SIEMENS

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
General technical data	
protection class IP of the enclosure	IP40
protection class IP of the terminal	IP20
touch 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 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: 0.75 mm
shock resistance	15g / 11 ms
surge voltage resistance rated value	4 000 V
EMC emitted interference	IEC 60947-5-1, IEC 61000
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 EN 61346-2	F
number of sensor inputs	
● 1-channel or 2-channel	1
type of the safety-related wiring of the inputs	single-channel and two-channel
product feature cross-circuit-proof	Yes
Safety Integrity Level (SIL)	
● according to IEC 61508	3
SIL Claim Limit (subsystem) according to EN 62061	3
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 A
PFHD with high demand rate according to EN 62061	9.4E-10 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	8.3E-7 1/y
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	1
● 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

Subject to change without notice
© Copyright Siemens

— instantaneous contact	0
stop category according to EN 60204-1	0
Inputs	
design of input	
● feedback input	Yes
● start input	Yes
Outputs	
type of electrical connection plug-in socket	No
operating frequency maximum	2 000 1/h
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
● 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
● 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
● 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
thermal current of the switching element with contacts maximum	5 A
electrical endurance (operating cycles) typical	200 000
mechanical service life (operating 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: 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)
DC resistance of the cable maximum	50 Ω
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	
● maximum	30 ms
● typical	20 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 frequency	
● 1 rated value	50 Hz
● 2 rated value	60 Hz
control supply voltage 1	
● at DC rated value	24 V
control supply voltage 1 at AC	

Subject to change without notice
© Copyright Siemens

● at 50 Hz rated value	24 V
● at 60 Hz rated value	24 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 ... 1.2
Installation/ mounting/ dimensions	
mounting position	any
fastening method	snap-on mounting
width	22.5 mm
height	103.6 mm
depth	118 mm
Connections/ Terminals	
type of electrical connection	screw-type terminals
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)
— without core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²)
type of connectable conductor cross-sections for AWG cables	
● solid	1x (20 ... 14), 2x (20 ... 16)
● stranded	1x (20 ... 14), 2x (20 ... 18)
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	Yes
● EMERGENCY OFF function	Yes
● pressure-sensitive mat monitoring	No
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	Yes
● safety-related circuits	Yes
Certificates/ approvals	
certificate of suitability	UL / CSA
● TÜV (German technical inspectorate) certificate	Yes
● UL approval	Yes
● BG BIA approval	No

General Product Approval	**EMC**	**Functional Safety/Safety of Machinery**

Subject to change without notice
© Copyright Siemens


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=3TK2820-1CB30

Cax online generator
http://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, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2820-1CB30&lang=en

last modified: 7/6/2022

Subject to change without notice
© Copyright Siemens