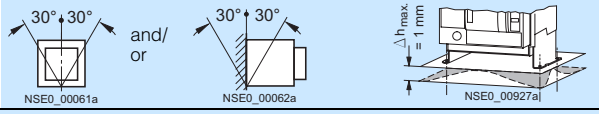
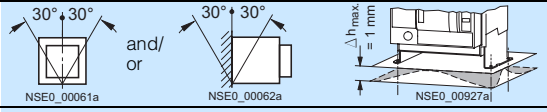
Technical specifications

Size		I		II			III
Type		**3WL11**		**3WL12**			**3WL13**
Switching capacity class		**N**	**S**	**N-type**	**NO**	**H**	**H**
Short-circuit breaking capacity							
Rated operational voltage U_e Up to 415 V AC							
I_{cu}	kA	50	65	55	80	100	100
I_{cs}	kA	50	65	55	80	100	100
I_{cm}	kA	105	143	121	176	220	220
Rated operational voltage U_e Up to 500 V AC							
I_{cu}	kA	50	65	55	80	100	100
I_{cs}	kA	50	65	55	80	100	100
I_{cm}	kA	105	143	121	176	220	220
Rated operational voltage U_e Up to 690 V AC							
I_{cu}	kA	42	50	50	75	85	85
I_{cs}	kA	42	50	50	75	85	85
I_{cm}	kA	88	105	105	165	187	187
Rated operational voltage U_e Up to 1000 V AC							
I_{cu}	kA	--	--	--	--	45	50
I_{cs}	kA	--	--	--	--	45	50
I_{cm}	kA	--	--	--	--	95	105
Rated short-time withstand current I_{cw} of the circuit breakers							
0.5 s	kA	42	65	55	80	85	85[3]/100[4]
1 s	kA	42	50	55	65	80	80[3]/100[4]
2 s	kA	29.5	35	39	46	50[1]/56[2]	56[3]/70[4]
3 s	kA	24	29	32	37	40[1]/50[2]	50[3]/57[4]
Short-circuit breaking capacity I_{cc} of the non-automatic air circuit breakers							
Up to 500 V AC	kA	42	65	55	80	100	100
Up to 690 V AC	kA	42	50	50	75	85	85

1) Size II with $I_{n\ max} \leq 2500$ A.
2) Size II with $I_{n\ max} = 3200$ A.
3) Size III with $I_{n\ max} \leq 5000$ A.
4) Size III with $I_{n\ max} = 6300$ A.

