SIEMENS

Data sheet 3SK1112-2BB40



SIRIUS safety relay Basic unit Standard series electronic enabling circuits 2 enabling circuits plus 1 signaling circuit Us = 24 V DC Spring-type terminal (push-in)

product brand name	SIRIUS
product category	Safety relays
product designation	safety relays
design of the product	Solid-state enabling circuits
product type designation	3SK1
product line	Standard basic unit
Product Function	
product function parameterizable	sensor floating / sensor non-floating, monitored start-up / automatic start, 1-channel / 2-channel sensor connection, cross-circuit detection, startup testing
product function	
● automatic start	Yes
● light barrier monitoring	Yes
● protective door monitoring	Yes
● magnetically operated switch monitoring NC-NO	No
● magnetically operated switch monitoring NC-NC	Yes
● laser scanner monitoring	Yes
● light array monitoring	Yes
● EMERGENCY OFF function	Yes
● monitored start-up	Yes
● pressure-sensitive mat monitoring	No
product feature cross-circuit-proof	Yes
suitability for interaction press control	No
suitability for operation device connector 3ZY12	No
suitability for use	
● monitoring of floating sensors	Yes
● monitoring of non-floating sensors	Yes
● position switch monitoring	Yes
● EMERGENCY-OFF circuit monitoring	Yes
● opto-electronic protection device monitoring	Yes
● magnetically operated switch monitoring	Yes
● safety-related circuits	Yes
General technical data	
certificate of suitability UL approval	Yes
product feature protective coating on printed-circuit board	No
power loss [W] maximum	2 W
insulation voltage rated value	50 V
degree of pollution	3
overvoltage category	3
surge voltage resistance rated value	800 V

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protection class IP of the enclosure	IP20
shock resistance	10 g / 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 (day/month/year)	11/05/2012
SVHC substance name	Lead CAS-No. 7439-92-1 Lead monoxide (lead oxide) CAS-No. 1317-36-8 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5 Melamine CAS-No. 108-78-1 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol CAS-No. 119-47-1
Net Weight	0.129 kg
Ambient conditions	
installation altitude at height above sea level maximum	4 000 m
● note	Derating, see Product Notification 109792701
ambient temperature	
● during operation	-25 ... +60 °C
● during storage	-40 ... +80 °C
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	900 ... 1 060 hPa
Electromagnetic compatibility	
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.
EMC emitted interference	IEC 60947-5-1, Class A
Safety related data	
product function suitable for safety function	Yes
safe state	Safety outputs switched off
test wear-related service life necessary	No
diagnostics test interval by internal test function maximum	600 s
stop category according to IEC 60204-1	0
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	0,0000000010
ISO 13849	
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
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
safety device type according to IEC 61508-2	Type B
PFHD with high demand rate according to IEC 61508	0,0000000010
PFDavg with low demand rate according to IEC 61508	0.000007
Safe failure fraction (SFF)	99 %
hardware fault tolerance	
● according to IEC 61508	1
● at single-channel evaluation according to IEC 61508	0

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● at 2-channel evaluation according to IEC 61508	1
T1 value	
● of service life according to IEC 61508	20 a
● for proof test interval or service life according to IEC 61508	20 a
Electrical Safety	
touch protection against electrical shock	finger-safe
Short-circuit protection	
design of the fuse link	
● for short-circuit protection of the NO contacts of the relay outputs required	not required
Inputs	
design of input	
● cascading input/functional switching	Yes
● feedback input	Yes
● start input	Yes
pulse duration of the sensor input minimum	60 ms
number of sensor inputs 1-channel or 2-channel	1
Outputs	
number of outputs as contact-affected switching element	
● as NO contact	
— safety-related delayed switching	0
number of outputs as contact-less semiconductor switching element	
● for signaling function	
— instantaneous contact	1
● safety-related	
— delayed switching	0
— instantaneous contact	2
switching capacity current of semiconductor outputs at DC-13 at 24 V	2 A
Times	
make time with automatic start	
● at DC maximum	85 ms
make time with automatic start after power failure	
● typical	6 500 ms
● maximum	6 500 ms
make time with monitored start	
● maximum	85 ms
backslide delay time after opening of the safety circuits typical	40 ms
recovery time after opening of the safety circuits typical	30 ms
recovery time after power failure typical	6.5 s
pulse duration	
● of the ON pushbutton input minimum	0.15 s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage at DC rated value	24 V
operating range factor control supply voltage rated value of magnet coil at DC	
● initial value	0.8
● full-scale value	1.2
Installation/ mounting/ dimensions	
mounting position	any
fastening method	screw and snap-on mounting
height	100 mm
width	22.5 mm
depth	91.6 mm
required spacing	
● for grounded parts at the side	5 mm

