

3TK28 Safety Relays

With relay enabling circuits

Technical specifications

Type		3TK28 21	3TK28 22	3TK28 23	3TK28 24	3TK28 30	3TK28 25	3TK28 27/28	3TK28 34	3TK28 35	
Standards		EN 60204-1 (VDE 0113 Part 1), EN ISO 12100, EN 954-1							Also EN 574		
Test certificates		BG, SUVA, UL, CSA									
Category											
• According to EN 954-1		3	4	4	3	As basic unit	4	4 ¹⁾	4	As basic unit	
• According to EN 574		--	--	--	--		--	--	Type III C		
SIL according to IEC 61508		--				As basic unit	--				
Rated insulation voltage U_i	V	300									
Degree of pollution		3									
Overvoltage category according to DIN VDE 0110		III									
Rated impulse withstand voltage U_{imp}	kV	4									
Rated power of magnetic coils											
DC/AC operation at $1.0 \times U_s$	W	1.5					3	4	3		
Operating range of the magnetic coils											
• AC operation		0.85 ... $1.1 \times U_s$						0.85 ... $1.1 \times U_s$			
• DC operation		0.85 ... $1.2 \times U_s$						0.85 ... $1.1 \times U_s$			
Continuous thermal current I_{th}	A	5					6	5	6	5	
Continuous thermal current I_{th} for 2 to 4 enabling contacts (FK)		2 FK		3 FK		4 FK					
• At ambient temperature 70 °C	A	4	3.5		3	5 A	4 A	5 A	4 A		
• At ambient temperature 60 °C	A	4.5	4		3.5	6 A	5 A	6 A	5 A		
• At ambient temperature 50 °C	A	5	4.5		4	6 A	5 A	6 A	5 A		
Rated operational currents I_e according to IEC 60947-1											
• I_e /AC-15	At 115 V, 230 V	A	5					6	5/2 ⁴⁾	6	
• I_e /DC-13	At 24 V	A	5					6	5/2 ⁴⁾	6	
Short-circuit protection (weld-free protection at $I_k = 1 \text{ kA}$) ³⁾		Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE gL/gG operational class 6 A (slow), quick 10 A ²⁾									
Mechanical endurance		10 million operating cycles									
Electrical endurance at I_e		100000 operating cycles									
Switching frequency		1000/h on loading with I_e									
Response time	ms	--	--	--	--	$\leq 30^{8)}$	--	--	≤ 100	≤ 50	
• Monitored start	ms	--	--	≤ 30	--	--	≤ 25	≤ 80	--	--	
• Autostart	ms	$\leq 200^{6)}$	≤ 100	--	$\leq 200^{6)7)}$	--	≤ 150	≤ 80	--	--	
Release time	ms	--	--	--	--	--	--	--	≤ 20	≤ 50	
• For EMERGENCY-STOP	ms	≤ 200	≤ 80	≤ 20	≤ 200	--	≤ 25	≤ 25	--	--	
• For mains failure	ms	≤ 200	≤ 100	≤ 150	≤ 200	$\leq 25^{9)}$	≤ 350	≤ 100	--	--	
Recovery time	ms	--	--	--	--	--	--	--	≥ 250	≥ 250	
• For EMERGENCY-STOP	ms	≥ 200	≥ 200	≥ 400	≥ 200	--	≥ 200	After time has elapsed	--	--	
• For mains failure	ms	≥ 200	≥ 200	≥ 600	≥ 200	≥ 100	≥ 500	$\geq 1 \text{ s}$	--	--	
Bridging of mains failures	ms	60	30	80	60	35	100	30	40	40	
Minimum command duration											
• EMERGENCY-STOP	ms	≥ 200	≥ 25	≥ 25	$\geq 200^{7)}$	--	≥ 25	≥ 25	--	--	
• ON button	ms	≥ 150	≥ 40	≥ 25	$\geq 150^{7)}$	--	≥ 25	≥ 25	--	--	
Simultaneity	ms	∞							500		
Conductor cross-sections											
• Screw terminals											
- Finely stranded with end sleeve	mm ²	2 × (0.5 ... 1.5), 1 × (0.5 ... 2.5)									
- Solid	mm ²	2 × (0.5 ... 2.5), 1 × (0.5 ... 4)									
- Tightening torque, M3.5 screw	Nm	0.8 ... 1.2									
• Spring-loaded terminals											
- Solid	mm ²	(1 or 2 conductors can be connected)									
- Finely stranded with end sleeve	mm ²	2 × (0.25 ... 1.5)									
- Finely stranded without end sleeve	mm ²	2 × (0.25 ... 1.5)									
- AWG conductors, solid or stranded	mm ²	2 × (0.25 ... 1.5)									
- AWG conductors, solid or stranded	mm ²	2 × AWG 24 ... 16									
Permissible ambient temperature											
• During operation	°C	-25 ... +60 (suitable for butt-mounting; 70 °C possible with restrictions)									
• During storage	°C	-40 ... +80									
Degree of protection according to EN 60529											
• Enclosure		IP40						IP20			
• Terminals		IP20						IP20			
Touch protection according to VDE 0106		Finger-safe									
Shock resistance, half-sine acc. to IEC 60068		8 g/10 ms									
Permissible mounting positions		Any									
PFH value		On request									

¹⁾ Only applicable for instantaneous enabling contacts;

Category 3 applies for time-delayed contacts.

²⁾ Signaling circuit for 3TK28 21 = 6 A.

³⁾ Other fuses on request.

⁴⁾ Instantaneous/time-delayed enabling contacts.

⁵⁾ 2 A applies to enabling contacts 13/14.

⁶⁾ At 24 V AC: 300 ms.

⁷⁾ At 115, 230 V AC: 300 ms.

⁸⁾ At 115, 230 V AC: max. 200 ms.

⁹⁾ At 115, 230 V AC: max. 80 ms.