Size			I			II				
Type			**Up to 3WL11 10**	**3WL11 12**	**3WL11 16**	**3WL12 08**	**3WL12 10**	**3WL12 12**	**3WL12 16**	**3WL12 20**
Rated current I_n at 40 °C, at 50/60 Hz										
Main conductor		A	Up to 1000	1250	1600	800	1000	1250	1600	2000
Neutral conductor (only on 4-pole versions)		A	Up to 1000	1250	1600	800	1000	1250	1600	2000
Rated operational voltage U_e at 50/60 Hz (1000 V version, see Catalog LV 1, Options)		V AC	Up to 690	Up to 690	Up to 690	Up to 690/1000	Up to 690/1000	Up to 690/1000	Up to 690/1000	Up to 690/1000
Rated insulation voltage U_i		V AC	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp}										
• Main current paths		kV	12	12	12	12	12	12	12	12
• Auxiliary circuits		kV	4	4	4	4	4	4	4	4
• Control circuits		kV	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Isolating function to EN 60 947-2			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Utilization category			B							
Permissible ambient temperature										
• During operation (in operation with LCD max. 55 °C)[4]		°C	–25/+70	–25/+70	–25/+70	–25/+70	–25/+70	–25/+70	–25/+70	–25/+70
• During storage (special conditions for LCDs must be observed)		°C	–40/+70	–40/+70	–40/+70	–40/+70	–40/+70	–40/+70	–40/+70	–40/+70
Permissible load At rear horizontal main circuit connections	• Up to 55 °C (Cu bare)	A	1000	1250	1600	800	1000	1250	1600	2000
	• Up to 60 °C (Cu bare)[5]	A	1000	1250	1600	800	1000	1250	1600	2000
	• Up to 70 °C (Cu black painted)[5]	A	1000	1210	1490	800	1000	1250	1600	2000
Rated rotor operational voltage U_{er}		V	2000	2000	2000	2000	2000	2000	2000	2000
Power loss at I_n with AC symmetrical load										
• Fixed-mounted circuit breakers		W	100	105	150	40	45	80	85	180
• Withdrawable circuit breakers		W	195	205	350	85	95	165	175	320
Operating times										
• Make-time		ms	35	35	35	35	35	35	35	35
• Opening time		ms	38	38	38	34	34	34	34	34
• Electrical make-time (through activation solenoid)[2]		ms	80	80	80	100	100	100	100	100
• Electrical opening time (through shunt trip unit)		ms	73	73	73	73	73	73	73	73
• Electrical opening time (instantaneous undervoltage trip unit)		ms	73	73	73	73	73	73	73	73
• Opening time due to ETU, instantaneous short-circuit release		ms	50[1]	50[1]	50[1]	50[1]	50[1]	50[1]	50[1]	50[1]
Endurance										
• Mechanical (without maintenance)		Operating cycles	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
• Mechanical (with maintenance)[3]		Operating cycles	20 000	20 000	20 000	15 000	15 000	15 000	15 000	15 000
