SIEMENS

Data sheet 3TK2820-1AJ20



SIRIUS safety relay with relay enabling circuits (EC) 115V AC, 22.5 mm Screw terminal Basic device Auto-start, monitored start EC instantaneous: 3 NO EC delayed: 0 NO SC: 1NC max. error category EN 13849-1: 4 Maximum achievable PL according to EN 13849-1: e Maximum achievable SIL according to IEC 61508: 3

product brand name	SIRIUS
product designation	safety relays
design of the product	for EMERGENCY-STOP and safety doors
General technical data	
protection class IP of the enclosure	IP40
protection class IP of the terminal	IP20
touch protection against electrical shock	finger-safe
insulation voltage rated value	300 V
ambient temperature	
during storage	-40 +80 °C
during operation	-25 +60 °C
air pressure according 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 according to IEC 60068-2-6	5 500 Hz: 0.75 mm
shock resistance	15g / 11 ms
surge voltage resistance rated value	4 000 V
EMC emitted interference	IEC 60947-5-1, IEC 61000
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.
reference code according to 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 cross-circuit-proof	Yes
Safety Integrity Level (SIL)	
according to IEC 61508	3
SIL Claim Limit (subsystem) according to EN 62061	3
category according to EN ISO 13849-1	4
hardware fault tolerance according to IEC 61508	1
safety device type according to IEC 61508-2	Туре А
PFHD with high demand rate according to EN 62061	9.4E-10 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	8.3E-7 1/y
T1 value for proof test interval or service life according to IEC 61508	20 a
number of outputs as contact-affected switching element	
• as NC contact	
— for signaling function instantaneous contact	1
as NO contact	

— safety-related instantaneous contact	3
— 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	0
stop category according to EN 60204-1	0
Inputs	
design of input	
feedback input	Yes
• start input	Yes
Outputs	
type of electrical connection plug-in socket	No
operating frequency maximum	2 000 1/h
switching capacity current	
of the NO contacts of the relay outputs at DC-13	
— at 24 V	4 A
— at 115 V	0.2 A
— at 230 V	0.1 A
of the NO contacts of the relay outputs at AC-15	
— at 24 V	4 A
— at 115 V	4 A
— at 230 V	4 A
of the NC contacts of the relay outputs at DC-13	
— at 24 V	4 A
— at 115 V	0.2 A
— at 230 V	0.1 A
of the NC contacts of the relay outputs at AC-15	
— at 24 V	4 A
— at 115 V	4 A
— at 230 V	4 A
thermal current of the switching element with contacts maximum	5 A
electrical endurance (operating cycles) typical	200 000
mechanical service life (operating cycles) 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)
DC resistance of the cable maximum	50 Ω
wire length between sensor and electronics evaluation device with Cu 1.5 mm² and 150 nF/km maximum	1 000 m
Times	
make time with automatic start	
• typical	400 ms
make time with automatic start after power failure	
• typical	110 ms
• maximum	170 ms
make time with monitored start	
• maximum	30 ms
• typical	20 ms
backslide delay time after opening of the safety circuits typical	8 ms
backslide delay time in the event of power failure	
• typical	40 ms
• maximum	45 ms
recovery time after opening of the safety circuits typical	20 ms
recovery time after power failure typical	60 ms
pulse duration	
 of the sensor input minimum 	35 ms

