SIEMENS

Data sheet

3TK2810-0BA01

SIRIUS safety relay safety-oriented Standstill monitoring 24 V DC, 45 mm screw terminal EC instantaneous: 3 NO + 1 NC EC delayed: 0 SC: 3 Auto-start Basic unit max. error category EN 954-1: 4 Maximum achievable PL according to EN 13849-1: Maximum achievable SIL according to IEC 61508: 3

General technical data	
Product brand name	SIRIUS
Product designation	Standstill monitor
Design of the product	for safe stoppage monitoring
Protection class IP of the enclosure	IP20
Protection class IP of the terminal	IP20
Protection against electrical shock	finger-safe
Insulation voltage rated value	690 V
Ambient temperature	
 during storage 	-40 +75 °C
 during operation 	-25 +60 °C
Air pressure acc. 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 acc. to IEC 60068-2-6	10 55 Hz: 0.35 mm
Shock resistance	8g / 10 ms
Surge voltage resistance rated value	6 000 V
EMC emitted interference	IEC 61000-6-2, IEC 61000-6-3

Installation environment regarding 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.
Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750	KT
Reference code acc. to DIN EN 61346-2	F
Number of sensor inputs	
 1-channel or 2-channel 	1
Design of the cascading	none
Type of the safety-related wiring of the inputs	measuring inputs
Product feature cross-circuit-proof	No
Safety Integrity Level (SIL)	
• acc. to IEC 61508	3
 for delayed release circuit acc. to IEC 61508 	SIL3
SIL Claim Limit (subsystem) acc. to EN 62061	3
Performance level (PL)	
• acc. to EN ISO 13849-1	e
Category acc. to EN ISO 13849-1	4
Hardware fault tolerance acc. to IEC 61508	1
Safety device type acc. to IEC 61508-2	Туре В
PFHD with high demand rate acc. to EN 62061	0.000000015 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	0.002 1/y
T1 value for proof test interval or service life acc. to IEC 61508	20 у
Number of outputs as contact-affected switching	
element	
 as NC contact 	
 for signaling function instantaneous contact 	2
• as NO contact	
— safety-related instantaneous contact	4
— 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
— instantaneous contact	2
Stop category acc. to DIN EN 60204-1	0
otop vategory ave. to Dira Lia 00204-1	v

