

SIRIUS safety relay with relay enabling circuits (EC) 230 V AC, 22.5 mm
Screw terminal EC instantaneous: 2 NO EC delayed: 0 NO SC: 0 NC
AUTOSTART Basic device Maximum achieved SIL: 1, PL: c

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: 0,075 mm
shock resistance	8g / 10 ms
surge voltage resistance rated value	4 000 V
EMC emitted interference	EN 60947-5-1
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 DIN 40719 extended	KT
according to IEC 204-2 according to IEC 750	
reference code according to 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	single-channel or single-channel and two-channel
product feature cross-circuit-proof	No
Safety Integrity Level (SIL)	
• according to IEC 61508	2
SIL Claim Limit (subsystem) according to EN 62061	1
category according to EN ISO 13849-1	2
hardware fault tolerance according to IEC 61508	1
safety device type according to IEC 61508-2	Type A
PFHD with high demand rate according to EN 62061	0.0000000087 1/h
Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508	0.00000077 1/y
T1 value for proof test interval or service life according to IEC 61508	20 y
number of outputs as contact-affected switching element	

<ul style="list-style-type: none"> • as NC contact <ul style="list-style-type: none"> — for signaling function instantaneous contact • as NO contact <ul style="list-style-type: none"> — safety-related instantaneous contact — safety-related delayed switching 	0 2 0
number of outputs as contact-less semiconductor switching element	
<ul style="list-style-type: none"> • safety-related <ul style="list-style-type: none"> — delayed switching — instantaneous contact • for signaling function <ul style="list-style-type: none"> — delayed switching — instantaneous contact 	0 0 0 0
stop category according to EN 60204-1	0
Inputs	
design of input	
<ul style="list-style-type: none"> • cascading input/functional switching • feedback input • start input 	No Yes Yes
Outputs	
type of electrical connection plug-in socket	Yes
operating frequency maximum	1 000 1/h
switching capacity current	
<ul style="list-style-type: none"> • of the NO contacts of the relay outputs at DC-13 <ul style="list-style-type: none"> — at 24 V — at 115 V — at 230 V • of the NO contacts of the relay outputs at AC-15 <ul style="list-style-type: none"> — at 115 V — at 230 V 	6 A 0.2 A 0.1 A 6 A 6 A
thermal current of the switching element with contacts maximum	5 A
electrical endurance (operating cycles) typical	100 000
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: 6 A, or quick: 10 A
DC resistance of the cable maximum	30 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	
<ul style="list-style-type: none"> • at AC maximum 	300 ms
backslide delay time in the event of power failure	
<ul style="list-style-type: none"> • maximum 	200 ms
recovery time after opening of the safety circuits typical	200 ms
recovery time after power failure typical	200 ms
pulse duration	
<ul style="list-style-type: none"> • of the sensor input minimum • of the ON pushbutton input minimum 	300 ms 0.3 s
Control circuit/ Control	
type of voltage of the control supply voltage	AC
control supply voltage frequency	
<ul style="list-style-type: none"> • 1 rated value • 2 rated value 	50 Hz 60 Hz
control supply voltage 1 at AC	
<ul style="list-style-type: none"> • at 50 Hz rated value • at 60 Hz rated value 	230 V 230 V
operating range factor control supply voltage rated value of magnet coil	
<ul style="list-style-type: none"> • at AC <ul style="list-style-type: none"> — at 50 Hz — at 60 Hz 	0.85 ... 1.1 0.85 ... 1.1

Installation/ mounting/ dimensions

mounting position	any
fastening method	screw and snap-on mounting
width	22.5 mm
height	120 mm
depth	120 mm

Connections/ Terminals

type of electrical connection	screw-type terminals
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • solid 	1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²)
<ul style="list-style-type: none"> • finely stranded <li style="padding-left: 20px;">— with core end processing 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.5 mm ²)
type of connectable conductor cross-sections at AWG cables	
<ul style="list-style-type: none"> • solid 	2x (20 ... 14)
<ul style="list-style-type: none"> • stranded 	2x (20 ... 14)