of the ON pushbutton input minimum	35 ms
Control circuit/ Control	OO IIIO
type of voltage of the control supply voltage	AC
	AC
control supply voltage frequency	E0 H-
• 1 rated value	50 Hz
• 2 rated value	60 Hz
control supply voltage 1 at AC	445.7
• at 50 Hz rated value	115 V
at 60 Hz rated value	115 V
operating range factor control supply voltage rated value of magnet coil	
• at AC	227
— at 50 Hz	0.85 1.1
— at 60 Hz	0.85 1.1
Installation/ mounting/ dimensions	
mounting position	any
fastening method	snap-on mounting
width	22.5 mm
height	103.6 mm
depth	118 mm
Connections/ Terminals	
type of electrical connection	screw-type terminals
type of connectable conductor cross-sections	
• solid	1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
 finely stranded 	
 — with core end processing 	1x (0.5 2.5 mm²), 2x (0.5 1 mm²)
 — without core end processing 	1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
type of connectable conductor cross-sections for AWG cables	
• solid	1x (20 14), 2x (20 16)
• stranded	1x (20 14), 2x (20 18)
Product Function	
product function	
	No
product function	No No
product function • light barrier monitoring	
product function Iight barrier monitoring standstill monitoring	No
 product function light barrier monitoring standstill monitoring protective door monitoring 	No Yes
product function	No Yes Yes
product function	No Yes Yes No
product function	No Yes Yes No No
product function	No Yes Yes No No
product function	No Yes Yes No No No Yes
product function	No Yes Yes No No No No Yes No
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function	No Yes Yes No No No No Yes No Yes
product function	No Yes Yes No No No Yes No Yes Yes
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring	No Yes Yes No No No Yes No Yes No Yes No
product function • light barrier monitoring • standstill monitoring • protective door monitoring • automatic start • magnetically operated switch monitoring NC-NO • rotation speed monitoring • laser scanner monitoring • monitored start-up • light array monitoring • magnetically operated switch monitoring NC-NC • EMERGENCY OFF function • pressure-sensitive mat monitoring suitability for interaction press control suitability for use	No Yes Yes No No No Yes No Yes No Yes No
product function • light barrier monitoring • standstill monitoring • protective door monitoring • automatic start • magnetically operated switch monitoring NC-NO • rotation speed monitoring • laser scanner monitoring • monitored start-up • light array monitoring • magnetically operated switch monitoring NC-NC • EMERGENCY OFF function • pressure-sensitive mat monitoring suitability for use • monitoring of floating sensors	No Yes Yes No No No Yes No Yes No Yes No Yes Yes No
product function	No Yes Yes No No No Yes No Yes No Yes Yes No No No No
product function	No Yes Yes No No No Yes No Yes No Yes Yes No No No
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring suitability for interaction press control suitability for use monitoring of floating sensors monitoring of non-floating sensors safety switch position switch monitoring	No Yes Yes No No No Yes No Yes Yes No Yes Yes No No No
product function • light barrier monitoring • standstill monitoring • protective door monitoring • automatic start • magnetically operated switch monitoring NC-NO • rotation speed monitoring • laser scanner monitoring • monitored start-up • light array monitoring • magnetically operated switch monitoring NC-NC • EMERGENCY OFF function • pressure-sensitive mat monitoring suitability for interaction press control suitability for use • monitoring of floating sensors • monitoring of non-floating sensors • safety switch • position switch monitoring • EMERGENCY-OFF circuit monitoring	No Yes Yes No No No No Yes No Yes
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring suitability for interaction press control suitability for use monitoring of floating sensors monitoring of non-floating sensors safety switch position switch monitoring EMERGENCY-OFF circuit monitoring valve monitoring	No Yes Yes No No No No Yes No Yes Yes Yes Yes No No No Yes No No Yes No Yes No Yes No Yes No Yes No No Yes Yes No
product function	No Yes Yes No No No Yes No Yes Yes No Yes Yes No No No Yes No No Yes Yes No No Yes Yes No No Yes Yes Yes No No No
product function	No Yes No No Yes Yes Yes No No Yes Yes Yes Yes Yes No No No Yes Yes Yes Yes Yes No No Yes
product function	No Yes Yes No No No Yes No Yes Yes No Yes Yes No No No Yes No No Yes Yes No No Yes Yes No No Yes Yes Yes No No No
product function	No Yes Yes No Yes No No No Yes No Yes Yes Yes No No No Yes Yes Yes Yes Yes Yes Yes Yes
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring suitability for interaction press control suitability for use monitoring of floating sensors monitoring of non-floating sensors safety switch position switch monitoring EMERGENCY-OFF circuit monitoring all EMERGENCY-OFF circuit monitoring all EMERGENCY-OFF circuit monitoring safety-related circuits Certificates/ approvals certificate of suitability	No Yes Yes No No No Yes No Yes Yes No Yes Yes No No Yes Yes No Yes
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring suitability for interaction press control suitability for use monitoring of floating sensors monitoring of non-floating sensors safety switch position switch monitoring EMERGENCY-OFF circuit monitoring attactile sensor monitoring magnetically operated switch monitoring magnetically operated switch monitoring safety-related circuits Certificates/approvals certificate of suitability TÜV (German technical inspectorate) certificate	No Yes Yes No No No No Yes No Yes Yes No No No Ves Yes Ves Ves Ves Yes Yes Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
product function Ight barrier monitoring standstill monitoring protective door monitoring automatic start magnetically operated switch monitoring NC-NO rotation speed monitoring laser scanner monitoring monitored start-up light array monitoring magnetically operated switch monitoring NC-NC EMERGENCY OFF function pressure-sensitive mat monitoring suitability for interaction press control suitability for use monitoring of floating sensors monitoring of non-floating sensors safety switch position switch monitoring EMERGENCY-OFF circuit monitoring all EMERGENCY-OFF circuit monitoring all EMERGENCY-OFF circuit monitoring safety-related circuits Certificates/ approvals certificate of suitability	No Yes Yes No No No No Yes No Yes Yes Yes Yes No No No Ves Yes Yes No Yes

EMC

Functional Safety/Safety of Machinery











Type Examination Certificate

Test Certificates

other

Special Test Certificate Confirmation

Further information

Siemens has decided to exit the Russian market (see here).

https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business

Siemens is working on the renewal of the current EAC certificates.

Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

Information on the packaging

https://support.industry.siemens.com/cs/ww/en/view/109813875

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=3TK2820-1AJ20

Cax online generator

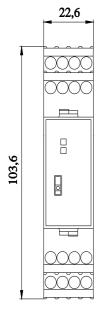
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2820-1AJ20

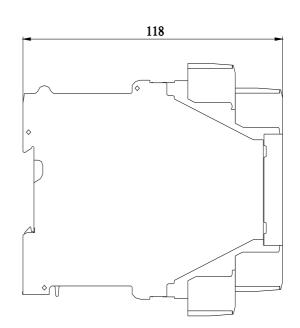
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

https://support.industry.siemens.com/cs/ww/en/ps/3TK2820-1AJ20

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

 $\underline{\text{http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2820-1AJ20\&lang=en}}$





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