

# AC motors

## Asynchronous motors

### 1PH7 motors

#### Selection and ordering data

| Rated speed                                                | Shaft height SH | Rated power              | Rated torque                                                                                                                                                                                                                                                                                                                         | Rated current        | Rated voltage                                                                                                                                   | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor         |                  |  |  |
|------------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------|--------------------------|---------------------------------|------------------|--|--|
| $n_{\text{rated}}$ rpm                                     |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                            | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V                                                                                                                            | $n_2$ rpm                                  | $n_{S1}$ rpm                                    | $n_{\text{max}}$ rpm     | Order No.                       |                  |  |  |
| 400 V 3 AC line voltage, Servo Control                     |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                                                                                                                                                 |                                            |                                                 |                          |                                 |                  |  |  |
| 400                                                        | 160             | 9.5/12.7                 | 227/167.3                                                                                                                                                                                                                                                                                                                            | 30                   | 274                                                                                                                                             | 1940                                       | 3700 <sup>9)</sup>                              | 6500 <sup>9)</sup>       | 1PH7163-■ ■ B ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 13/17.4                  | 310/228.5                                                                                                                                                                                                                                                                                                                            | 37                   | 294                                                                                                                                             | 1540                                       | 3700 <sup>9)</sup>                              | 6500 <sup>9)</sup>       | 1PH7167-■ ■ B ■ ■ -■ ...        |                  |  |  |
| 1000                                                       | 100             | 3.7/5.0                  | 35/25.8                                                                                                                                                                                                                                                                                                                              | 10                   | 343                                                                                                                                             | 2250                                       | 5500 <sup>9)</sup>                              | 9000 <sup>9)</sup>       | 1PH7103-■ ■ D ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 6.3/8.5                  | 60/44.2                                                                                                                                                                                                                                                                                                                              | 17.5                 | 319                                                                                                                                             | 3560                                       | 5500 <sup>9)</sup>                              | 9000 <sup>9)</sup>       | 1PH7107-■ ■ D ■ ■ -■ ...        |                  |  |  |
|                                                            | 132             | 12/16.1                  | 115/84.8                                                                                                                                                                                                                                                                                                                             | 30                   | 336                                                                                                                                             | 2500                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7133-■ ■ D ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 17/22.8                  | 162/119.4                                                                                                                                                                                                                                                                                                                            | 43                   | 322                                                                                                                                             | 3390                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7137-■ ■ D ■ ■ -■ ...        |                  |  |  |
| 1500                                                       | 160             | 22/29.5                  | 210/154.8                                                                                                                                                                                                                                                                                                                            | 55                   | 315                                                                                                                                             | 2750                                       | 3700                                            | 6500 <sup>9)</sup>       | 1PH7163-■ ■ D ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 28/37.6                  | 267/196.8                                                                                                                                                                                                                                                                                                                            | 71                   | 312                                                                                                                                             | 4090                                       | 3700                                            | 6500 <sup>9)</sup>       | 1PH7167-■ ■ D ■ ■ -■ ...        |                  |  |  |
|                                                            | 100             | 3.7/5.0                  | 24/17.7                                                                                                                                                                                                                                                                                                                              | 10                   | 350                                                                                                                                             | 5360                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7101-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 5.5/7.4                  | 35/25.8                                                                                                                                                                                                                                                                                                                              | 13                   | 350                                                                                                                                             | 3000                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7103-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 7.0/9.4                  | 45/33.2                                                                                                                                                                                                                                                                                                                              | 17.5                 | 346                                                                                                                                             | 5110                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7105-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 9.0/12.1                 | 57/42                                                                                                                                                                                                                                                                                                                                | 23.5                 | 336                                                                                                                                             | 3500                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7107-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            | 132             | 11/14.8                  | 70/51.6                                                                                                                                                                                                                                                                                                                              | 24                   | 350                                                                                                                                             | 4310                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7131-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 15/20.1                  | 96/70.8                                                                                                                                                                                                                                                                                                                              | 34                   | 346                                                                                                                                             | 4400                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7133-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 18.5/24.8                | 118/87                                                                                                                                                                                                                                                                                                                               | 42                   | 350                                                                                                                                             | 4920                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7135-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 22/29.5                  | 140/103.2                                                                                                                                                                                                                                                                                                                            | 57                   | 308                                                                                                                                             | 3750                                       | 4500                                            | 8000 <sup>9)</sup>       | 1PH7137-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            | 160             | 30/40.2                  | 191/140.8                                                                                                                                                                                                                                                                                                                            | 72                   | 319                                                                                                                                             | 4000                                       | 3700                                            | 6500                     | 1PH7163-■ ■ F ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 37/49.6                  | 236/173.9                                                                                                                                                                                                                                                                                                                            | 82                   | 350                                                                                                                                             | 2750                                       | 3700                                            | 6500                     | 1PH7167-■ ■ F ■ ■ -■ ...        |                  |  |  |
| 2000                                                       | 100             | 7/9.4                    | 33/24.3                                                                                                                                                                                                                                                                                                                              | 17.5                 | 343                                                                                                                                             | 4630                                       | 5500                                            | 9000                     | 1PH7103-■ ■ G ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 10.5/14.1                | 50/36.9                                                                                                                                                                                                                                                                                                                              | 26                   | 350                                                                                                                                             | 4000                                       | 5500                                            | 9000                     | 1PH7107-■ ■ G ■ ■ -■ ...        |                  |  |  |
|                                                            | 132             | 20/26.8                  | 96/70.8                                                                                                                                                                                                                                                                                                                              | 45                   | 350                                                                                                                                             | 4000                                       | 4500                                            | 8000                     | 1PH7133-■ ■ G ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 28/37.6                  | 134/98.8                                                                                                                                                                                                                                                                                                                             | 60                   | 350                                                                                                                                             | 3750                                       | 4500                                            | 8000                     | 1PH7137-■ ■ G ■ ■ -■ ...        |                  |  |  |
|                                                            | 160             | 36/48.3                  | 172/126.8                                                                                                                                                                                                                                                                                                                            | 85                   | 333                                                                                                                                             | 3000                                       | 3700                                            | 6500                     | 1PH7163-■ ■ G ■ ■ -■ ...        |                  |  |  |
|                                                            |                 | 41/55.0                  | 196/144.5                                                                                                                                                                                                                                                                                                                            | 89                   | 350                                                                                                                                             | 2750                                       | 3700                                            | 6500                     | 1PH7167-■ ■ G ■ ■ -■ ...        |                  |  |  |
| Fan:                                                       |                 |                          | External fan unit, heavy-gauge threaded cable entry in terminal box<br>Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box               |                      |                                                                                                                                                 |                                            |                                                 |                          | 2<br>6<br>7<br>8                |                  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:   |                 |                          | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver |                      |                                                                                                                                                 |                                            |                                                 |                          | A<br>E<br>H<br>J<br>M<br>N<br>R |                  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:      |                 |                          | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver                                                                                                                        |                      |                                                                                                                                                 |                                            |                                                 |                          | F<br>D<br>Q<br>P                |                  |  |  |
| Terminal box/cable entry (view onto DE):                   |                 |                          | Top/from right<br>Top/from NDE<br>Top/from left                                                                                                                                                                                                                                                                                      |                      |                                                                                                                                                 |                                            |                                                 |                          | 0<br>2<br>3                     |                  |  |  |
| Type:                                                      |                 |                          | IM B3 (IM V5, IM V6)<br>IM B5 (IM V1, IM V3) available only for shaft heights 100 and 132<br>IM B35 (IM V15, IM V36)                                                                                                                                                                                                                 |                      |                                                                                                                                                 |                                            |                                                 |                          | 0<br>2<br>3                     |                  |  |  |
| Holding brake with emergency stop function <sup>4)</sup> : |                 |                          | Without brake                                                                                                                                                                                                                                                                                                                        |                      |                                                                                                                                                 |                                            |                                                 |                          |                                 | 0                |  |  |
|                                                            |                 |                          | Brake supply voltage<br>230 V 1 AC, 50/60 Hz                                                                                                                                                                                                                                                                                         |                      | With brake<br>With brake (includes microswitch)<br>With brake (includes manual release)<br>With brake (includes manual release and microswitch) |                                            |                                                 |                          |                                 | 1<br>2<br>3<br>4 |  |  |
|                                                            |                 |                          | Brake supply voltage<br>24 V DC                                                                                                                                                                                                                                                                                                      |                      | With brake<br>With brake (includes microswitch)<br>With brake (includes manual release)<br>With brake (includes manual release and microswitch) |                                            |                                                 |                          |                                 | 5<br>6<br>7<br>8 |  |  |

#### Selection and ordering data

| Power factor                              | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia of                                            | Weight, approx. | 1PH7 asynchronous motor    | SINAMICS S120 Motor Module |                       |
|-------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------|-----------------|----------------------------|----------------------------|-----------------------|
| $\cos \varphi$                            | $I_{\mu}$<br>A      | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$<br>Hz | $J$<br>kgm <sup>2</sup> /<br>lb <sub>F</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                  | $I_{\text{rated}}$<br>A    | Order No.             |
| 400 V 3 AC line voltage, Servo Control    |                     |                                                                              |                          |                                                                 |                 |                            |                            |                       |
| 0.88                                      | 11.5                | 0.809                                                                        | 14.3                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . B . . . ■■■   | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.88                                      | 14.0                | 0.814                                                                        | 14.3                     | 0.228/2.018                                                     | 210/463         | 1PH7167- . . B . . . ■■■   | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.82                                      | 4.8                 | 0.794                                                                        | 35.6                     | 0.017/0.15                                                      | 40/88.2         | 1PH7103- . . D . . . ■■■   | 9 <sup>8)</sup>            | 6SL3120- ■ TE21-0AA ■ |
| 0.81                                      | 9                   | 0.822                                                                        | 35.3                     | 0.029/0.257                                                     | 65/143.33       | 1PH7107- . . D . . . ■■■   | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.86                                      | 13                  | 0.865                                                                        | 34.8                     | 0.076/0.673                                                     | 90/198.5        | 1PH7133- . . D . . . ■■■   | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.86                                      | 19                  | 0.878                                                                        | 34.6                     | 0.109/0.965                                                     | 150/330.8       | 1PH7137- . . D . . . ■■■   | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.85                                      | 24                  | 0.899                                                                        | 34.2                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . D . . . ■■■   | 60                         | 6SL3120- 1 TE26-0AA 1 |
| 0.84                                      | 33                  | 0.903                                                                        | 34.2                     | 0.228/2.018                                                     | 210/463         | 1PH7167- . . D . . . ■■■   | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.74                                      | 5.9                 | 0.847                                                                        | 51.6                     | 0.017/0.15                                                      | 40/88.2         | 1PH7101- . . F . . . ■■■   | 9 <sup>8)</sup>            | 6SL3120- ■ TE21-0AA ■ |
| 0.84                                      | 5.4                 | 0.832                                                                        | 52.7                     | 0.017/0.15                                                      | 40/88.2         | 1PH7103- . . F . . . ■■■   | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.78                                      | 9.4                 | 0.866                                                                        | 51.7                     | 0.029/0.257                                                     | 65/143.33       | 1PH7105- . . F . . . ■■■   | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.80                                      | 11.0                | 0.859                                                                        | 52.0                     | 0.029/0.257                                                     | 65/143.33       | 1PH7107- . . F . . . ■■■   | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.88                                      | 8.4                 | 0.896                                                                        | 51.3                     | 0.076/0.673                                                     | 90/198.5        | 1PH7131- . . F . . . ■■■   | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.85                                      | 14                  | 0.895                                                                        | 51.3                     | 0.076/0.673                                                     | 90/198.5        | 1PH7133- . . F . . . ■■■   | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.85                                      | 17                  | 0.902                                                                        | 51.1                     | 0.109/0.965                                                     | 150/330.8       | 1PH7135- . . F . . . ■■■   | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.85                                      | 23                  | 0.900                                                                        | 51.2                     | 0.109/0.965                                                     | 150/330.8       | 1PH7137- . . F . . . ■■■   | 60                         | 6SL3120- 1 TE26-0AA 1 |
| 0.85                                      | 30                  | 0.912                                                                        | 50.9                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . F . . . ■■■   | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.86                                      | 32                  | 0.916                                                                        | 50.8                     | 0.228/2.018                                                     | 210/463         | 1PH7167- . . F . . . ■■■   | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.80                                      | 8.3                 | 0.857                                                                        | 68.9                     | 0.017/0.15                                                      | 40/88.2         | 1PH7103- . . G . . . ■■■   | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.80                                      | 12                  | 0.869                                                                        | 68.6                     | 0.029/0.257                                                     | 65/143.33       | 1PH7107- . . G . . . ■■■   | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.86                                      | 18                  | 0.898                                                                        | 68.0                     | 0.076/0.673                                                     | 90/198.5        | 1PH7133- . . G . . . ■■■   | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.88                                      | 21                  | 0.903                                                                        | 68.0                     | 0.109/0.965                                                     | 150/330.8       | 1PH7137- . . G . . . ■■■   | 60                         | 6SL3120- 1 TE26-0AA 1 |
| 0.84                                      | 37                  | 0.906                                                                        | 67.5                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . G . . . ■■■   | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.84                                      | 40                  | 0.907                                                                        | 67.4                     | 0.228/2.018                                                     | 210/463         | 1PH7167- . . G . . . ■■■   | 85 <sup>8)</sup>           | 6SL3120- 1 TE28-5AA 1 |
| Output type:                              |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                                      |                 | B<br>C<br>D<br>K<br>L      |                            |                       |
| Coupling/belt                             |                     | R                                                                            |                          | R                                                               |                 |                            |                            |                       |
| Coupling/belt                             |                     | S                                                                            |                          | R                                                               |                 |                            |                            |                       |
| Coupling/belt                             |                     | SR                                                                           |                          | R                                                               |                 |                            |                            |                       |
| Coupling/belt                             |                     | N                                                                            |                          | N (with brake mounting)                                         |                 |                            |                            |                       |
| Increased max. speed <sup>5)</sup>        |                     | SR                                                                           |                          | R                                                               |                 |                            |                            |                       |
| Shaft extension (DE):                     |                     | Balancing:                                                                   |                          | Direction of air flow (fan):                                    |                 | A<br>B<br>C<br>D<br>J<br>K |                            |                       |
| Fitted key                                |                     | Half-key                                                                     |                          | DE → NDE                                                        |                 |                            |                            |                       |
| Fitted key                                |                     | Half-key                                                                     |                          | NDE → DE <sup>7)</sup>                                          |                 |                            |                            |                       |
| Fitted key                                |                     | Full-key                                                                     |                          | DE → NDE                                                        |                 |                            |                            |                       |
| Fitted key                                |                     | Full-key                                                                     |                          | NDE → DE <sup>7)</sup>                                          |                 |                            |                            |                       |
| Plain shaft                               |                     | –                                                                            |                          | DE → NDE                                                        |                 |                            |                            |                       |
| Plain shaft                               |                     | –                                                                            |                          | NDE → DE <sup>7)</sup>                                          |                 |                            |                            |                       |
| Seal:                                     |                     | Paint finish:                                                                |                          |                                                                 |                 | 0<br>2<br>3<br>5<br>6<br>8 |                            |                       |
| –                                         |                     | None                                                                         |                          |                                                                 |                 |                            |                            |                       |
| Flange + shaft sealing ring <sup>6)</sup> |                     | None                                                                         |                          |                                                                 |                 |                            |                            |                       |
| –                                         |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                            |                            |                       |
| Flange + shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                            |                            |                       |
| –                                         |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                            |                            |                       |
| Flange + shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                            |                            |                       |
| Special versions:                         |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                                 |                 |                            |                            | –Z                    |
| Motor Module:                             |                     | Single Motor Module                                                          |                          |                                                                 |                 |                            |                            | 1                     |
|                                           |                     | Double Motor Module                                                          |                          |                                                                 |                 |                            |                            | 2                     |
|                                           |                     |                                                                              |                          |                                                                 |                 |                            |                            | 1                     |
|                                           |                     |                                                                              |                          |                                                                 |                 |                            |                            | 0                     |

- $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- Model with brake possible if: 12. Position "2" or "3", 14th position "K", 15th position "A", "B", "J" or "K", 16th position "0", "3" or "6".
- Max. possible speed (see also selection guides): SH 100: 12000 rpm, SH 132: 10000 rpm, SH 160: 8000 rpm, with keyless shaft only (15th position "J" or "K" and 16th position "0", "3" or "6").

- Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), or version with increased maximum speed.
- Preferred air-flow direction in polluted environment.
- The rated output current of the Motor Module is lower than the motor rated current.
- Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                                                                                         | Shaft height SH | Rated power              | Rated torque                                                                        | Rated current        | Rated voltage        | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|-------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------------|-------------------------------------------------|--------------------------|-------------------------|--|--|--|--|
| $n_{\text{rated}}$ rpm                                                                                              |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb·ft                                                         | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                  | $n_{S1}$ rpm                                    | $n_{\text{max}}$ rpm     | Order No.               |  |  |  |  |
| 400 V 3 AC line voltage, Servo Control                                                                              |                 |                          |                                                                                     |                      |                      |                                            |                                                 |                          |                         |  |  |  |  |
| 400                                                                                                                 | 180             | 16.3/21.9                | 390/287.4                                                                           | 51                   | 271                  | 2100 <sup>10)</sup>                        | 3500 <sup>4)10)</sup>                           | 5000 <sup>10)</sup>      | 1PH7184-■■■B■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 21.2/28.4                | 505/372.2                                                                           | 67                   | 268                  | 2400 <sup>10)</sup>                        | 3500 <sup>4)10)</sup>                           | 5000 <sup>10)</sup>      | 1PH7186-■■■B■■■-■...    |  |  |  |  |
|                                                                                                                     | 225             | 30.4/40.8                | 725/534.3                                                                           | 88                   | 268                  | 1900                                       | 3100 <sup>4)10)</sup>                           | 4500 <sup>10)</sup>      | 1PH7224-■■■B■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 39.2/52.6                | 935/689.1                                                                           | 114                  | 264                  | 2200 <sup>10)</sup>                        | 3100 <sup>4)10)</sup>                           | 4500 <sup>10)</sup>      | 1PH7226-■■■B■■■-■...    |  |  |  |  |
| 1000                                                                                                                | 180             | 48/64.4                  | 1145/843.9                                                                          | 136                  | 272                  | 2200 <sup>10)</sup>                        | 3100 <sup>4)10)</sup>                           | 4500 <sup>4)10)</sup>    | 1PH7228-■■■B■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 39/52.3                  | 372/274.2                                                                           | 90                   | 335                  | 3300                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184-■■■D■■■-■...    |  |  |  |  |
|                                                                                                                     | 225             | 51/68.4                  | 485/357.4                                                                           | 116                  | 340                  | 3700                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186-■■■D■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 71/95.2                  | 678/499.7                                                                           | 161                  | 335                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224-■■■D■■■-■...    |  |  |  |  |
| 1500                                                                                                                | 180             | 92/123.4                 | 880/649.1                                                                           | 198                  | 340                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226-■■■D■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 113/151.5                | 1080/796                                                                            | 240                  | 340                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228-■■■D■■■-■...    |  |  |  |  |
|                                                                                                                     | 225             | 51/68.4                  | 325/239.5                                                                           | 120                  | 335                  | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184-■■■F■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 74/99.2                  | 471/347.1                                                                           | 170                  | 330                  | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186-■■■F■■■-■...    |  |  |  |  |
| 2500                                                                                                                | 180             | 95/127.4                 | 605/445.9                                                                           | 204                  | 340                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224-■■■U■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 130/174.3                | 828/610.2                                                                           | 278                  | 340                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226-■■■F■■■-■...    |  |  |  |  |
|                                                                                                                     | 225             | 160/214.6                | 1019/751                                                                            | 350                  | 340                  | 2900                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228-■■■F■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 78/104.6                 | 298/219.6                                                                           | 171                  | 340                  | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184-■■■L■■■-■...    |  |  |  |  |
| Fan:                                                                                                                | 180             | 106/142.2                | 405/298.5                                                                           | 235                  | 335                  | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186-■■■L■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 142/190.4                | 542/399.5                                                                           | 298                  | 340                  | 3500                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224-■■■L■■■-■...    |  |  |  |  |
|                                                                                                                     | 225             | 168/225.3                | 642/473.2                                                                           | 362                  | 335                  | 3500                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226-■■■L■■■-■...    |  |  |  |  |
|                                                                                                                     |                 | 205/274.9                | 783/577.1                                                                           | 433                  | 340                  | 3500                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228-■■■L■■■-■...    |  |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:                                                            |                 |                          | Without encoder                                                                     |                      |                      |                                            |                                                 |                          | A                       |  |  |  |  |
|                                                                                                                     |                 |                          | Absolute encoder EnDat 2048 pulses/revolution                                       |                      |                      |                                            |                                                 |                          | E                       |  |  |  |  |
|                                                                                                                     |                 |                          | Incremental encoder HTL 1024 pulses/revolution                                      |                      |                      |                                            |                                                 |                          | H                       |  |  |  |  |
|                                                                                                                     |                 |                          | Incremental encoder HTL 2048 pulses/revolution                                      |                      |                      |                                            |                                                 |                          | J                       |  |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:                                                               |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>11)</sup>    |                      |                      |                                            |                                                 |                          | M                       |  |  |  |  |
|                                                                                                                     |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>11)</sup> |                      |                      |                                            |                                                 |                          | N                       |  |  |  |  |
|                                                                                                                     |                 |                          | 2-pole resolver                                                                     |                      |                      |                                            |                                                 |                          | R                       |  |  |  |  |
|                                                                                                                     |                 |                          | Absolute encoder EnDat 2048 pulses/revolution                                       |                      |                      |                                            |                                                 |                          | F                       |  |  |  |  |
| Terminal box/cable entry (view onto DE):                                                                            |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>11)</sup>    |                      |                      |                                            |                                                 |                          | D                       |  |  |  |  |
|                                                                                                                     |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>11)</sup> |                      |                      |                                            |                                                 |                          | Q                       |  |  |  |  |
|                                                                                                                     |                 |                          | 2-pole resolver                                                                     |                      |                      |                                            |                                                 |                          | P                       |  |  |  |  |
|                                                                                                                     |                 |                          |                                                                                     |                      |                      |                                            |                                                 |                          |                         |  |  |  |  |
| Type:                                                                                                               |                 |                          | Top/from right                                                                      |                      |                      |                                            |                                                 |                          | 0                       |  |  |  |  |
|                                                                                                                     |                 |                          | top/from DE                                                                         |                      |                      |                                            |                                                 |                          | 1                       |  |  |  |  |
|                                                                                                                     |                 |                          | top/from NDE                                                                        |                      |                      |                                            |                                                 |                          | 2                       |  |  |  |  |
|                                                                                                                     |                 |                          | top/from left                                                                       |                      |                      |                                            |                                                 |                          | 3                       |  |  |  |  |
| Holding brake with emergency stop function suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 |                          | IM B3                                                                               |                      |                      |                                            |                                                 |                          | 0                       |  |  |  |  |
|                                                                                                                     |                 |                          | IM B5                                                                               |                      |                      |                                            |                                                 |                          | 1                       |  |  |  |  |
|                                                                                                                     |                 |                          | IM B35                                                                              |                      |                      |                                            |                                                 |                          | 3                       |  |  |  |  |
|                                                                                                                     |                 |                          | (only for 1PH7184 with flange A400/1PH7186 with flange A450/1PH7 with flange A550)  |                      |                      |                                            |                                                 |                          | 4                       |  |  |  |  |
| Holding brake with emergency stop function suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 |                          | IM B35                                                                              |                      |                      |                                            |                                                 |                          | 4                       |  |  |  |  |
|                                                                                                                     |                 |                          | (only for 1PH7184 with flange A450)                                                 |                      |                      |                                            |                                                 |                          | 5                       |  |  |  |  |
|                                                                                                                     |                 |                          | IM B35                                                                              |                      |                      |                                            |                                                 |                          | 5                       |  |  |  |  |
|                                                                                                                     |                 |                          | (only for 1PH7184 with flange A450/1PH7186 with flange A450/1PH7 with flange A550)  |                      |                      |                                            |                                                 |                          | 6                       |  |  |  |  |
| Holding brake with emergency stop function suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 |                          | IM B35                                                                              |                      |                      |                                            |                                                 |                          | 6                       |  |  |  |  |
|                                                                                                                     |                 |                          | (only for 1PH7184 with flange A450)                                                 |                      |                      |                                            |                                                 |                          | 6                       |  |  |  |  |
|                                                                                                                     |                 |                          |                                                                                     |                      |                      |                                            |                                                 |                          |                         |  |  |  |  |
|                                                                                                                     |                 |                          |                                                                                     |                      |                      |                                            |                                                 |                          |                         |  |  |  |  |
| Holding brake with emergency stop function suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 |                          | Without brake                                                                       |                      |                      |                                            |                                                 |                          | 0                       |  |  |  |  |
|                                                                                                                     |                 |                          | With brake                                                                          |                      |                      |                                            |                                                 |                          | 2                       |  |  |  |  |
|                                                                                                                     |                 |                          | With brake                                                                          |                      |                      |                                            |                                                 |                          | 4                       |  |  |  |  |
|                                                                                                                     |                 |                          |                                                                                     |                      |                      |                                            |                                                 |                          |                         |  |  |  |  |

#### Selection and ordering data

| Power factor                                | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia                                 | Weight, approx. | 1PH7 asynchronous motor  | SINAMICS S120 Motor Module                |                      |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|-----------------|--------------------------|-------------------------------------------|----------------------|
|                                             | $I_{\mu}$<br>A      | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$<br>Hz | $J$<br>kgm <sup>2</sup> /<br>lb·in·s <sup>2</sup> | kg/lb           | Order No.                | $I_{\text{rated}}$<br>A                   | Order No.            |
| 400 V 3 AC line voltage, Servo Control      |                     |                                                                              |                          |                                                   |                 |                          |                                           |                      |
| 0.84                                        | 26                  | 0.830                                                                        | 14.2                     | 0.503/4.452                                       | 370/815.85      | 1PH7184- . . B . . . ■■■ | 60                                        | 6SL3120- 1 TE26-0AA1 |
| 0.81                                        | 38.5                | 0.845                                                                        | 14.0                     | 0.666/5.895                                       | 440/970.2       | 1PH7186- . . B . . . ■■■ | 85                                        | 6SL3120- 1 TE28-5AA1 |
| 0.87                                        | 36.5                | 0.864                                                                        | 14.0                     | 1.479/13.09                                       | 630/1389.2      | 1PH7224- . . B . . . ■■■ | 85 <sup>9)</sup>                          | 6SL3120- 1 TE28-5AA1 |
| 0.86                                        | 49                  | 0.880                                                                        | 14.0                     | 1.930/17.082                                      | 750/1653.8      | 1PH7226- . . B . . . ■■■ | 132                                       | 6SL3120- 1 TE31-3AA0 |
| 0.85                                        | 60.5                | 0.888                                                                        | 13.9                     | 2.326/19.79                                       | 860/1896.3      | 1PH7228- . . B . . . ■■■ | 132 <sup>9)</sup>                         | 6SL3120- 1 TE31-3AA0 |
| 0.83                                        | 44                  | 0.913                                                                        | 34.2                     | 0.503/4.452                                       | 370/815.85      | 1PH7184- . . D . . . ■■■ | 85 <sup>9)</sup>                          | 6SL3120- 1 TE28-5AA1 |
| 0.81                                        | 58                  | 0.918                                                                        | 34.1                     | 0.666/5.895                                       | 440/970.2       | 1PH7186- . . D . . . ■■■ | 132                                       | 6SL3120- 1 TE31-3AA0 |
| 0.81                                        | 78.5                | 0.934                                                                        | 33.9                     | 1.479/13.09                                       | 630/1389.2      | 1PH7224- . . D . . . ■■■ | 200                                       | 6SL3120- 1 TE32-0AA0 |
| 0.84                                        | 87.5                | 0.935                                                                        | 33.9                     | 1.930/17.082                                      | 750/1653.8      | 1PH7226- . . D . . . ■■■ | 200                                       | 6SL3120- 1 TE32-0AA0 |
| 0.85                                        | 98                  | 0.938                                                                        | 33.9                     | 2.326/20.587                                      | 860/1896.3      | 1PH7228- . . D . . . ■■■ | 260                                       | 6SL3120- 1 TE32-1AA0 |
| 0.78                                        | 64                  | 0.930                                                                        | 50.7                     | 0.503/4.452                                       | 370/815.85      | 1PH7184- . . F . . . ■■■ | 132                                       | 6SL3120- 1 TE31-3AA0 |
| 0.81                                        | 84                  | 0.937                                                                        | 50.7                     | 0.666/5.895                                       | 440/970.2       | 1PH7186- . . F . . . ■■■ | 200                                       | 6SL3120- 1 TE32-0AA0 |
| 0.84                                        | 88.5                | 0.944                                                                        | 50.6                     | 1.479/13.09                                       | 630/1389.2      | 1PH7224- . . U . . . ■■■ | 200 <sup>9)</sup>                         | 6SL3120- 1 TE32-0AA0 |
| 0.84                                        | 120                 | 0.945                                                                        | 50.6                     | 1.930/17.082                                      | 750/1653.8      | 1PH7226- . . F . . . ■■■ | 310                                       | 6SL3320- 1 TE33-1AA0 |
| 0.82                                        | 169                 | 0.949                                                                        | 50.5                     | 2.326/19.79                                       | 860/1896.3      | 1PH7228- . . F . . . ■■■ | 380                                       | 6SL3320- 1 TE33-8AA0 |
| 0.82                                        | 77                  | 0.937                                                                        | 84.1                     | 0.503/4.452                                       | 370/815.85      | 1PH7184- . . L . . . ■■■ | 200                                       | 6SL3120- 1 TE32-0AA0 |
| 0.82                                        | 108                 | 0.942                                                                        | 84.1                     | 0.666/5.895                                       | 440/970.2       | 1PH7186- . . L . . . ■■■ | 260                                       | 6SL3320- 1 TE32-1AA0 |
| 0.84                                        | 115                 | 0.948                                                                        | 84.0                     | 1.479/13.09                                       | 630/1389.2      | 1PH7224- . . L . . . ■■■ | 310                                       | 6SL3320- 1 TE33-1AA0 |
| 0.84                                        | 154                 | 0.950                                                                        | 84.0                     | 1.930/17.082                                      | 750/1653.8      | 1PH7226- . . L . . . ■■■ | 380                                       | 6SL3320- 1 TE33-8AA0 |
| 0.84                                        | 185                 | 0.950                                                                        | 83.9                     | 2.326/19.798                                      | 860/1896.3      | 1PH7228- . . L . . . ■■■ | 490                                       | 6SL3320- 1 TE35-0AA0 |
| Output type:                                |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                        |                 |                          | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>J |                      |
| Coupling                                    |                     | R                                                                            |                          | N                                                 |                 |                          |                                           |                      |
| Coupling                                    |                     | R                                                                            |                          | R                                                 |                 |                          |                                           |                      |
| Coupling                                    |                     | S                                                                            |                          | R                                                 |                 |                          |                                           |                      |
| Coupling                                    |                     | SR                                                                           |                          | R                                                 |                 |                          |                                           |                      |
| Belt                                        |                     | R                                                                            |                          | N                                                 |                 |                          |                                           |                      |
| Belt                                        |                     | R                                                                            |                          | R                                                 |                 |                          |                                           |                      |
| Incr. cantilever forces                     |                     | R                                                                            |                          | N                                                 |                 |                          |                                           |                      |
| Incr. cantilever forces                     |                     | R                                                                            |                          | R                                                 |                 |                          |                                           |                      |
| Incr. max. speed <sup>6)</sup>              |                     | S                                                                            |                          | R                                                 |                 |                          |                                           |                      |
| Shaft extension (DE):                       |                     | Balancing:                                                                   |                          | Direction of air flow (fan):                      |                 |                          | A<br>B<br>C<br>D<br>J<br>K                |                      |
| Fitted key                                  |                     | Half-key                                                                     |                          | DE → NDE                                          |                 |                          |                                           |                      |
| Fitted key                                  |                     | Half-key                                                                     |                          | NDE → DE <sup>8)</sup>                            |                 |                          |                                           |                      |
| Fitted key                                  |                     | Full-key                                                                     |                          | DE → NDE                                          |                 |                          |                                           |                      |
| Fitted key                                  |                     | Full-key                                                                     |                          | NDE → DE <sup>8)</sup>                            |                 |                          |                                           |                      |
| Plain shaft                                 |                     | –                                                                            |                          | DE → NDE                                          |                 |                          |                                           |                      |
| Plain shaft                                 |                     | –                                                                            |                          | NDE → DE <sup>8)</sup>                            |                 |                          |                                           |                      |
| Seal:                                       |                     | Paint finish:                                                                |                          |                                                   |                 |                          | 0<br>2<br>3<br>5<br>6<br>8                |                      |
| –                                           |                     | Primed                                                                       |                          |                                                   |                 |                          |                                           |                      |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Primed                                                                       |                          |                                                   |                 |                          |                                           |                      |
| –                                           |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                   |                 |                          |                                           |                      |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                   |                 |                          |                                           |                      |
| –                                           |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                   |                 |                          |                                           |                      |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                   |                 |                          |                                           |                      |
| Special versions:                           |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                   |                 |                          |                                           | –Z                   |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Speed is reduced at higher cantilever forces, see selection guides.
- <sup>5)</sup> Model with brake:  
12th position "0"  
14th position "A",  
15th position "A" or "B",  
16th position "0", "3" or "6".
- <sup>6)</sup> For shaft height 180  $n_{\text{max}} = 7000$  rpm, 1PH7224:  $n_{\text{max}} = 5500$  rpm coupling output only and 16th position "0", "3" or "6".

- <sup>7)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased maximum speed, version with belt drive or increased cantilever forces.
- <sup>8)</sup> Preferred air-flow direction in polluted environment.
- <sup>9)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>10)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.
- <sup>11)</sup> When ordering option **L27**, please also select option **M84** (insulated version of encoder).

# AC motors

## Asynchronous motors

### 1PH7 motors

#### Selection and ordering data

| Rated speed                                                | Shaft height SH | Rated power              | Rated torque                                                                                                                                                                                                                                                                                                                         | Rated current        | Rated voltage        | Speed during field weakening <sup>1)9)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor                              |                                           |  |  |
|------------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------------------------------|-------------------------------------------------|--------------------------|------------------------------------------------------|-------------------------------------------|--|--|
| $n_{\text{rated}}$ rpm                                     |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                            | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                    | $n_{\text{S1}}$ rpm                             | $n_{\text{max}}$ rpm     | Order No.                                            |                                           |  |  |
| 400 V 3 AC line voltage, Vector Control                    |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
| 400                                                        | 160             | 9.5/12.7                 | 227/167.3                                                                                                                                                                                                                                                                                                                            | 30                   | 274                  | 2630 <sup>9)</sup>                           | 3700 <sup>9)</sup>                              | 6500 <sup>9)</sup>       | 1PH7163-■ ■ B ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            |                 | 13.0/17.4                | 310/228.5                                                                                                                                                                                                                                                                                                                            | 37                   | 294                  | 2140 <sup>9)</sup>                           | 3700 <sup>9)</sup>                              | 6500 <sup>9)</sup>       | 1PH7167-■ ■ B ■ ■ - ■ . . .                          |                                           |  |  |
| 1150                                                       | 100             | 4.3/5.8                  | 36/26.5                                                                                                                                                                                                                                                                                                                              | 10                   | 391                  | 2400                                         | 5500                                            | 9000 <sup>9)</sup>       | 1PH7103-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            |                 | 7.2/9.7                  | 60/44.2                                                                                                                                                                                                                                                                                                                              | 17.5                 | 360                  | 4170                                         | 5500                                            | 9000 <sup>9)</sup>       | 1PH7107-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            | 132             | 13.5/18.1                | 112/82.5                                                                                                                                                                                                                                                                                                                             | 29                   | 381                  | 3000                                         | 4500                                            | 8000 <sup>9)</sup>       | 1PH7133-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            |                 | 19.5/26.2                | 162/119.4                                                                                                                                                                                                                                                                                                                            | 43                   | 367                  | 3930                                         | 4500                                            | 8000 <sup>9)</sup>       | 1PH7137-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            | 160             | 25/33.5                  | 208/153.3                                                                                                                                                                                                                                                                                                                            | 55                   | 364                  | 3500                                         | 3700                                            | 6500 <sup>9)</sup>       | 1PH7163-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
|                                                            |                 | 31/41.6                  | 257/189.4                                                                                                                                                                                                                                                                                                                            | 70                   | 357                  | 4840                                         | 3700                                            | 6500 <sup>9)</sup>       | 1PH7167-■ ■ D ■ ■ - ■ . . .                          |                                           |  |  |
| Fan:                                                       |                 |                          | External fan unit, heavy-gauge threaded cable entry in terminal box<br>Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box               |                      |                      |                                              |                                                 |                          | 2<br>6<br>7<br>8                                     | A<br>E<br>H<br>J<br>M<br>N<br>R           |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:   |                 |                          | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:      |                 |                          | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver                                                                                                                        |                      |                      |                                              |                                                 |                          | F<br>D<br>Q<br>P                                     |                                           |  |  |
| Terminal box/cable entry (view onto DE):                   |                 |                          | Top/from right<br>Top/from NDE<br>Top/from left                                                                                                                                                                                                                                                                                      |                      |                      |                                              |                                                 |                          | 0<br>2<br>3                                          |                                           |  |  |
| Type:                                                      |                 |                          | IM B3 (IM V5, IM V6)<br>IM B5 (IM V1, IM V3) available only for shaft heights 100 and 132<br>IM B35 (IM V15, IM V36)                                                                                                                                                                                                                 |                      |                      |                                              |                                                 |                          | 0<br>2<br>3                                          | 0<br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8 |  |  |
| Holding brake with emergency stop function <sup>4)</sup> : |                 |                          | Without brake                                                                                                                                                                                                                                                                                                                        |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          | Brake supply voltage<br>230 V 1 AC, 50/60 Hz                                                                                                                                                                                                                                                                                         |                      |                      | With brake                                   |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                      | With brake (includes microswitch)            |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                      | With brake (includes manual release)         |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                      |                                              |                                                 |                          | With brake (includes manual release and microswitch) |                                           |  |  |
| Brake supply voltage<br>24 V DC                            |                 |                          | With brake                                                                                                                                                                                                                                                                                                                           |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          | With brake (includes microswitch)                                                                                                                                                                                                                                                                                                    |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          | With brake (includes manual release)                                                                                                                                                                                                                                                                                                 |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |
|                                                            |                 |                          | With brake (includes manual release and microswitch)                                                                                                                                                                                                                                                                                 |                      |                      |                                              |                                                 |                          |                                                      |                                           |  |  |