• Electrical (without maintenance)		Operating cycles	10 000	10 000	10 000	7500	7500	7500	7500	7500
• 1000 V version		Operating cycles	--	--	--	1000	1000	1000	1000	1000
• Electrical (with maintenance)[3]		Operating cycles	20 000	20 000	20 000	15 000	15 000	15 000	15 000	15 000
Switching frequency										
• 690 V version		1/h	60	60	60	60	60	60	60	60
• 1000 V version		1/h	--	--	--	20	20	20	20	20
Minimum interval between tripping operation by electronic trip unit and next making operation of the circuit breaker (only with autom. mechanical resetting of the lockout device)		ms	80	80	80	80	80	80	80	80
Mounting position										
Degree of protection			IP20 without cabinet door, IP41 with door sealing frame, IP55 with cover							
Main conductor minimum cross-sections	• Copper bars, bare	Unit(s) mm²	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	3 × 50 × 10
	• Copper bars, painted black	Unit(s) mm²	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	3 × 50 × 10
Auxiliary conductors (Cu) Max. number of auxiliary conductors × cross-section (solid/stranded)	Standard connection = strain-relief clamp									
	• Without end sleeve		2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16); 1 × 2.5 mm² (AWG 14)							
	• With end sleeve acc. to DIN 46228 Part 2		1 × 0.5 mm² (AWG 20) ... 1 × 1.5 mm² (AWG 16)							
	• With twin end sleeve		2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16)							
	Optional connection = tension spring									
	• Without end sleeve									
	• Without end sleeve acc. to DIN 46228 Part 2		2 × 0.5 mm² (AWG 20) ... 2 × 2.5 mm² (AWG 14) 2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16)							
Position indicator switches	Tension spring terminals		1 × 0.5 mm² (AWG 20) ... 1 × 2.5 mm² (AWG 14)							
Weights 3-pole	• Fixed-mounted circuit breakers	kg	43	43	43	56	56	56	56	56
	• Withdrawable circuit breakers	kg	45	45	45	60	60	60	60	60
	• Guide frame	kg	25	25	25	31	31	31	31	31
4-pole	• Fixed-mounted circuit breakers	kg	50	50	50	67	67	67	67	67
	• Withdrawable circuit breakers	kg	54	54	54	72	72	72	72	72
	• Guide frames	kg	30	30	30	37	37	37	37	37

1) Opening time on instantaneous short-circuit release with ETU15B = 85 ms.
2) Make-time through activation solenoid for synchronization purposes (short-time excited) 50 ms.
3) Maintenance means: replace main contact elements and arc chutes (see Operator's Guide).
4) Use of trip units from –20 °C.
5) ETU76B with graphics display can be used up to max. 55 °C.

