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Data sheet 3TK2820-1CB30



SIRIUS safety relay with relay enabling circuits (EC) 24 V AC/DC, 22.5 mm Screw terminal Basic device Auto-start, monitored start EC instantaneous: 3 NO EC delayed: 0 NO SC: 1NC max. error category EN 13849-1: 4 Maximum achievable PL according to EN 13849-1: e Maximum achievable SIL according to IEC 61508: 3

product brand name	SIRIUS
product designation	safety relays
design of the product	for EMERGENCY-STOP and safety doors
product type designation	3TK28
Product Function	
product function	
● automatic start	Yes
● light barrier monitoring	No
● standstill monitoring	No
● protective door monitoring	Yes
● magnetically operated switch monitoring NC-NO	No
● magnetically operated switch monitoring NC-NC	Yes
● rotation speed monitoring	No
● laser scanner monitoring	No
● light array monitoring	No
● EMERGENCY OFF function	Yes
● monitored start-up	Yes
● pressure-sensitive mat monitoring	No
product feature cross-circuit-proof	Yes
suitability for interaction press control	No
suitability for use	
● monitoring of floating sensors	Yes
● monitoring of non-floating sensors	No
● position switch monitoring	Yes
● EMERGENCY-OFF circuit monitoring	Yes
● valve monitoring	No
● opto-electronic protection device monitoring	No
● tactile sensor monitoring	No
● magnetically operated switch monitoring	Yes
● proximity switch monitoring	No
● safety-related circuits	Yes
General technical data	
certificate of suitability UL approval	Yes
insulation voltage rated value	300 V
surge voltage resistance rated value	4 000 V
protection class IP	
● of the enclosure	IP40
● of the terminal	IP20
shock resistance	15 g / 11 ms

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vibration resistance according to IEC 60068-2-6	5 ... 500 Hz: 0.75 mm
operating frequency maximum	2 000 1/h
electrical endurance (operating cycles) typical	200 000
Substance Prohibitance (day/month/year)	05/01/2012
SVHC substance name	Lead monoxide (lead oxide) CAS-No. 1317-36-8
Net Weight	0.299 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
● during operation	-25 ... +60 °C
● during storage	-40 ... +80 °C
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	90 ... 106 kPa
Electromagnetic compatibility	
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.
EMC emitted interference	IEC 60947-5-1, Class B
Safety related data	
product function suitable for safety function	Yes
stop category according to IEC 60204-1	0
IEC 62061	
SIL Claim Limit (subsystem) according to EN 62061	3
PFHD with high demand rate according to IEC 62061	9.4E-10 1/h
ISO 13849	
category according to EN ISO 13849-1	4
IEC 61508	
Safety Integrity Level (SIL)	
● according to IEC 61508	3
safety device type according to IEC 61508-2	Type A
Safe failure fraction (SFF)	99 %
hardware fault tolerance according to IEC 61508	1
T1 value for proof test interval or service life according to IEC 61508	20 a
Electrical Safety	
touch protection against electrical shock	finger-safe
Short-circuit protection	
design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required	gL/gG: 10 A or quick-response: 10 A or MCB type B: 2 A or MCB type C: 1.6 A or SITOP select diagnostics module (order No.: 6EP1961-2BA00)
Inputs	
design of input	
● feedback input	Yes
● start input	Yes
number of sensor inputs	
● 1-channel or 2-channel	1
Outputs	
number of outputs as contact-affected switching element	
● as NC contact	
— for signaling function instantaneous contact	1
● as NO contact	
— safety-related instantaneous contact	3
— safety-related delayed switching	0
mechanical service life (operating cycles) typical	10 000 000
thermal current of the switching element with contacts maximum	5 A
number of outputs as contact-less semiconductor switching element	
● for signaling function	
— delayed switching	0
— instantaneous contact	0