#### Selection and ordering data

| Power factor                                | Magnetizing current | Efficiency                                                                   | Rated frequency    | Moment of inertia                                        | Weight, approx. | 1PH7 asynchronous motor    | SINAMICS S120 Motor Module |                       |   |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------|----------------------------------------------------------|-----------------|----------------------------|----------------------------|-----------------------|---|
|                                             | $I_{\mu}$           | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$ | $J$                                                      |                 |                            | Rated output current       |                       |   |
| $\cos \varphi$                              | A                   |                                                                              | Hz                 | kgm <sup>2</sup> /<br>lb <sub>f</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                  | $I_{\text{rated}}$<br>A    | Order No.             |   |
| 400 V 3 AC line voltage, Vector Control     |                     |                                                                              |                    |                                                          |                 |                            |                            |                       |   |
| 0.88                                        | 11.5                | 0.809                                                                        | 14.3               | 0.185/1.637                                              | 175/385.88      | 1PH7163- . . B . . . ■ ■ ■ | 30                         | 6SL3120- 1 TE23-0AA 1 |   |
| 0.88                                        | 14.0                | 0.814                                                                        | 14.3               | 0.228/2.018                                              | 210/463.05      | 1PH7167- . . B . . . ■ ■ ■ | 45                         | 6SL3120- 1 TE24-5AA 1 |   |
| 0.81                                        | 5.0                 | 0.813                                                                        | 40.6               | 0.017/0.15                                               | 40/88.2         | 1PH7103- . . D . . . ■ ■ ■ | 9 <sup>8)</sup>            | 6SL3120- ■ TE21-0AA ■ |   |
| 0.81                                        | 8.8                 | 0.838                                                                        | 40.3               | 0.029/0.257                                              | 65/143.33       | 1PH7107- . . D . . . ■ ■ ■ | 18                         | 6SL3120- ■ TE21-8AA ■ |   |
| 0.85                                        | 13                  | 0.877                                                                        | 39.7               | 0.076/0.673                                              | 90/198.45       | 1PH7133- . . D . . . ■ ■ ■ | 30                         | 6SL3120- 1 TE23-0AA 1 |   |
| 0.86                                        | 19                  | 0.887                                                                        | 39.6               | 0.109/0.965                                              | 150/330.75      | 1PH7137- . . D . . . ■ ■ ■ | 45                         | 6SL3120- 1 TE24-5AA 1 |   |
| 0.84                                        | 25                  | 0.904                                                                        | 39.2               | 0.185/1.637                                              | 175/385.88      | 1PH7163- . . D . . . ■ ■ ■ | 60                         | 6SL3120- 1 TE26-0AA 1 |   |
| 0.83                                        | 34                  | 0.909                                                                        | 39.1               | 0.228/2.018                                              | 210/463.05      | 1PH7167- . . D . . . ■ ■ ■ | 85                         | 6SL3120- 1 TE28-5AA 1 |   |
| Output type:                                |                     | Vibration severity grade:                                                    |                    | Shaft and flange accuracy:                               |                 |                            | B<br>C<br>D<br>K<br>L      |                       |   |
| Coupling/belt                               |                     | R                                                                            |                    | R                                                        |                 |                            |                            |                       |   |
| Coupling/belt                               |                     | S                                                                            |                    | R                                                        |                 |                            |                            |                       |   |
| Coupling/belt                               |                     | SR                                                                           |                    | R                                                        |                 |                            |                            |                       |   |
| Coupling/belt                               |                     | N                                                                            |                    | N (with brake mounting)                                  |                 |                            |                            |                       |   |
| Increased max. speed <sup>5)</sup>          |                     | SR                                                                           |                    | R                                                        |                 |                            |                            |                       |   |
| Shaft extension (DE):                       |                     | Balancing:                                                                   |                    | Direction of air flow (fan):                             |                 |                            | A<br>B<br>C<br>D<br>J<br>K |                       |   |
| Fitted key                                  |                     | Half-key                                                                     |                    | DE → NDE                                                 |                 |                            |                            |                       |   |
| Fitted key                                  |                     | Half-key                                                                     |                    | NDE → DE <sup>7)</sup>                                   |                 |                            |                            |                       |   |
| Fitted key                                  |                     | Full-key                                                                     |                    | DE → NDE                                                 |                 |                            |                            |                       |   |
| Fitted key                                  |                     | Full-key                                                                     |                    | NDE → DE <sup>7)</sup>                                   |                 |                            |                            |                       |   |
| Plain shaft                                 |                     | –                                                                            |                    | DE → NDE                                                 |                 |                            |                            |                       |   |
| Plain shaft                                 |                     | –                                                                            |                    | NDE → DE <sup>7)</sup>                                   |                 |                            |                            |                       |   |
| Seal:                                       |                     | Paint finish:                                                                |                    |                                                          |                 |                            | 0<br>2<br>3<br>5<br>6<br>8 |                       |   |
| –                                           |                     | Without                                                                      |                    |                                                          |                 |                            |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Without                                                                      |                    |                                                          |                 |                            |                            |                       |   |
| –                                           |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                          |                 |                            |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                          |                 |                            |                            |                       |   |
| –                                           |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                          |                 |                            |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                          |                 |                            |                            |                       |   |
| Special versions:                           |                     | Specify supplementary order code and plain text if applicable (see Options). |                    |                                                          |                 |                            |                            | –Z                    |   |
| Motor Module:                               |                     | Single Motor Module                                                          |                    |                                                          |                 |                            |                            | 1                     | 1 |
|                                             |                     | Double Motor Module                                                          |                    |                                                          |                 |                            |                            | 2                     | 0 |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Model with brake possible if:  
12th position "2" or "3",  
14th position "K",  
15th position "A", "B", "J" or "K",  
16th position "0", "3" or "6".
- <sup>5)</sup> Max. possible speed (see also selection guides):  
SH 100: 12000 rpm, SH 132: 10000 rpm, SH 160: 8000 rpm,  
with keyless shaft only (15th position "J" or "K" and 16th position "0",  
"3" or "6").

- <sup>6)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), or version with increased maximum speed.
- <sup>7)</sup> Preferred air-flow direction in polluted environment.
- <sup>8)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>9)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

# AC motors

## Asynchronous motors

### 1PH7 motors

#### Selection and ordering data

| Rated speed                                                | Shaft height SH | Rated power                                          | Rated torque                                                                                                                                                                                                                                                                                                                         | Rated current           | Rated voltage                                        | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor    |                                 |             |   |  |  |
|------------------------------------------------------------|-----------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------|--------------------------------------------|-------------------------------------------------|--------------------------|----------------------------|---------------------------------|-------------|---|--|--|
| $n_{\text{rated}}$<br>rpm                                  |                 | $P_{\text{rated}}$<br>kW/HP                          | $M_{\text{rated}}$<br>Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                         | $I_{\text{rated}}$<br>A | $V_{\text{rated}}$<br>V                              | $n_2$<br>rpm                               | $n_{S1}$<br>rpm                                 | $n_{\text{max}}$<br>rpm  | Order No.                  |                                 |             |   |  |  |
| 400 V 3 AC line voltage, Vector Control                    |                 |                                                      |                                                                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          |                            |                                 |             |   |  |  |
| 1750                                                       | 100             | 4.3/5.8                                              | 24/17.7                                                                                                                                                                                                                                                                                                                              | 10                      | 398                                                  | 6130                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7101-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 6.3/8.5                                              | 34/25.1                                                                                                                                                                                                                                                                                                                              | 13                      | 398                                                  | 3500                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7103-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 8/10.7                                               | 44/32.4                                                                                                                                                                                                                                                                                                                              | 17.5                    | 398                                                  | 5940                                       | 5500                                            | 9000 <sup>9)</sup>       | 1PH7105-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 10/13.4                                              | 55/40.5                                                                                                                                                                                                                                                                                                                              | 23                      | 381                                                  | 4500                                       | 5500                                            | 8750                     | 1PH7107-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            | 132             | 13/17.4                                              | 71/52.3                                                                                                                                                                                                                                                                                                                              | 24                      | 398                                                  | 4830                                       | 4500                                            | 8000                     | 1PH7131-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 17.5/23.5                                            | 96/70.8                                                                                                                                                                                                                                                                                                                              | 34                      | 398                                                  | 4990                                       | 4500                                            | 8000                     | 1PH7133-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 21.5/28.8                                            | 117/86.2                                                                                                                                                                                                                                                                                                                             | 42                      | 398                                                  | 5570                                       | 4500                                            | 8000                     | 1PH7135-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 25/33.5                                              | 136/100.2                                                                                                                                                                                                                                                                                                                            | 56                      | 357                                                  | 4000                                       | 4500                                            | 8000                     | 1PH7137-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            | 160             | 34/45.6                                              | 186/137.1                                                                                                                                                                                                                                                                                                                            | 72                      | 364                                                  | 4000                                       | 3700                                            | 6500                     | 1PH7163-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 41/55.0                                              | 224/165.1                                                                                                                                                                                                                                                                                                                            | 79                      | 398                                                  | 2750                                       | 3700                                            | 6500                     | 1PH7167-■ ■ F ■ ■ -■ . . . |                                 |             |   |  |  |
| 2300                                                       | 100             | 7.5/10.1                                             | 31/22.8                                                                                                                                                                                                                                                                                                                              | 17                      | 388                                                  | 6000                                       | 5500                                            | 9000                     | 1PH7103-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 12/16.1                                              | 50/36.9                                                                                                                                                                                                                                                                                                                              | 26                      | 400                                                  | 6000                                       | 5500                                            | 9000                     | 1PH7107-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            | 132             | 22.5/30.2                                            | 93/68.5                                                                                                                                                                                                                                                                                                                              | 45                      | 398                                                  | 4000                                       | 4500                                            | 8000                     | 1PH7133-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 29/38.9                                              | 120/88.4                                                                                                                                                                                                                                                                                                                             | 56                      | 398                                                  | 4000                                       | 4500                                            | 8000                     | 1PH7137-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            | 160             | 38/51.0                                              | 158/116.4                                                                                                                                                                                                                                                                                                                            | 82                      | 398                                                  | 3000                                       | 3700                                            | 6500                     | 1PH7163-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
|                                                            |                 | 44/59.0                                              | 183/134.9                                                                                                                                                                                                                                                                                                                            | 85                      | 398                                                  | 3000                                       | 3700                                            | 6500                     | 1PH7167-■ ■ G ■ ■ -■ . . . |                                 |             |   |  |  |
| Fan:                                                       |                 |                                                      | External fan unit, heavy-gauge threaded cable entry in terminal box<br>Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box               |                         |                                                      |                                            |                                                 |                          | 2<br>6<br>7<br>8           |                                 |             |   |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:   |                 |                                                      | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver |                         |                                                      |                                            |                                                 |                          |                            | A<br>E<br>H<br>J<br>M<br>N<br>R |             |   |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:      |                 |                                                      | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver                                                                                                                        |                         |                                                      |                                            |                                                 |                          |                            | F<br>D<br>Q<br>P                |             |   |  |  |
| Terminal box/ cable entry (view onto DE):                  |                 |                                                      | Top/from right<br>Top/from NDE<br>Top/from left                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          |                            |                                 | 0<br>2<br>3 |   |  |  |
| Type:                                                      |                 |                                                      | IM B3 (IM V5, IM V6)<br>IM B5 (IM V1, IM V3) available only for shaft heights 100 and 132<br>IM B35 (IM V15, IM V36)                                                                                                                                                                                                                 |                         |                                                      |                                            |                                                 |                          |                            |                                 | 0<br>2<br>3 |   |  |  |
| Holding brake with emergency stop function <sup>4)</sup> : |                 |                                                      | Without brake                                                                                                                                                                                                                                                                                                                        |                         |                                                      |                                            |                                                 |                          |                            |                                 |             | 0 |  |  |
|                                                            |                 |                                                      | Brake supply voltage<br>230 V 1 AC, 50/60 Hz                                                                                                                                                                                                                                                                                         |                         | With brake                                           |                                            |                                                 |                          |                            |                                 |             | 1 |  |  |
|                                                            |                 |                                                      |                                                                                                                                                                                                                                                                                                                                      |                         | With brake (includes microswitch)                    |                                            |                                                 |                          |                            |                                 |             | 2 |  |  |
|                                                            |                 |                                                      |                                                                                                                                                                                                                                                                                                                                      |                         | With brake (includes manual release)                 |                                            |                                                 |                          |                            |                                 |             | 3 |  |  |
|                                                            |                 |                                                      |                                                                                                                                                                                                                                                                                                                                      |                         | With brake (includes manual release and microswitch) |                                            |                                                 |                          |                            |                                 |             | 4 |  |  |
| Brake supply voltage<br>24 V DC                            |                 | With brake                                           |                                                                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          | 5                          |                                 |             |   |  |  |
|                                                            |                 | With brake (includes microswitch)                    |                                                                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          | 6                          |                                 |             |   |  |  |
|                                                            |                 | With brake (includes manual release)                 |                                                                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          | 7                          |                                 |             |   |  |  |
|                                                            |                 | With brake (includes manual release and microswitch) |                                                                                                                                                                                                                                                                                                                                      |                         |                                                      |                                            |                                                 |                          | 8                          |                                 |             |   |  |  |



#### Selection and ordering data

| Power factor                                | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia of                                            | Weight, approx. | 1PH7 asynchronous motor   | SINAMICS S120 Motor Module |                       |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------|-----------------|---------------------------|----------------------------|-----------------------|
|                                             | $I_{\mu}$<br>A      | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$<br>Hz | $J$<br>kgm <sup>2</sup> /<br>lb <sub>F</sub> -in-s <sup>2</sup> | kg/lb           |                           | Rated output current       |                       |
| cos φ                                       |                     |                                                                              |                          |                                                                 |                 | Order No.                 | $I_{\text{rated}}$<br>A    | Order No.             |
| 400 V 3 AC line voltage, Vector Control     |                     |                                                                              |                          |                                                                 |                 |                           |                            |                       |
| 0.75                                        | 5.7                 | 0.855                                                                        | 60.0                     | 0.017/0.15                                                      | 40/88.2         | 1PH7101- . . F . . . ■■■■ | 9 <sup>8)</sup>            | 6SL3120- ■ TE21-0AA ■ |
| 0.84                                        | 5.3                 | 0.849                                                                        | 61.0                     | 0.017/0.15                                                      | 40/88.2         | 1PH7103- . . F . . . ■■■■ | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.77                                        | 9.3                 | 0.875                                                                        | 60.0                     | 0.029/0.257                                                     | 65/143.33       | 1PH7105- . . F . . . ■■■■ | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.80                                        | 10.6                | 0.870                                                                        | 60.3                     | 0.029/0.257                                                     | 65/143.33       | 1PH7107- . . F . . . ■■■■ | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.88                                        | 8.1                 | 0.902                                                                        | 59.7                     | 0.076/0.673                                                     | 90/198.45       | 1PH7131- . . F . . . ■■■■ | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.85                                        | 14                  | 0.900                                                                        | 59.7                     | 0.076/0.673                                                     | 90/198.45       | 1PH7133- . . F . . . ■■■■ | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.86                                        | 16                  | 0.906                                                                        | 59.5                     | 0.109/0.965                                                     | 150/330.8       | 1PH7135- . . F . . . ■■■■ | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.85                                        | 23                  | 0.902                                                                        | 59.5                     | 0.109/0.965                                                     | 150/330.8       | 1PH7137- . . F . . . ■■■■ | 60                         | 6SL3120- 1 TE26-0AA 1 |
| 0.86                                        | 28                  | 0.915                                                                        | 59.2                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . F . . . ■■■■ | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.86                                        | 30                  | 0.920                                                                        | 59.2                     | 0.228/2.018                                                     | 210/463.1       | 1PH7167- . . F . . . ■■■■ | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.79                                        | 8.2                 | 0.866                                                                        | 78.8                     | 0.017/0.15                                                      | 40/88.2         | 1PH7103- . . G . . . ■■■■ | 18                         | 6SL3120- ■ TE21-8AA ■ |
| 0.80                                        | 12                  | 0.878                                                                        | 78.7                     | 0.029/0.257                                                     | 65/143.33       | 1PH7107- . . G . . . ■■■■ | 30                         | 6SL3120- 1 TE23-0AA 1 |
| 0.86                                        | 17                  | 0.900                                                                        | 78.0                     | 0.076/0.673                                                     | 90/198.45       | 1PH7133- . . G . . . ■■■■ | 45                         | 6SL3120- 1 TE24-5AA 1 |
| 0.87                                        | 21                  | 0.903                                                                        | 77.8                     | 0.109/0.965                                                     | 150/330.8       | 1PH7137- . . G . . . ■■■■ | 60                         | 6SL3120- 1 TE26-0AA 1 |
| 0.83                                        | 43                  | 0.900                                                                        | 77.3                     | 0.185/1.637                                                     | 175/385.9       | 1PH7163- . . G . . . ■■■■ | 85                         | 6SL3120- 1 TE28-5AA 1 |
| 0.84                                        | 40                  | 0.911                                                                        | 77.4                     | 0.228/2.018                                                     | 210/463.1       | 1PH7167- . . G . . . ■■■■ | 85                         | 6SL3120- 1 TE28-5AA 1 |
| Output type:                                |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                                      |                 |                           | B<br>C<br>D<br>K<br>L      |                       |
| Coupling/belt                               |                     | R                                                                            |                          | R                                                               |                 |                           |                            |                       |
| Coupling/belt                               |                     | S                                                                            |                          | R                                                               |                 |                           |                            |                       |
| Coupling/belt                               |                     | SR                                                                           |                          | R                                                               |                 |                           |                            |                       |
| Coupling/belt                               |                     | N                                                                            |                          | N (with brake mounting)                                         |                 |                           |                            |                       |
| Increased max. speed <sup>5)</sup>          |                     | SR                                                                           |                          | R                                                               |                 |                           |                            |                       |
| Shaft extension (DE):                       |                     | Balancing:                                                                   |                          | Direction of air flow (fan):                                    |                 |                           | A<br>B<br>C<br>D<br>J<br>K |                       |
| Fitted key                                  |                     | Half-key                                                                     |                          | DE → NDE                                                        |                 |                           |                            |                       |
| Fitted key                                  |                     | Half-key                                                                     |                          | NDE → DE <sup>7)</sup>                                          |                 |                           |                            |                       |
| Fitted key                                  |                     | Full-key                                                                     |                          | DE → NDE                                                        |                 |                           |                            |                       |
| Fitted key                                  |                     | Full-key                                                                     |                          | NDE → DE <sup>7)</sup>                                          |                 |                           |                            |                       |
| Plain shaft                                 |                     | –                                                                            |                          | DE → NDE                                                        |                 |                           |                            |                       |
| Plain shaft                                 |                     | –                                                                            |                          | NDE → DE <sup>7)</sup>                                          |                 |                           |                            |                       |
| Seal:                                       |                     | Paint finish:                                                                |                          |                                                                 |                 |                           | 0<br>2<br>3<br>5<br>6<br>8 |                       |
| –                                           |                     | Without                                                                      |                          |                                                                 |                 |                           |                            |                       |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Without                                                                      |                          |                                                                 |                 |                           |                            |                       |
| –                                           |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                           |                            |                       |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                           |                            |                       |
| –                                           |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                           |                            |                       |
| Flange and shaft sealing ring <sup>6)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                           |                            |                       |
| Special versions:                           |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                                 |                 |                           | –Z                         |                       |
| Motor Module:                               |                     | Single Motor Module                                                          |                          |                                                                 |                 |                           |                            | 1                     |
|                                             |                     | Double Motor Module                                                          |                          |                                                                 |                 |                           |                            | 2                     |
|                                             |                     |                                                                              |                          |                                                                 |                 |                           |                            | 0                     |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Model with brake possible if:  
12th position "2" or "3",  
14th position "K", "J" or "K",  
15th position "A", "B", "J" or "K",  
16th position "0", "3" or "6".
- <sup>5)</sup> Max. possible speed (see also selection guides):  
SH 100: 12000 rpm, SH 132: 10000 rpm, SH 160: 8000 rpm,  
with keyless shaft only (15th position "J" or "K" and 16th position "0", "3" or "6").

- <sup>6)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), or version with increased maximum speed.
- <sup>7)</sup> Preferred air-flow direction in polluted environment.
- <sup>8)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>9)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.



## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                                                                                          | Shaft height SH | Rated power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Rated torque                              | Rated current        | Rated voltage        | Speed during field weakening <sup>1)</sup> | Max. perm. continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor                    |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------|----------------------|--------------------------------------------|-------------------------------------------|--------------------------|--------------------------------------------|--|--|--|--|
| $n_{\text{rated}}$ rpm                                                                                               |                 | $P_{\text{rated}}$ kW/HP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | $M_{\text{rated}}$ Nm/lb <sub>r</sub> -ft | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                  | $n_{S1}$ rpm                              | $n_{\text{max}}$ rpm     | Order No.                                  |  |  |  |  |
| 400 V 3 AC line voltage, Vector Control                                                                              |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |                      |                      |                                            |                                           |                          |                                            |  |  |  |  |
| 400                                                                                                                  | 180             | 16.3/21.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 390/287.4                                 | 51                   | 271                  | 2900 <sup>11)</sup>                        | 3500 <sup>4)11)</sup>                     | 5000 <sup>11)</sup>      | 1PH7184-■ ■ B ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 21.2/28.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 505/372.2                                 | 67                   | 268                  | 3300 <sup>11)</sup>                        | 3500 <sup>4)11)</sup>                     | 5000 <sup>11)</sup>      | 1PH7186-■ ■ B ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      | 225             | 30.4/40.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 725/534.3                                 | 88                   | 268                  | 2700 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                     | 4500 <sup>11)</sup>      | 1PH7224-■ ■ B ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 39.2/52.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 935/689.1                                 | 114                  | 264                  | 2900 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                     | 4500 <sup>11)</sup>      | 1PH7226-■ ■ B ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 48/64.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1145/843.9                                | 136                  | 272                  | 2900 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                     | 4500 <sup>4)11)</sup>    | 1PH7228-■ ■ B ■ ■ - ■ ...                  |  |  |  |  |
| 1150                                                                                                                 | 180             | 44/6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 366/269.7                                 | 89                   | 383                  | 4200                                       | 3500 <sup>4)</sup>                        | 5000                     | 1PH7184-■ ■ D ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 58/77.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 482/355.2                                 | 116                  | 390                  | 4400                                       | 3500 <sup>4)</sup>                        | 5000                     | 1PH7186-■ ■ D ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      | 225             | 81/108.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 670/493.8                                 | 160                  | 385                  | 2900                                       | 3100 <sup>4)</sup>                        | 4500                     | 1PH7224-■ ■ D ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 105/140.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 870/641.2                                 | 197                  | 390                  | 2900                                       | 3100 <sup>4)</sup>                        | 4500                     | 1PH7226-■ ■ D ■ ■ - ■ ...                  |  |  |  |  |
|                                                                                                                      |                 | 129/173.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1070/788.6                                | 238                  | 390                  | 2900                                       | 3100 <sup>4)</sup>                        | 4500 <sup>4)</sup>       | 1PH7228-■ ■ D ■ ■ - ■ ...                  |  |  |  |  |
| Fan:                                                                                                                 |                 | External fan unit, PG cable entry in terminal box<br>Without external fan unit, for pipe connection, PG cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box                                                                                                                                                                                                                                                                                                                                                                   |                                           |                      |                      |                                            |                                           |                          | 2<br>6<br>7<br>8                           |  |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:                                                             |                 | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver                                                                                                                                                                                                                                                                                   |                                           |                      |                      |                                            |                                           |                          | A<br>E<br>H<br>J<br>M<br>N<br>R            |  |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:                                                                |                 | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |                      |                      |                                            |                                           |                          | F<br>D<br>Q<br>P                           |  |  |  |  |
| Terminal box/cable entry (view onto DE):                                                                             |                 | top/from right<br>top/from DE<br>top/from NDE<br>top/from left                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                           |                      |                      |                                            |                                           |                          | 0<br>1<br>2<br>3                           |  |  |  |  |
| Type:                                                                                                                |                 | IM B3<br>IM B3<br><br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br>IM B35<br>(only for 1PH7184 with flange A 450)<br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br>IM B35<br>(only for 1PH7184 with flange A 450)<br><br>Hoisting system for different construction types (IM B6, IM B7, IM B8, IM V5, IM V6)<br><br><br><br><br><br><br><br><br><br>Hoisting system for different construction types (IM V15, IM V36)<br><br><br><br><br><br><br>Hoisting system for different construction types (IM V15, IM V36) |                                           |                      |                      |                                            |                                           |                          | 0<br>1<br><br>3<br><br>4<br><br>5<br><br>6 |  |  |  |  |
| Holding brake with emergency stop function (suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 | Without brake<br>With brake (includes emergency release screws and microswitch)<br>With brake (includes manual release and microswitch)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                           |                      |                      |                                            |                                           |                          | 0<br>2<br>4                                |  |  |  |  |

#### Selection and ordering data

| Power factor                                | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia of                                            | Weight, approx. | 1PH7 asynchronous motor                   | SINAMICS S120 Motor Module<br>Rated output current |                    |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------|-----------------|-------------------------------------------|----------------------------------------------------|--------------------|
| cos φ                                       | $I_{\mu}$<br>A      | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$<br>Hz | $J$<br>kgm <sup>2</sup> /<br>lb <sub>F</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                                 | $I_{\text{rated}}$<br>A                            | Order No.          |
| 400 V 3 AC line voltage, Vector Control     |                     |                                                                              |                          |                                                                 |                 |                                           |                                                    |                    |
| 0.84                                        | 26                  | 0.830                                                                        | 14.2                     | 0.503/4.452                                                     | 370/815.9       | 1PH7184- . . B . . . ■■■■                 | 60                                                 | 6SL3120-1TE26-0AA1 |
| 0.81                                        | 38.5                | 0.845                                                                        | 14.0                     | 0.666/5.895                                                     | 440/970.2       | 1PH7186- . . B . . . ■■■■                 | 85                                                 | 6SL3120-1TE28-5AA1 |
| 0.87                                        | 36.5                | 0.864                                                                        | 14.0                     | 1.479/13.09                                                     | 630/1389.2      | 1PH7224- . . B . . . ■■■■                 | 85 <sup>9)</sup>                                   | 6SL3120-1TE28-5AA1 |
| 0.86                                        | 49                  | 0.880                                                                        | 14.0                     | 1.930/17.08                                                     | 750/1653.8      | 1PH7226- . . B . . . ■■■■                 | 132                                                | 6SL3120-1TE31-3AA0 |
| 0.85                                        | 60.5                | 0.888                                                                        | 13.9                     | 2.326/19.79                                                     | 860/1896.3      | 1PH7228- . . B . . . ■■■■                 | 132 <sup>9)</sup>                                  | 6SL3120-1TE31-3AA0 |
| 0.82                                        | 42                  | 0.920                                                                        | 39.2                     | 0.503/4.452                                                     | 370/815.9       | 1PH7184- . . D . . . ■■■■                 | 85 <sup>9)</sup>                                   | 6SL3120-1TE28-5AA1 |
| 0.81                                        | 58                  | 0.925                                                                        | 39.1                     | 0.666/5.895                                                     | 440/970.2       | 1PH7186- . . D . . . ■■■■                 | 132                                                | 6SL3120-1TE31-3AA0 |
| 0.81                                        | 79                  | 0.938                                                                        | 38.9                     | 1.479/13.09                                                     | 630/1389.2      | 1PH7224- . . D . . . ■■■■                 | 200                                                | 6SL3120-1TE32-0AA0 |
| 0.84                                        | 87.5                | 0.941                                                                        | 38.9                     | 1.930/17.08                                                     | 750/1653.8      | 1PH7226- . . D . . . ■■■■                 | 200                                                | 6SL3120-1TE32-0AA0 |
| 0.85                                        | 98                  | 0.943                                                                        | 38.9                     | 2.326/19.79                                                     | 860/1896.3      | 1PH7228- . . D . . . ■■■■                 | 260                                                | 6SL3320-1TE32-6AA0 |
| Output type:                                |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                                      |                 | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>J |                                                    |                    |
| Coupling                                    |                     | R                                                                            |                          | N                                                               |                 |                                           |                                                    |                    |
| Coupling                                    |                     | R                                                                            |                          | R                                                               |                 |                                           |                                                    |                    |
| Coupling                                    |                     | S                                                                            |                          | R                                                               |                 |                                           |                                                    |                    |
| Coupling                                    |                     | SR                                                                           |                          | R                                                               |                 |                                           |                                                    |                    |
| Belt                                        |                     | R                                                                            |                          | N                                                               |                 |                                           |                                                    |                    |
| Belt                                        |                     | R                                                                            |                          | R                                                               |                 |                                           |                                                    |                    |
| Incr. cantilever forces                     |                     | R                                                                            |                          | N                                                               |                 |                                           |                                                    |                    |
| Incr. cantilever forces                     |                     | R                                                                            |                          | R                                                               |                 |                                           |                                                    |                    |
| Increased max. speed <sup>6)</sup>          |                     | S                                                                            |                          | R                                                               |                 |                                           |                                                    |                    |
| Shaft extension (DE):                       |                     | Balancing:                                                                   |                          | Direction of air flow (fan):                                    |                 | A<br>B<br>C<br>D<br>J<br>K                |                                                    |                    |
| Fitted key                                  |                     | Half-key                                                                     |                          | DE → NDE                                                        |                 |                                           |                                                    |                    |
| Fitted key                                  |                     | Half-key                                                                     |                          | NDE → DE <sup>8)</sup>                                          |                 |                                           |                                                    |                    |
| Fitted key                                  |                     | Full-key                                                                     |                          | DE → NDE                                                        |                 |                                           |                                                    |                    |
| Fitted key                                  |                     | Full-key                                                                     |                          | NDE → DE <sup>8)</sup>                                          |                 |                                           |                                                    |                    |
| Plain shaft                                 |                     | –                                                                            |                          | DE → NDE                                                        |                 |                                           |                                                    |                    |
| Plain shaft                                 |                     | –                                                                            |                          | NDE → DE <sup>8)</sup>                                          |                 |                                           |                                                    |                    |
| Seal:                                       |                     | Paint finish:                                                                |                          |                                                                 |                 | 0<br>2<br>3<br>5<br>6<br>8                |                                                    |                    |
| –                                           |                     | Primed                                                                       |                          |                                                                 |                 |                                           |                                                    |                    |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Primed                                                                       |                          |                                                                 |                 |                                           |                                                    |                    |
| –                                           |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                                           |                                                    |                    |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                                 |                 |                                           |                                                    |                    |
| –                                           |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                                           |                                                    |                    |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                                 |                 |                                           |                                                    |                    |
| Special versions:                           |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                                 |                 |                                           |                                                    | –Z                 |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Speed is reduced with increased cantilever forces; see selection guides.
- <sup>5)</sup> Model with brake: 12th position "0", 14th position "A", 15th position "A" or "B", 16th position "0", "3" or "6".
- <sup>6)</sup> For shaft height 180  $n_{\text{max}} = 7000$  rpm, 1PH7 224  $n_{\text{max}} = 5500$  rpm, only coupling output possible and 16th position "0", "3" or "6".

- <sup>7)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased maximum speed, version for belt output or increased cantilever forces.
- <sup>8)</sup> Preferred air-flow direction in polluted environment.
- <sup>9)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>10)</sup> When ordering option **L27**, please also select option **M84** (insulated version of encoder).
- <sup>11)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                                                                                          | Shaft height SH | Rated power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Rated torque                                     | Rated current               | Rated voltage               | Speed during field weakening <sup>1)</sup> | Max. perm. continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup>    | 1PH7 asynchronous motor            |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------|-----------------------------|--------------------------------------------|-------------------------------------------|-----------------------------|------------------------------------|--|--|--|--|
| <i>n</i> <sub>rated</sub> rpm                                                                                        |                 | <i>P</i> <sub>rated</sub> kW/HP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>M</i> <sub>rated</sub> Nm/lb <sub>r</sub> -ft | <i>I</i> <sub>rated</sub> A | <i>V</i> <sub>rated</sub> V | <i>n</i> <sub>2</sub> rpm                  | <i>n</i> <sub>S1</sub> rpm                | <i>n</i> <sub>max</sub> rpm | Order No.                          |  |  |  |  |
| 400 V 3 AC line voltage, Vector Control                                                                              |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                  |                             |                             |                                            |                                           |                             |                                    |  |  |  |  |
| 1750                                                                                                                 | 180             | 60/80.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 327/241                                          | 120                         | 388                         | 5000                                       | 3500 <sup>4)</sup>                        | 5000                        | 1PH7184-■ ■ F ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 85/114.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 465/342.7                                        | 169                         | 385                         | 5000                                       | 3500 <sup>4)</sup>                        | 5000                        | 1PH7186-■ ■ F ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      | 225             | 110/147.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 600/442.2                                        | 203                         | 395                         | 2900                                       | 3100 <sup>4)</sup>                        | 4500                        | 1PH7224-■ ■ U ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 135/181.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 737/543.2                                        | 254                         | 395                         | 2900                                       | 3100 <sup>4)</sup>                        | 4500                        | 1PH7226-■ ■ F ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 179/240.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 975/718.6                                        | 342                         | 395                         | 2900                                       | 3100 <sup>4)</sup>                        | 4500 <sup>4)</sup>          | 1PH7228-■ ■ F ■ ■ - ■ ...          |  |  |  |  |
| 2900                                                                                                                 | 180             | 81/108.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 265/193.5                                        | 158                         | 395                         | 5000                                       | 3500 <sup>4)</sup>                        | 5000                        | 1PH7184-■ ■ L ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 101/135.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 333/245.4                                        | 206                         | 385                         | 5000                                       | 3500 <sup>4)</sup>                        | 5000                        | 1PH7186-■ ■ L ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      | 225             | 149/199.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 490/361.1                                        | 274                         | 395                         | 3500                                       | 3100 <sup>4)</sup>                        | 4500                        | 1PH7224-■ ■ L ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 185/248.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 610/449.6                                        | 348                         | 390                         | 3500                                       | 3100 <sup>4)</sup>                        | 4500                        | 1PH7226-■ ■ L ■ ■ - ■ ...          |  |  |  |  |
|                                                                                                                      |                 | 215/288.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 708/521.8                                        | 402                         | 395                         | 3500                                       | 3100 <sup>4)</sup>                        | 4500 <sup>4)</sup>          | 1PH7228-■ ■ L ■ ■ - ■ ...          |  |  |  |  |
| Fan:                                                                                                                 |                 | External fan unit, PG cable entry in terminal box<br>Without external fan unit, for pipe connection, PG cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box                                                                                                                                                                                                                                                                                           |                                                  |                             |                             |                                            |                                           |                             | 2<br>6<br>7<br>8                   |  |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:                                                             |                 | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver                                                                                                                                                                                                           |                                                  |                             |                             |                                            |                                           |                             | A<br>E<br>H<br>J<br>M<br>N<br>R    |  |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:                                                                |                 | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver                                                                                                                                                                                                                                                                                                                                  |                                                  |                             |                             |                                            |                                           |                             | F<br>D<br>Q<br>P                   |  |  |  |  |
| Terminal box/<br>cable entry<br>(view onto DE):                                                                      |                 | top/from right<br>top/from DE<br>top/from NDE<br>top/from left                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                  |                             |                             |                                            |                                           |                             | 0<br>1<br>2<br>3                   |  |  |  |  |
| Type:                                                                                                                |                 | IM B3<br>IM B3<br><br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br><br>IM B35<br>(only for 1PH7184 with flange A 450)<br><br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br><br>IM B35<br>(only for 1PH7184 with flange A 450)<br><br>Hoisting system for different construction types<br>(IM V15, IM V36)<br><br>IM B35<br>(only for 1PH7184 with flange A 450)<br><br>Hoisting system for different construction types<br>(IM V15, IM V36) |                                                  |                             |                             |                                            |                                           |                             | 0<br>1<br><br>3<br><br>4<br>5<br>6 |  |  |  |  |
| Holding brake with emergency stop function (suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 | Without brake<br>With brake (includes emergency release screws and microswitch)<br>With brake (includes manual release and microswitch)                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  |                             |                             |                                            |                                           |                             | 0<br>2<br>4                        |  |  |  |  |

#### Selection and ordering data

| Power factor                                | Magnetizing current | Efficiency                                                                   | Rated frequency    | Moment of inertia of                                     | Weight, approx.            | 1PH7 asynchronous motor   | SINAMICS S120 Motor Module                |                     |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------|----------------------------------------------------------|----------------------------|---------------------------|-------------------------------------------|---------------------|
|                                             | $I_{\mu}$           | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$ | $J$                                                      |                            |                           | Rated output current                      |                     |
| $\cos \varphi$                              | A                   |                                                                              | Hz                 | kgm <sup>2</sup> /<br>lb <sub>r</sub> -in-s <sup>2</sup> | kg/lb                      | Order No.                 | A                                         | Order No.           |
| 400 V 3 AC line voltage, Vector Control     |                     |                                                                              |                    |                                                          |                            |                           |                                           |                     |
| 0.78                                        | 64                  | 0.934                                                                        | 59.0               | 0.503/4.452                                              | 370/815.85                 | 1PH7184- . . F . . . ■■■■ | 132                                       | 6SL3120-1 TE31-3AA0 |
| 0.80                                        | 84                  | 0.940                                                                        | 59.0               | 0.666/5.895                                              | 440/970.2                  | 1PH7186- . . F . . . ■■■■ | 200                                       | 6SL3120-1 TE32-0AA0 |
| 0.84                                        | 88                  | 0.944                                                                        | 58.9               | 1.479/13.09                                              | 630/1389.2                 | 1PH7224- . . U . . . ■■■■ | 200 <sup>9)</sup>                         | 6SL3120-1 TE32-0AA0 |
| 0.82                                        | 120                 | 0.947                                                                        | 58.9               | 1.930/17.082                                             | 750/1653.8                 | 1PH7226- . . F . . . ■■■■ | 260                                       | 6SL3320-1 TE32-6AA0 |
| 0.81                                        | 169                 | 0.948                                                                        | 58.8               | 2.326/19.79                                              | 860/1896.3                 | 1PH7228- . . F . . . ■■■■ | 380                                       | 6SL3320-1 TE33-8AA0 |
| 0.80                                        | 77                  | 0.934                                                                        | 97.4               | 0.503/4.452                                              | 370/815.85                 | 1PH7184- . . L . . . ■■■■ | 200                                       | 6SL3120-1 TE32-0AA0 |
| 0.78                                        | 107                 | 0.936                                                                        | 97.3               | 0.666/5.895                                              | 440/970.2                  | 1PH7186- . . L . . . ■■■■ | 200 <sup>9)</sup>                         | 6SL3120-1 TE32-0AA0 |
| 0.84                                        | 115                 | 0.946                                                                        | 97.3               | 1.479/13.09                                              | 630/1389.2                 | 1PH7224- . . L . . . ■■■■ | 310                                       | 6SL3320-1 TE33-1AA0 |
| 0.83                                        | 154                 | 0.946                                                                        | 97.2               | 1.930/17.082                                             | 750/1653.8                 | 1PH7226- . . L . . . ■■■■ | 380                                       | 6SL3320-1 TE33-8AA0 |
| 0.82                                        | 186                 | 0.946                                                                        | 97.2               | 2.326/19.79                                              | 860/1896.3                 | 1PH7228- . . L . . . ■■■■ | 490                                       | 6SL3320-1 TE35-0AA0 |
| Output type:                                |                     | Vibration severity grade:                                                    |                    | Shaft and flange accuracy:                               |                            |                           | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>J |                     |
| Coupling                                    |                     | R                                                                            |                    | N                                                        |                            |                           |                                           |                     |
| Coupling                                    |                     | R                                                                            |                    | R                                                        |                            |                           |                                           |                     |
| Coupling                                    |                     | S                                                                            |                    | R                                                        |                            |                           |                                           |                     |
| Coupling                                    |                     | SR                                                                           |                    | R                                                        |                            |                           |                                           |                     |
| Belt                                        |                     | R                                                                            |                    | N                                                        |                            |                           |                                           |                     |
| Belt                                        |                     | R                                                                            |                    | R                                                        |                            |                           |                                           |                     |
| Incr. cantilever forces                     |                     | R                                                                            |                    | N                                                        |                            |                           |                                           |                     |
| Incr. cantilever forces                     |                     | R                                                                            |                    | R                                                        |                            |                           |                                           |                     |
| Increased max. speed <sup>6)</sup>          |                     | S                                                                            |                    | R                                                        |                            |                           |                                           |                     |
| Shaft extension (DE):                       |                     | Balancing:                                                                   |                    | Direction of air flow (fan):                             |                            |                           | A<br>B<br>C<br>D<br>J<br>K                |                     |
| Fitted key                                  |                     | Half-key                                                                     |                    | DE → NDE                                                 |                            |                           |                                           |                     |
| Fitted key                                  |                     | Half-key                                                                     |                    | NDE → DE <sup>8)</sup>                                   |                            |                           |                                           |                     |
| Fitted key                                  |                     | Full-key                                                                     |                    | DE → NDE                                                 |                            |                           |                                           |                     |
| Fitted key                                  |                     | Full-key                                                                     |                    | NDE → DE <sup>8)</sup>                                   |                            |                           |                                           |                     |
| Plain shaft                                 |                     | –                                                                            |                    | DE → NDE                                                 |                            |                           |                                           |                     |
| Plain shaft                                 |                     | –                                                                            |                    | NDE → DE <sup>8)</sup>                                   |                            |                           |                                           |                     |
| Seal:                                       |                     | Paint finish:                                                                |                    |                                                          | 0<br>2<br>3<br>5<br>6<br>8 |                           |                                           |                     |
| –                                           |                     | Primed                                                                       |                    |                                                          |                            |                           |                                           |                     |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Primed                                                                       |                    |                                                          |                            |                           |                                           |                     |
| –                                           |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                          |                            |                           |                                           |                     |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                          |                            |                           |                                           |                     |
| –                                           |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                          | 6<br>8                     |                           |                                           |                     |
| Flange and shaft sealing ring <sup>7)</sup> |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                          |                            |                           |                                           |                     |
| Special versions:                           |                     | Specify supplementary order code and plain text if applicable (see Options). |                    |                                                          |                            |                           |                                           | –Z                  |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Speed is reduced with increased cantilever forces; see selection guides.
- <sup>5)</sup> Model with brake: 12th position "0", 14th position "A", 15th position "A" or "B", 16th position "0", "3" or "6".
- <sup>6)</sup> For shaft height 180  $n_{\text{max}} = 7000$  rpm, 1PH7 224  $n_{\text{max}} = 5500$  rpm, only coupling output possible and 16th position "0", "3" or "6".

