SIEMENS

Data sheet 3TK2857-1BB42

SIRIUS safety relay with contactor relay enabling circuits (EC) 24 V DC, 90 mm Screw terminal EC instantaneous: 0 EC delayed: 3NO, 0.5...30 s SC: 0 Expansion unit Maximum achievable PL: as basic unit Maximum achievable SIL: as basic unit

product brand name	SIRIUS
product designation	safety relays
design of the product	extension unit
General technical data	
protection class IP of the enclosure	IP20
protection class IP of the terminal	IP20
touch protection against electrical shock	finger-safe
insulation voltage rated value	690 V
ambient temperature	
● during storage	-40 ... +80 °C
● during operation	-25 ... +60 °C
air pressure according 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 according to IEC 60068-2-6	5 ... 500 Hz: 0,075 mm
shock resistance	8g / 10 ms, 15g / 5 ms
surge voltage resistance rated value	6 000 V
EMC emitted interference	IEC 60947-5-1, IEC 60000-4-3, IEC 60000-4-5, IEC 60000-4-6
installation environment regarding EMC	This product is suitable for Class A environments only. In household environments, this device can cause unwanted radio interference. The user is required to implement appropriate measures in this case.
reference code according to DIN 40719 extended according to IEC 204-2 according to IEC 750	KT
reference code according to 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 cross-circuit-proof	No
Safety Integrity Level (SIL)	
● according to IEC 61508	3
● for delayed release circuit according to IEC 61508	SIL3
SIL Claim Limit (subsystem) according to EN 62061	3
performance level (PL)	
● for delayed release circuit according to EN ISO 13849-1	e
category according to EN ISO 13849-1	4
hardware fault tolerance according to IEC 61508	1
safety device type according to IEC 61508-2	Type B
PFHD with high demand rate according to EN 62061	1.1E-8 1/h
T1 value for proof test interval or service life according to IEC 61508	20 a
number of outputs as contact-affected switching element	
● as NC contact	
— for signaling function instantaneous contact	0
● as NO contact	
— safety-related instantaneous contact	0
— safety-related delayed switching	3
number of outputs as contact-less semiconductor switching element	
● safety-related	
— delayed switching	0
— instantaneous contact	1
● for signaling function	

— delayed switching	0
— instantaneous contact	0
stop category according to EN 60204-1	1
Inputs	
design of input	
● cascading input/functional switching	Yes
● feedback input	Yes
● start input	Yes
Outputs	
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	10 A
— at 115 V	1 A
— at 230 V	0.3 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	10 A
— at 115 V	1 A
— at 230 V	0.3 A
● of the NC contacts of the relay outputs at AC-15	
— at 115 V	6 A
— at 230 V	6 A
mechanical service life (operating cycles) typical	30 000 000
maximum permissible voltage for protective separation between electronics evaluation device and enabling circuit according to EN 60947-1	400 V
design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required	gL/gG: 10 A
DC resistance of the cable maximum	500 Ω
wire length between sensor and electronics evaluation device with Cu 1.5 mm² and 150 nF/km maximum	2 000 m
Times	
make time with automatic start after power failure	
● typical	6 000 ms
● maximum	7 000 ms
backslide delay time in the event of power failure	
● typical	120 ms
● maximum	120 ms
recovery time after opening of the safety circuits typical	500 ms
recovery time after power failure typical	7 s
pulse duration	
● of the cascading input minimum	0.045 s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1	
● at DC rated value	24 V
operating range factor control supply voltage rated value of magnet coil	
● at DC	0.85 ... 1.1
Auxiliary circuit	
contact reliability of auxiliary contacts	< 1 error per 100 million operating cycles
Installation/ mounting/ dimensions	
mounting position	any
fastening method	screw and snap-on mounting
width	90 mm
height	132 mm
depth	146 mm
Connections/ Terminals	

type of electrical connection	screw-type terminals
type of connectable conductor cross-sections	
● solid	1x (0.2 ... 2.5 mm²), 2x (0.2 ... 1.0 mm²)
● finely stranded	
— with core end processing	1x (0.25 ... 2.5 mm²), 2x (0.25 ... 1.0 mm²)
type of connectable conductor cross-sections for AWG cables	
● solid	2x (24 ... 18)
● stranded	2x (24 ... 18)

Product Function

product function	
● light barrier monitoring	No
● standstill monitoring	No
● protective door monitoring	No
● automatic start	No
● 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	Yes
● EMERGENCY OFF function	Yes
● pressure-sensitive mat monitoring	No
suitability for interaction press control	No
suitability for use	
● 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	UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
● TÜV (German technical inspectorate) certificate	Yes
● UL approval	Yes
● BG BIA approval	Yes

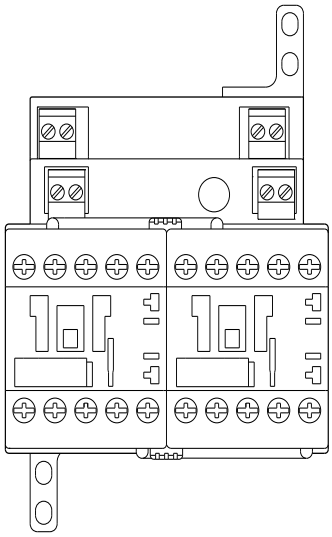
General Product Approval	EMC	Functional Safety/Safety of Machinery
CSA CCC UL EAC RCM		Type Examination Certificate

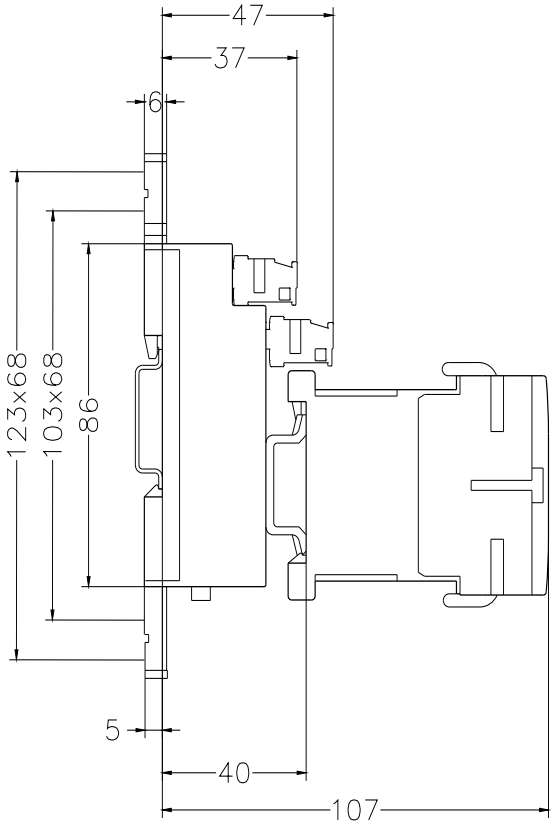
Test Certificates	other
Special Test Certificate	Confirmation

Further information

Siemens has decided to exit the Russian market (see here).
https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business
Siemens is working on the renewal of the current EAC certificates.
Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).
Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information- and Downloadcenter (Catalogs, Brochures,…)
https://www.siemens.com/ic10

Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3TK2857-1BB42
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2857-1BB42
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3TK2857-1BB42
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2857-1BB42&lang=en





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