Design of Input • cascading input/functional switching No • cascading input/functional switching Yes • Start input Yes • Operating frequency maximum 1 200 1/h Switching capacity current • of semiconductor outputs • of semiconductor outputs 0.1 A • of semiconductor outputs 0.1 A • of the NO contacts of the relay outputs at DC-13 2 A • of the NO contacts of the relay outputs at AC-15 2 A • of the NO contacts of the relay outputs at AC-15 3 A - at 230 V 3 A • of the NC contacts of the relay outputs at AC-15 2 A - at 230 V 3 A • of the NC contacts of the relay outputs at AC-15 2 A - at 230 V 2 A • of the NC contacts of the relay outputs at AC-15 2 A - at 230 V 2 A • of the NC contacts of the relay outputs at AC-15 2 A - at 230 V 2 A Thermal current of the switching element with contacts maximum 5 A Electrical endurance (switching cycles) typical 50 000 000 Design of the fuels link for short-circuit protection of the NO contacts of the relay outputs reaction of the NO contacts of the relay outputs reaction of the NO contacts of the relay outputs reaction of the NO contacts of the relay outputs reaction of the NO contacts of the relay outputs	General technical data	
• feedback inputYes• Start inputNoType of electrical connection Plug-in socketYesOperating frequency maximum1200 1/hSwitching capacity current0.1 A• of semiconductor outputs0.1 A- for signaling function at DC-13 at 24 V0.1 A• of the NO contacts of the relay outputs at DC-132 A13- at 24 V2 A• of the NO contacts of the relay outputs at DC-153 A- at 21 V3 A- at 23 V3 A• of the NC contacts of the relay outputs at DC-1313- at 23 V- at 23 V3 A• of the NC contacts of the relay outputs at DC-13- at 24 V2 A• of the NC contacts of the relay outputs at DC-13- at 23 V3 A• of the NC contacts of the relay outputs at AC-15- at 215 V2 A- at 115 V2 A- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of th	Design of input	
 Start input No Type of electrical connection Plug-in socket Yes Operating frequency maximum 1 200 1/h Switching capacity current of semiconductor outputs for signaling function at DC-13 at 24 V of the NO contacts of the relay outputs at DC-13 at 24 V of the NO contacts of the relay outputs at AC-15 at 115 V at 230 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-13 at 24 V of the NC contacts of the relay outputs at DC-14 at 24 V of the NC contacts of the relay outputs	 cascading input/functional switching 	No
Type of electrical connection Plug-in socketYesOperating frequency maximum1 200 1/hSwitching capacity current0.1 A• of semiconductor outputs0.1 A- for signaling function at DC-13 at 24 V0.1 A• of the NO contacts of the relay outputs at DC-132 A• of the NO contacts of the relay outputs at AC-153 A- at 24 V2 A• of the NO contacts of the relay outputs at AC-153 A- at 230 V3 A• of the NC contacts of the relay outputs at DC-1313- at 230 V- at 24 V2 A• of the NC contacts of the relay outputs at DC-1313- at 230 V- at 24 V2 A• of the NC contacts of the relay outputs at DC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 115 V2 A- at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical50 000 000Machanical service life (switching cycles) typical50 000 000Design of the relay outputs required0.2 6 sAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl supply voltage 1DC	 feedback input 	Yes
Operating frequency maximum1 200 1/hSwitching capacity current- for signaling function at DC-13 at 24 V0.1 A• of the NO contacts of the relay outputs at DC-13- at 24 V2 A• of the NO contacts of the relay outputs at AC-15- at 215 V3 A- at 215 V3 A- at 230 V3 A• of the NC contacts of the relay outputs at DC-13- at 24 V2 A• of the NC contacts of the relay outputs at DC-13- at 230 V3 A• of the NC contacts of the relay outputs at DC-13- at 24 V2 A• of the NC contacts of the relay outputs at DC-13- at 24 V2 A• of the NC contacts of the relay outputs at DC-13- at 24 V2 A• of the NC contacts of the relay outputs at AC-15- at 24 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• of the NC contacts of the relay outputs at AC-15- at 230 V2 A• at 115 V2 A2 A- at 230 V2 A- at 230 VElectrical endurance (switching cycles) typical5000 000Design of the fuse link for short-circuit protection of the NC contacts of the relay outputs required5 AAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl Circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1DC	Start input	No
Witching capacity current0.1 A• of semiconductor outputs0.1 A• of the NO contacts of the relay outputs at DC- 13 - at 24 V2 A• of the NO contacts of the relay outputs at AC- 15 - at 115 V3 A• of the NC contacts of the relay outputs at DC- 13 - at 230 V3 A• of the NC contacts of the relay outputs at DC- 13 - at 230 V3 A• of the NC contacts of the relay outputs at DC- 13 - at 24 V2 A• of the NC contacts of the relay outputs at DC- 13 - at 24 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 115 V - at 230 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 1230 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 230 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 230 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 230 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 230 V2 A• Thermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical te NO contacts of the relay outputs required Adjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltage Control supply voltage 1DC	Type of electrical connection Plug-in socket	Yes
 of seniconductor outputs for signaling function at DC-13 at 24 V of the NO contacts of the relay outputs at DC-13 at 24 V at 24 V at 115 V at 210 V at 230 V at 24 V at 24 V at 24 V at 215 V at 210 V at 230 V at 24 V at 230 V at 24 V at 20 V<th>Operating frequency maximum</th><th>1 200 1/h</th>	Operating frequency maximum	1 200 1/h
- for signaling function at DC-13 at 24 V0.1 Å• of the NO contacts of the relay outputs at DC-13 - at 24 V2 Å• of the NO contacts of the relay outputs at AC-15 - at 115 V3 Å- at 230 V3 Å• of the NC contacts of the relay outputs at DC-13 - at 230 V2 Å• of the NC contacts of the relay outputs at DC-13 - at 230 V2 Å- at 115 V2 Å- at 230 V2 Å• of the NC contacts of the relay outputs at DC-13 - at 230 V2 Å- at 115 V2 Å- at 230 V2 Å• of the NC contacts of the relay outputs at AC-15 - at 230 V2 ÅDesign of the fuse link for short-circuit protection of the NO contacts of the relay outputs at AC- 15 - at 230 V50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required50 000 000Adjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1DC	Switching capacity current	
 of the NO contacts of the relay outputs at DC- 13 -at 24 V of the NO contacts of the relay outputs at AC- 15	 of semiconductor outputs 	
132 A- at 24 V2 A• of the NO contacts of the relay outputs at AC- 153 A- at 115 V3 A- at 230 V3 A• of the NC contacts of the relay outputs at DC- 132 A- at 24 V2 A• of the NC contacts of the relay outputs at AC- 152 A- at 115 V2 A- at 115 V2 A- at 115 V2 A- at 115 V2 A- at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required00 000Adjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1DC	— for signaling function at DC-13 at 24 V	0.1 A
of the NC 153 A- at 115 V3 A- at 230 V3 A• of the NC contacts of the relay outputs at DC- 13- at 24 V- at 24 V2 A• of the NC contacts of the relay outputs at AC- 15- at 230 V- at 230 V2 A• of the NC contacts of the relay outputs at AC- 15- at 230 V15- at 115 V- at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required50 000 000Adjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltage Control supply voltage 1DC		
153 A- at 115 V3 A- at 230 V3 A• of the NC contacts of the relay outputs at DC- 13- at 24 V- at 24 V2 A• of the NC contacts of the relay outputs at AC- 15- at 115 V- at 115 V2 A- at 115 V2 A- at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical Design of the fuse link for short-circuit protection of the NC contacts of the relay outputs required Adjustable OFF-delay time after opening of the safety circuits200 000Control circuit/ Control0.2 6 sType of voltage of the control supply voltage Control supply voltage 1DC	— at 24 V	2 A
- at 230 V3 A• of the NC contacts of the relay outputs at DC- 13 - at 24 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 115 V - at 230 V2 A• at 115 V - at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical200 000Mechanical service life (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs requiredquick: 5 AAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1DC		
 of the NC contacts of the relay outputs at DC- 13 - at 24 V of the NC contacts of the relay outputs at AC- 15	— at 115 V	3 A
13 - at 24 V2 A• of the NC contacts of the relay outputs at AC- 15 - at 115 V - at 230 V2 A2 A 2 A2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical200 000Mechanical service life (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of 	— at 230 V	3 A
152 A- at 115 V2 A- at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical200 000Mechanical service life (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs requiredquick: 5 AAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1Image: State	— at 24 V	2 A
at 230 V2 AThermal current of the switching element with contacts maximum5 AElectrical endurance (switching cycles) typical200 000Mechanical service life (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs requiredquick: 5 AAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1Interference		
Thermal current of the switching element with contacts maximum 5 A Electrical endurance (switching cycles) typical 200 000 Mechanical service life (switching cycles) typical 50 000 000 Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required quick: 5 A Adjustable OFF-delay time after opening of the safety circuits 0.2 6 s Control circuit/ Control DC Type of voltage of the control supply voltage DC Control supply voltage 1 DC	— at 115 V	2 A
contacts maximum200 000Electrical endurance (switching cycles) typical200 000Mechanical service life (switching cycles) typical50 000 000Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs requiredquick: 5 AAdjustable OFF-delay time after opening of the safety circuits0.2 6 sControl circuit/ ControlDCType of voltage of the control supply voltageDCControl supply voltage 1DC	— at 230 V	2 A
Mechanical service life (switching cycles) typical 50 000 000 Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required quick: 5 A Adjustable OFF-delay time after opening of the safety circuits 0.2 6 s Control circuit/ Control DC Type of voltage of the control supply voltage Control supply voltage 1 DC	-	5 A
Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required quick: 5 A Adjustable OFF-delay time after opening of the safety circuits 0.2 6 s Control circuit/ Control DC Type of voltage of the control supply voltage DC Control supply voltage 1 DC	Electrical endurance (switching cycles) typical	200 000
the NO contacts of the relay outputs required 0.2 6 s Adjustable OFF-delay time after opening of the safety circuits 0.2 6 s Control circuit/ Control DC Type of voltage of the control supply voltage DC Control supply voltage 1 DC	Mechanical service life (switching cycles) typical	50 000 000
circuits Control circuit/ Control Type of voltage of the control supply voltage Control supply voltage 1 Control supply voltage 1		quick: 5 A
Type of voltage of the control supply voltage DC Control supply voltage 1 DC		0.2 6 s
Type of voltage of the control supply voltage DC Control supply voltage 1 DC	Control circuit/ Control	
		DC
• at DC rated value 24 V	Control supply voltage 1	
	• at DC rated value	24 V
Operating range factor control supply voltage rated		
value of magnet coil	-	
• at DC 0.9 1.2	• at DC	0.9 1.2
Installation/ mounting/ dimensions	Installation/ mounting/ dimensions	
Mounting position any	Mounting position	any
Mounting type screw and snap-on mounting	Mounting type	screw and snap-on mounting
Width 45 mm	Width	45 mm