- <sup>7)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased maximum speed, version for belt output or increased cantilever forces.
- <sup>8)</sup> Preferred air-flow direction in polluted environment.
- <sup>9)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>10)</sup> When ordering option **L27**, please also select option **M84** (insulated version of encoder).

## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                              | Shaft height SH | Rated power              | Rated torque                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rated current        | Rated voltage        | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor     |                                 |                                 |  |  |  |
|----------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------------|-------------------------------------------------|--------------------------|-----------------------------|---------------------------------|---------------------------------|--|--|--|
| $n_{\text{rated}}$ rpm                                   |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                                                                                                                                                          | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                  | $n_{S1}$ rpm                                    | $n_{\text{max}}$ rpm     | Order No.                   |                                 |                                 |  |  |  |
| 400 V 3 AC line voltage, Vector Control                  |                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                      |                                            |                                                 |                          |                             |                                 |                                 |  |  |  |
| 500                                                      | 280             | 80/107.3                 | 1529/1126.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 144                  | 400                  | 1700                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7 284- ■ ■ B ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 100/134.1                | 1909/1406.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 180                  | 400                  | 1800                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7 286- ■ ■ B ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 130/174.3                | 2481/1828.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 233                  | 400                  | 1800                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7 288- ■ ■ B ■ ■ - 0 ... |                                 |                                 |  |  |  |
| 800                                                      | 280             | 125/167.6                | 1492/1099.6                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 220                  | 400                  | 2200                                       | 2200                                            | 3300                     | 1PH7 284- ■ ■ C ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 155/207.9                | 1850/1363.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 285                  | 385                  | 2200                                       | 2200                                            | 3300                     | 1PH7 286- ■ ■ C ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 190/254.8                | 2268/1671.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 365                  | 370                  | 2200                                       | 2200                                            | 3300                     | 1PH7 288- ■ ■ C ■ ■ - 0 ... |                                 |                                 |  |  |  |
| 1150                                                     | 280             | 170/228.0                | 1414/1042.1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 314                  | 400                  | 2200                                       | 2200                                            | 3300                     | 1PH7 284- ■ ■ D ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 210/281.6                | 1745/1286.1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 414                  | 380                  | 2200                                       | 2200                                            | 3300                     | 1PH7 286- ■ ■ D ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 260/348.7                | 2160/1591.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 497                  | 385                  | 2200                                       | 2200                                            | 3300                     | 1PH7 288- ■ ■ D ■ ■ - 0 ... |                                 |                                 |  |  |  |
| 1750                                                     | 280             | 225/301.7                | 1228/905                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 393                  | 400                  | 2200                                       | 2200                                            | 3300                     | 1PH7 284- ■ ■ F ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 270/362.1                | 1474/1086.3                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 466                  | 400                  | 2200                                       | 2200                                            | 3300                     | 1PH7 286- ■ ■ F ■ ■ - 0 ... |                                 |                                 |  |  |  |
|                                                          |                 | 340/455.9                | 1856/1367.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 586                  | 400                  | 2200                                       | 2200                                            | 3300                     | 1PH7 288- ■ ■ F ■ ■ - 0 ... |                                 |                                 |  |  |  |
| Fans <sup>4)</sup> :                                     |                 |                          | External fan unit, NDE at top, air-flow direction NDE to DE<br>External fan unit, NDE on right, air-flow direction NDE to DE<br>External fan unit, NDE on left, air-flow direction NDE to DE<br>External fan unit, DE at top, air-flow direction DE to NDE<br>External fan unit, DE on right, air-flow direction DE to NDE<br>External fan unit, DE on left, air-flow direction DE to NDE<br>Without external fan unit, for single pipe connection at NDE on right |                      |                      |                                            |                                                 |                          |                             | 0<br>1<br>2<br>3<br>4<br>5<br>6 |                                 |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface: |                 |                          | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                   |                      |                      |                                            |                                                 |                          |                             |                                 | A<br>E<br>H<br>J<br>M<br>N<br>R |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:    |                 |                          | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                                                                                                                                          |                      |                      |                                            |                                                 |                          |                             |                                 | F<br>D<br>Q<br>P                |  |  |  |
| Terminal box/cable entry (view onto DE) <sup>4)</sup> :  |                 |                          | NDE right/from below/encoder connector DE<br>NDE left/from below/encoder connector DE<br>NDE top/from right/encoder connector DE<br>DE top/from right/encoder connector NDE                                                                                                                                                                                                                                                                                        |                      |                      |                                            |                                                 |                          |                             | 0<br>1<br>2<br>5                |                                 |  |  |  |
| Type <sup>4)</sup> :                                     |                 |                          | IM B3<br>IM V5 (can be subsequently modified to IM V6)<br>IM B35 (with flange A 660)<br>IM V15 (with flange A 660, can be subsequently modified to IM V36)                                                                                                                                                                                                                                                                                                         |                      |                      |                                            |                                                 |                          |                             | 0<br>1<br>3<br>5                |                                 |  |  |  |

#### Selection and ordering data

| Power factor                                 | Magnetizing current | Efficiency                                                                   | Rated frequency    | Moment of inertia of                     | Weight, approx. | 1PH7 asynchronous motor    | SINAMICS S120 Motor Module |                     |
|----------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------|------------------------------------------|-----------------|----------------------------|----------------------------|---------------------|
|                                              | $I_{\mu}$           | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$ | $J$                                      |                 |                            | Rated output current       |                     |
| $\cos \varphi$                               | A                   |                                                                              | Hz                 | $\text{kgm}^2/\text{lb}_f\text{-in-s}^2$ | kg/lb           | Order No.                  | $I_{\text{rated}}$         | Order No.           |
| 400 V 3 AC line voltage, Vector Control      |                     |                                                                              |                    |                                          |                 |                            |                            |                     |
| 0.87                                         | 60                  | 0.922                                                                        | 17                 | 4.2/37.17                                | 1300/2866.5     | 1PH7284- . . B . . -0 ■■■■ | 200                        | 6SL3120-1 TE32-0AA0 |
| 0.86                                         | 78                  | 0.930                                                                        | 17                 | 5.2/46.02                                | 1500/3307.5     | 1PH7286- . . B . . -0 ■■■■ | 200                        | 6SL3120-1 TE32-0AA0 |
| 0.87                                         | 100                 | 0.933                                                                        | 17                 | 6.3/55.76                                | 1700/3748.5     | 1PH7288- . . B . . -0 ■■■■ | 260                        | 6SL3320-1 TE32-6AA0 |
| 0.86                                         | 95                  | 0.944                                                                        | 27                 | 4.2/37.17                                | 1300/2866.5     | 1PH7284- . . C . . -0 ■■■■ | 260                        | 6SL3320-1 TE32-6AA0 |
| 0.85                                         | 135                 | 0.948                                                                        | 27                 | 5.2/46.02                                | 1500/3307.5     | 1PH7286- . . C . . -0 ■■■■ | 310                        | 6SL3320-1 TE33-1AA0 |
| 0.84                                         | 170                 | 0.951                                                                        | 27                 | 6.3/55.76                                | 1700/3748.5     | 1PH7288- . . C . . -0 ■■■■ | 380                        | 6SL3320-1 TE33-8AA0 |
| 0.82                                         | 158                 | 0.956                                                                        | 38.6               | 4.2/37.17                                | 1300/2866.5     | 1PH7284- . . D . . -0 ■■■■ | 310 <sup>5)</sup>          | 6SL3320-1 TE33-1AA0 |
| 0.81                                         | 218                 | 0.958                                                                        | 38.6               | 5.2/46.02                                | 1500/3307.5     | 1PH7286- . . D . . -0 ■■■■ | 490                        | 6SL3320-1 TE35-0AA0 |
| 0.82                                         | 252                 | 0.960                                                                        | 38.6               | 6.3/55.76                                | 1700/3748.5     | 1PH7288- . . D . . -0 ■■■■ | 490 <sup>5)</sup>          | 6SL3320-1 TE35-0AA0 |
| 0.86                                         | 163                 | 0.962                                                                        | 58.7               | 4.2/37.17                                | 1300/2866.5     | 1PH7284- . . F . . -0 ■■■■ | 490                        | 6SL3320-1 TE35-0AA0 |
| 0.87                                         | 184                 | 0.963                                                                        | 58.7               | 5.2/46.02                                | 1500/3307.5     | 1PH7286- . . F . . -0 ■■■■ | 490                        | 6SL3320-1 TE35-0AA0 |
| 0.87                                         | 234                 | 0.965                                                                        | 58.7               | 6.3/55.76                                | 1700/3748.5     | 1PH7288- . . F . . -0 ■■■■ | 605                        | 6SL3320-1 TE36-1AA0 |
| Output type <sup>4)</sup> :                  |                     | Vibration severity grade:                                                    |                    | Shaft and flange accuracy:               |                 |                            | A<br>B<br>E<br>F           |                     |
| Coupling                                     |                     | N                                                                            |                    | N                                        |                 |                            |                            |                     |
| Coupling                                     |                     | R                                                                            |                    | R                                        |                 |                            |                            |                     |
| Belt/incr. cantilever forces                 |                     | N                                                                            |                    | N                                        |                 |                            |                            |                     |
| Belt/incr. cantilever forces                 |                     | R                                                                            |                    | R                                        |                 |                            | A<br>C<br>J                |                     |
| Shaft extension (DE):                        |                     | Balancing:                                                                   |                    |                                          |                 |                            |                            |                     |
| Fitted key                                   |                     | Half-key                                                                     |                    |                                          |                 |                            |                            |                     |
| Fitted key                                   |                     | Full-key                                                                     |                    |                                          |                 |                            |                            |                     |
| Plain shaft                                  |                     | –                                                                            |                    |                                          |                 |                            | 0<br>3<br>6                |                     |
| Paint finish:                                |                     |                                                                              |                    |                                          |                 |                            |                            |                     |
| Primed                                       |                     |                                                                              |                    |                                          |                 |                            |                            |                     |
| Anthracite (RAL 7016), standard paint finish |                     |                                                                              |                    |                                          |                 |                            |                            |                     |
| Anthracite (RAL 7016), special paint finish  |                     |                                                                              |                    |                                          |                 | –Z                         |                            |                     |
| Special versions:                            |                     | Specify supplementary order code and plain text if applicable (see Options). |                    |                                          |                 |                            |                            |                     |

<sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .

<sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.

<sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.

<sup>4)</sup> See Table “Permissible combinations of mechanical designs”.

<sup>5)</sup> The rated output current of the Motor Module is lower than the motor rated current.

<sup>6)</sup> When ordering option **L27**, please also select option **M84** (insulated version of encoder).

<sup>7)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

# AC motors

## Asynchronous motors

### 1PH7 motors

#### Selection and ordering data

| Rated speed                                                | Shaft height SH | Rated power              | Rated torque                                                                                                                                                                                                                                                                                                                         | Rated current        | Rated voltage                                        | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor    |                                 |             |   |  |  |  |
|------------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------|--------------------------------------------|-------------------------------------------------|--------------------------|----------------------------|---------------------------------|-------------|---|--|--|--|
| $n_{\text{rated}}$ rpm                                     |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                            | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V                                 | $n_2$ rpm                                  | $n_{\text{S1}}$ rpm                             | $n_{\text{max}}$ rpm     | Order No.                  |                                 |             |   |  |  |  |
| 480 V 3 AC line voltage, Servo/Vector Control              |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                                                      |                                            |                                                 |                          |                            |                                 |             |   |  |  |  |
| 500                                                        | 160             | 12/16.1                  | 230/169.5                                                                                                                                                                                                                                                                                                                            | 30                   | 340                                                  | 2840 <sup>8)</sup>                         | 3700 <sup>8)</sup>                              | 6500 <sup>8)</sup>       | 1PH7163-■ ■ B ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            |                 | 16/21.5                  | 306/225.5                                                                                                                                                                                                                                                                                                                            | 35                   | 350                                                  | 2380 <sup>8)</sup>                         | 3700 <sup>8)</sup>                              | 6500 <sup>8)</sup>       | 1PH7167-■ ■ B ■ ■ -■ . . . |                                 |             |   |  |  |  |
| 1350                                                       | 100             | 4.7/6.3                  | 33/24.3                                                                                                                                                                                                                                                                                                                              | 9.5                  | 433                                                  | 3500                                       | 5500                                            | 9000 <sup>8)</sup>       | 1PH7103-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            |                 | 8/10.7                   | 57/42                                                                                                                                                                                                                                                                                                                                | 17                   | 405                                                  | 5160                                       | 5500                                            | 9000 <sup>8)</sup>       | 1PH7107-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            | 132             | 15/20.1                  | 106/78.1                                                                                                                                                                                                                                                                                                                             | 30                   | 433                                                  | 3500                                       | 4500                                            | 8000 <sup>8)</sup>       | 1PH7133-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            |                 | 22/29.5                  | 156/115                                                                                                                                                                                                                                                                                                                              | 42                   | 416                                                  | 4750                                       | 4500                                            | 8000 <sup>8)</sup>       | 1PH7137-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            | 160             | 28/37.6                  | 198/145.9                                                                                                                                                                                                                                                                                                                            | 53                   | 413                                                  | 4000                                       | 3700                                            | 6500                     | 1PH7163-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
|                                                            |                 | 34/45.6                  | 241/177.6                                                                                                                                                                                                                                                                                                                            | 67                   | 400                                                  | 5900                                       | 3700                                            | 6500                     | 1PH7167-■ ■ D ■ ■ -■ . . . |                                 |             |   |  |  |  |
| Fans:                                                      |                 |                          | External fan unit, heavy-gauge threaded cable entry in terminal box<br>Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box               |                      |                                                      |                                            |                                                 |                          | 2<br>6<br>7<br>8           |                                 |             |   |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:   |                 |                          | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver |                      |                                                      |                                            |                                                 |                          |                            | A<br>E<br>H<br>J<br>M<br>N<br>R |             |   |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:      |                 |                          | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks<br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks<br>2-pole resolver                                                                                                                        |                      |                                                      |                                            |                                                 |                          |                            | F<br>D<br>Q<br>P                |             |   |  |  |  |
| Terminal box/cable entry (view onto DE):                   |                 |                          | Top/from right<br>Top/from NDE<br>Top/from left                                                                                                                                                                                                                                                                                      |                      |                                                      |                                            |                                                 |                          |                            |                                 | 0<br>2<br>3 |   |  |  |  |
| Type:                                                      |                 |                          | IM B3 (IM V5, IM V6)<br>IM B5 (IM V1, IM V3) available only for shaft heights 100 and 132<br>IM B35 (IM V15, IM V36)                                                                                                                                                                                                                 |                      |                                                      |                                            |                                                 |                          |                            |                                 | 0<br>2<br>3 |   |  |  |  |
| Holding brake with emergency stop function <sup>4)</sup> : |                 |                          | Without brake                                                                                                                                                                                                                                                                                                                        |                      |                                                      |                                            |                                                 |                          |                            |                                 |             | 0 |  |  |  |
|                                                            |                 |                          | Brake supply voltage<br>230 V 1 AC, 50/60 Hz                                                                                                                                                                                                                                                                                         |                      | With brake                                           |                                            |                                                 |                          |                            |                                 |             | 1 |  |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      | With brake (includes microswitch)                    |                                            |                                                 |                          |                            |                                 |             | 2 |  |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      | With brake (includes manual release)                 |                                            |                                                 |                          |                            |                                 |             | 3 |  |  |  |
|                                                            |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      | With brake (includes manual release and microswitch) |                                            |                                                 |                          |                            |                                 |             | 4 |  |  |  |
|                                                            |                 |                          | Brake supply voltage<br>24 V DC V                                                                                                                                                                                                                                                                                                    |                      | With brake                                           |                                            |                                                 |                          |                            |                                 |             | 5 |  |  |  |
| With brake (includes microswitch)                          |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                                                      |                                            |                                                 | 6                        |                            |                                 |             |   |  |  |  |
| With brake (includes manual release)                       |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                                                      |                                            |                                                 | 7                        |                            |                                 |             |   |  |  |  |
| With brake (includes manual release and microswitch)       |                 |                          |                                                                                                                                                                                                                                                                                                                                      |                      |                                                      |                                            |                                                 | 8                        |                            |                                 |             |   |  |  |  |



#### Selection and ordering data

| Power factor                                  | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia of                                      | Weight, approx. | 1PH7 asynchronous motor      | SINAMICS S120 Motor Module |                       |   |
|-----------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------|-----------------|------------------------------|----------------------------|-----------------------|---|
|                                               |                     |                                                                              |                          |                                                           |                 |                              | Rated output current       |                       |   |
| cos φ                                         | I <sub>μ</sub><br>A | η <sub>rated</sub>                                                           | f <sub>rated</sub><br>Hz | J<br>kgm <sup>2</sup> /lb <sub>r</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                    | I <sub>rated</sub><br>A    | Order No.             |   |
| Netzspannung 3 AC 480 V, Servo/Vector Control |                     |                                                                              |                          |                                                           |                 |                              |                            |                       |   |
| 0.86                                          | 13                  | 0.841                                                                        | 17.6                     | 0.185/1.637                                               | 175/385.9       | 1PH7163- . . B . . . ■ ■ ■ ■ | 30                         | 6SL3120- 1 TE23-0AA 1 |   |
| 0.89                                          | 13                  | 0.836                                                                        | 17.7                     | 0.228/2.018                                               | 210/463.05      | 1PH7167- . . B . . . ■ ■ ■ ■ | 45                         | 6SL3120- 1 TE24-5AA 1 |   |
| 0.81                                          | 4.5                 | 0.830                                                                        | 47.1                     | 0.017/0.15                                                | 40/88.2         | 1PH7103- . . D . . . ■ ■ ■ ■ | 18                         | 6SL3120- ■ TE21-8AA ■ |   |
| 0.80                                          | 8.1                 | 0.853                                                                        | 47.0                     | 0.029/0.257                                               | 65/143.33       | 1PH7107- . . D . . . ■ ■ ■ ■ | 18                         | 6SL3120- ■ TE21-8AA ■ |   |
| 0.84                                          | 12                  | 0.887                                                                        | 46.4                     | 0.076/0.673                                               | 90/198.45       | 1PH7133- . . D . . . ■ ■ ■ ■ | 30                         | 6SL3120- 1 TE23-0AA 1 |   |
| 0.85                                          | 17                  | 0.895                                                                        | 46.3                     | 0.109/0.965                                               | 150/330.75      | 1PH7137- . . D . . . ■ ■ ■ ■ | 45                         | 6SL3120- 1 TE24-5AA 1 |   |
| 0.83                                          | 24                  | 0.911                                                                        | 45.8                     | 0.185/1.637                                               | 175/385.9       | 1PH7163- . . D . . . ■ ■ ■ ■ | 60                         | 6SL3120- 1 TE26-0AA 1 |   |
| 0.83                                          | 34                  | 0.910                                                                        | 45.8                     | 0.228/2.018                                               | 210/463.05      | 1PH7167- . . D . . . ■ ■ ■ ■ | 85                         | 6SL3120- 1 TE28-5AA 1 |   |
| Output type:                                  |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                                |                 | B<br>C<br>D<br>K<br>L        |                            |                       |   |
| Coupling/belt                                 |                     | R                                                                            |                          | R                                                         |                 |                              |                            |                       |   |
| Coupling/belt                                 |                     | S                                                                            |                          | R                                                         |                 |                              |                            |                       |   |
| Coupling/belt                                 |                     | SR                                                                           |                          | R                                                         |                 |                              |                            |                       |   |
| Coupling/belt                                 |                     | N                                                                            |                          | N (with brake mounting)                                   |                 |                              |                            |                       |   |
| Increased maximum speed <sup>5)</sup>         |                     | SR                                                                           |                          | R                                                         |                 | A<br>B<br>C<br>D<br>J<br>K   |                            |                       |   |
| Shaft extension (DE):                         |                     | Balancing:                                                                   |                          | Direction of air flow (fan):                              |                 |                              |                            |                       |   |
| Fitted key                                    |                     | Half-key                                                                     |                          | DE → NDE                                                  |                 |                              |                            |                       |   |
| Fitted key                                    |                     | Half-key                                                                     |                          | NDE → DE <sup>7)</sup>                                    |                 |                              |                            |                       |   |
| Fitted key                                    |                     | Full-key                                                                     |                          | DE → NDE                                                  |                 |                              |                            |                       |   |
| Fitted key                                    |                     | Full-key                                                                     |                          | NDE → DE <sup>7)</sup>                                    |                 |                              |                            |                       |   |
| Plain shaft                                   |                     | –                                                                            |                          | DE → NDE                                                  |                 |                              |                            |                       |   |
| Plain shaft                                   |                     | –                                                                            |                          | NDE → DE <sup>7)</sup>                                    |                 | 0<br>2<br>3<br>5<br>6<br>8   |                            |                       |   |
| Seal:                                         |                     | Paint finish:                                                                |                          |                                                           |                 |                              |                            |                       |   |
| –                                             |                     | None                                                                         |                          |                                                           |                 |                              |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | None                                                                         |                          |                                                           |                 |                              |                            |                       |   |
| –                                             |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                           |                 |                              |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | Anthracite (RAL 7016), standard paint finish                                 |                          |                                                           |                 |                              |                            |                       |   |
| –                                             |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                           |                 |                              |                            |                       |   |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | Anthracite (RAL 7016), special paint finish                                  |                          |                                                           |                 | –Z                           |                            |                       |   |
| Special versions:                             |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                           |                 |                              |                            |                       |   |
| Motor Module:                                 |                     | Single Motor Module                                                          |                          |                                                           |                 |                              |                            | 1                     |   |
|                                               |                     | Double Motor Module                                                          |                          |                                                           |                 |                              |                            | 2                     |   |
|                                               |                     |                                                                              |                          |                                                           |                 |                              |                            |                       | 0 |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Model with brake possible if:  
12th position "2" or "3",  
14th position "K",  
15th position "A", "B", "J" or "K",  
16th position "0", "3" or "6".