Size			II		III		
Type			**3WL12 25**	**3WL12 32**	**3WL13 40**	**3WL13 50**	**3WL13 63**
Rated current I_n at 40 °C, at 50/60 Hz							
Main conductors		A	2500	3200	4000	5000	6300
Neutral conductor (only on 4-pole versions)		A	2500	3200	4000	5000	6300
Rated operational voltage U_e at 50/60 Hz		V AC	Up to 690/1000	Up to 690/1000	Up to 690/1000	Up to 690/1000	Up to 690/1000
(1000 V version, see Catalog LV 1, Options)							
Rated insulation voltage U_i		V AC	1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp}							
• Main current paths		kV	12	12	12	12	12
• Auxiliary circuits		kV	4	4	4	4	4
• Control circuits		kV	2.5	2.5	2.5	2.5	2.5
Isolating function to EN 60947-2			Yes	Yes	Yes	Yes	Yes
Utilization category			B (except switching capacity class DC)				
Permissible ambient temperature							
• During operation (in operation with LCD max. 55 °C)[4]		°C	–25/+70	–25/+70	–25/+70	–25/+70	–25/+70
• During storage (special conditions for LCDs must be observed)		°C	–40/+70	–40/+70	–40/+70	–40/+70	–40/+70
Permissible load	• Up to 55 °C (Cu bare)	A	2500	3200	4000	5000	5920
	• Up to 60 °C (Cu bare)[5]	A	2500	3020	4000	5000	5810
	• Up to 70 °C (Cu black painted)[5]	A	2280	2870	4000	5000	5500
Rated rotor operational voltage U_{er}		V	2000	2000	2000	2000	2000
Power loss at I_n							
with AC symmetrical load							
• Fixed-mounted circuit breakers		W	270	410	520	630	900
• Withdrawable circuit breakers		W	520	710	810	1050	1600
Operating times							
• Make-time		ms	35	35	35	35	35
• Opening time		ms	34	34	34	34	34
• Electrical make-time (through activation solenoid)[2]		ms	100	100	100	100	100
• Electrical opening time (through shunt trip unit)		ms	73	73	73	73	73
• Electrical opening time (instantaneous undervoltage trip unit)		ms	73	73	73	73	73
• Opening time due to ETU, instantaneous short-circuit release		ms	50[1]	50[1]	50	50	50
Endurance							
• Mechanical (without maintenance)		Operating cycles	10000	10000	5000	5000	5000
• Mechanical (with maintenance)[3]		Operating cycles	15000	15000	10000	10000	10000
• Electrical (without maintenance)		Operating cycles	7500	4000	2000	2000	2000
• 1000 V version		Operating cycles	1000	1000	1000	1000	1000
• Electrical (with maintenance)[3]		Operating cycles	15000	15000	10000	10000	10000
Switching frequency							
• 690 V version		1/h	60	60	60	60	60
• 1000 V version		1/h	20	20	20	20	20
Minimum interval between tripping operation by electronic trip unit and next making operation of the circuit breaker (only with automatical mechanical resetting of the lockout device)		ms	80	80	80	80	80
Mounting position							
Degree of protection			IP20 without cabinet door, IP41 with door sealing frame, IP55 with cover				
Main conductor minimum cross-sections	• Copper bars, bare	Unit(s) mm²	2 × 100 × 10	3 × 100 × 10	4 × 100 x 10	6 x 100 x 10	6 x 120 x 10
	• Copper bars, painted black	Unit(s) mm²	2 × 100 × 10	3 × 100 × 10	4 × 100 × 10	6 × 100 × 10	6 × 120 × 10
Auxiliary conductors (Cu) Max. no. of auxiliary conductors × cross-section (solid/stranded)	Standard connection = strain-relief clamp						
	• Without end sleeve		2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16); 1 × 2.5 mm² (AWG 14)				
	• With end sleeve according to DIN 46228 Part 2		1 × 0.5 mm² (AWG 20) ... 1 × 1.5 mm² (AWG 16)				
	• With twin end sleeve		2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16)				
	Optional connection = tension spring						
	• Without end sleeve		2 × 0.5 mm² (AWG 20) ... 2 × 2.5 mm² (AWG 14)				
	• With end sleeve acc. DIN 46228 Part 2		2 × 0.5 mm² (AWG 20) ... 2 × 1.5 mm² (AWG 16)				
Position indicator switches	Tension spring terminals		1 × 0.5 mm² (AWG 20) ... 1 × 2.5 mm² (AWG 14)				
Weights 3-pole	• Fixed-mounted circuit breakers	kg	59	64	82	82	90
	• Withdrawable circuit breakers	kg	63	68	88	88	96
	• Guide frames	kg	39	45	60	60	70
4-pole	• Fixed-mounted circuit breakers	kg	71	77	99	99	108
	• Withdrawable circuit breakers	kg	76	82	106	106	108
	• Guide frames	kg	47	54	84	84	119

