



SIRIUS safety relay basic unit 3SK2 series 10 F-DI, 2 F-DQ, 1 DQ, 24 V DC Can be parameterized via SIRIUS Safety ES 22.5 mm overall width spring-loaded terminal (push-in) up to SIL 3 (IEC 62061) up to performance level e (ISO 13849-1) output expansions 3SK1, coupling relay 3RQ1 and fail-safe motor starters 3RM1 via device connector connectable

product brand name	SIRIUS
product category	Safety relay
product designation	Base-Unit
design of the product	10 F-DI, 2 F-DQ, 1 DQ
suitability for use for monitoring of optoelectronic protective devices according to IEC 61496-1	Yes
suitability for use	
• monitoring of floating sensors	Yes
• monitoring of non-floating sensors	Yes
• position switch monitoring	Yes
• EMERGENCY-OFF circuit monitoring	Yes
• valve monitoring	Yes
• opto-electronic protection device monitoring	Yes
• magnetically operated switch monitoring	Yes
• proximity switch monitoring	Yes
• safety-related circuits	Yes
General technical data	
product function	
• EMERGENCY STOP function	Yes
• protective door monitoring	Yes
• protective door monitoring with tumbler	Yes
• muting, 2 sensor-parallel	Yes
• muting, 4 sensor-parallel	Yes
• muting, 4 sensor-sequential	Yes
• monitoring parameterizable	Yes
• evaluation: electro-sensitive protective equipment	Yes
• evaluation: selector switch	Yes
• pressure-sensitive mat monitoring	Yes
• evaluation: two-hand operator panel	Yes
• evaluation: enabling switch	Yes
• monitored start-up	Yes
• two-hand control according to EN 574	Yes
configuration software required	Yes; Safety ES V1.0 and higher
number of function blocks typical	50
insulation voltage rated value	50 V
degree of pollution	3
surge voltage resistance rated value	800 V
protection class IP	
• of the enclosure	IP20

• of the terminal	IP20
shock resistance	15g / 11 ms
vibration resistance according to IEC 60068-2-6	5 ... 500 Hz: 0.75 mm
operating frequency maximum	2 000 1/h
reference code according to IEC 81346-2	F
Substance Prohibitance (Date)	05/28/2009
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 Lead titanium zirconium oxide - 12626-81-2 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5
Weight	0.197 kg
product function suitable for AS-i Power24V	No
product function diagnostics with CTT2 device	No
Ambient conditions	
installation altitude at height above sea level maximum	4 000 m; Derating, see Product Notification 109792701
ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-40 ... +80 °C
• during transport	-40 ... +80 °C
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	90 ... 106 kPa
Electromagnetic compatibility	
EMC emitted interference according to IEC 60947-1	class A
conducted interference	
• due to burst according to IEC 61000-4-4	2 kV (power ports) / 1 kV (signal ports)
field-based interference according to IEC 61000-4-3	10 V/m
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge
Safety related data	
test wear-related service life necessary	No
diagnostics test interval by internal test function maximum	1 000 s
stop category according to IEC 60204-1	0 / 1
IEC 62061	
SIL Claim Limit (subsystem) according to EN 62061	3
Safety Integrity Level (SIL)	
• according to IEC 62061	SIL 3
• at single-channel evaluation according to IEC 62061	1
• at 2-channel evaluation according to IEC 62061	3
PFHD with high demand rate	
• according to IEC 62061	1E-8 1/h
ISO 13849	
performance level (PL) according to EN ISO 13849-1	e
category according to EN ISO 13849-1	4
performance level (PL)	
• according to ISO 13849-1	PL e
• at single-channel evaluation according to ISO 13849-1	c
• at 2-channel evaluation according to ISO 13849-1	e
category	
• according to ISO 13849-1	4
• at 2-channel evaluation according to ISO 13849-1	4
device type according to ISO 13849-1	1
overdimensioning according to ISO 13849-2 necessary	No
IEC 61508	
Safety Integrity Level (SIL)	
• according to IEC 61508	3
• at single-channel evaluation according to IEC 61508	1
• at 2-channel evaluation according to IEC 61508	3
PFHD with high demand rate according to IEC 61508	1E-8 1/h
PFDAvg with low demand rate according to IEC 61508	1.5E-5
Safe failure fraction (SFF)	99 %