Connections/ Terminals Type of electrical connection Scale Type of connectable conductor cross-sections	20 mm crew-type terminals < (0.5 4.0 mm²), 2x (0.5 2.5 mm²) < (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
Type of electrical connection sci Type of connectable conductor cross-sections a • solid 1x	k (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
Type of electrical connection sci Type of connectable conductor cross-sections solid • solid 1x	k (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
Type of connectable conductor cross-sections 1x • solid 1x	k (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
• finely stranded	x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
	x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
- with core end processing 1x	
Type of connectable conductor cross-sections at	
AWG conductors	
	κ (20 14)
• stranded 2x	κ (20 14)
Product Function	
Product function	
Light barrier monitoring No	0
Standstill monitoring Ye	es
protective door monitoring No	0
Automatic start No	0
magnetically operated switch monitoring NC- NO	0
rotation speed monitoring No	0
laser scanner monitoring No	0
monitored start-up No	0
Light array monitoring No	0
magnetically operated switch monitoring NC- NC	0
EMERGENCY OFF function No	0
Pressure-sensitive mat monitoring No	0
Suitability for interaction press control No	0
Suitability for use	
• safety switch Ye	es
position switch monitoring	0
EMERGENCY-OFF circuit monitoring No	0
valve monitoring No	0
tactile sensor monitoring No	0
magnetically operated switch monitoring No	0
• safety-related circuits Ye	es
Certificates/ approvals	
Certificate of suitability UL	L, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
• TÜV (German technical inspectorate) certificate	es
• UL approval Ye	es