1) Opening time on instantaneous short-circuit release with ETU15B = 85 ms.

2) Make-time through activation solenoid for synchronization purposes (short-time excited) 50 ms.

3) Maintenance means: replace main contact elements and arc chutes (see Operator's Guide).

4) Use of trip units from –20 °C

5) ETU76B with graphics display can be used up to max. 55 °C.

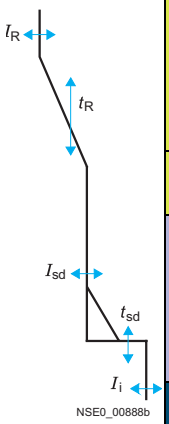
Size					**I to III**
Type					**3WL1**
Manual operating mechanism with mechanical closing					
Closing/Charging stored-energy feature	Max. force required to operate the hand lever Required number of strokes on the hand lever			N	≤ 230 9
Manual operating mechanism with mechanical and electrical closing					
Charging stored-energy feature					
Closing solenoid (CC)	• Operating range				0.85 ... 1.1 × U_s
	• Extended operating range for battery operation		For 24 V DC, 48 V DC 60 V DC, 110 V DC 220 V DC		0.7 ... 1.26 × U_s
	• Power consumption		AC/DC	VA/W	15/15
	• Minimum command duration at U_s for the closing solenoid			ms	60
	• Short-circuit protection Smallest permissible DIAZED fuse (gL operational class)/ miniature circuit breaker with C characteristic				1 A TDz (slow)/1 A
Manual/motorized operating mechanism with mechanical and electrical closing					
Manual operating mechanism					For data see above.
Motor	• Operating range				0.85 ... 1.1 × U_s
	• Extended operating range for battery operation		For 24 V DC, 48 V DC 60 V DC, 110 V DC 220 V DC		0.7 ... 1.26 × U_s
	• Power consumption of motor		AC/DC	VA/W	110/110
	• Time required to charge the stored-energy mechanism at 1 × U_s			s	≤ 10
Closing solenoid					For data see above.
For motor and closing solenoid	• Short-circuit protection Motor and closing solenoid for the same rated control supply voltages				2 A TDz (slow)/1 A
	• Smallest permissible DIAZED fuse (gL operational class)/ miniature circuit breaker with C characteristic (for different rated control supply voltages)		At U_s = 24 ... 30 V At U_s = 48 ... 60 V At U_s = 110 ... 127 V At U_s = 208 ... 240 V		2 A 2 A 1 A 1 A
Electronic trip unit signals					
Measuring accuracy of the electronic trip unit					Protection functions according to EN 60947; current indication ≤ 10 %; Measurement function base quantities ≤ 1 %; Measurement function derived quantities ≤ 4 %
Auxiliary trip units					
Shunt trip unit (ST) (F1, F2)	• For continuous command (100 % ON period), locks out on momentary-contact commands	- Response value	Pickup		> 0.7 × U_s (circuit breaker is tripped)
		- Operating range			0.85 ... 1.1 × U_s
		- Extended operating range for battery operation	For 24 V DC, 48 V DC 60 V DC, 110 V DC 220 V DC		0.7 ... 1.26 × U_s
		• Rated control supply voltage U_s	AC 50/60 Hz DC	V V	110; 230 24; 30; 48; 60; 110; 220
		• Power consumption	AC/DC	VA/W	15/15
		• Minimum command duration at U_s		ms	60
		• Opening time of circuit breaker at U_s = 100 %	AC/DC	ms	80
		• Short-circuit protection Smallest permissible DIAZED fuse (gL operational class)/ miniature circuit breaker with C characteristic			1 A TDz (slow)/1 A
	• With stored energy feature consisting of shunt trip unit and capacitor storage device	- Rated control supply voltage U_s	AC 50/60 Hz DC	V V	110; 230 110; 220
		- Operating range			0.85 ... 1.1 × U_s
		- Power consumption	AC/DC	VA/W	1/1
		- Storage time at U_s/recharging time at U_s			Max. 5 min/min. 5 s
		- Opening time of circuit breaker, short-circuit protection			As with "for continuous command"

