



SIRIUS SAFETY RELAY WITH RELAY RELEASE
CIRCUITS (RC),
AC 230V, 45.0MM,
SPRING-LOADED TERMINAL,
RC INSTANT.: 2NO,
RC DELAYED: 2NO 0.05...3S, MC: 1NC,
AUTOSTART, BASIC DEVICE,
MAX. ACHIEVABLE SIL: 3/2, PL: E/D

General technical details:

product brand name		SIRIUS
product designation		safety relays
Design of the product		for EMERGENCY-STOP units
protection class IP / of the housing		IP20
Protection class IP / of the terminal		IP20
Protection against electrical shock		finger-safe
Insulation voltage / rated value	V	300
Ambient temperature		
• during storage	°C	-40 ... +80
• during operating	°C	-25 ... +60
Air pressure		
• according to SN 31205	kPa	90 ... 106
Relative humidity		
• during operating phase	%	10 ... 95
Installation altitude / at a height over sea level / maximum	m	2,000
Resistance against vibration / according to IEC 60068-2-6		5 ... 500 Hz: 0,075 mm
Resistance against shock		8g / 10 ms
Impulse voltage resistance / rated value	V	4,000
EMC emitted interference		EN 60947-5-1

Installation environment relating to 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.
Item designation • according to DIN 40719 extendable after IEC 204-2 / according to IEC 750 • according to DIN EN 61346-2		KT 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 / transverse contact-secure		Yes
Safety Integrity Level (SIL) • according to IEC 61508 • for delayed release circuit / according to IEC 61508		SIL3 SIL2
SIL claim limit (for a subsystem) / according to EN 62061		3
Performance Level (PL) • according to ISO 13849-1 • for delayed release circuit / according to ISO 13849-1		e d
Category / according to EN 954-1		4
Category / according to ISO 13849-1		4
Hardware fault tolerance / according to IEC 61508		1
Safety device type / according to IEC 61508-2		Type A
Probability of dangerous failure per hour (PFHD) / with high demand rate / according to EN 62061	1/h	0.27E-8
Average probability of failure on demand (PFDavg) / with low demand rate / according to IEC 61508	1/y	0.24E-5
T1 value / for proof test interval or service life / according to IEC 61508	a	20
Number of outputs / as contact-affected switching element • as NC contact / for reporting function / instantaneous switching • as NO contact / safety-related / instantaneous switching • as NO contact / safety-related / delayed switching		1 2 2
Number of outputs / as contact-less semiconductor switching element • safety-related • delayed switching • non-delayed • for reporting function • delayed switching • non-delayed		0 0 0 0

Stop category / according to DIN EN 60204-1		0 + 1
General technical details:		
Design of the input		
• cascading-input/functional switching		No
• feedback input		Yes
• start input		Yes
Design of the electrical connection / jumper socket		Yes
Operating cycles / maximum	1/h	1,000
Switching capacity current		
• of NO contacts of relay outputs		
• at DC-13		
• at 24 V	A	5
• at 115 V	A	0.2
• at 230 V	A	0.1
• at AC-15		
• at 115 V	A	5
• at 230 V	A	5
• of NC contacts of relay outputs		
• at DC-13		
• at 24 V	A	5
• at 115 V	A	0.2
• at 230 V	A	0.1
• at AC-15		
• at 115 V	A	5
• at 230 V	A	5
Thermal current / of the contact-affected switching element / maximum	A	5
Electrical operating cycles as operating time / typical		100,000
Mechanical operating cycles as operating time / 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
Resistance to direct current / of the cable / maximum	Ω	30
Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum	m	1,000
Make time / with automatic start		
• for AC / maximum	ms	80
Backslide delay time / at mains power cut		
• maximum	ms	100
Adjustable backslide delay time		
• after opening of the safety circuits	s	0.05 ... 3

Recovery time / after mains power cut / typical	s	1
Pulse duration		
• of the sensor input / minimum	ms	25
• of the ON pushbutton input / minimum	s	0.025

Control circuit:

Type of voltage / of the controlled supply voltage		AC
Control supply voltage frequency		
• 1 / rated value	Hz	50
• 2 / rated value	Hz	60
Control supply voltage / 1 / at 50 Hz / for AC / rated value	V	230
Control supply voltage / 1 / at 60 Hz / for AC / rated value	V	230
operating range factor control supply voltage rated value / of the magnet coil		
• at 50 Hz		
• for AC		0.85 ... 1.1
• at 60 Hz		
• for AC		0.85 ... 1.1
• for DC		0.85 ... 1.1

Installation/mounting/dimensions:

mounting position		any
Type of mounting		screw and snap-on mounting
Width	mm	45
Height	mm	138.5
Depth	mm	120

Connections:

Design of the electrical connection		spring-loaded terminals
Type of the connectable conductor cross-section		
• solid		2x (0.25 ... 1.5 mm²)
• finely stranded		
• with wire end processing		2 x (0.25 ... 1.5 mm²)
• without wire end processing		2x (0.25 ... 1.5 mm²)
Type of the connectable conductor cross-section / for AWG conductors		
• solid		2x (24 ... 16)
• stranded		2x (24 ... 16)

Product Function:

Product function		
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• light barrier monitoring	No
• standstill monitoring	No
• protective door monitoring	Yes
• automatic start	Yes
• magnetic switch monitoring Normally closed contact-Normally open contact	No
• rotation speed monitoring	No
• laser scanner monitoring	No
• monitored start-up	No
• light grid monitoring	No
• magnetic switch monitoring Normally closed contact-Normally closed contact	No
• emergency stop function	No
• step mat monitoring	Yes
Suitability for interaction / pressing control	No
Acceptability for application	
• monitoring of floating sensors	Yes
• monitoring of non-floating sensors	No
• safety cut-out switch	Yes
• position switch monitoring	Yes
• EMERGENCY-OFF circuit monitoring	No
• valve monitoring	No
• tactile sensor monitoring	No
• magnetically operated switches monitoring	No
• safety-related circuits	Yes

Certificates/approvals:

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

General Product Approval

EMC



CCC



CSA



GOST



UL



C-TICK

Functional Safety / Safety of Machinery

Declaration of Conformity

Test Certificates

other



ATEX



VDE



EG-Konf.

[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)

<http://www.siemens.com/industrial-controls/mall>

Cax online generator:

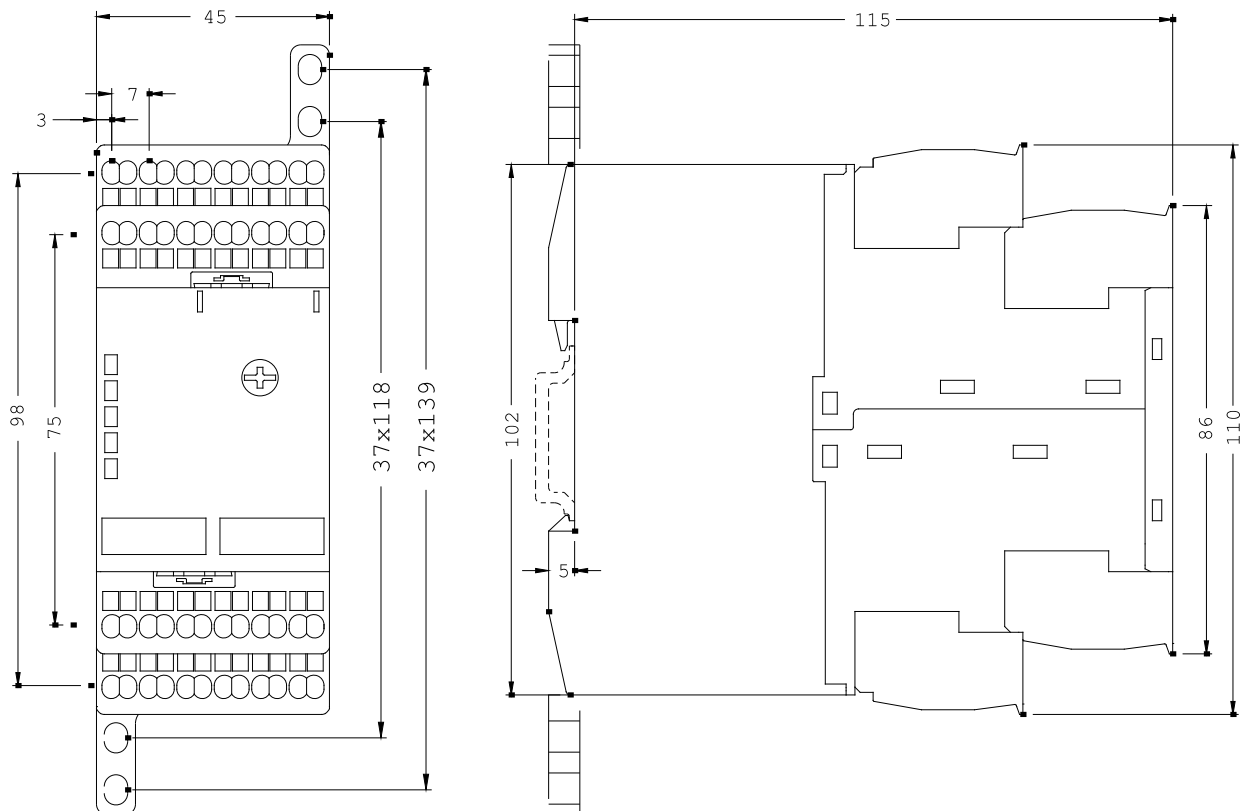
<http://www.siemens.com/cax>

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<http://support.automation.siemens.com/WW/view/en/3TK2828-2AL21/all>

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, ...)

http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2828-2AL21



last change:

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