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Data sheet 3TK2810-1BA42



SIRIUS safety relay Safety-oriented Speed monitoring 24 V DC, 45 mm overall width Spring-type terminal EC instantaneous: 2 NO EC delayed: 0 SC: 2 electrical Auto-start/manual start Basic device Maximum achievable PL according to EN 13849-1: e Maximum achievable SIL according to IEC 61508: 3

product brand name	SIRIUS
product designation	Speed monitor
design of the product	standstill and speed monitoring
product type designation	3TK28
Product Function	
product function	
● automatic start	Yes
● light barrier monitoring	No
● standstill monitoring	Yes
● protective door monitoring	Yes
● magnetically operated switch monitoring NC-NO	No
● magnetically operated switch monitoring NC-NC	No
● rotation speed monitoring	Yes
● 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	No
● valve monitoring	No
● opto-electronic protection device monitoring	No
● tactile sensor monitoring	No
● magnetically operated switch monitoring	No
● proximity switch monitoring	Yes
● 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	IP20
shock resistance	8 g / 10 ms
vibration resistance according to IEC 60068-2-6	10 ... 55 Hz: 0.35 mm

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electrical endurance (operating cycles) typical	100 000
Substance Prohibitance (day/month/year)	05/01/2012
SVHC substance name	Lead CAS-No. 7439-92-1
Net Weight	0.414 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
● note	installation altitude: 5000 m with derating
ambient temperature	
● during operation	0 ... 60 °C; from an operating altitude > 2000 m, the maximum permissible temperature is reduced by 0.5 °C / 100 m
● during storage	-20 ... +70 °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	EN 60947-5-1
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
Safety Integrity Level (SIL) according to IEC 62061	SIL 3
PFHD with high demand rate according to IEC 62061	3.4E-9 1/h
ISO 13849	
category according to EN ISO 13849-1	4
performance level (PL)	
● **according to ISO 13849-1**	PL e
● for delayed release circuit according to ISO 13849-1	e
IEC 61508	
Safety Integrity Level (SIL)	
● according to IEC 61508	3
● for delayed release circuit according to IEC 61508	SIL3
safety device type according to IEC 61508-2	Type B
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: 4 A
Inputs	
design of input	
● cascading input/functional switching	No
● feedback input	Yes
● start input	Yes
number of sensor inputs	
● 1-channel or 2-channel	0
● 2-channel	3
Outputs	
number of outputs as contact-affected switching element	
● as NC contact	
— for signaling function instantaneous contact	0
— for signaling function delayed switching	0
— safety-related instantaneous contact	0
— safety-related delayed switching	0
● as NO contact	
— for signaling function instantaneous contact	0

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— for signaling function delayed switching	0
— safety-related instantaneous contact	1
— safety-related delayed switching	1
mechanical service life (operating cycles) typical	50 000 000
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	1
— instantaneous contact	1
● safety-related	
— delayed switching	0
— instantaneous contact	0
switching capacity current of semiconductor outputs	
● for signaling function at DC-13 at 24 V	0.02 A
switching capacity current of the NO contacts of the relay outputs at DC-13	
● at 24 V	2 A
● at 115 V	2 A
switching capacity current of the NO contacts of the relay outputs at AC-15	
● at 24 V	3 A
● at 230 V	3 A
switching capacity current of the NC contacts of the relay outputs at AC-15	
● at 24 V	3 A
● at 115 V	3 A
● at 230 V	2 A
type of switching output	optionally PNP or NPN
Encoder	
encoder signal evaluation	two signal tracks each with inverted signals
type of signal level of the encoder	optionally TTL, HTL or sin/cos (Ua = 1Vss)
type of failure response of the encoder	high-resistance
Proximity switch	
type of voltage of the supply voltage of proximity switches	DC
supply voltage of proximity switches	24 V; provided by the device
current consumption of proximity switches maximum	30 mA
input voltage for proximity switch minimum	10 V
pulse duration of proximity switches minimum	75 µs
interpulse period of proximity switches minimum	75 µs
adjustment range of signal frequency of proximity switches	1 Hz ... 2 kHz
measuring precision	+-2 %
switching hysteresis	6.25 %
Control circuit/ Control	
type of voltage of the control supply voltage	DC
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	0.9
● full-scale value	1.1
Installation/ mounting/ dimensions	
mounting position	any
fastening method	screw and snap-on mounting
height	107.7 mm
width	45 mm
depth	124.3 mm
Connections/ Terminals	
type of electrical connection	spring-loaded terminals
type of connectable conductor cross-sections	