Size				**I to III**	
Type				**3WL1**	
Auxiliary trip units					
Undervoltage trip units UVR (F3) and UVR-t_d (F4)	• Response values	Pickup Dropout		≥ 0.85 × U_s (circuit breaker can be closed) 0.35 ... 0.7× U_s (circuit breaker is tripped)	
	• Operating range			0.85 ... 1.1	
	• Extended operating range for battery operation	At 24 V DC, 30 V DC, 48 V DC, 110 V DC, 220 V DC		0.85 ... 1.26	
	• Rated control supply voltage U_s	AC 50/60 Hz DC	V V	110 ... 127/208 ... 240/380 ... 415 24/30/48/60/110/220 ... 250[1]	
	• Power consumption (pickup/continuous duty)	AC DC	VA W	20/5 20/5	
	• Opening time of circuit breaker at U_s = 0 - Version UVR (F3) Without delay With delay - Version UVR-t_d (F8) With delay, t_d = 0.2 to 3.2 s Reset through additional NC contact – direct switching-off		ms ms ms s ms	200 80 200 0.2 ... 3.2 ≤ 100	
	• Short-circuit protection Smallest permissible DIAZED fuse (gL operational class)/ miniature circuit breaker with C characteristic			1 A TDz (slow) 1 A	
Contact position-driven auxiliary switches (S1, S2, S3, S4, S7, S8)					
Rated insulation voltage U_i			V AC/DC	500	
Rated operational voltage U_e			V AC/DC	500	
Switching capacity	• Alternating current 50/60 Hz	- Rated operational voltage U_e - Rated operational current I_e /AC-12 I_e/AC-15	V A A	24 ... 230 10 4	380/400 10 3	500 10 2
	• Direct current	- Rated operational voltage U_e - Rated operational current I_e/DC-12 I_e/DC-13	V A A	24 10 8	48 8 4	110 3.5 1.2	220 1 0.4
Short-circuit protection	• Largest permissible DIAZED fuse (gL operational class) • Largest permissible miniature circuit breaker with C characteristic			10 A TDz, 10 A Dz 10 A	
Ready-to-close signaling switch (S20) (according to DIN VDE 0630)					
Switching capacity	• Alternating current	- Rated operational voltage U_e - Rated operational current I_e	V A	250 8	
	• DC current	- Rated operational voltage U_e - Rated operational current I_e	V A	125 0.4	250 0.2
Short-circuit protection	Largest permissible DIAZED fuse (gL operational class)			2 A Dz (quick)	
Tripped switch	Signal duration after tripping			On req.	
Tripped signaling switch (S24) and alarm switch for auxiliary trip units (S22, S23) (acc. to DIN VDE 0630)					
Switching capacity	• Alternating current	- Rated operational voltage U_e - Rated operational current I_e/AC-12	V A	250 8	
	• DC current	- Rated operational voltage U_e - Rated operational current I_e/DC-12	V A	24 6	125 0.4	250 0.2
Short-circuit protection	Largest permissible DIAZED fuse (gL operational class)			6 A Dz (quick)	
Tripped switch	Signal duration after tripping			Until manual or electrical remote-controlled reset (option)	
Position indicator switch on guide frame					
Type of contact	• Signal:	- "Circuit breaker in connected position" - "Circuit breaker in test position" - "Circuit breaker in disconnected position"		3 W 2 W 1 W	or	1 W 1 W 1 W
Rated insulation voltage U_i			AC 50/60 Hz DC	V V	440 250
Rated operational voltage U_e			V	250	
Switching capacity	• Rated operational current I_e	- I_e/AC-12 - I_e/AC-15 - I_e/DC-12 - I_e/DC-13 - A 300 (AC) - R 300 (DC)		24 V 10 A, 110/127 V 10 A, 220/240 V 10 A, 320/440 V 10 A 220/240 V 4 A, 320/440 V 3 A, 24 V 10 A, 48 V 2.5 A, 220/240 V 0.2 A, 24 V 3.0 A, 220/240 V 0.1 A 120 V 6 A, 240 V 3 A 125 V 0.22 A, 250 V 0.11 A	
Short-circuit protection	• Largest permissible DIAZED fuse (gL operational class) • Largest permissible miniature circuit breaker with C characteristic			8 A TDz (slow) 8 A TDz (slow)	

