



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

<b>product brand name</b>	SIRIUS
<b>product designation</b>	Speed monitor
<b>design of the product</b>	standstill and speed monitoring
<b>product type designation</b>	3TK28
<b>Product Function</b>	
<b>product function</b>	
<ul style="list-style-type: none"> <li>• automatic start</li> <li>• light barrier monitoring</li> <li>• standstill monitoring</li> <li>• protective door monitoring</li> <li>• magnetically operated switch monitoring NC-NO</li> <li>• magnetically operated switch monitoring NC-NC</li> <li>• rotation speed monitoring</li> <li>• laser scanner monitoring</li> <li>• light array monitoring</li> <li>• EMERGENCY OFF function</li> <li>• monitored start-up</li> <li>• pressure-sensitive mat monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>No</li> <li>Yes</li> <li>Yes</li> <li>No</li> <li>No</li> <li>Yes</li> <li>No</li> <li>No</li> <li>Yes</li> <li>Yes</li> <li>No</li> </ul>
<b>suitability for interaction press control</b>	No
<b>suitability for use</b>	
<ul style="list-style-type: none"> <li>• monitoring of floating sensors</li> <li>• monitoring of non-floating sensors</li> <li>• position switch monitoring</li> <li>• EMERGENCY-OFF circuit monitoring</li> <li>• valve monitoring</li> <li>• opto-electronic protection device monitoring</li> <li>• tactile sensor monitoring</li> <li>• magnetically operated switch monitoring</li> <li>• proximity switch monitoring</li> <li>• safety switch</li> <li>• safety-related circuits</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>No</li> <li>Yes</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>No</li> <li>Yes</li> <li>Yes</li> <li>Yes</li> </ul>
<b>General technical data</b>	
certificate of suitability UL approval	Yes
<b>product feature cross-circuit-proof</b>	Yes
<b>insulation voltage rated value</b>	300 V
<b>surge voltage resistance rated value</b>	4 000 V
<b>protection class IP</b>	
<ul style="list-style-type: none"> <li>• of the enclosure</li> </ul>	IP20
<b>shock resistance</b>	8g / 10 ms

<b>vibration resistance according to IEC 60068-2-6</b>	10 ... 55 Hz: 0.35 mm
<b>mechanical service life (operating cycles) typical</b>	50 000 000
electrical endurance (operating cycles) typical	100 000
<b>thermal current of the switching element with contacts maximum</b>	5 A
<b>Substance Prohibitance (Date)</b>	05/01/2012
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
<b>Weight</b>	0.427 kg
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m; installation altitude: 5000 m with derating
<b>ambient temperature</b>	
• 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
<b>Electromagnetic compatibility</b>	
<b>installation environment regarding EMC</b>	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.
<b>EMC emitted interference</b>	EN 60947-5-1
<b>Safety related data</b>	
<b>stop category according to IEC 60204-1</b>	0
IEC 62061	
SIL Claim Limit (subsystem) according to EN 62061	3
<b>Safety Integrity Level (SIL) according to IEC 62061</b>	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
<b>performance level (PL)</b>	
• according to ISO 13849-1	PL e
• for delayed release circuit according to ISO 13849-1	e
IEC 61508	
<b>Safety Integrity Level (SIL)</b>	
• according to IEC 61508	3
• for delayed release circuit according to IEC 61508	SIL3
<b>safety device type according to IEC 61508-2</b>	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	
<b>touch protection against electrical shock</b>	finger-safe
<b>Short-circuit protection</b>	
design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required	gL/gG: 4 A
<b>Inputs</b>	
<b>design of input</b>	
• cascading input/functional switching	No
• feedback input	Yes
• start input	Yes
<b>number of sensor inputs</b>	
• 1-channel or 2-channel	0
• 2-channel	3
<b>Outputs</b>	
<b>number of outputs as contact-affected switching element</b>	
• 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