hardware fault tolerance	
<ul style="list-style-type: none"> • according to IEC 61508 	1
<ul style="list-style-type: none"> • at single-channel evaluation according to IEC 61508 	0
<ul style="list-style-type: none"> • at 2-channel evaluation according to IEC 61508 	1
T1 value	
<ul style="list-style-type: none"> • of service life according to IEC 61508 	20 a
<ul style="list-style-type: none"> • for proof test interval or service life according to IEC 61508 	20 a
Electrical Safety	
touch protection against electrical shock	finger-safe
Inputs/ Outputs	
product function	
<ul style="list-style-type: none"> • parameterizable inputs 	Yes
<ul style="list-style-type: none"> • parameterizable outputs 	Yes
<ul style="list-style-type: none"> • at the digital outputs short-circuit protection 	Yes
number of inputs	
<ul style="list-style-type: none"> • safety-related 	10
<ul style="list-style-type: none"> • non-safety-related 	0
input delay time	0 ... 150 ms
type of digital inputs according to IEC 60947-1	Type 1
ingress acquisition time at digital input maximum	60 ms
input delay time at digital input maximum	150 ms
input current at digital input	
<ul style="list-style-type: none"> • for signal <1> typical 	2.6 mA
number of outputs	
<ul style="list-style-type: none"> • safety-related 2-channel 	2
<ul style="list-style-type: none"> • for testing contact-based sensors 	2
number of outputs as contact-affected switching element safety-related	
<ul style="list-style-type: none"> • 1-channel 	0
<ul style="list-style-type: none"> • 2-channel 	0
number of outputs as contact-less semiconductor switching element	
<ul style="list-style-type: none"> • safety-related 2-channel 	2
<ul style="list-style-type: none"> • non-safety-related 	1
design of the contactless switching element safety-related	P potential
recovery time of the safe outputs	0 ms
readback time maximum	400 ms
light test period	3 ms
dark period of the common drivers	3 ms
switching capacity current of semiconductor outputs at DC-13 at 24 V	4 A
residual current	
<ul style="list-style-type: none"> • maximum 	0.1 mA
<ul style="list-style-type: none"> • at digital output with signal <0> maximum 	0.1 mA
total current maximum	6.5 A
voltage drop maximum	0.5 V
wire length of the signal cable	
<ul style="list-style-type: none"> • to the inputs <ul style="list-style-type: none"> — shielded maximum — unshielded maximum 	1 000 m 600 m
<ul style="list-style-type: none"> • to the outputs <ul style="list-style-type: none"> — shielded maximum — unshielded maximum 	1 000 m 600 m
Communication/ Protocol	
protocol optional is supported	
<ul style="list-style-type: none"> • PROFIBUS DP protocol 	Yes; when using the DP interface module; 64 bit cyclical data
<ul style="list-style-type: none"> • PROFINET IO protocol 	Yes; when using the PN interface module; 64-bit cyclic data
protocol is supported AS-Interface protocol	No
Control circuit/ Control	

type of voltage	DC
control supply voltage rated value	24 V
operating range factor control supply voltage rated value at DC	
• initial value	0.85
• full-scale value	1.2
inrush current peak	
• at 24 V	10 A
duration of inrush current peak	
• at 24 V	1 ms
operating power rated value	2.5 W

Installation/ mounting/ dimensions

mounting position	any
fastening method	Snap-mounted to DIN rail or screw-mounted with additional push-in lug
height	100 mm
width	22.5 mm
depth	124.5 mm

Connections/ Terminals

product function removable terminal	Yes
type of electrical connection	spring-loaded terminal (push-in)
type of connectable conductor cross-sections	
• solid	1x (0.5 ... 1.5 mm ²), 2x (0.5 ... 1.5 mm ²)
• finely stranded with core end processing	1x (0.5 ... 1.0 mm ²), 2x (0.5 ... 1.0 mm ²)
• for AWG cables solid	1x (20 ... 16), 2x (20 ... 16)
• for AWG cables stranded	1x (20 ... 16), 2x (20 ... 16)
connectable conductor cross-section finely stranded with core end processing	0.5 ... 1 mm ²
AWG number as coded connectable conductor cross section	
• solid	20 ... 16
• stranded	20 ... 16

Approvals Certificates

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

Test Certificates	other	Environment
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[Type Test Certificates/Test Report](#)



[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=3SK2112-2AA10>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK2112-2AA10>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3SK2112-2AA10>

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

https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK2112-2AA10&lang=en