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● solid	1x (0.5 ... 4 mm²)
● finely stranded with core end processing	2 x (0.25 ... 1.5 mm²)
● finely stranded without core end processing	2x (0.25 ... 1.5 mm²)
● for AWG cables solid	2x (24 ... 16)
● for AWG cables stranded	2x (20 ... 16)
connectable conductor cross-section	
● solid	0.25 ... 1.5 mm²
● finely stranded with core end processing	0.25 ... 1.5 mm²
● finely stranded without core end processing	0.25 ... 1.5 mm²
AWG number as coded connectable conductor cross section	
● solid	24 ... 16
● stranded	24 ... 16

Approvals Certificates

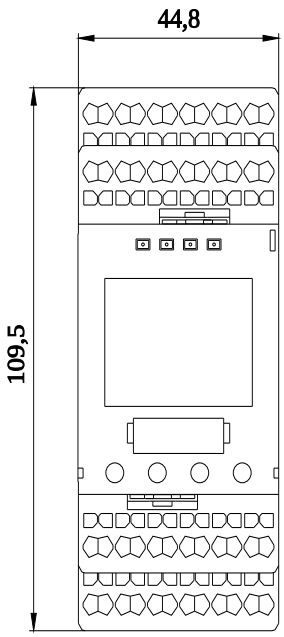
Environment	General Product Approval				
Environmental Confirmations	CCC	UL	EAC	CE EG-Konf.	UKCA

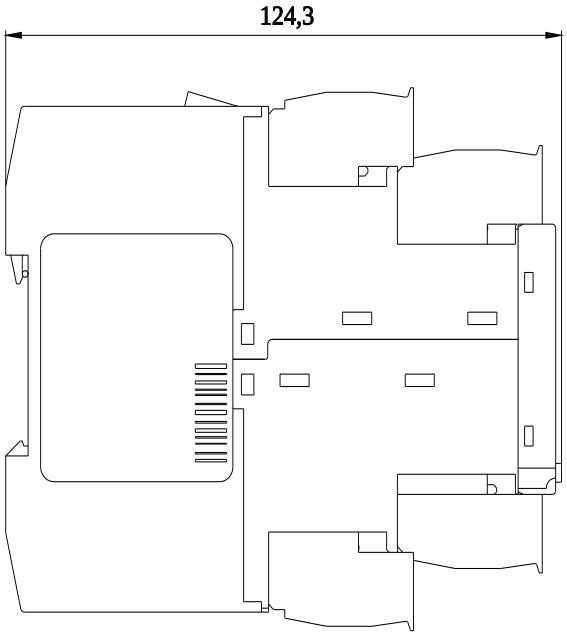
Functional Saftey	Test Certificates	other		Railway
Type Examination Certificate	Special Test Certificate	Confirmation	产品合格 QC PASS	Confirmation

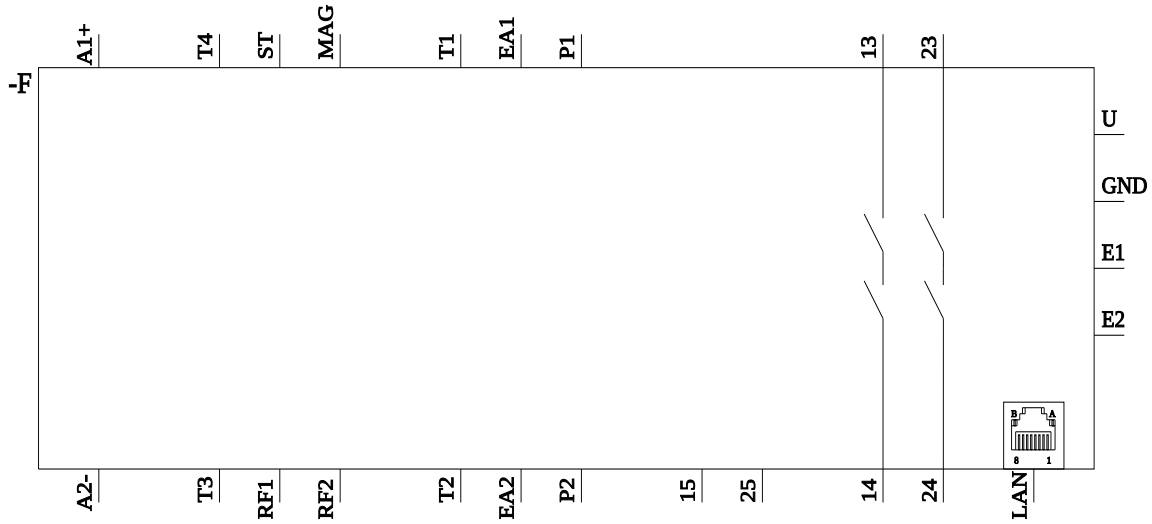
Further information

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=3TK2810-1BA42
Cax online generator
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2810-1BA42
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3TK2810-1BA42
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2810-1BA42&lang=en

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