[1] 24 V and 30 V only with undervoltage trip unit UVR (F3).

Functional overview of the electronic trip unit system

Protection functions Parameterization by		ETU15B D	ETU25B D	ETU27B D & S
	Overload protection Function can be switched on/off	✓ --	✓ --	✓ --
	Setting range $I_R = I_n \times$ ...	0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.9-1	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1
	Switchable overload protection (I^2t or I^4t dependent function)	--	--	--
	Setting range for time-lag class t_R at I^2t	10 s fixed	10 s fixed	10 s fixed
	Setting range for time-lag class t_R at I^4t	--	--	--
	Thermal image can be switched on/off	--	--	--
	Phase failure sensitivity	--	at t_{sd} = 20 ms (M)	at t_{sd} = 20 ms (M)
	Neutral conductor protection	--	--	✓
	Function can be switched on/off	--	--	✓
	N conductor setting range $I_N = I_n \times$ ...	--	--	1
	Short-time delayed short-circuit protection	--	✓	✓
	Function can be switched on/off	--	--	--
	Setting range $I_{sd} = I_n \times$ ...	--	1.25-1.5-2-2.5-3-4-6-8-10-12	1.25-1.5-2-2.5-3-4-6-8-10-12
	Setting range for delay time t_{sd}	--	0-M-100-200-300-400 ms	0-M-100-200-300-400 ms
	Switchable short-time delayed short-circuit protection (I^2t dependent function)	--	--	--
	Setting range for delay time t_{sd} at I^2t	--	--	--
	Zone Selective Interlocking function	--	--	--
	Instantaneous short-circuit protection	✓	✓	✓
	Function can be switched on/off	--	--	--
	Setting range $I_i = I_n \times$ ...	2-3-4-5-6-7-8	fixed for $I_i \geq 20 \times I_n$, max. 50 kA	fixed for $I_i \geq 20 \times I_n$, max. 50 kA
	Ground-fault protection	--	--	✓ fixed-mounted
	Tripping and alarm function	--	--	--
	Tripping function can be switched on/off	--	--	✓
	Alarm function can be switched on/off	--	--	--
	Detection of the ground-fault current through summation current formation, internal or external neutral conductor transformer	--	--	✓
	Detection of ground-fault current through external transformer	--	--	--
	Setting range of the operating current I_g for release	--	--	A-B-C-D-E
	Setting range of the operating current I_g for alarm	--	--	--
	Setting range of the delay time t_g	--	--	100-200-300-400-500 ms
	Switchable ground-fault protection characteristic curve (I^2t dependent function)	--	--	--
	Setting range for delay time t_g at I^2t	--	--	--
	Zone Selective Interlocking ground-fault protect. function	--	--	--
Parameter set switchover				
	Switchable between parameter set A and B	--	--	--
LCD				
	Alphanumeric LCD (4-line)	--	--	--
	Graphical LCD (24 V, external power supply required)	--	--	--
Communication				
	CubicleBUS integrated	--	--	--
	Communication-capable through PROFIBUS DP	--	--	--
Measurement function				
	Measurement-function capable with measurement function *Plus*	--	--	--
LED display				
	Electronic trip unit active	✓	✓	✓
	Alarm	✓	✓	✓
	ETU fault	✓	✓	✓
	L-release	--	✓	✓
	S-release	--	✓	✓
	I-release	--	✓	✓
	N-release	--	--	✓
	G-release	--	--	✓
	G-alarm	--	--	--
	Release through extended protection function	--	--	--
	Communication	--	--	--
Signals from signaling switches with external CubicleBUS **modules (relays)**				
	Overload warning	--	--	--
	Load shedding, load receiving	--	--	--
	Leading signal overload trip 200 ms	--	--	--
	Temperature alarm	--	--	--
	Phase unbalance	--	--	--
	Instantaneous short-circuit release	--	--	--
	Short-time delayed short-circuit release	--	--	--
	Overload trip	--	--	--
	Neutral conductor release	--	--	--
	Ground-fault protection release	--	--	--
	Ground-fault alarm	--	--	--
	Auxiliary relay	--	--	--
	ETU fault	--	--	--



NSE0_00888b

NSE0_00889a


NSE00890


NSE00891

Delay time figures given in ms.
M = motor protection, corresponds to 20 ms.
D = rotary coding switch
D & S = rotary coding and slide switch
K = communication
M/K = menu/communication

✓ Available.
-- Not available.
❑ Optional.

Setting range of the operating current I_g see page 15/29.

