SIEMENS

Product data sheet 3TK2830-1CB30



SIRIUS SAFETY RELAY WITH RELAY RELEASE CIRCUITS (FK), 24V AC/DC, 22.5MM, SCREW TERMINAL, FK INSTANT.: 4S, FK DELAYED: 0, MC FOR FEEDBACK: 1, EXPANSION UNIT, MAX. ERR. SIL / PL: 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		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: 0,075 mm
Resistance against shock		8g / 10 ms
Impulse voltage resistance / rated value	V	4,000
EMC emitted interference		EN 60947-5-1

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 		КТ
according to DIN EN 61346-2		F
Design of the cascading		none
Product feature / transverse contact-secure		No
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		е
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 A
Probability of dangerous failure per hour (PFHD) / with high demand rate / according to EN 62061	1/h	0.12E-8
Average probability of failure on demand (PFDavg) / with low demand rate / according to IEC 61508	1/y	0.1E-5
T1 value / for proof test interval or service life / according to IEC 61508	а	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		4
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		
 cascading-input/functional switching 		No
feedback input		Yes

Peelign of the electrical connection / jumper socket Operating cycles / maximum 1/h 1,000	• start input		No
Switching capacity current • of NO contacts of relay outputs • at DC-13 A 5 • at 24 V A 0.2 • at 115 V A 0.1 • at 230 V A 5 • at 175 V A 5 • at 230 V A 5 • at DC-13 A 0.2 • at 115 V A 0.2 • at 115 V A 0.2 • at 24 V A 0.2 • at 115 V A 0.2 • at 230 V A 0.1 • at 24 V • at 115 V A 0.2 • at 230 V A 0.1 • at 230 V A 5 • at 115 V A 5 • at 230 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum B 5 Belotical operating cycles as operating time / typical 100,000 100,000 Resistance to direct current / of the cable / ma	Design of the electrical connection / jumper socket		Yes
- of NO contacts of relay outputs - at 24 V - at 115 V A 0.2 - at 230 V - at 230 V - at 230 V - of NC contacts of relay outputs - at 230 V - of NC contacts of relay outputs - at 24 V - at 115 V A 5 - at 230 V - of NC contacts of relay outputs - at 115 V A 5 - at 230 V - at 115 V A 5 - at 230 V - at 115 V A 0.2 - at 115 V A 0.1 - at 230 V - at 115 V A 5 - at 230 V A 5 - at 230 V A 0.1	Operating cycles / maximum	1/h	1,000
- at DC-13	Switching capacity current		
- at 24 V	of NO contacts of relay outputs		
- at 135 V - at 230 V - at AC-15 - at 115 V - at 130 V - at 1320 V - of NC contacts of relay outputs - at 24 V - at 115 V - at 230 V - at 115 V - at 24 V - at 115 V - at 230 V - at AC-15 - at 115 V - at 230 V - at AC-13 - at 24 V - at 115 V - at 230 V - at AC-15 - at 115 V - at 230 V - at AC-15 - at 115 V - at 230 V - at AC-15 - at 115 V - at 230 V - at AC-16 - at 230 V - at 230 V - at AC-16 - at 230 V - at 30 S - at 230 V - at 30 S - at 230 V - at 250 V -	• at DC-13		
- at 230 V - at AC-15 - at 116 V A 5 - at 230 V A 5 - at 230 V A 5 - of NC contacts of relay outputs - at 224 V A 5 - at 115 V A 0.2 - at 230 V A 0.1 - at AC-15 A 5 - at 230 V A 5 - hermal current / of the contact-affected switching element / maximum A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 Mechanical operating cycles as operating time / typical 100,000 Mechanical operating cycles as operating time / typical 2 2 Resistance to direct current / of the cable / maximum Ω 30 Resistance to direct current / of the cable / maximum Ω 30 Make time / with automatic start ms 30 Cable length / between sensor and electronic evaluation device / with cut of maximum ms 30 Make time / with automatic star	• at 24 V	Α	5
- at AC-15 - at 115 V - at 230 V - of NC contacts of relay outputs - at DC-13 - at 24 V - at 115 V - at 230 V - at 4230 V - at 230 V - at 250	• at 115 V	Α	0.2
• at 115 V A 5 • at 230 V A 5 • of NC contacts of relay outputs A 5 • at DC-13 A 5 • at 24 V A 0.2 • at 115 V A 0.1 • at 230 V A 5 • at 115 V A 5 • at 115 V A 5 • at 230 V A 5 • tall till till till till till till till	• at 230 V	Α	0.1
• at 230 V • of NC contacts of relay outputs • at DC-13 — at 24 V A 5 • at 115 V A 0.2 • at 230 V A 0.1 • at 115 V A 5 • at 115 V A 5 • at 115 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 Mechanical operating cycles as operating time / typical 100,000 Mechanical operating cycles as operating time / typical 10,000,000 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 m 1,000,000 Resistance to direct current / of the cable / maximum Ω 30 Make time / with automatic start m 1,000 with Cu 1.5 mm² and 150 nF/km / maximum ms 30 Make time / with automatic start / after mains power cut ms 30 • maximum ms 30 Backsilde delay	• at AC-15		
• of NC contacts of relay outputs at DC-13 • at DC-13 at 24 V • at 115 V A • at 230 V A • at 115 V A • at 230 V A • tat 240 V B 5 • tat 240 V	• at 115 V	Α	5
• at DC-13 at 24 V A 5 • at 115 V A 0.2 • at 230 V A 0.1 • at 115 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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 for DC / maximum ms 30 Make time / with automatic start / after mains power cut ms 30 • maximum ms 30 Backslide delay time / at mains power cut ms 30 • maximum ms 30 Recovery time / after mains power cut / typical s 50	• at 230 V	Α	5
• at 24 V A 5 • at 115 V A 0.2 • at 230 V A 0.1 • at 115 V A 5 • at 115 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 Mechanical operating cycles as operating time / typical 10,000,000 Besign of the fuse link / for short-circuit protection of the NO contacts of the relay outputs / required g/gG: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum ms 30 Make time / with automatic start ms 30 • for DC / maximum ms 30 • for AC / maximum ms 30 Make time / with automatic start / after mains power cut ms 30 • maximum ms 30 Backslide delay time / after mains power cut / typical s 50 <t< td=""><td>of NC contacts of relay outputs</td><td></td><td></td></t<>	of NC contacts of relay outputs		