<ul style="list-style-type: none"> <li>● as NO contact <ul style="list-style-type: none"> <li>— for signaling function instantaneous contact</li> <li>— for signaling function delayed switching</li> <li>— safety-related instantaneous contact</li> <li>— safety-related delayed switching</li> </ul> </li> </ul>	<p>0</p> <p>0</p> <p>1</p> <p>1</p>
<b>number of outputs as contact-less semiconductor switching element</b> <ul style="list-style-type: none"> <li>● for signaling function <ul style="list-style-type: none"> <li>— delayed switching</li> <li>— instantaneous contact</li> </ul> </li> <li>● safety-related <ul style="list-style-type: none"> <li>— delayed switching</li> <li>— instantaneous contact</li> </ul> </li> </ul>	<p>1</p> <p>1</p> <p>0</p> <p>0</p>
<b>switching capacity current of semiconductor outputs</b> <ul style="list-style-type: none"> <li>● for signaling function at DC-13 at 24 V</li> </ul>	0.02 A
<b>switching capacity current of the NO contacts of the relay outputs at DC-13</b> <ul style="list-style-type: none"> <li>● at 24 V</li> </ul>	2 A
<b>switching capacity current of the NO contacts of the relay outputs at AC-15</b> <ul style="list-style-type: none"> <li>● at 24 V</li> <li>● at 230 V</li> </ul>	<p>3 A</p> <p>3 A</p>
<b>switching capacity current of the NC contacts of the relay outputs at AC-15</b> <ul style="list-style-type: none"> <li>● at 24 V</li> <li>● at 115 V</li> <li>● at 230 V</li> </ul>	<p>3 A</p> <p>3 A</p> <p>2 A</p>
<b>Encoder</b>	
<b>encoder signal evaluation</b>	two signal tracks each with inverted signals
<b>type of signal level of the encoder</b>	optionally TTL, HTL or sin/cos ( $U_a = 1V_{ss}$ )
<b>type of failure response of the encoder</b>	high-resistance
<b>Proximity switch</b>	
<b>measuring precision</b>	+2 %
<b>switching hysteresis</b>	6.25 %
<b>NAMUR sensors</b>	
<b>type of voltage of the supply voltage of NAMUR sensors</b>	DC
<b>supply voltage of NAMUR sensors</b>	8.2 V; provided by the device
<b>switching threshold for input current at input of NAMUR sensors</b> <ul style="list-style-type: none"> <li>● with signal &lt;0&gt;</li> <li>● for signal &lt;1&gt;</li> </ul>	<p>1.6 mA</p> <p>1.8 mA</p>
<b>switching threshold for input current at input of NAMUR sensors</b> <ul style="list-style-type: none"> <li>● for cable break maximum</li> <li>● on short circuit minimum</li> </ul>	<p>0.15 mA</p> <p>6 mA</p>
<b>pulse duration of NAMUR sensors minimum</b>	75 $\mu$ s
<b>interpulse period of NAMUR sensors minimum</b>	75 $\mu$ s
<b>adjustment range of signal frequency of NAMUR sensors</b>	1 Hz ... 2 kHz
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage 1 at DC rated value</b>	24 V
<b>operating range factor control supply voltage rated value of magnet coil at DC</b> <ul style="list-style-type: none"> <li>● initial value</li> <li>● full-scale value</li> </ul>	<p>0.9</p> <p>1.1</p>
<b>Installation/ mounting/ dimensions</b>	
<b>mounting position</b>	any
<b>fastening method</b>	screw and snap-on mounting
<b>height</b>	105.9 mm
<b>width</b>	45 mm
<b>depth</b>	124.3 mm

## Connections/ Terminals

<b>type of electrical connection</b>	screw terminal
<b>type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>• solid</li> </ul>	1x (0.5 ... 4 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• for AWG cables solid</li> </ul>	2x (20 ... 14)
<ul style="list-style-type: none"> <li>• for AWG cables stranded</li> </ul>	2x (20 ... 14)
<b>connectable conductor cross-section</b>	
<ul style="list-style-type: none"> <li>• solid</li> </ul>	0.5 ... 4 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>	0.5 ... 2.5 mm <sup>2</sup>
<b>AWG number as coded connectable conductor cross section</b>	
<ul style="list-style-type: none"> <li>• solid</li> </ul>	20 ... 14
<ul style="list-style-type: none"> <li>• stranded</li> </ul>	20 ... 14

## Approvals Certificates

General Product Approval	Functional Safety
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[Type Examination Certificate](#)

Test Certificates	other	Railway	Environment
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[Special Test Certificate](#)



[Confirmation](#)

[Confirmation](#)

[Environmental Confirmations](#)

## 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=3TK2810-1BA41-0AA0>

### Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2810-1BA41-0AA0>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3TK2810-1BA41-0AA0>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3TK2810-1BA41-0AA0&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2810-1BA41-0AA0&lang=en)



