SIEMENS

Product data sheet 3TK2820-1CB30

SIRIUS SAFETY RELAY WITH RELAY ENABLING CIRCUITS,
24 V AC/DC, 22.5MM, SCREW CONNECTION,
BASIC UNIT, AUTO START,
MONITORED START INSTANTANEOUS: 3NO,
DELAYED: 0NO, SIGNALING CIRCUIT: 1NC,
MAX. ERR. CAT. EN954-1: 4 SIL: 3,
PL: E SIL: 3, PL: E

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		IP40
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: 0,75 mm
Resistance against shock		15g / 11 ms
Impulse voltage resistance / rated value	V	4,000
EMC emitted interference		IEC 60947-5-1, IEC 61000

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 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 / transverse contact-secure		Yes
Safety Integrity Level (SIL)		
• 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
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	0.94E-9
Average probability of failure on demand (PFDavg) / with low demand rate / according to IEC 61508	1/y	0.831E-6
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		1
• as NO contact / safety-related / instantaneous switching		3
• as NO contact / safety-related / delayed switching		0
Number of outputs / as contact-less semiconductor switching element		
• safety-related		
• delayed switching		0
• non-delayed		0
• for reporting function		
• delayed switching		0
• non-delayed		0
Stop category / according to DIN EN 60204-1		0

General technical details:

Design of the input		
• feedback input		Yes
• start input		Yes

Design of the electrical connection / jumper socket		No
Operating cycles / maximum	1/h	2,000
Switching capacity current		
• of NO contacts of relay outputs		
• at DC-13		
• at 24 V	A	4
• at 115 V	A	0.2
• at 230 V	A	0.1
• at AC-15		
• at 24 V	A	4
• at 115 V	A	4
• at 230 V	A	4
• of NC contacts of relay outputs		
• at DC-13		
• at 24 V	A	4
• at 115 V	A	0.2
• at 230 V	A	0.1
• at AC-15		
• at 24 V	A	4
• at 115 V	A	4
• at 230 V	A	4
Thermal current / of the contact-affected switching element / maximum	A	5
Electrical operating cycles as operating time / typical		200,000
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: 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)
Resistance to direct current / of the cable / maximum	Ω	50
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		
• typical	ms	110
Make time / with automatic start / after mains power cut		
• typical	ms	110
• maximum	ms	170
Make time / with monitored start		
• maximum	ms	30
• typical	ms	20
Backslide delay time / after opening of the safety circuits / typical	ms	8
Backslide delay time / at mains power cut		

• typical	ms	60
• maximum	ms	70
Recovery time / after opening of the safety circuits / typical	ms	20
Recovery time / after mains power cut / typical	ms	80
Pulse duration		
• of the sensor input / minimum	ms	25
• of the ON pushbutton input / minimum	ms	25

Control circuit:		
Type of voltage / of the controlled supply voltage		AC/DC
Control supply voltage frequency		
• 1 / rated value	Hz	50
• 2 / rated value	Hz	60
Control supply voltage / 1 / for DC / rated value	V	24
Control supply voltage / 1 / at 50 Hz / for AC / rated value	V	24
Control supply voltage / 1 / at 60 Hz / for AC / rated value	V	24
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 … 1.2

Installation/mounting/dimensions:		
mounting position		any
Type of mounting		snap-on mounting
Width	mm	22.5
Height	mm	103.6
Depth	mm	118

Connections:		
Design of the electrical connection		screw-type terminals
Type of the connectable conductor cross-section		
• solid		1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²)
• finely stranded		
• with wire end processing		1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)
• without wire end processing		1x (0.5 … 2.5 mm²), 2x (0.5 … 1.5 mm²)
Type of the connectable conductor cross-sections / for AWG conductors		
• 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
• magnetic switch monitoring Normally closed contact-Normally open contact		No
• rotation speed monitoring		No
• laser scanner monitoring		No
• monitored start-up		Yes
• light grid monitoring		No
• magnetic switch monitoring Normally closed contact-Normally closed contact		Yes
• emergency stop function		Yes
• step mat monitoring		No
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		Yes
• valve monitoring		No
• tactile sensor monitoring		No
• magnetically operated switches monitoring		Yes
• safety-related circuits		Yes

Certificates/approvals:

Verification of suitability		UL / CSA
• TÜV (German technical inspectorate) certificate		Yes
• UL-registration		Yes
• BG BIA certificate		No

General Product Approval				EMC	Functional Safety / Safety of Machinery
CCC	CSA	GOST	UL	C-TICK	VDE

Declaration of Conformity

EG-Konf.