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Connections/ Terminals	
type of electrical connection	spring-loaded terminal (push-in)
wire length	
● with Cu 1.5 mm² and 150 nF/km per sensor circuit maximum	4 000 m
type of connectable conductor cross-sections	
● solid	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)
● finely stranded with core end processing	1x (0.5 ... 1.0 mm²), 2x (0.5 ... 1.0 mm²)
● finely stranded without core end processing	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)
● for AWG cables solid	1x (20 ... 16), 2x (20 ... 16)
● for AWG cables stranded	1x (20 ... 16), 2x (20 ... 16)
type of electrical connection plug-in socket	No

Approvals Certificates

Environment	General Product Approval				
Environmental Confirmations	EPD	CCC	cULus	EAC	CE EG-Konf.

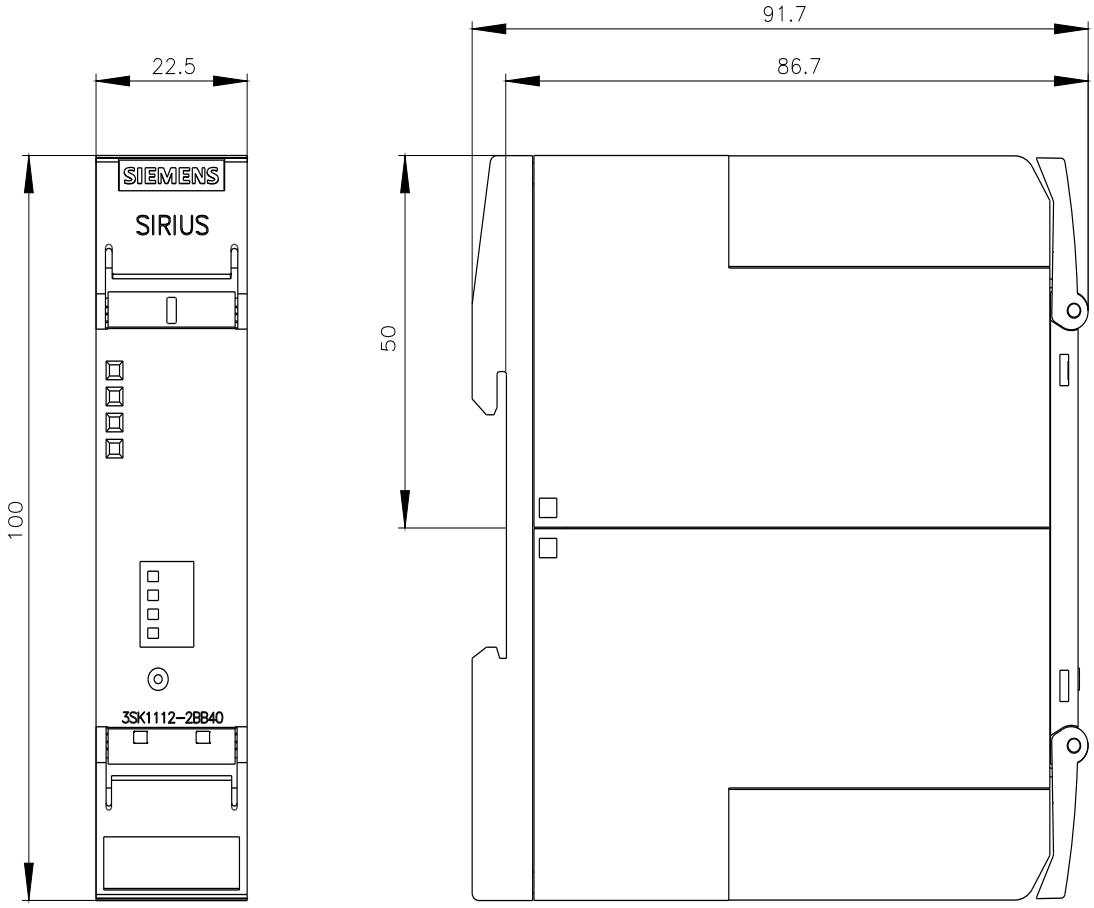
General Product Approval	EMV		Functional Saftey	Test Certificates	Maritime application
UKCA	KC	RCM	Type Examination Certificate	Type Test Certificates/Test Report	DNV

