SIEMENS

Data sheet 3TK2828-2AL21

SIRIUS safety relay with relay enabling circuits (EC) 230 V AC, 45 mm overall width Spring-type terminal EC instantaneous: 2 NO EC delayed: 2NO, 0.05...3 s SC: 1NC AUTOSTART Basic device Maximum achieved SIL: 3/2, PL: e/d

Figure similar

General technical data	
Product brand name	SIRIUS
Product designation	safety relays
Design of the product	für Schutztüren
Protection class IP of the enclosure	IP20
Protection class IP of the terminal	IP20
Protection against electrical shock	finger-safe
Insulation voltage rated value	300 V
Ambient temperature	
• during storage	-40 ... +80 °C
• during operation	-25 ... +60 °C
Air pressure acc. to SN 31205	90 ... 106 kPa
Relative humidity during operation	10 ... 95 %
Installation altitude at height above sea level maximum	2 000 m
Vibration resistance acc. to IEC 60068-2-6	5 ... 500 Hz: 0,075 mm
Shock resistance	8g / 10 ms
Surge voltage resistance rated value	4 000 V

EMC emitted interference	EN 60947-5-1
Installation environment regarding EMC	This product is suitable for Class A environments only. It can cause undesired radio-frequency interference in residential environments. If this is the case, the user must take appropriate measures.
Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750	KT
Reference code acc. to DIN EN 61346-2	F
Number of sensor inputs	
• 1-channel or 2-channel	1
Design of the cascading	none
Type of the safety-related wiring of the inputs	single-channel and two-channel
Product feature cross-circuit-proof	Yes
Safety Integrity Level (SIL)	
• acc. to IEC 61508	3
• for delayed release circuit acc. to IEC 61508	SIL2
SIL Claim Limit (subsystem) acc. to EN 62061	3
Performance level (PL)	
• acc. to EN ISO 13849-1	e
• for delayed release circuit acc. to EN ISO 13849-1	d
Category acc. to EN ISO 13849-1	4
Hardware fault tolerance acc. to IEC 61508	1
Safety device type acc. to IEC 61508-2	Type A
PFHD with high demand rate acc. to EN 62061	0.0000000027 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	0.0000024 1/y
T1 value for proof test interval or service life acc. to IEC 61508	20 y
Number of outputs as contact-affected switching element	
• as NC contact	
— for signaling function instantaneous contact	1
• as NO contact	
— safety-related instantaneous contact	2
— safety-related delayed switching	2
Number of outputs as contact-less semiconductor switching element	
• safety-related	
— delayed switching	0
— instantaneous contact	0
• for signaling function	
— delayed switching	0

— instantaneous contact	0
Stop category acc. to DIN EN 60204-1	0 + 1

General technical data

Design of input	
• cascading input/functional switching	No
• feedback input	Yes
• Start input	Yes
Type of electrical connection Plug-in socket	Yes
Operating frequency maximum	1 000 1/h
Switching capacity current	
• of the NO contacts of the relay outputs for delayed release circuit	
— at AC-15 at 230 V	3 A
— at DC-13 at 24 V	2 A
• of the NO contacts of the relay outputs for instantaneous enabling circuit	
— at AC-15 at 230 V	5 A
— at DC-13 at 24 V	5 A
Thermal current of the switching element with contacts maximum	5 A
Electrical endurance (switching cycles) typical	100 000
Mechanical service life (switching cycles) typical	10 000 000
Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required	gL/gG: 6 A, or quick: 10 A
DC resistance of the cable maximum	30 Ω
Wire length between sensor and electronic evaluation device with Cu 1.5 mm² and 150 nF/km maximum	1 000 m
Make time with automatic start	
• at AC maximum	80 ms
Backslide delay time in the event of power failure	
• maximum	100 ms
Adjustable OFF-delay time after opening of the safety circuits	0.05 ... 3 s
Recovery time after power failure typical	1 000 ms
Pulse duration	
• of the sensor input minimum	25 ms
• of the ON pushbutton input minimum	0.025 s

Control circuit/ Control

Type of voltage of the control supply voltage	AC
Control supply voltage frequency	
• 1 rated value	50 Hz
• 2 rated value	60 Hz

Control supply voltage 1 at AC	
• at 50 Hz rated value	230 V
• at 60 Hz rated value	230 V
Operating range factor control supply voltage rated value of magnet coil	
• at AC	
— at 50 Hz	0.85 ... 1.1
— at 60 Hz	0.85 ... 1.1
• at DC	0.85 ... 1.1

Installation/ mounting/ dimensions

Mounting position	any
Mounting type	screw and snap-on mounting
Width	45 mm
Height	138.5 mm
Depth	120 mm

Connections/Terminals

Type of electrical connection	spring-loaded terminals
Type of connectable conductor cross-sections	
• solid	2x (0.25 ... 1.5 mm²)
• finely stranded	
— with core end processing	2 x (0.25 ... 1.5 mm²)
— without core end processing	2x (0.25 ... 1.5 mm²)
Type of connectable conductor cross-sections at AWG conductors	
• solid	2x (24 ... 16)
• stranded	2x (24 ... 16)