Protection functions Parameterization by	ETU45B D & S	ETU55B K	ETU76B M/K
Functional overview of the electronic trip unit system			
Overload protection	✓	✓	✓
Function can be switched on/off	--	✓	✓
Setting range $I_R = I_n \times$ ...	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.4 ... 1	0.4 ... 1
Switchable overload protection (I^2t or I^4t dependent function)	✓	✓	✓
Setting range for time-lag class t_R at I^2t	2-3.5-5.5-8-10-14-17-21-25-30 s	2 ... 30 s	2 ... 30 s
Setting range for time-lag class t_R at I^4t	1-2-3-4-5 s	1 ... 5 s	1 ... 5 s
Thermal image can be switched on/off	✓	✓	✓
Phase failure sensitivity	At t_{sd} = 20 ms (M)	✓ (on/off)	✓ (on/off)
Neutral conductor protection	✓	✓	✓
Function can be switched on/off	✓	✓	✓
N conductor setting range $I_N = I_n \times$ ...	0.5 ... 1	0.2 ... 2	0.2 ... 2
Short-time delayed short-circuit protection	✓	✓	✓
Function can be switched on/off	✓	✓	✓
Setting range $I_{sd} = I_n \times$ ...	1.25-1.5-2-2.5-3-4-6-8-10-12	1.25 × I_n ... 0.8 × I_{cw}	1.25 × I_n ... 0.8 × I_{cw}
Setting range for delay time t_{sd}	M-100-200-300-400 ms	M-80 ... 4000 ms	M-80 ... 4000 ms
Switchable short-time delayed short-circuit protection (I^2t dependent function)	✓	✓	✓
Setting range for delay time t_{sd} at I^2t	100-200-300-400 ms	100 ... 400 ms	100 ... 400 ms
Zone Selective Interlocking function	By **Cubicle**BUS-Modul	By **Cubicle**BUS-Modul	By **Cubicle**BUS-Modul
Instantaneous short-circuit protection	✓	✓	✓
Function can be switched on/off	✓	✓	✓
Setting range $I_i = I_n \times$ ...	1.5-2.2-3-4-6-8-10-12-0.8 x I_{cs}	1.5 × I_n ... 0.8 × I_{cs}	1.5 × I_n ... 0.8 × I_{cs}
Ground-fault protection	❑ Module can be retrofitted	❑ Module can be retrofitted	❑ Module can be retrofitted
Tripping and alarm function	✓	✓	✓
Tripping function can be switched on/off	✓	✓	✓
Alarm function can be switched on/off	--	✓	✓
Detection of the ground-fault current through summation current formation, int. or ext. neutral conductor transformer	✓	✓	✓
Detection of ground-fault current through ext. transformer	✓	✓	✓
Setting range of the operating current I_g for release	A-B-C-D-E	A ... E	A ... E
Setting range of the operating current I_g for alarm	A-B-C-D-E	A ... E	A ... E
Setting range of the delay time t_g	100-200-300-400-500 ms	100 ... 500 ms	100 ... 500 ms
Switchable ground-fault protection characteristic curve (I^2t dependent function)	✓	✓	✓
Setting range for delay time t_g at I^2t	100-200-300-400-500 ms	100 ... 500 ms	100 ... 500 ms
Zone Selective Interlocking ground-fault protect. function	By **Cubicle**BUS-Modul	By **Cubicle**BUS-Modul	By **Cubicle**BUS-Modul
Parameter set switchover			
Switchable between parameter set A and B	--	✓	✓
LCD			
Alphanumeric LCD (4-line)	❑	--	--
Graphical LCD (24 V, external power supply required)	--	--	✓
Communication			
CubicleBUS integrated	✓	✓	✓
Communication-capable through PROFIBUS DP	✓	✓	✓
Measurement function			
Measurement-function capable with measurement function *Plus*	✓	✓	✓
LED display			
Electronic trip unit active	✓	✓	✓
Alarm	✓	✓	✓
ETU fault	✓	✓	✓
L-release	✓	✓	✓
S-release	✓	✓	✓
I-release	✓	✓	✓
N-release	✓	✓	✓
G-release	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)
G-alarm	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)
Release through extended protection functions	✓	✓	✓
Communication	✓	✓	✓
Signals from signaling switches with external CubicleBUS **modules (relays)**			
Overload warning	✓	✓	✓
Load shedding, load receiving	✓	✓	✓
Leading signal overload trip 200 ms	✓	✓	✓
Temperature alarm	✓	✓	✓
Phase unbalance	✓	✓	✓
Instantaneous short-circuit release	✓	✓	✓
Short-time delayed short-circuit release	✓	✓	✓
Overload trip	✓	✓	✓
Neutral conductor release	✓	✓	✓
Ground-fault protection release	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)
Ground-fault alarm	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)	✓ (only with ground-fault protection module)
Auxiliary relay	✓	✓	✓
ETU fault	✓	✓	✓

Setting range of the operating current I_g

	Size I and size II	Size III
A	100 A	400 A
B	300 A	600 A
C	600 A	800 A
D	900 A	1000 A
E	1200 A	1200 A

Increment size for adjustment of M

From ... to	Increment size	From ... to	Increment size
0 ... 1	0.1	1000 ... 1600	50
1 ... 100	1	1600 ... 10000	100
100 ... 500	5	10000 ... max	1000
500 ... 1000	10		

For continuation of legends see page 15/28.