• at 115 V A 0.2 • at 230 V A 0.1 • at AC-15 **** **** • at 115 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 Cable length / between sensor and electronic evaluation device / with cut-1.5 mm² and 150 nF/km / maximum m 1,000 Make time / with automatic start ** 30 * for DC / maximum ms 30 * for AC / maximum ms 30 * maximum ms 30 * Backslide delay time / at mains power cut ** * maximum ms 30 * Backslide delay time / at mains power cut / typical s 50 * Control circuit: ** ** * Type of	• at DC-13		
• at 230 V A 0.1 • at AC-15 A 5 • at 115 V A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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 • for DC / maximum ms 30 • for DC / maximum ms 30 • for AC / maximum ms 30 • maximum ms 30 Backslide delay time / at mains power cut • maximum s 5 • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	• at 24 V	Α	5
• at AC-15 A 5 • at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum ms 30 Make time / with automatic start • for DC / maximum ms 30 • for DC / maximum ms 30 • Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	• at 115 V	Α	0.2
+ at 115 V + at 230 V A 5 Thermal current / of the contact-affected switching element / maximum A 5 Electrical operating cycles as operating time / typical 100,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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 • for DC / maximum ms 30 • for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	• at 230 V	Α	0.1
Thermal current / of the contact-affected switching element / maximum Electrical operating cycles as operating time / typical 100,000 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 200,000 Resistance to direct current / of the cable / maximum 200,000 Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum 200,000 Make time / with automatic start - for DC / maximum 200,000 Make time / with automatic start / after mains power cut - maximum 200,000 Backslide delay time / at mains power cut / typical 200,000 Control circuit: Type of voltage / of the controlled supply voltage 200,000 A 5	• at AC-15		
Thermal current / of the contact-affected switching element / maximum Electrical operating cycles as operating time / typical 10,000 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 20 Resistance to direct current / of the cable / maximum Ω 30 Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum ms 30 Make time / with automatic start	• at 115 V	Α	5
maximum 100,000 Electrical operating cycles as operating time / typical 10,000,000 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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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	• at 230 V	Α	5
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: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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 • for DC / maximum ms 30 • for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Control circuit: AC/DC		Α	5
Design of the fuse link / for short-circuit protection of the NO contacts of the relay outputs / required gL/gG: 6 A, or quick: 10 A Resistance to direct current / of the cable / maximum Ω 30 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 • for DC / maximum ms 30 • for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Electrical operating cycles as operating time / typical		100,000
of the relay outputs / required Resistance to direct current / of the cable / maximum Ω 30 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 • for DC / maximum ms 30 • for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Mechanical operating cycles as operating time / typical		10,000,000
Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum Make time / with automatic start • for DC / maximum • for AC / maximum Make time / with automatic start / after mains power cut • maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical S 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC			gL/gG: 6 A, or quick: 10 A
with Cu 1.5 mm² and 150 nF/km / maximum Make time / with automatic start • for DC / maximum • for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Resistance to direct current / of the cable / maximum	Ω	30
• for DC / maximum • for AC / maximum Make time / with automatic start / after mains power cut • maximum Backslide delay time / at mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC		m	1,000
• for AC / maximum ms 30 Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Make time / with automatic start		
Make time / with automatic start / after mains power cut • maximum ms 30 Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical Control circuit: Type of voltage / of the controlled supply voltage AC/DC	• for DC / maximum	ms	30
maximum ms 30 Backslide delay time / at mains power cut maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage	• for AC / maximum	ms	30
Backslide delay time / at mains power cut • maximum ms 25 Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Make time / with automatic start / after mains power cut		
maximum ms 25 Recovery time / after mains power cut / typical	• maximum	ms	30
Recovery time / after mains power cut / typical s 50 Control circuit: Type of voltage / of the controlled supply voltage AC/DC	Backslide delay time / at mains power cut		
Control circuit: Type of voltage / of the controlled supply voltage AC/DC	• maximum	ms	25
Type of voltage / of the controlled supply voltage AC/DC	Recovery time / after mains power cut / typical	S	50
	Control circuit:		
Control supply voltage frequency	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		screw and snap-on mounting
Width	mm	22.5
Height	mm	120
Depth	mm	120