 BG BIA certificate

General Product Approval	
--------------------------	--

(\mathbf{m})
CCC









Declaration of

Conformity

Functional

Safety/Safety

of Machinery

Certificate

Declaration of Conformity	Test Certific- ates	other	Railway	
Miscellaneous	Special Test Certi- ficate	Confirmation	Confirmation	

Further information

Information- and Downloadcenter (Catalogs, Brochures,...) https://www.siemens.com/ic10

Industry Mall (Online ordering system)

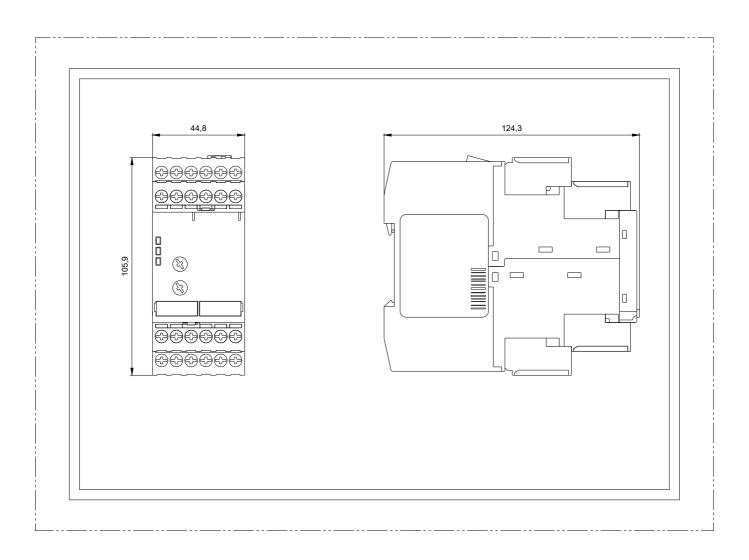
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3TK2810-0BA01

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2810-0BA01

Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3TK2810-0BA01

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2810-0BA01&lang=en



last modified:

03/10/2020