Product Function

Product function	
• Light barrier monitoring	No
• Standstill monitoring	No
• protective door monitoring	Yes
• Automatic start	Yes
• magnetically operated switch monitoring NC-NO	No
• rotation speed monitoring	No
• laser scanner monitoring	No
• monitored start-up	No
• Light array monitoring	No
• magnetically operated switch monitoring NC-NC	No
• EMERGENCY OFF function	No

• Pressure-sensitive mat monitoring	Yes
Suitability for interaction press control	No
Suitability for use	
• Monitoring of floating sensors	Yes
• Monitoring of non-floating sensors	No
• safety switch	Yes
• position switch monitoring	Yes
• EMERGENCY-OFF circuit monitoring	No
• valve monitoring	No
• tactile sensor monitoring	No
• magnetically operated switch monitoring	No
• safety-related circuits	Yes

Certificates/approvals

Certificate of suitability	BG, SUVA, UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
• TÜV (German technical inspectorate) certificate	Yes
• UL approval	Yes
• BG BIA certificate	Yes

General Product Approval				EMC	Functional Safety/Safety of Machinery
CCC	CSA	UL	EAC	RCM	Type Examination Certificate

Declaration of Conformity		Test Certificates	other	
CE EG-Konf.	Miscellaneous	Special Test Certificate	Confirmation	Environmental Confirmations

Further information

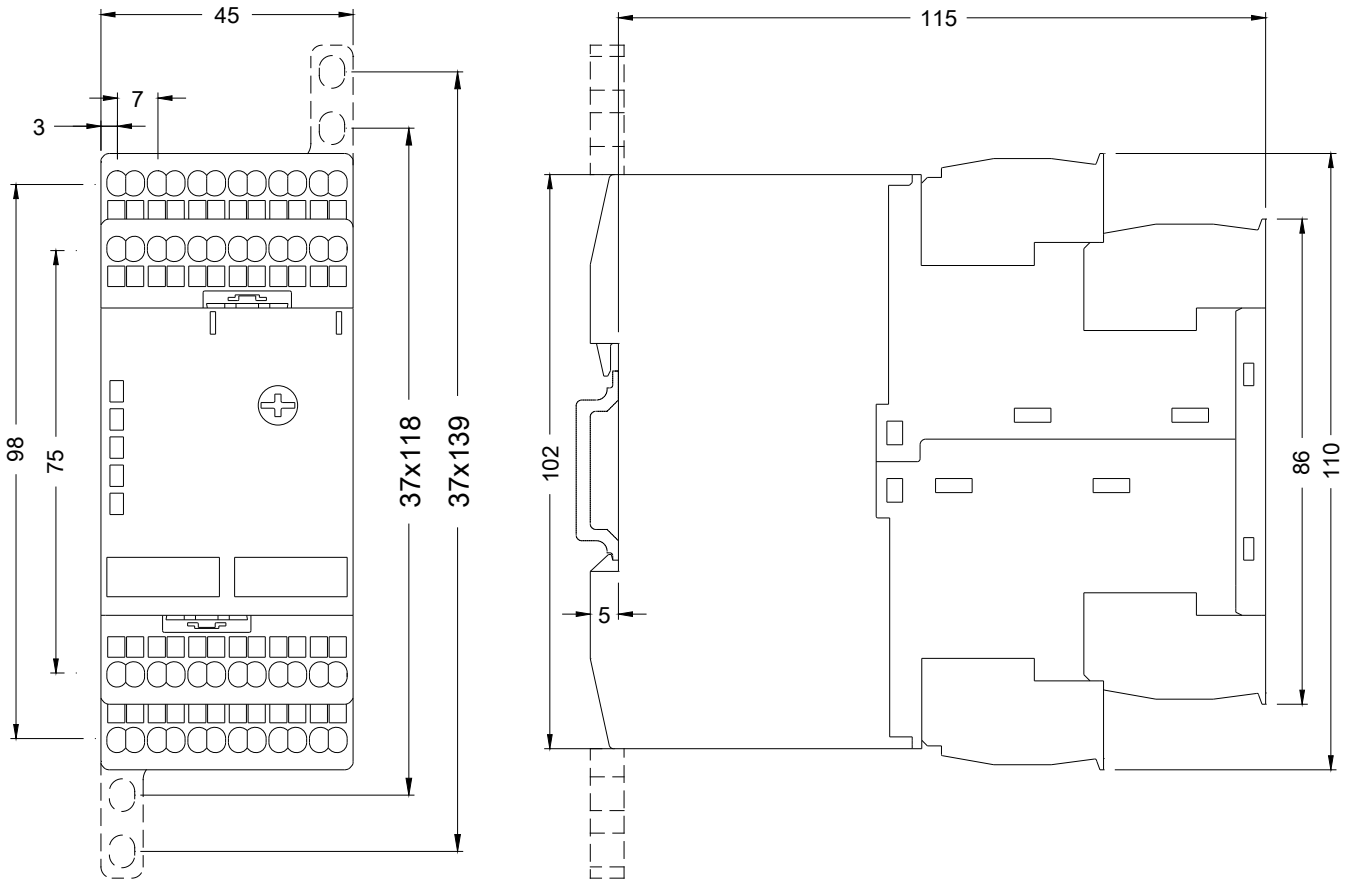
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3TK2828-2AL21

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2828-2AL21

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3TK2828-2AL21

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2828-2AL21&lang=en



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