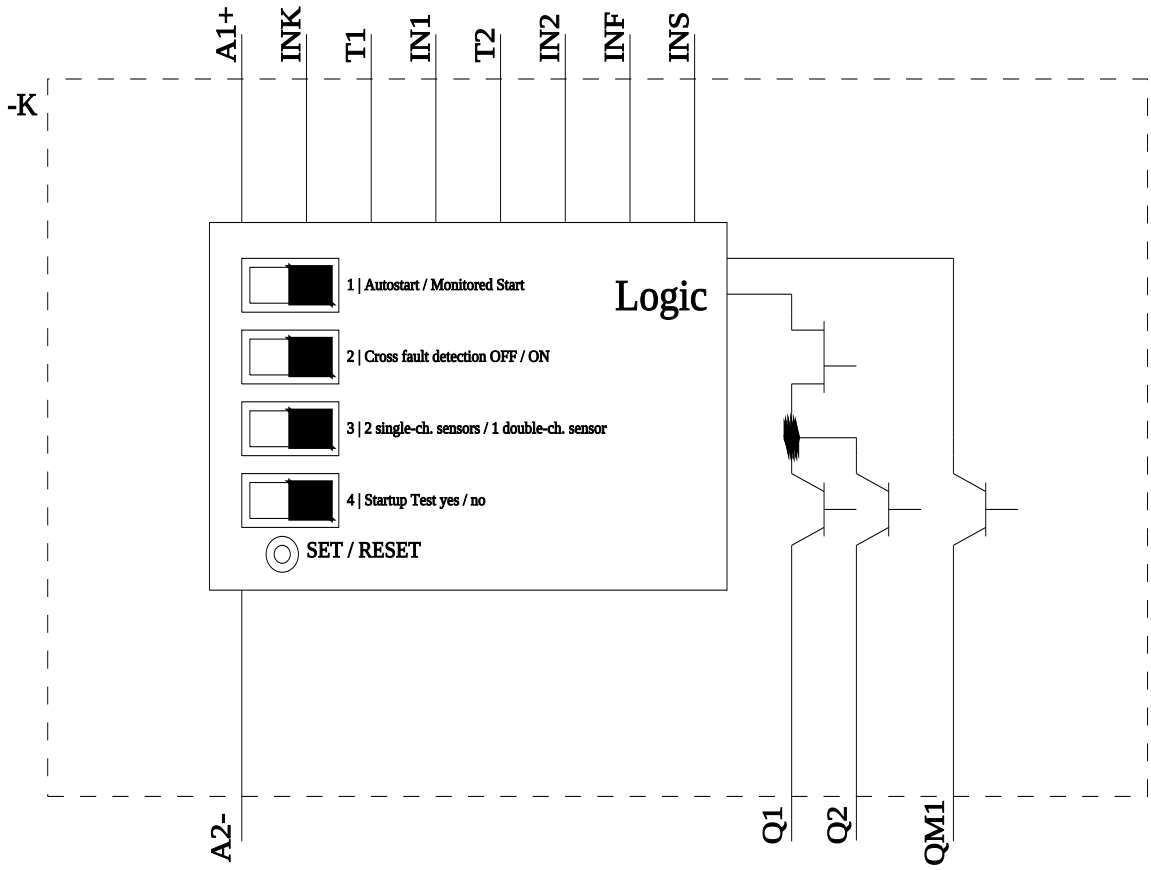
Maritime application		other		Railway
Lloyd's Register LRS	RINA	Confirmation	产品合格 QC PASS	Confirmation

Further information

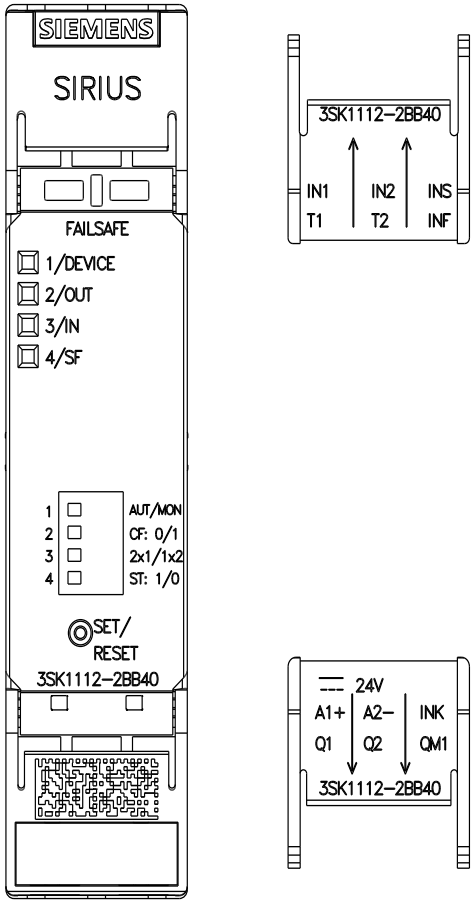
Information on the packaging
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