- <sup>5)</sup> Max. possible speed (see also selection guides):  
SH 100: 12000 rpm, SH 132: 10000 rpm, SH 160: 8000 rpm,  
with keyless shaft only (15th position "J" or "K" and 16th position "0",  
"3" or "6").
- <sup>6)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), or version with increased maximum speed.
- <sup>7)</sup> Preferred air-flow direction in polluted environment.
- <sup>8)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

# AC motors

## Asynchronous motors

### 1PH7 motors

#### Selection and ordering data

| Rated speed                                                | Shaft height SH | Rated power              | Rated torque                                                                                     | Rated current        | Rated voltage        | Speed during field weakening <sup>1)</sup>           | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor         |  |  |  |                  |
|------------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------|----------------------|----------------------|------------------------------------------------------|-------------------------------------------------|--------------------------|---------------------------------|--|--|--|------------------|
| $n_{\text{rated}}$ rpm                                     |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>r</sub> -ft                                                        | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                            | $n_{S1}$ rpm                                    | $n_{\text{max}}$ rpm     | Order No.                       |  |  |  |                  |
| 480 V 3 AC line voltage, Servo/Vector Control              |                 |                          |                                                                                                  |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
| 2000                                                       | 100             | 4.7/6                    | 22/16.2                                                                                          | 10                   | 459                  | 7580                                                 | 5500                                            | 9000                     | 1PH7101-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 7/9.4                    | 33/24.3                                                                                          | 13                   | 459                  | 4100                                                 | 5500                                            | 9000                     | 1PH7103-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 9/12.1                   | 43/31.7                                                                                          | 17.5                 | 450                  | 7160                                                 | 5500                                            | 9000                     | 1PH7105-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 11/14.8                  | 53/39.1                                                                                          | 23                   | 433                  | 5500                                                 | 5500                                            | 9000                     | 1PH7107-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            | 132             | 15/20.1                  | 72/53.1                                                                                          | 25                   | 459                  | 5660                                                 | 4500                                            | 8000                     | 1PH7131-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 20/26.8                  | 96/70.8                                                                                          | 34                   | 459                  | 5910                                                 | 4500                                            | 8000                     | 1PH7133-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 24/32.2                  | 115/84.8                                                                                         | 42                   | 459                  | 6730                                                 | 4500                                            | 8000                     | 1PH7135-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 28/37.6                  | 134/98.8                                                                                         | 55                   | 402                  | 4000                                                 | 4500                                            | 8000                     | 1PH7137-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            | 160             | 37/49.6                  | 177/130.4                                                                                        | 70                   | 412                  | 4000                                                 | 3700                                            | 6500                     | 1PH7163-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 45/60.4                  | 215/158.5                                                                                        | 76                   | 459                  | 3250                                                 | 3700                                            | 6500                     | 1PH7167-■ ■ F ■ ■ - ■ . . .     |  |  |  |                  |
| 2650                                                       | 100             | 8/10.7                   | 29/21.4                                                                                          | 16.5                 | 440                  | 7500                                                 | 5500                                            | 9000                     | 1PH7103-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 13/17.4                  | 47/34.6                                                                                          | 24.5                 | 459                  | 7500                                                 | 5500                                            | 9000                     | 1PH7107-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            | 132             | 24/32.2                  | 87/64.1                                                                                          | 42                   | 450                  | 4000                                                 | 4500                                            | 8000                     | 1PH7133-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 30/40.2                  | 108/79.6                                                                                         | 52                   | 450                  | 4250                                                 | 4500                                            | 8000                     | 1PH7137-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            | 160             | 40/53.6                  | 144/106.1                                                                                        | 76                   | 433                  | 3500                                                 | 3700                                            | 6500                     | 1PH7163-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
|                                                            |                 | 44/6                     | 159/117.2                                                                                        | 77                   | 459                  | 3250                                                 | 3700                                            | 6500                     | 1PH7167-■ ■ G ■ ■ - ■ . . .     |  |  |  |                  |
| Fans:                                                      |                 |                          | External fan unit, heavy-gauge threaded cable entry in terminal box                              |                      |                      |                                                      |                                                 |                          | 2                               |  |  |  |                  |
|                                                            |                 |                          | Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box |                      |                      |                                                      |                                                 |                          | 6                               |  |  |  |                  |
|                                                            |                 |                          | External fan unit, metric cable entry in terminal box                                            |                      |                      |                                                      |                                                 |                          | 7                               |  |  |  |                  |
|                                                            |                 |                          | Without external fan unit, for pipe connection, metric cable entry in terminal box               |                      |                      |                                                      |                                                 |                          | 8                               |  |  |  |                  |
| Encoder systems for motors without DRIVE-CLiQ interface:   |                 |                          | Without encoder                                                                                  |                      |                      |                                                      |                                                 |                          | A<br>E<br>H<br>J<br>M<br>N<br>R |  |  |  |                  |
|                                                            |                 |                          | Absolute encoder EnDat 2048 pulses/revolution                                                    |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder HTL 1024 pulses/revolution                                                   |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder HTL 2048 pulses/revolution                                                   |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks                                |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks                             |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | 2-pole resolver                                                                                  |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
| Encoder systems for motors with DRIVE-CLiQ interface:      |                 |                          | Absolute encoder EnDat 2048 pulses/revolution                                                    |                      |                      |                                                      |                                                 |                          | F<br>D<br>Q<br>P                |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks                                |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks                             |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | 2-pole resolver                                                                                  |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
| Terminal box/cable entry (view onto DE):                   |                 |                          | Top/from right                                                                                   |                      |                      |                                                      |                                                 |                          | 0<br>2<br>3                     |  |  |  |                  |
|                                                            |                 |                          | Top/from NDE                                                                                     |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Top/from left                                                                                    |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
| Type:                                                      |                 |                          | IM B3 (IM V5, IM V6)                                                                             |                      |                      |                                                      |                                                 |                          | 0<br>2<br>3                     |  |  |  |                  |
|                                                            |                 |                          | IM B5 (IM V1, IM V3) available only for shaft heights 100 and 132                                |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | IM B35 (IM V15, IM V36)                                                                          |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
| Holding brake with emergency stop function <sup>4)</sup> : |                 |                          | Without brake                                                                                    |                      |                      |                                                      |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Brake supply voltage                                                                             |                      |                      | With brake                                           |                                                 |                          |                                 |  |  |  | 1<br>2<br>3<br>4 |
|                                                            |                 |                          | 230 V 1 AC, 50/60 Hz                                                                             |                      |                      | With brake (includes microswitch)                    |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          |                                                                                                  |                      |                      | With brake (includes manual release)                 |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          |                                                                                                  |                      |                      | With brake (includes manual release and microswitch) |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          | Brake supply voltage                                                                             |                      |                      | With brake                                           |                                                 |                          | 5<br>6<br>7<br>8                |  |  |  |                  |
|                                                            |                 |                          | 24 V DC                                                                                          |                      |                      | With brake (includes microswitch)                    |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          |                                                                                                  |                      |                      | With brake (includes manual release)                 |                                                 |                          |                                 |  |  |  |                  |
|                                                            |                 |                          |                                                                                                  |                      |                      | With brake (includes manual release and microswitch) |                                                 |                          |                                 |  |  |  |                  |

#### Selection and ordering data

| Power factor                                  | Magnetizing current | Efficiency                                                                   | Rated frequency    | Moment of inertia of                                 | Weight, approx. | 1PH7 asynchronous motor            | SINAMICS S120 Motor Module |                       |        |
|-----------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------|------------------------------------------------------|-----------------|------------------------------------|----------------------------|-----------------------|--------|
|                                               | $I_{\mu}$           | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$ | $J$                                                  |                 |                                    | $I_{\text{rated}}$         |                       |        |
| $\cos \varphi$                                | A                   |                                                                              | Hz                 | kgm <sup>2</sup> /lb <sub>F</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                          | A                          | Order No.             |        |
| 480 V 3 AC line voltage, Servo/Vector Control |                     |                                                                              |                    |                                                      |                 |                                    |                            |                       |        |
| 0.72                                          | 6.0                 | 0.862                                                                        | 68.2               | 0.017/0.15                                           | 40/88.2         | 1PH7101- . . F . . . ■ ■ ■         | 18                         | 6SL3120- ■ TE21-8AA ■ |        |
| 0.82                                          | 5.6                 | 0.860                                                                        | 69.1               | 0.017/0.15                                           | 40/88.2         | 1PH7103- . . F . . . ■ ■ ■         | 18                         | 6SL3120- ■ TE21-8AA ■ |        |
| 0.78                                          | 9.3                 | 0.878                                                                        | 68.3               | 0.029/0.257                                          | 65/143.33       | 1PH7105- . . F . . . ■ ■ ■         | 18                         | 6SL3120- ■ TE21-8AA ■ |        |
| 0.79                                          | 10.8                | 0.876                                                                        | 68.6               | 0.029/0.257                                          | 65/143.33       | 1PH7107- . . F . . . ■ ■ ■         | 30                         | 6SL3120- 1 TE23-0AA 1 |        |
| 0.88                                          | 8.5                 | 0.903                                                                        | 68.0               | 0.076/0.673                                          | 90/198.45       | 1PH7131- . . F . . . ■ ■ ■         | 30                         | 6SL3120- 1 TE23-0AA 1 |        |
| 0.84                                          | 15                  | 0.900                                                                        | 68.0               | 0.076/0.673                                          | 90/198.45       | 1PH7133- . . F . . . ■ ■ ■         | 45                         | 6SL3120- 1 TE24-5AA 1 |        |
| 0.85                                          | 17                  | 0.905                                                                        | 67.8               | 0.109/0.965                                          | 150/330.75      | 1PH7135- . . F . . . ■ ■ ■         | 45                         | 6SL3120- 1 TE24-5AA 1 |        |
| 0.85                                          | 23                  | 0.900                                                                        | 67.9               | 0.109/0.965                                          | 150/330.75      | 1PH7137- . . F . . . ■ ■ ■         | 60                         | 6SL3120- 1 TE26-0AA 1 |        |
| 0.85                                          | 29                  | 0.912                                                                        | 67.5               | 0.185/1.637                                          | 175/385.88      | 1PH7163- . . F . . . ■ ■ ■         | 85                         | 6SL3120- 1 TE28-5AA 1 |        |
| 0.84                                          | 32                  | 0.916                                                                        | 67.4               | 0.228/2.018                                          | 210/463.05      | 1PH7167- . . F . . . ■ ■ ■         | 85                         | 6SL3120- 1 TE28-5AA 1 |        |
| 0.78                                          | 8.2                 | 0.871                                                                        | 90.3               | 0.017/0.15                                           | 40/88.2         | 1PH7103- . . G . . . ■ ■ ■         | 18                         | 6SL3120- ■ TE21-8AA ■ |        |
| 0.78                                          | 12                  | 0.887                                                                        | 90.2               | 0.029/0.257                                          | 65/143.33       | 1PH7107- . . G . . . ■ ■ ■         | 30                         | 6SL3120- 1 TE23-0AA 1 |        |
| 0.85                                          | 17                  | 0.898                                                                        | 89.6               | 0.076/0.673                                          | 90/198.45       | 1PH7133- . . G . . . ■ ■ ■         | 45                         | 6SL3120- 1 TE24-5AA 1 |        |
| 0.84                                          | 21                  | 0.894                                                                        | 89.4               | 0.109/0.965                                          | 150/330.75      | 1PH7137- . . G . . . ■ ■ ■         | 60                         | 6SL3120- 1 TE26-0AA 1 |        |
| 0.82                                          | 37                  | 0.895                                                                        | 89.0               | 0.185/1.637                                          | 175/385.88      | 1PH7163- . . G . . . ■ ■ ■         | 85                         | 6SL3120- 1 TE28-5AA 1 |        |
| 0.80                                          | 40                  | 0.911                                                                        | 89.0               | 0.228/2.018                                          | 210/463.05      | 1PH7167- . . G . . . ■ ■ ■         | 85                         | 6SL3120- 1 TE28-5AA 1 |        |
| Output type:                                  |                     | Vibration severity grade:                                                    |                    | Shaft and flange accuracy:                           |                 | B<br>C<br>D<br>K<br>L              |                            |                       |        |
| Coupling/belt                                 |                     | R                                                                            |                    | R                                                    |                 |                                    |                            |                       |        |
| Coupling/belt                                 |                     | S                                                                            |                    | R                                                    |                 |                                    |                            |                       |        |
| Coupling/belt                                 |                     | SR                                                                           |                    | R                                                    |                 |                                    |                            |                       |        |
| Coupling/belt                                 |                     | N                                                                            |                    | N (with brake mounting)                              |                 |                                    |                            |                       |        |
| Increased max. speed <sup>5)</sup>            |                     | SR                                                                           |                    | R                                                    |                 |                                    |                            |                       |        |
| Shaft extension (DE):                         |                     | Balancing:                                                                   |                    | Direction of air flow (fan):                         |                 | A<br>B<br>C<br>D<br>J<br>K         |                            |                       |        |
| Fitted key                                    |                     | Half-key                                                                     |                    | DE → NDE                                             |                 |                                    |                            |                       |        |
| Fitted key                                    |                     | Half-key                                                                     |                    | NDE → DE <sup>7)</sup>                               |                 |                                    |                            |                       |        |
| Fitted key                                    |                     | Full-key                                                                     |                    | DE → NDE                                             |                 |                                    |                            |                       |        |
| Fitted key                                    |                     | Full-key                                                                     |                    | NDE → DE <sup>7)</sup>                               |                 |                                    |                            |                       |        |
| Plain shaft                                   |                     | –                                                                            |                    | DE → NDE                                             |                 |                                    |                            |                       |        |
| Plain shaft                                   |                     | –                                                                            |                    | NDE → DE <sup>7)</sup>                               |                 |                                    |                            |                       |        |
| Seal:                                         |                     | Paint finish:                                                                |                    |                                                      |                 | 0<br>2<br><br>3<br>5<br><br>6<br>8 |                            |                       |        |
| –                                             |                     | None                                                                         |                    |                                                      |                 |                                    |                            |                       |        |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | None                                                                         |                    |                                                      |                 |                                    |                            |                       |        |
| –                                             |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                      |                 |                                    |                            |                       |        |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | Anthracite (RAL 7016), standard paint finish                                 |                    |                                                      |                 |                                    |                            |                       |        |
| –                                             |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                      |                 |                                    |                            |                       |        |
| Flange and shaft sealing ring <sup>6)</sup>   |                     | Anthracite (RAL 7016), special paint finish                                  |                    |                                                      |                 |                                    |                            |                       |        |
| Special versions:                             |                     | Specify supplementary order code and plain text if applicable (see Options). |                    |                                                      |                 |                                    |                            | –Z                    |        |
| Motor Module:                                 |                     | Single Motor Module<br>Double Motor Module                                   |                    |                                                      |                 |                                    |                            | 1<br>2                | 1<br>0 |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> Model with brake possible if:  
12th position "2" or "3",  
14th position "K",  
15th position "A", "B", "J" or "K",  
16th position "0", "3" or "6".

- <sup>5)</sup> Max. possible speed (see also selection guides):  
SH 100: 12000 rpm, SH 132: 10000 rpm, SH 160: 8000 rpm,  
with keyless shaft only (15th position "J" or "K" and 16th position "0",  
"3" or "6").
- <sup>6)</sup> Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), or version with increased maximum speed.
- <sup>7)</sup> Preferred air-flow direction in polluted environment.

## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                                                                                          | Shaft height SH | Rated power       | Rated torque                                                                                                                                                                                                                                                                                                                                                       | Rated current | Rated voltage | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor                                                                 |                                 |                  |  |                            |  |  |  |
|----------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|--------------------------------------------|-------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------|---------------------------------|------------------|--|----------------------------|--|--|--|
| $n_{rated}$ rpm                                                                                                      |                 | $P_{rated}$ kW/HP | $M_{rated}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                                                                 | $I_{rated}$ A | $V_{rated}$ V | $n_2$ rpm                                  | $n_{S1}$ rpm                                    | $n_{max}$ rpm            | Order No.                                                                               |                                 |                  |  |                            |  |  |  |
| 480 V 3 AC line voltage, Servo/Vector Control                                                                        |                 |                   |                                                                                                                                                                                                                                                                                                                                                                    |               |               |                                            |                                                 |                          |                                                                                         |                                 |                  |  |                            |  |  |  |
| 500                                                                                                                  | 180             | 20.5/27.5         | 392/288.9                                                                                                                                                                                                                                                                                                                                                          | 51            | 335           | 3200 <sup>11)</sup>                        | 3500 <sup>4)11)</sup>                           | 5000 <sup>11)</sup>      | 1PH7184- ■ ■ B ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 26.5/35.5         | 506/372.9                                                                                                                                                                                                                                                                                                                                                          | 67            | 335           | 3600 <sup>11)</sup>                        | 3500 <sup>4)11)</sup>                           | 5000 <sup>11)</sup>      | 1PH7186- ■ ■ B ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      | 225             | 38/51.0           | 725/534.3                                                                                                                                                                                                                                                                                                                                                          | 86            | 335           | 2900 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                           | 4500 <sup>11)</sup>      | 1PH7224- ■ ■ B ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 49/65.7           | 935/689.1                                                                                                                                                                                                                                                                                                                                                          | 112           | 330           | 3200 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                           | 4500 <sup>11)</sup>      | 1PH7226- ■ ■ B ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 60/80.5           | 1145/843.9                                                                                                                                                                                                                                                                                                                                                         | 135           | 340           | 3200 <sup>11)</sup>                        | 3100 <sup>4)11)</sup>                           | 4500 <sup>4)11)</sup>    | 1PH7228- ■ ■ B ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
| 1350                                                                                                                 | 180             | 50/67.1           | 355/261.6                                                                                                                                                                                                                                                                                                                                                          | 86            | 450           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184- ■ ■ D ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 67/89.9           | 475/350.1                                                                                                                                                                                                                                                                                                                                                          | 114           | 460           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186- ■ ■ D ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      | 225             | 92/123.4          | 650/479.1                                                                                                                                                                                                                                                                                                                                                          | 156           | 450           | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224- ■ ■ D ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 120/160.9         | 847/624.2                                                                                                                                                                                                                                                                                                                                                          | 193           | 460           | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226- ■ ■ D ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 147/197.1         | 1043/768.7                                                                                                                                                                                                                                                                                                                                                         | 232           | 460           | 2900                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228- ■ ■ D ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
| 2000                                                                                                                 | 180             | 68/91.2           | 325/239.5                                                                                                                                                                                                                                                                                                                                                          | 120           | 450           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184- ■ ■ F ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 94/126.1          | 450/331.7                                                                                                                                                                                                                                                                                                                                                          | 165           | 445           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186- ■ ■ F ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      | 225             | 124/166.3         | 590/434.8                                                                                                                                                                                                                                                                                                                                                          | 200           | 460           | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224- ■ ■ U ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 153/205.2         | 730/538                                                                                                                                                                                                                                                                                                                                                            | 254           | 450           | 2900                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226- ■ ■ F ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 196/262.8         | 936/689.8                                                                                                                                                                                                                                                                                                                                                          | 332           | 450           | 3000                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228- ■ ■ F ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
| 2900                                                                                                                 | 180             | 81/108.6          | 267/196.8                                                                                                                                                                                                                                                                                                                                                          | 158           | 395           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7184- ■ ■ L ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 101/135.4         | 333/245.4                                                                                                                                                                                                                                                                                                                                                          | 206           | 385           | 5000                                       | 3500 <sup>4)</sup>                              | 5000                     | 1PH7186- ■ ■ L ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      | 225             | 149/199.8         | 490/361.1                                                                                                                                                                                                                                                                                                                                                          | 274           | 395           | 3500                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7224- ■ ■ L ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 185/248.1         | 610/449.6                                                                                                                                                                                                                                                                                                                                                          | 348           | 390           | 3500                                       | 3100 <sup>4)</sup>                              | 4500                     | 1PH7226- ■ ■ L ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
|                                                                                                                      |                 | 215/288.3         | 708/521.8                                                                                                                                                                                                                                                                                                                                                          | 402           | 395           | 3500                                       | 3100 <sup>4)</sup>                              | 4500 <sup>4)</sup>       | 1PH7228- ■ ■ L ■ ■ - ■ . . .                                                            |                                 |                  |  |                            |  |  |  |
| Fans:                                                                                                                |                 |                   | External fan unit, heavy-gauge threaded cable entry in terminal box<br>Without external fan unit, for pipe connection, heavy-gauge threaded cable entry in terminal box<br>External fan unit, metric cable entry in terminal box<br>Without external fan unit, for pipe connection, metric cable entry in terminal box                                             |               |               |                                            |                                                 |                          | 2<br>6<br>7<br>8                                                                        |                                 |                  |  |                            |  |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface:                                                             |                 |                   | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver |               |               |                                            |                                                 |                          |                                                                                         | A<br>E<br>H<br>J<br>M<br>N<br>R |                  |  |                            |  |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:                                                                |                 |                   | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>10)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>10)</sup><br>2-pole resolver                                                                                                                        |               |               |                                            |                                                 |                          |                                                                                         | F<br>D<br>Q<br>P                |                  |  |                            |  |  |  |
| Terminal box/cable entry (view onto DE):                                                                             |                 |                   | Top/from right<br>Top/from DE<br>Top/from NDE<br>Top/from left                                                                                                                                                                                                                                                                                                     |               |               |                                            |                                                 |                          |                                                                                         |                                 | 0<br>1<br>2<br>3 |  |                            |  |  |  |
| Type:                                                                                                                |                 |                   | IM B3<br>IM B3<br><br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br>IM B35<br>(only for 1PH7184 with flange A 450)<br>IM B35<br>(only for 1PH7184 with flange A 400,<br>1PH7186 with flange A 450,<br>1PH722. with flange A 550)<br>IM B35<br>(only for 1PH7184 with flange A 450)                 |               |               |                                            |                                                 |                          | Hoisting system for different construction types<br>(IM B6, IM B7, IM B8, IM V5, IM V6) |                                 |                  |  | 0<br>1<br>3<br>4<br>5<br>6 |  |  |  |
| Holding brake with emergency stop function (suitable for coupling output in construction type IM B3) <sup>5)</sup> : |                 |                   | Without brake<br>With brake (includes emergency release screws and microswitch)<br>With brake (includes manual release and microswitch)                                                                                                                                                                                                                            |               |               |                                            |                                                 |                          |                                                                                         |                                 | 0<br>2<br>4      |  |                            |  |  |  |

#### Selection and ordering data

| Power factor                                  | Magnetizing current | Efficiency                                                                   | Rated frequency    | Moment of inertia of                                     | Weight, approx. | 1PH7 asynchronous motor     | SINAMICS S120 Motor Module                                                                                            |                     |
|-----------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------|----------------------------------------------------------|-----------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|
|                                               | $I_{\mu}$           | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$ | $J$                                                      |                 |                             | Rated output current                                                                                                  |                     |
| $\cos \varphi$                                | A                   |                                                                              | Hz                 | kgm <sup>2</sup> /<br>lb <sub>r</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                   | $I_{\text{rated}}$<br>A                                                                                               | Order No.           |
| 480 V 3 AC line voltage, Servo/Vector Control |                     |                                                                              |                    |                                                          |                 |                             |                                                                                                                       |                     |
| 0.83                                          | 26                  | 0.858                                                                        | 17.5               | 0.503/4.452                                              | 370/815.85      | 1PH7184- . . B . . - . ■■■■ | 60                                                                                                                    | 6SL3120-1 TE26-0AA1 |
| 0.79                                          | 39.5                | 0.870                                                                        | 17.3               | 0.666/5.895                                              | 440/970.2       | 1PH7186- . . B . . - . ■■■■ | 85                                                                                                                    | 6SL3120-1 TE28-5AA1 |
| 0.85                                          | 37.5                | 0.888                                                                        | 17.3               | 1.479/13.09                                              | 630/1389.2      | 1PH7224- . . B . . - . ■■■■ | 85 <sup>9)</sup>                                                                                                      | 6SL3120-1 TE28-5AA1 |
| 0.85                                          | 50                  | 0.900                                                                        | 17.3               | 1.930/17.082                                             | 750/1653.8      | 1PH7226- . . B . . - . ■■■■ | 132                                                                                                                   | 6SL3120-1 TE31-3AA0 |
| 0.84                                          | 61.5                | 0.907                                                                        | 17.2               | 2.326/20.587                                             | 860/1896.3      | 1PH7228- . . B . . - . ■■■■ | 132 <sup>9)</sup>                                                                                                     | 6SL3120-1 TE31-3AA0 |
| 0.81                                          | 42                  | 0.928                                                                        | 45.8               | 0.503/4.452                                              | 370/815.85      | 1PH7184- . . D . . - . ■■■■ | 85 <sup>9)</sup>                                                                                                      | 6SL3120-1 TE28-5AA1 |
| 0.79                                          | 59.5                | 0.930                                                                        | 45.7               | 0.666/5.895                                              | 440/970.2       | 1PH7186- . . D . . - . ■■■■ | 132                                                                                                                   | 6SL3120-1 TE31-3AA0 |
| 0.80                                          | 78.5                | 0.942                                                                        | 45.6               | 1.479/13.09                                              | 630/1389.2      | 1PH7224- . . D . . - . ■■■■ | 200                                                                                                                   | 6SL3120-1 TE32-0AA0 |
| 0.82                                          | 88.5                | 0.945                                                                        | 45.6               | 1.930/17.082                                             | 750/1653.8      | 1PH7226- . . D . . - . ■■■■ | 200                                                                                                                   | 6SL3120-1 TE32-0AA0 |
| 0.84                                          | 99.5                | 0.947                                                                        | 45.6               | 2.326/20.587                                             | 860/1896.3      | 1PH7228- . . D . . - . ■■■■ | 260                                                                                                                   | 6SL3320-1 TE32-6AA0 |
| 0.78                                          | 66                  | 0.935                                                                        | 67.3               | 0.503/4.452                                              | 370/815.85      | 1PH7184- . . F . . - . ■■■■ | 132                                                                                                                   | 6SL3120-1 TE31-3AA0 |
| 0.78                                          | 87                  | 0.941                                                                        | 67.3               | 0.666/5.895                                              | 440/970.2       | 1PH7186- . . F . . - . ■■■■ | 200                                                                                                                   | 6SL3120-1 TE32-0AA0 |
| 0.82                                          | 91                  | 0.944                                                                        | 67.2               | 1.479/13.09                                              | 630/1389.2      | 1PH7224- . . U . . - . ■■■■ | 200                                                                                                                   | 6SL3120-1 TE32-0AA0 |
| 0.82                                          | 119                 | 0.948                                                                        | 67.2               | 1.930/17.082                                             | 750/1653.8      | 1PH7226- . . F . . - . ■■■■ | 260                                                                                                                   | 6SL3320-1 TE32-6AA0 |
| 0.79                                          | 168                 | 0.950                                                                        | 67.1               | 2.326/20.587                                             | 860/1896.3      | 1PH7228- . . F . . - . ■■■■ | 380                                                                                                                   | 6SL3320-1 TE33-8AA0 |
| 0.80                                          | 77                  | 0.934                                                                        | 97.4               | 0.503/4.452                                              | 370/815.85      | 1PH7184- . . L . . - . ■■■■ | 200                                                                                                                   | 6SL3120-1 TE32-0AA0 |
| 0.78                                          | 107                 | 0.936                                                                        | 97.3               | 0.666/5.895                                              | 440/970.2       | 1PH7186- . . L . . - . ■■■■ | 210                                                                                                                   | 6SL3320-1 TE32-1AA0 |
| 0.84                                          | 115                 | 0.946                                                                        | 97.3               | 1.479/13.09                                              | 630/1389.2      | 1PH7224- . . L . . - . ■■■■ | 310                                                                                                                   | 6SL3320-1 TE33-1AA0 |
| 0.83                                          | 154                 | 0.946                                                                        | 97.2               | 1.930/17.082                                             | 750/1653.8      | 1PH7226- . . L . . - . ■■■■ | 380                                                                                                                   | 6SL3320-1 TE33-8AA0 |
| 0.82                                          | 188                 | 0.954                                                                        | 97.2               | 2.326/20.587                                             | 860/1896.3      | 1PH7228- . . L . . - . ■■■■ | 490                                                                                                                   | 6SL3320-1 TE35-0AA0 |
| Output type:                                  |                     | Vibration severity grade:                                                    |                    | Shaft and flange accuracy:                               |                 |                             | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>J<br><br>A<br>B<br>C<br>D<br>J<br>K<br><br>0<br>2<br><br>3<br>5<br><br>6<br>8 |                     |
| Coupling                                      | R                   | R                                                                            |                    | N                                                        |                 |                             |                                                                                                                       |                     |
| Coupling                                      | R                   | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Coupling                                      | S                   | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Coupling                                      | SR                  | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Belt                                          | R                   | N                                                                            |                    | N                                                        |                 |                             |                                                                                                                       |                     |
| Belt                                          | R                   | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Incr. cantilever forces                       | R                   | N                                                                            |                    | N                                                        |                 |                             |                                                                                                                       |                     |
| Incr. cantilever forces                       | R                   | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Increased max. speed <sup>6)</sup>            | S                   | R                                                                            |                    | R                                                        |                 |                             |                                                                                                                       |                     |
| Shaft extension (DE):                         |                     | Balancing:                                                                   |                    | Direction of air flow (fan):                             |                 |                             | A<br>B<br>C<br>D<br>J<br>K<br><br>0<br>2<br><br>3<br>5<br><br>6<br>8                                                  |                     |
| Fitted key                                    | Half-key            | DE → NDE                                                                     |                    | DE → NDE                                                 |                 |                             |                                                                                                                       |                     |
| Fitted key                                    | Half-key            | NDE → DE <sup>8)</sup>                                                       |                    | NDE → DE <sup>8)</sup>                                   |                 |                             |                                                                                                                       |                     |
| Fitted key                                    | Full-key            | DE → NDE                                                                     |                    | DE → NDE                                                 |                 |                             |                                                                                                                       |                     |
| Fitted key                                    | Full-key            | NDE → DE <sup>8)</sup>                                                       |                    | NDE → DE <sup>8)</sup>                                   |                 |                             |                                                                                                                       |                     |
| Plain shaft                                   | –                   | DE → NDE                                                                     |                    | DE → NDE                                                 |                 |                             |                                                                                                                       |                     |
| Plain shaft                                   | –                   | NDE → DE <sup>8)</sup>                                                       |                    | NDE → DE <sup>8)</sup>                                   |                 |                             |                                                                                                                       |                     |
| Seal:                                         |                     | Paint finish:                                                                |                    |                                                          |                 |                             | 0<br>2<br><br>3<br>5<br><br>6<br>8                                                                                    |                     |
| –                                             |                     | Primed                                                                       |                    | Primed                                                   |                 |                             |                                                                                                                       |                     |
| Flange and shaft sealing ring <sup>7)</sup>   |                     | Anthracite (RAL 7016), standard paint finish                                 |                    | Anthracite (RAL 7016), standard paint finish             |                 |                             |                                                                                                                       |                     |
| –                                             |                     | Anthracite (RAL 7016), standard paint finish                                 |                    | Anthracite (RAL 7016), standard paint finish             |                 |                             |                                                                                                                       |                     |
| Flange and shaft sealing ring <sup>7)</sup>   |                     | Anthracite (RAL 7016), special paint finish                                  |                    | Anthracite (RAL 7016), special paint finish              |                 |                             |                                                                                                                       |                     |
| –                                             |                     | Anthracite (RAL 7016), special paint finish                                  |                    | Anthracite (RAL 7016), special paint finish              |                 |                             |                                                                                                                       |                     |
| Flange and shaft sealing ring <sup>7)</sup>   |                     | Anthracite (RAL 7016), special paint finish                                  |                    | Anthracite (RAL 7016), special paint finish              |                 |                             | –Z                                                                                                                    |                     |
| Special versions:                             |                     | Specify supplementary order code and plain text if applicable (see Options). |                    |                                                          |                 |                             |                                                                                                                       |                     |

- $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- Speed is reduced with increased cantilever forces, see selection guides.
- Model with brake: 12th position "0", 14th position "A", 15th position "A" or "B", 16th position "0", "3" or "6".
- For shaft height 180  $n_{\text{max}} = 7000$  rpm, 1PH7 224  $n_{\text{max}} = 5500$  rpm, only coupling output possible and 16th position "0", "3" or "6".

- Only appropriate if oil spray/mist occasionally gets onto the sealing ring. A sealing ring is not possible for type IM B3 (IM V5, IM V6), version with increased maximum speed, version for belt output or increased cantilever forces.
- Preferred air-flow direction in polluted environment.
- The rated output current of the Motor Module is lower than the motor rated current.
- When ordering option **L27**, please also select option **M84** (insulated version of encoder).
- Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                              | Shaft height SH | Rated power              | Rated torque                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rated current        | Rated voltage        | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | 1PH7 asynchronous motor         |                                 |  |
|----------------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------------|-------------------------------------------------|--------------------------|---------------------------------|---------------------------------|--|
| $n_{\text{rated}}$ rpm                                   |                 | $P_{\text{rated}}$ kW/HP | $M_{\text{rated}}$ Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                                                                                                                                                          | $I_{\text{rated}}$ A | $V_{\text{rated}}$ V | $n_2$ rpm                                  | $n_{\text{S1}}$ rpm                             | $n_{\text{max}}$ rpm     | Order No.                       |                                 |  |
| 480 V 3 AC line voltage, Servo/Vector Control            |                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                      |                                            |                                                 |                          |                                 |                                 |  |
| 600                                                      | 280             | 95/127.4                 | 1519/1119.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 144                  | 480                  | 2200                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7284-■ ■ B ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 120/160.9                | 1916/1412.1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 180                  | 480                  | 2200                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7286-■ ■ B ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 155/207.9                | 2467/1818.2                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 233                  | 480                  | 2200                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7288-■ ■ B ■ ■ - 0 ...       |                                 |  |
| 1000                                                     | 280             | 150/201.2                | 1433/1056.1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 220                  | 480                  | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ C ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 185/248.1                | 1767/1302.3                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 285                  | 480                  | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ C ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 230/308.4                | 2197/1619.2                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 365                  | 460                  | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ C ■ ■ - 0 ...       |                                 |  |
| 1350                                                     | 280             | 200/268.2                | 1416/1043.6                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 314                  | 470                  | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ D ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 245/328.6                | 1733/1277.2                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 414                  | 445                  | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ D ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 305/409.0                | 2158/1590.4                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 497                  | 450                  | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ D ■ ■ - 0 ...       |                                 |  |
| 2000                                                     | 280             | 255/342.0                | 1218/897.7                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 393                  | 455                  | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ F ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 310/415.7                | 1481/1091.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 466                  | 455                  | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ F ■ ■ - 0 ...       |                                 |  |
|                                                          |                 | 385/516.3                | 1838/1354.6                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 586                  | 455                  | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ F ■ ■ - 0 ...       |                                 |  |
| Fans <sup>4)</sup> :                                     |                 |                          | External fan unit, NDE at top, air-flow direction NDE to DE<br>External fan unit, NDE on right, air-flow direction NDE to DE<br>External fan unit, NDE on left, air-flow direction NDE to DE<br>External fan unit, DE at top, air-flow direction DE to NDE<br>External fan unit, DE on right, air-flow direction DE to NDE<br>External fan unit, DE on left, air-flow direction DE to NDE<br>Without external fan unit, for single pipe connection at NDE on right |                      |                      |                                            |                                                 |                          | 0<br>1<br>2<br>3<br>4<br>5<br>6 |                                 |  |
| Encoder systems for motors without DRIVE-CLiQ interface: |                 |                          | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                   |                      |                      |                                            |                                                 |                          |                                 | A<br>E<br>H<br>J<br>M<br>N<br>R |  |
| Encoder systems for motors with DRIVE-CLiQ interface:    |                 |                          | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                                                                                                                                          |                      |                      |                                            |                                                 |                          |                                 | F<br>D<br>Q<br>P                |  |
| Terminal box/cable entry (view onto DE) <sup>4)</sup> :  |                 |                          | NDE right/from below/encoder connector DE<br>NDE left/from below/encoder connector DE<br>NDE top/from right/encoder connector DE<br>DE top/from right/encoder connector NDE                                                                                                                                                                                                                                                                                        |                      |                      |                                            |                                                 |                          |                                 | 0<br>1<br>2<br>5                |  |
| Type <sup>4)</sup> :                                     |                 |                          | IM B3<br>IM V5 (can be subsequently modified to IM V6)<br>IM B35 (with flange A660)<br>IM V15 (with flange A 660; can be subsequently modified to IM V36)                                                                                                                                                                                                                                                                                                          |                      |                      |                                            |                                                 |                          |                                 | 0<br>1<br>3<br>5                |  |