Further information:

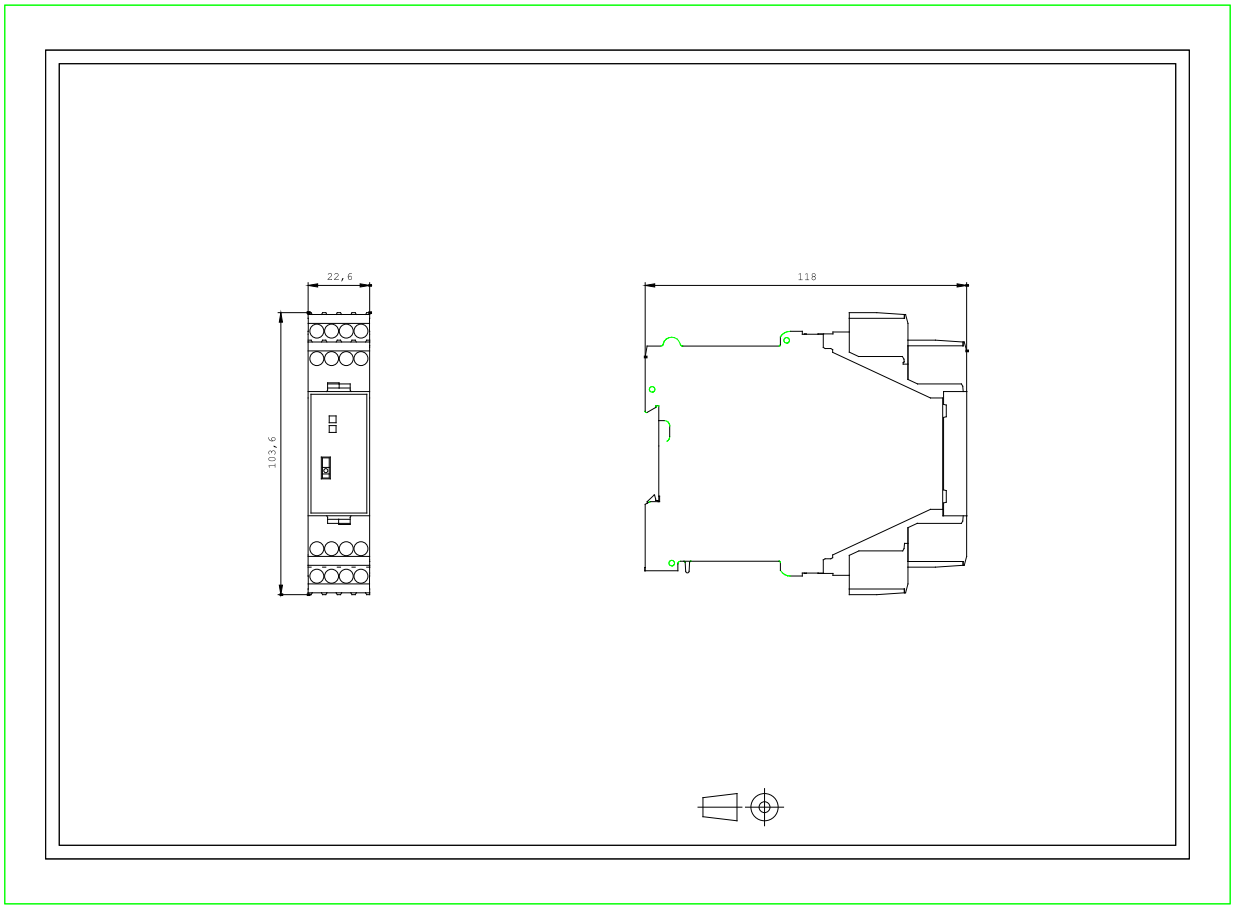
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

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/3TK2820-1CB30/all

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, ...)
http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2820-1CB30



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