SIEMENS

Product data sheet 3TK2857-1BB42

SIRIUS SAFETY RELAY WITH AUXILIARY CONTACTOR RELEASE CIRCUIT (RC),
DC 24V, 90.0MM, SCREW TERMINAL,
RC INSTANT.: 0,
RC DELAYED: 3S 0.5...30S, MK: 0,
EXPANSION UNIT,
MAX. ACHIEVABLE PL: AS GG,
MAX. ACHIEVABLE SIL: AS GG,

General technical details:		
product brand name		SIRIUS
product designation		safety relays
Design of the product		extension unit
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	690
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 and 15g / 5 ms
Impulse voltage resistance / rated value	V	6,000
EMC emitted interference		IEC 60947-5-1, IEC 60000-4-3, IEC 60000-4-5, IEC 60000-4-6
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		KT
• according to DIN EN 61346-2		F

Contact reliability		one incorrect switching operation of 100 million switching operations (17 V, 5 mA)
Design of the cascading		cascading and in-service switching
Product feature / transverse contact-secure		No
safety Integrated Level		
• according to IEC 61508		SIL3
• for delayed release circuit / according to IEC 61508		SIL3
SIL claim limit (for a subsystem) / according to EN 62061		3
Performance Level (PL)		
• according to ISO 13849-1		e
• for delayed release circuit / according to ISO 13849-1		e
Category / according to EN 954-1		corresponds to basic unit
Category / according to ISO 13849-1		4
Hardware fault tolerance / according to IEC 61508		1
Safety device type / according to IEC 61508-2		Type B
Probability of dangerous failure per hour (PFHD) / with high demand rate / according to EN 62061	1/h	0.11E-7
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		0
• as NO contact / safety-related / instantaneous switching		0
• as NO contact / safety-related/ delayed switching		3
Number of outputs / as contact-less semiconductor switching element		
• safety-related		
• delayed switching		0
• non-delayed		1
• for reporting function		
• delayed switching		0
• non-delayed		0
Stop category / according to DIN EN 60204-1		1

General technical details:

Design of the input		
• cascading-entrance/operation-even switching		Yes
• reducing-entrance		Yes
• start-up entrance		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	10
• at 115 V	A	1
• at 230 V	A	0.3
• at AC-15		
• at 115 V	A	6
• at 230 V	A	6
• of NC contacts of relay outputs		
• at DC-13		
• at 24 V	A	10
• at 115 V	A	1
• at 230 V	A	0.3
• at AC-15		
• at 115 V	A	6
• at 230 V	A	6
Mechanical operating cycles as operating time / typical		30,000,000
Max. permissible voltage for safe isolation / between electronic evaluation device and enabling circuit / according to EN 60947-1	V	400
Design of the fuse link / for short-circuit protection of the NO contacts of the relay outputs / required		gL/gG: 10 A
Resistance to direct current / of the cable / maximum	Ω	500
Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum	m	2,000
Make time / with automatic start / after mains power cut		
• typical	ms	6,000
• maximum	ms	7,000
Backslide delay time / at mains power cut		
• typical	ms	120
• maximum	ms	120
Adjustable backslide delay time		
• after opening of the safety circuits	s	0.5 … 30
Recovery time / after opening of the safety circuits / typical	ms	500
Recovery time / after mains power cut / typical	s	7
Pulse duration		
• of the cascading-entrance / minimum	s	0.045
Control circuit:		
Type of voltage / of the controlled supply voltage		DC
Control supply voltage / 1 / for DC / rated value	V	24

operating range factor control supply voltage rated value / of the magnet coil		
• for DC		0.85 … 1.1

Auxiliary circuit:

Contact reliability / of the auxiliary contacts		< 1 error per 100 million operating cycles

Installation/mounting/dimensions:

mounting position		any
Type of mounting		screw and snap-on mounting
Width	mm	90
Height	mm	132
Depth	mm	146

Connections:

Design of the electrical connection		screw-type terminals
Type of the connectable conductor cross-section		
• solid		1x (0.2 ... 2.5 mm²), 2x (0.2 ... 1 mm²)
• finely stranded		
• with wire end processing		1x (0.25 ... 2.5 mm²), 2x (0.25 ... 1 mm²)
Type of the connectable conductor cross-section / for AWG conductors		
• solid		2x (24 ... 12)
• stranded		2x (24 ... 12)

Product Function:

Product function		
• light barrier monitoring		No
• standstill monitoring		No
• protective door monitoring		No
• automatic start		No
• 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		Yes
• emergency stop function		No
• step mat monitoring		No
Suitability for interaction / pressing control		No
Acceptability for application		

• safety cut-out switch	Yes
• position switch monitoring	Yes
• EMERGENCY-OFF circuit monitoring	Yes
• valve monitoring	No
• tactile sensor monitoring	No
• magnetically operated switches monitoring	No
• safety-related circuits	Yes

Certificates/approvals:

Verification of suitability	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				Functional Safety / Safety of Machinery	Test Certificates
CCC	CSA	GOST	TÜV	VDE	Special Test Certificate

other

Confirmation

Further information:

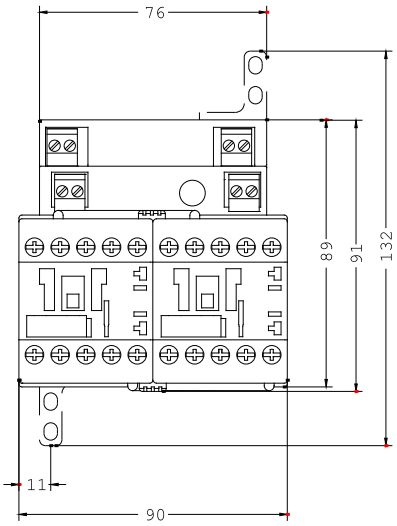
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

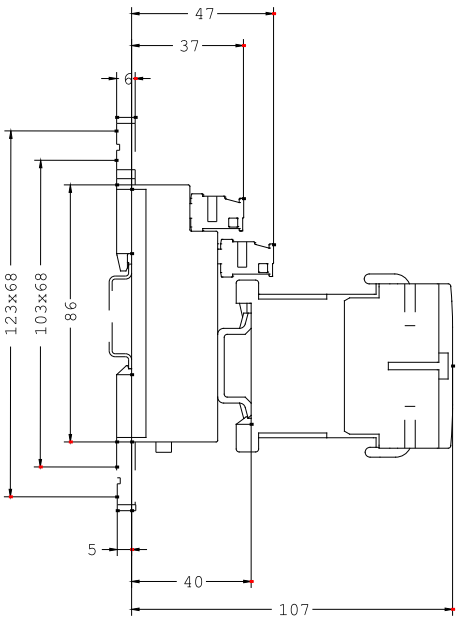
Industry Mall (Online ordering system)
http://www.siemens.com/industrial-controls/mall

Cax online generator:
http://www.siemens.com/cax

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
http://support.automation.siemens.com/WW/view/en/3TK2857-1BB42/all

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, ...)
http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2857-1BB42





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