#### Selection and ordering data

| Power factor                                  | Magnetizing current | Efficiency                                                                   | Rated frequency          | Moment of inertia of                                        | Weight, approx. | 1PH7 asynchronous motor    | SINAMICS S120 Motor Module<br>Rated output current |                    |  |
|-----------------------------------------------|---------------------|------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------|-----------------|----------------------------|----------------------------------------------------|--------------------|--|
| cos φ                                         | $I_{\mu}$<br>A      | $\eta_{\text{rated}}$                                                        | $f_{\text{rated}}$<br>Hz | $J$<br>kgm <sup>2</sup> /lb <sub>F</sub> -in-s <sup>2</sup> | kg/lb           | Order No.                  | $I_{\text{rated}}$<br>A                            | Order No.          |  |
| 480 V 3 AC line voltage, Servo/Vector Control |                     |                                                                              |                          |                                                             |                 |                            |                                                    |                    |  |
| 0.86                                          | 61                  | 0.932                                                                        | 20.3                     | 4.2/37.173                                                  | 1300/2866.5     | 1PH7284- . . B . . -0 ■■■■ | 200                                                | 6SL3120-1TE32-0AA0 |  |
| 0.86                                          | 80                  | 0.939                                                                        | 20.3                     | 5.2/46.02                                                   | 1500/3307.5     | 1PH7286- . . B . . -0 ■■■■ | 200                                                | 6SL3120-1TE32-0AA0 |  |
| 0.86                                          | 102                 | 0.941                                                                        | 20.3                     | 6.3/55.76                                                   | 1700/3748.5     | 1PH7288- . . B . . -0 ■■■■ | 260                                                | 6SL3320-1TE32-6AA0 |  |
| 0.86                                          | 90                  | 0.950                                                                        | 34                       | 4.2/37.173                                                  | 1300/2866.5     | 1PH7284- . . C . . -0 ■■■■ | 260                                                | 6SL3320-1TE32-6AA0 |  |
| 0.84                                          | 135                 | 0.954                                                                        | 34                       | 5.2/46.02                                                   | 1500/3307.5     | 1PH7286- . . C . . -0 ■■■■ | 310                                                | 6SL3320-1TE33-1AA0 |  |
| 0.84                                          | 170                 | 0.956                                                                        | 34                       | 6.3/55.76                                                   | 1700/3748.5     | 1PH7288- . . C . . -0 ■■■■ | 380                                                | 6SL3320-1TE33-8AA0 |  |
| 0.82                                          | 159                 | 0.958                                                                        | 45.3                     | 4.2/37.173                                                  | 1300/2866.5     | 1PH7284- . . D . . -0 ■■■■ | 310 <sup>5)</sup>                                  | 6SL3320-1TE33-1AA0 |  |
| 0.80                                          | 217                 | 0.960                                                                        | 45.3                     | 5.2/46.02                                                   | 1500/3307.5     | 1PH7286- . . D . . -0 ■■■■ | 490                                                | 6SL3320-1TE35-0AA0 |  |
| 0.82                                          | 250                 | 0.962                                                                        | 45.3                     | 6.3/55.76                                                   | 1700/3748.5     | 1PH7288- . . D . . -0 ■■■■ | 490 <sup>5)</sup>                                  | 6SL3320-1TE35-0AA0 |  |
| 0.86                                          | 162                 | 0.962                                                                        | 67                       | 4.2/37.173                                                  | 1300/2866.5     | 1PH7284- . . F . . -0 ■■■■ | 490                                                | 6SL3320-1TE35-0AA0 |  |
| 0.87                                          | 182                 | 0.964                                                                        | 67                       | 5.2/46.02                                                   | 1500/3307.5     | 1PH7286- . . F . . -0 ■■■■ | 490                                                | 6SL3320-1TE35-0AA0 |  |
| 0.87                                          | 232                 | 0.965                                                                        | 67                       | 6.3/55.76                                                   | 1700/3748.5     | 1PH7288- . . F . . -0 ■■■■ | 605                                                | 6SL3320-1TE36-1AA0 |  |
| Output type <sup>4)</sup> :                   |                     | Vibration severity grade:                                                    |                          | Shaft and flange accuracy:                                  |                 |                            | A<br>B<br>E<br>F                                   |                    |  |
| Coupling                                      |                     | N                                                                            |                          | N                                                           |                 |                            |                                                    |                    |  |
| Coupling                                      |                     | R                                                                            |                          | R                                                           |                 |                            |                                                    |                    |  |
| Belt/increased cantilever forces              |                     | N                                                                            |                          | N                                                           |                 |                            |                                                    |                    |  |
| Belt/increased cantilever forces              |                     | R                                                                            |                          | R                                                           |                 |                            | A<br>C<br>J                                        |                    |  |
| Shaft extension (DE):                         |                     | Balancing:                                                                   |                          |                                                             |                 |                            |                                                    |                    |  |
| Fitted key                                    |                     | Half-key                                                                     |                          |                                                             |                 |                            |                                                    |                    |  |
| Fitted key                                    |                     | Full-key                                                                     |                          |                                                             |                 |                            |                                                    |                    |  |
| Plain shaft                                   |                     | –                                                                            |                          |                                                             |                 |                            | 0<br>3<br>6                                        |                    |  |
| Paint finish:                                 |                     |                                                                              |                          |                                                             |                 |                            |                                                    |                    |  |
| Primed                                        |                     |                                                                              |                          |                                                             |                 |                            |                                                    |                    |  |
| Anthracite (RAL 7016), standard paint finish  |                     |                                                                              |                          |                                                             |                 |                            |                                                    |                    |  |
| Anthracite (RAL 7016), special paint finish   |                     |                                                                              |                          |                                                             |                 |                            |                                                    | –Z                 |  |
| Special versions:                             |                     | Specify supplementary order code and plain text if applicable (see Options). |                          |                                                             |                 |                            |                                                    |                    |  |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.
- <sup>4)</sup> See Table "Permissible combinations of mechanical designs".

- <sup>5)</sup> The rated output current of the Motor Module is lower than the motor rated current.
- <sup>6)</sup> Only in conjunction with option **M84** (insulated version of encoder).
- <sup>7)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.



## AC motors

### Asynchronous motors

## 1PH7 motors

## Selection and ordering data

| Rated speed                                              | Shaft height SH | Rated power                 | Rated torque                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Rated current           | Rated voltage           | Speed during field weakening <sup>1)</sup> | Max. permissible continuous speed <sup>2)</sup> | Max. speed <sup>3)</sup> | Asynchronmotor 1PH7             |  |  |
|----------------------------------------------------------|-----------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|--------------------------------------------|-------------------------------------------------|--------------------------|---------------------------------|--|--|
| $n_{\text{rated}}$<br>rpm                                |                 | $P_{\text{rated}}$<br>kW/HP | $M_{\text{rated}}$<br>Nm/lb <sub>f</sub> -ft                                                                                                                                                                                                                                                                                                                                                                                                                       | $I_{\text{rated}}$<br>A | $V_{\text{rated}}$<br>V | $n_2$<br>rpm                               | $n_{S1}$<br>rpm                                 | $n_{\text{max}}$<br>rpm  | Order No.                       |  |  |
| 690 V 3 AC line voltage, Servo/Vector Control            |                 |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                         |                                            |                                                 |                          |                                 |  |  |
| 500                                                      | 280             | 77/103.3                    | 1471/1084.1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 80                      | 690                     | 1700                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7284-■ ■ B ■ ■ - 0 ...       |  |  |
|                                                          |                 | 96/128.7                    | 1834/1351.7                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 101                     | 690                     | 1800                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7286-■ ■ B ■ ■ - 0 ...       |  |  |
|                                                          |                 | 125/167.6                   | 2388/1760                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 130                     | 690                     | 1900                                       | 2200                                            | 3300 <sup>7)</sup>       | 1PH7288-■ ■ B ■ ■ - 0 ...       |  |  |
| 800                                                      | 280             | 115/154.2                   | 1373/1011.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 120                     | 690                     | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ C ■ ■ - 0 ...       |  |  |
|                                                          |                 | 145/194.5                   | 1731/1275.7                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 160                     | 665                     | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ C ■ ■ - 0 ...       |  |  |
|                                                          |                 | 185/248.1                   | 2208/1627.3                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 210                     | 640                     | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ C ■ ■ - 0 ...       |  |  |
| 1150                                                     | 280             | 164/219.9                   | 1362/1003.8                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 176                     | 690                     | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ D ■ ■ - 0 ...       |  |  |
|                                                          |                 | 203/272.2                   | 1686/1242.6                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 233                     | 655                     | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ D ■ ■ - 0 ...       |  |  |
|                                                          |                 | 251/336.6                   | 2084/1535.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 280                     | 665                     | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ D ■ ■ - 0 ...       |  |  |
| 1750                                                     | 280             | 217/291.0                   | 1184/872.6                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 221                     | 690                     | 2200                                       | 2200                                            | 3300                     | 1PH7284-■ ■ F ■ ■ - 0 ...       |  |  |
|                                                          |                 | 261/350.0                   | 1424/1049.5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 262                     | 690                     | 2200                                       | 2200                                            | 3300                     | 1PH7286-■ ■ F ■ ■ - 0 ...       |  |  |
|                                                          |                 | 329/441.2                   | 1795/1322.9                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 330                     | 690                     | 2200                                       | 2200                                            | 3300                     | 1PH7288-■ ■ F ■ ■ - 0 ...       |  |  |
| Fans <sup>4)</sup> :                                     |                 |                             | External fan unit, NDE at top, air-flow direction NDE to DE<br>External fan unit, NDE on right, air-flow direction NDE to DE<br>External fan unit, NDE on left, air-flow direction NDE to DE<br>External fan unit, DE at top, air-flow direction DE to NDE<br>External fan unit, DE on right, air-flow direction DE to NDE<br>External fan unit, DE on left, air-flow direction DE to NDE<br>Without external fan unit, for single pipe connection at NDE on right |                         |                         |                                            |                                                 |                          | 0<br>1<br>2<br>3<br>4<br>5<br>6 |  |  |
| Encoder systems for motors without DRIVE-CLiQ interface: |                 |                             | Without encoder<br>Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder HTL 1024 pulses/revolution<br>Incremental encoder HTL 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                   |                         |                         |                                            |                                                 |                          | A<br>E<br>H<br>J<br>M<br>N<br>R |  |  |
| Encoder systems for motors with DRIVE-CLiQ interface:    |                 |                             | Absolute encoder EnDat 2048 pulses/revolution<br>Incremental encoder sin/cos 1 V <sub>pp</sub> with C and D tracks <sup>6)</sup><br>Incremental encoder sin/cos 1 V <sub>pp</sub> without C and D tracks <sup>6)</sup><br>2-pole resolver                                                                                                                                                                                                                          |                         |                         |                                            |                                                 |                          | F<br>D<br>Q<br>P                |  |  |
| Terminal box/cable entry (view onto DE) <sup>4)</sup> :  |                 |                             | NDE on right/from below/encoder connector DE<br>NDE on left/from below/encoder connector DE<br>NDE at top/from right/encoder connector DE<br>DE at top/from right/encoder connector NDE                                                                                                                                                                                                                                                                            |                         |                         |                                            |                                                 |                          | 0<br>1<br>2<br>5                |  |  |
| Type <sup>4)</sup> :                                     |                 |                             | IM B3<br>IM V5 (can be subsequently modified to IM V6)<br>IM B35 (with flange A660)<br>IM V15 (with flange A 660; can be subsequently modified to IM V36)                                                                                                                                                                                                                                                                                                          |                         |                         |                                            |                                                 |                          | 0<br>1<br>3<br>5                |  |  |

#### Selection and ordering data

| Power factor                                                                 | Magnetizing current | Efficiency                | Rated frequency    | Moment of inertia of                                     | Weight approx. | 1PH7 asynchronous motor    | SINAMICS S120 Motor Module |                     |
|------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|----------------------------------------------------------|----------------|----------------------------|----------------------------|---------------------|
|                                                                              | $I_{\mu}$           | $\eta_{\text{rated}}$     | $f_{\text{rated}}$ | $J$                                                      |                |                            | Rated output current       |                     |
| $\cos \varphi$                                                               | A                   |                           | Hz                 | kgm <sup>2</sup> /<br>lb <sub>r</sub> -in-s <sup>2</sup> | kg/lb          | Order No.                  | $I_{\text{rated}}$<br>A    | Order No.           |
| 690 V 3 AC line voltage, Servo/Vector Control                                |                     |                           |                    |                                                          |                |                            |                            |                     |
| 0.87                                                                         | 34                  | 0.923                     | 17                 | 4.2/37.173                                               | 1300/2866.5    | 1PH7284- . . B . . -0 ■■■■ | 85                         | 6SL3320-1 TH28-5AA0 |
| 0.86                                                                         | 45                  | 0.927                     | 17                 | 5.2/46.02                                                | 1500/3307.5    | 1PH7286- . . B . . -0 ■■■■ | 100 <sup>5)</sup>          | 6SL3320-1 TH31-0AA0 |
| 0.86                                                                         | 57                  | 0.930                     | 17                 | 6.3/55.76                                                | 1700/3748.5    | 1PH7288- . . B . . -0 ■■■■ | 150                        | 6SL3320-1 TH31-5AA0 |
| 0.85                                                                         | 55                  | 0.943                     | 27                 | 4.2/37.173                                               | 1300/2866.5    | 1PH7284- . . C . . -0 ■■■■ | 120                        | 6SL3320-1 TH31-2AA0 |
| 0.84                                                                         | 80                  | 0.947                     | 27                 | 5.2/46.02                                                | 1500/3307.5    | 1PH7286- . . C . . -0 ■■■■ | 175                        | 6SL3320-1 TH31-8AA0 |
| 0.84                                                                         | 100                 | 0.950                     | 27                 | 6.3/55.76                                                | 1700/3748.5    | 1PH7288- . . C . . -0 ■■■■ | 215                        | 6SL3320-1 TH32-2AA0 |
| 0.81                                                                         | 91                  | 0.955                     | 38.6               | 4.2/37.173                                               | 1300/2866.5    | 1PH7284- . . D . . -0 ■■■■ | 175 <sup>5)</sup>          | 6SL3320-1 TH31-8AA0 |
| 0.80                                                                         | 125                 | 0.957                     | 38.6               | 5.2/46.02                                                | 1500/3307.5    | 1PH7286- . . D . . -0 ■■■■ | 260                        | 6SL3320-1 TH32-6AA0 |
| 0.81                                                                         | 145                 | 0.959                     | 38.6               | 6.3/55.76                                                | 1700/3748.5    | 1PH7288- . . D . . -0 ■■■■ | 330                        | 6SL3320-1 TH33-3AA0 |
| 0.86                                                                         | 94                  | 0.961                     | 58.7               | 4.2/37.173                                               | 1300/2866.5    | 1PH7284- . . F . . -0 ■■■■ | 260                        | 6SL3320-1 TH32-6AA0 |
| 0.87                                                                         | 105                 | 0.963                     | 58.7               | 5.2/46.02                                                | 1500/3307.5    | 1PH7286- . . F . . -0 ■■■■ | 260 <sup>5)</sup>          | 6SL3320-1 TH32-6AA0 |
| 0.86                                                                         | 134                 | 0.964                     | 58.7               | 6.3/55.76                                                | 1700/3748.5    | 1PH7288- . . F . . -0 ■■■■ | 330                        | 6SL3320-1 TH33-3AA0 |
| Output type <sup>4)</sup> :                                                  |                     | Vibration severity grade: |                    | Shaft and flange accuracy:                               |                | A<br>B<br>E<br>F           |                            |                     |
| Coupling                                                                     |                     | N                         |                    | N                                                        |                |                            |                            |                     |
| Coupling                                                                     |                     | R                         |                    | R                                                        |                |                            |                            |                     |
| Belt/incr. cantilever forces                                                 |                     | N                         |                    | N                                                        |                |                            |                            |                     |
| Belt/incr. cantilever forces                                                 |                     | R                         |                    | R                                                        |                | A<br>C<br>J                |                            |                     |
| Shaft extension:                                                             |                     | Balancing:                |                    |                                                          |                |                            |                            |                     |
| Fitted key                                                                   |                     | Half-key                  |                    |                                                          |                |                            |                            |                     |
| Fitted key                                                                   |                     | Full-key                  |                    |                                                          |                |                            |                            |                     |
| Plain shaft                                                                  |                     | –                         |                    |                                                          |                | 0<br>3<br>6                |                            |                     |
| Paint finish:                                                                |                     |                           |                    |                                                          |                |                            |                            |                     |
| Primed                                                                       |                     |                           |                    |                                                          |                |                            |                            |                     |
| Anthracite (RAL 7016), standard paint finish                                 |                     |                           |                    |                                                          |                |                            |                            |                     |
| Anthracite (RAL 7016), special paint finish                                  |                     |                           |                    |                                                          |                |                            |                            |                     |
| Special versions:                                                            |                     |                           |                    |                                                          |                |                            |                            |                     |
| Specify supplementary order code and plain text if applicable (see Options). |                     |                           |                    |                                                          |                |                            |                            |                     |
| C30 absolutely essential                                                     |                     |                           |                    |                                                          |                |                            |                            |                     |
|                                                                              |                     |                           |                    |                                                          |                | –Z                         |                            |                     |

- <sup>1)</sup>  $n_2$ : Max. permissible thermal speed at constant output or speed, which is at the voltage limit when  $P = P_{\text{rated}}$ .
- <sup>2)</sup>  $n_{S1}$ : Max. permissible speed that is continuously permitted without speed duty cycles.
- <sup>3)</sup>  $n_{\text{max}}$ : Maximum speed which must not be exceeded.

- <sup>4)</sup> See Table "Permissible combinations of mechanical designs".
- <sup>5)</sup> The rated output current is lower than the motor rated current.
- <sup>6)</sup> Only in conjunction with option **M84** (insulated version of encoder).
- <sup>7)</sup> Speed is limited to lower values in some cases. The following restriction applies: Max. output frequency < 5 × motor rated frequency.

## AC motors

### Asynchronous motors

### Permissible combinations of mechanical designs for 1PH7 motors, shaft height 280

## Selection and ordering data

### Permissible combinations of mechanical designs

|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------------|------------------------------|--------------------------------------------------------------------------------------------------|
| 1PH7 28 . motors<br>Shaft height 280<br><br>Position in<br>order No.   8. 9. 10. 11. 12.   13. 14. 15. 16.<br>1PH728 . - ■ . . . ■ ■ - . ■ . . . | Permissible combinations of mechanical designs                                   |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  | External fan unit<br>8th position in order no.<br>1PH728 . - ■ . . . . - . . . . |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  | Order No. supplement                                                             |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  | 0                                                                                | 1                              | 2                             | 3                           | 4                             | 5                            | 6                                                                                                |
|                                                                                                                                                  | NDE<br>at top<br>NDE →<br>DE                                                     | NDE<br>on right<br>NDE →<br>DE | NDE<br>on left<br>NDE →<br>DE | DE<br>at top<br>DE →<br>NDE | DE<br>on right<br>DE →<br>NDE | DE<br>on left<br>DE →<br>NDE | Single pipe<br>connection<br>NDE on right<br>(can be<br>modified<br>subsequently<br>to NDE left) |
| 1PH728 . - . . . . 0 - . . . . . Type of construction IM B3                                                                                      |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| 1PH728 . - . . . . 1 - . . . . . Type of construction IM V5<br>(can be modified<br>subsequently to IM V6)                                        |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| 1PH728 . - . . . . 3 - . . . . . Type of construction IM B35                                                                                     |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| 1PH728 . - . . . . 5 - . . . . . Type construction IM V15<br>(can be modified<br>subsequently to IM V 36)                                        |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
|                                                                                                                                                  |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| Order codes for options                                                                                                                          |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| R1Y Standard finish RAL ...                                                                                                                      |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| R2Y Special finish RAL ...                                                                                                                       |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| G14 With air filter                                                                                                                              |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K08 Encoder connector mounted opposite                                                                                                           |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K55 Cable entry plate, terminal box, customer-specific <sup>1)</sup>                                                                             |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K83 Terminal box rotated through +90 degrees                                                                                                     |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K84 Terminal box rotated through -90 degrees                                                                                                     |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K85 Terminal box rotated through 180 degrees                                                                                                     |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K16 Second standard shaft extension<br>(possible only for encoderless systems)                                                                   |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K31 Second rating plate                                                                                                                          |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| K45 230 V anti-condensation heating                                                                                                              |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| C30 690 V version                                                                                                                                |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| Y55 Non-standard shaft extension DE                                                                                                              |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| Y80 Different rating plate data <sup>1)</sup>                                                                                                    |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| Y82 Extra rating plate with customer data <sup>1)</sup>                                                                                          |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |
| M83 Additional thread for a setting screw on motor feet                                                                                          |                                                                                  |                                |                               |                             |                               |                              |                                                                                                  |

1) Plain text is necessary

Standard design

Released supplementary versions

### Permissible combinations of mechanical designs for 1PH7 motors, shaft height 280

[illegible]