Connections:	
Design of the electrical connection	screw-type terminals
Type of the connectable conductor cross-section	
• solid	1x (0.5 4 mm²), 2x (0.5 2.5 mm²)
finely stranded	
with 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	2x (20 14)
• stranded	2x (20 14)

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 	No
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	No
EMERGENCY-OFF circuit monitoring	No
valve monitoring	No
tactile sensor monitoring	No
magnetically operated switches monitoring	No
safety-related circuits	No

Certificates/approvals:

Verification of suitability

BG, SUVA, UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508

• TÜV (German technical inspectorate) certificate

Yes

UL-registrationBG BIA certificateNo

General Product Approval

EMC

Functional Safety / Safety of Machinery













Declaration of Conformity Test Certificates

other

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Special Test Certificate Confirmation

Environmental Confirmations

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:

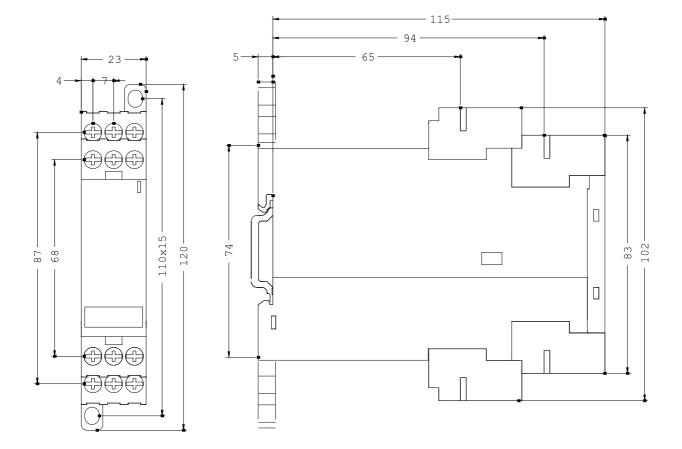
http://www.siemens.com/cax

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

http://support.automation.siemens.com/WW/view/en/3TK2830-1CB30/all

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, ...)

http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2830-1CB30



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