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● safety-related	
— delayed switching	0
— instantaneous contact	0
switching capacity current of the NO contacts of the relay outputs at DC-13	
● at 24 V	4 A
● at 115 V	0.2 A
● at 230 V	0.1 A
switching capacity current of the NO contacts of the relay outputs at AC-15	
● at 24 V	4 A
● at 115 V	4 A
● at 230 V	4 A
switching capacity current of the NC contacts of the relay outputs at DC-13	
● at 24 V	4 A
● at 115 V	0.2 A
● at 230 V	0.1 A
switching capacity current of the NC contacts of the relay outputs at AC-15	
● at 24 V	4 A
● at 115 V	4 A
● at 230 V	4 A
wire length between sensor and electronics evaluation device with Cu 1.5 mm² and 150 nF/km maximum	1 000 m
Times	
make time with automatic start	
● typical	110 ms
make time with automatic start after power failure	
● typical	110 ms
● maximum	170 ms
make time with monitored start	
● typical	20 ms
● maximum	30 ms
backslide delay time after opening of the safety circuits typical	8 ms
backslide delay time in the event of power failure	
● typical	60 ms
● maximum	70 ms
recovery time after opening of the safety circuits typical	20 ms
recovery time after power failure typical	80 ms
pulse duration	
● of the sensor input minimum	25 ms
● of the ON pushbutton input minimum	25 ms
Control circuit/ Control	
type of voltage of the control supply voltage	AC/DC
control supply voltage 1 at AC	
● at 50 Hz rated value	24 V
● at 60 Hz rated value	24 V
control supply voltage frequency	
● 1 rated value	50 Hz
● 2 rated value	60 Hz
control supply voltage 1 at DC rated value	24 V
operating range factor control supply voltage rated value of magnet coil at DC	
● initial value	0.85
● full-scale value	1.2
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

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Installation/ mounting/ dimensions	
mounting position	any
fastening method	snap-on mounting
height	103.6 mm
width	22.5 mm
depth	118 mm
Connections/ Terminals	
type of electrical connection	screw terminal
type of connectable conductor cross-sections	
● solid	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²)
● finely stranded with core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)
● finely stranded without core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²)
● for AWG cables solid	1x (20 ... 14), 2x (20 ... 16)
● for AWG cables stranded	1x (20 ... 14), 2x (20 ... 18)
connectable conductor cross-section	
● solid	0.5 ... 2.5 mm²
● finely stranded with core end processing	0.5 ... 2.5 mm²
● finely stranded without core end processing	0.5 ... 2.5 mm²
AWG number as coded connectable conductor cross section	
● solid	20 ... 14
● stranded	20 ... 14
DC resistance of the cable maximum	50 Ω
type of electrical connection plug-in socket	No

Approvals Certificates

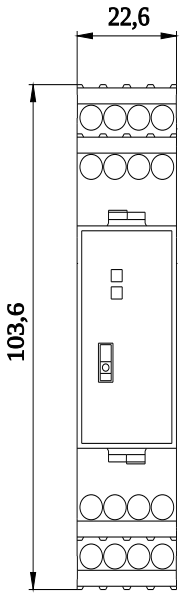
Environment	General Product Approval			EMV	Functional Saftey
Environmental Confirmations	CCC	UL	EAC	RCM	Type Examination Certificate

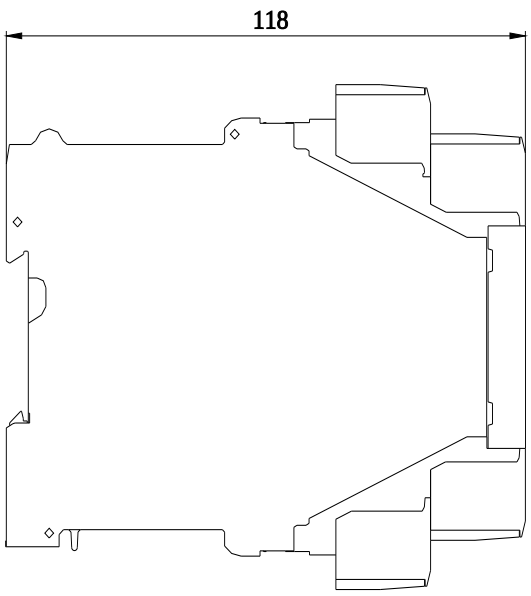
Test Certificates	other	
Special Test Certificate	Confirmation	产品合格 QC PASS

Further information

Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information for data generation and storage
https://support.industry.siemens.com/cs/ww/en/view/109995012
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=3TK2820-1CB30
Cax online generator
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2820-1CB30
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3TK2820-1CB30
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2820-1CB30&lang=en

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