SIEMENS

Data sheet 3TK2825-1AL20

SIRIUS safety relay with relay enabling circuits (EC) 230 V AC, 45 mm overall width Screw terminal EC instantaneous: 3 NO EC delayed: 0 NO SC: 2 NC Autostart/monitored start Basic device Maximum achieved SIL: 3, PL: E

Figure similar

General technical data	
Product brand name	SIRIUS
Product designation	safety relays
Design of the product	for EMERGENCY-STOP units
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
SIL Claim Limit (subsystem) acc. to EN 62061	3
Performance level (PL)	
• acc. to EN ISO 13849-1	e
Category acc. to EN 954-1	4
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	0.0000000015 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	0.0000013 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	2
• as NO contact	
— safety-related instantaneous contact	3
— safety-related delayed switching	0
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

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 at DC-13	
— at 24 V	6 A
— at 115 V	0.2 A
— at 230 V	0.1 A
• of the NO contacts of the relay outputs at AC-15	
— at 115 V	6 A
— at 230 V	6 A
• of the NC contacts of the relay outputs at DC-13	
— at 24 V	6 A
— at 115 V	0.2 A
— at 230 V	0.1 A
• of the NC contacts of the relay outputs at AC-15	
— at 115 V	6 A
— at 230 V	6 A
Thermal current of the switching element with contacts maximum	6 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	150 ms
Make time with monitored start	
• maximum	25 ms
Backslide delay time in the event of power failure	
• maximum	350 ms

Recovery time after opening of the safety circuits typical	200 ms
Recovery time after power failure typical	50 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	44.8 mm
Height	138.5 mm
Depth	120 mm

Connections/Terminals

Type of electrical connection	screw-type terminals
Type of connectable conductor cross-sections	
• solid	1x (0.5 ... 4.0 mm²), 2x (0.5 ... 2.5 mm²)
• finely stranded	
— with core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²)
Type of connectable conductor cross-sections at AWG conductors	
• solid	2x (20 ... 14)
• stranded	2x (20 ... 14)

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	Yes
• Light array monitoring	No
• magnetically operated switch monitoring NC-NC	No
• EMERGENCY OFF function	Yes
• 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	Yes
• 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	C-Tick	Type Examination Certificate

Declaration of Conformity		Test Certific-ates	other	
EG-Konf.	Miscellaneous	Special Test Certi-ficate	Confirmation	Environmental Con-firmations

Further information

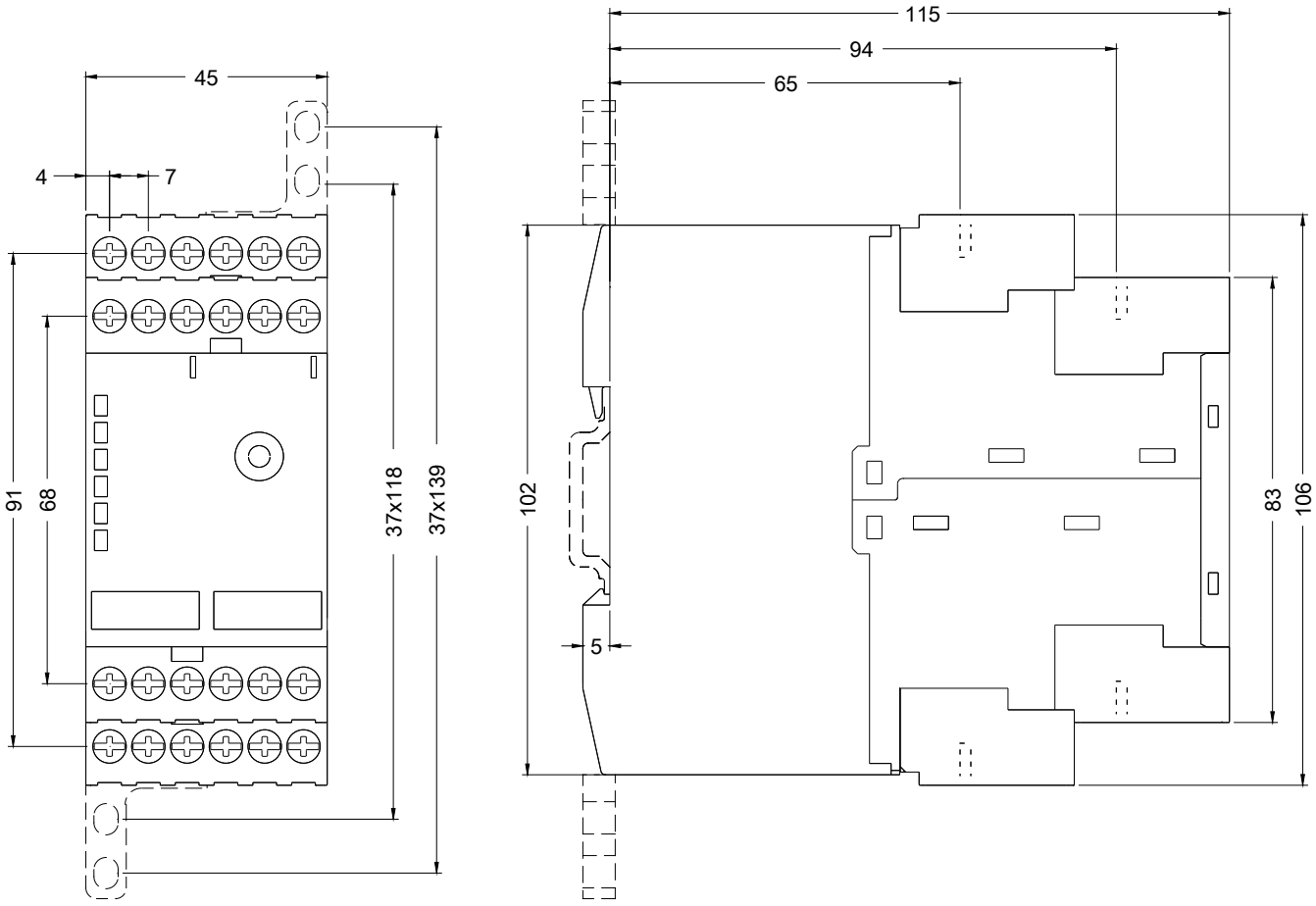
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3TK2825-1AL20

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2825-1AL20

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3TK2825-1AL20

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2825-1AL20&lang=en



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