



SIRIUS SAFETY RELAY WITH RELAY ENABLING CIRCUITS,
230 V AC, 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 • as NO contact / safety-related / instantaneous switching • as NO contact / safety-related / delayed switching		1 3 0
Number of outputs / as contact-less semiconductor switching element • safety-related • delayed switching • non-delayed • for reporting function • delayed switching • non-delayed		0 0 0 0 0
Stop category / according to DIN EN 60204-1		0

General technical details:

Design of the input

- feedback input
- start input

Yes
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	400
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	40
• maximum	ms	45
Recovery time / after opening of the safety circuits / typical	ms	20
Recovery time / after mains power cut / typical	ms	60
Pulse duration		
• of the sensor input / minimum	ms	35
• of the ON pushbutton input / minimum	ms	35

Control circuit:		
Type of voltage / of the controlled supply voltage		AC
Control supply voltage frequency		
• 1 / rated value	Hz	50
• 2 / rated value	Hz	60
Control supply voltage / 1 / at 50 Hz / for AC / rated value	V	230
Control supply voltage / 1 / at 60 Hz / for AC / rated value	V	230
operating range factor control supply voltage rated value / of the magnet coil		
• at 50 Hz		0.85 ... 1.1
• for AC		
• at 60 Hz		0.85 ... 1.1
• for AC		

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-section / for AWG conductors		
• solid		1x (20 ... 14), 2x (20 ... 16)
• stranded		1x (20 ... 14), 2x (20 ... 18)

Product Function:**Product function**

- light barrier monitoring
- standstill monitoring
- protective door monitoring
- automatic start
- magnetic switch monitoring Normally closed contact-Normally open contact
- rotation speed monitoring
- laser scanner monitoring
- monitored start-up
- light grid monitoring
- magnetic switch monitoring Normally closed contact-Normally closed contact
- emergency stop function
- step mat monitoring

No

No

Yes

Yes

No

No

No

Yes

No

Yes

Yes

No

Suitability for interaction / pressing control

No

Acceptability for application

- monitoring of floating sensors
- monitoring of non-floating sensors
- safety cut-out switch
- position switch monitoring
- EMERGENCY-OFF circuit monitoring
- valve monitoring
- tactile sensor monitoring
- magnetically operated switches monitoring
- safety-related circuits

Yes

No

Yes

Yes

Yes

No

No

Yes

Yes

Certificates/approvals:**Verification of suitability**

- TÜV (German technical inspectorate) certificate
- UL-registration
- BG BIA certificate

UL / CSA

Yes

Yes

No

General Product Approval

EMC

Functional Safety /
Safety of Machinery



Declaration of Conformity



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:

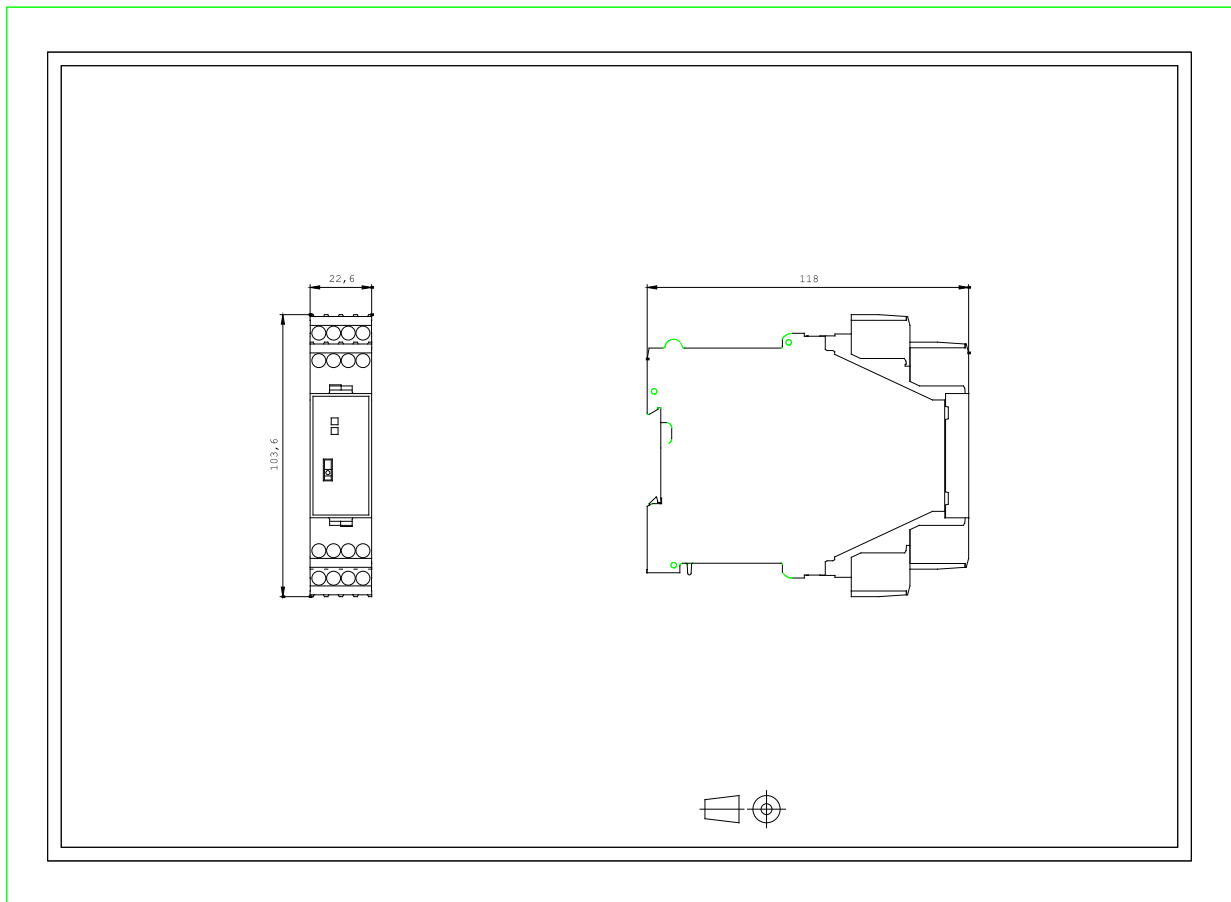
<http://www.siemens.com/cax>

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

<http://support.automation.siemens.com/VW/view/en/3TK2820-1AL20/all>

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

http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2820-1AL20



last change:

Feb 18, 2013