Product Function

product function	
<ul style="list-style-type: none"> • 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 	<p>No</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>Yes</p> <p>No</p>
suitability for interaction press control	No
suitability for use	
<ul style="list-style-type: none"> • monitoring of floating sensors • monitoring of non-floating sensors • safety switch • position switch monitoring • EMERGENCY-OFF circuit monitoring • valve monitoring • tactile sensor monitoring • magnetically operated switch monitoring • safety-related circuits 	<p>Yes</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>No</p> <p>Yes</p>

Certificates/ approvals

certificate of suitability	BG, SUVA, UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
<ul style="list-style-type: none"> • TÜV (German technical inspectorate) certificate • UL approval • BG BIA approval 	<p>Yes</p> <p>Yes</p> <p>Yes</p>

General Product Approval	EMC	Functional Safety/Safety of Machinery
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[Type Examination Certificate](#)

Test Certificates	other
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[Special Test Certificate](#)

[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=3TK2824-1AL20>

Cax online generator

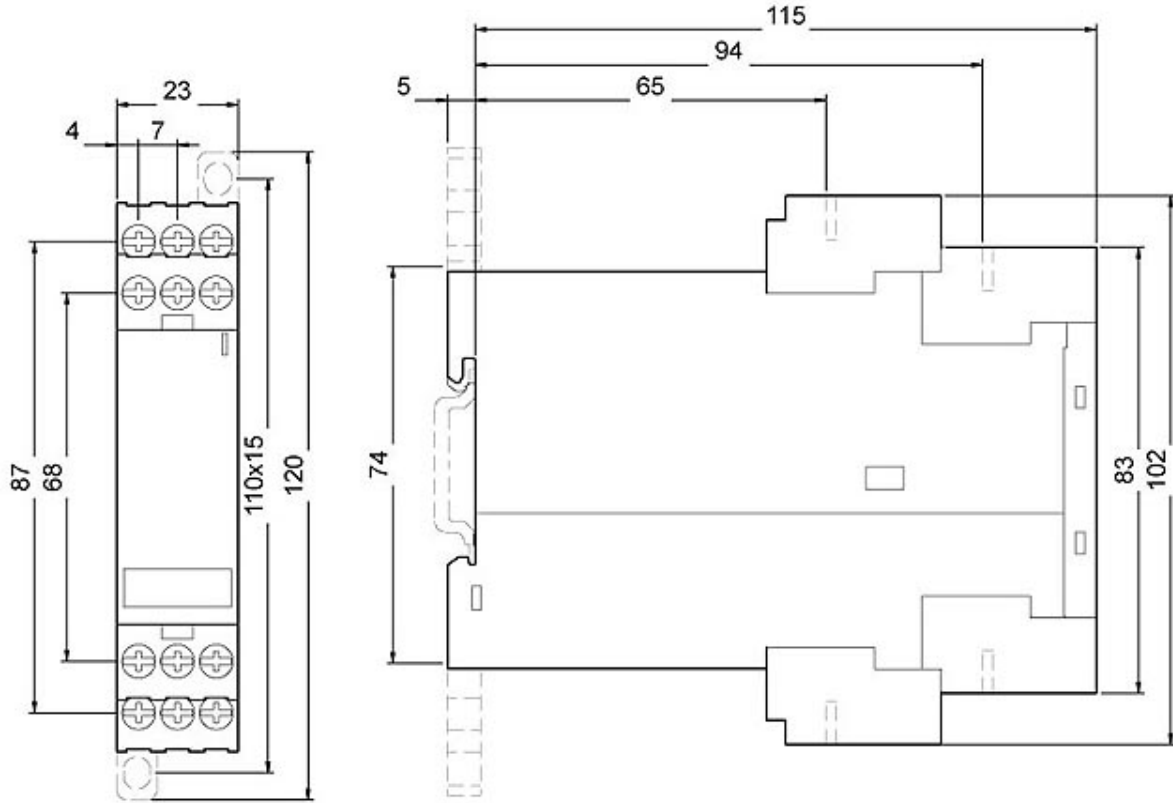
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2824-1AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3TK2824-1AL20>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2824-1AL20&lang=en



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