SIEMENS

Data sheet 3RF2190-2AA04

Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 90 A 48-460 V / 24 V DC Spring-type terminal

product brand name	SIRIUS
product designation	solid-state relay
design of the product	single-phase
product type designation	3RF21
manufacturer's article number	
● _3 of the accessories that can be ordered	3RF2900-0EA18
product designation	
● _3 of the accessories that can be ordered	converter
General technical data	
product function	zero-point switching
power loss [V·A] maximum	118 VA
power loss [W] for rated value of the current	
● at AC in hot operating state	118 W
● at AC in hot operating state per pole	118 W
● without load current share typical	0.4 W
insulation voltage rated value	600 V
type of voltage of the control supply voltage	DC
surge voltage resistance of main circuit rated value	6 kV
shock resistance according to IEC 60068-2-27	15g / 11 ms
vibration resistance according to IEC 60068-2-6	2g
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	05/28/2009
Main circuit	
number of poles for main current circuit	1
number of NO contacts for main contacts	1
number of NC contacts for main contacts	0
operating voltage at AC	
● at 50 Hz rated value	48 ... 460 V
● at 60 Hz rated value	48 ... 460 V
operating frequency rated value	50 ... 60 Hz
relative symmetrical tolerance of the operating frequency	10 %
operating range relative to the operating voltage at AC	
● at 50 Hz	40 ... 506 V
● at 60 Hz	40 ... 506 V
operational current	
● at AC-51 rated value	20 A
● according to UL 508 rated value	20 A
ampacity maximum	90 A
operational current minimum	500 mA
rate of voltage rise at the thyristor for main contacts maximum permissible	1 000 V/µs

blocking voltage at the thyristor for main contacts maximum permissible	1 200 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	1 150 A
I2t value maximum	6 600 A²·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1	
● at DC rated value	30 V
● at DC	15 ... 24 V
control supply voltage	
● at DC initial value for signal <1> detection	15 V
● at DC full-scale value for signal<0> recognition	5 V
control current at minimum control supply voltage	
● at DC	13 mA
control current at DC rated value	15 mA
ON-delay time	1 ms; additionally max. one half-wave
OFF-delay time	1 ms; additionally max. one half-wave
Auxiliary circuit	
number of NC contacts for auxiliary contacts	0
number of NO contacts for auxiliary contacts	0
number of CO contacts for auxiliary contacts	0
Installation/ mounting/ dimensions	
fastening method	screw fixing
● side-by-side mounting	Yes
design of the thread of the screw for securing the equipment	M4
tightening torque of fixing screw maximum	1.5 N·m
tightening torque [lbf·in] of fixing screw maximum	13 lbf·in
height	85 mm
width	22.5 mm
depth	48 mm
Connections/ Terminals	
type of electrical connection	
● for main current circuit	spring-loaded terminals
● for auxiliary and control circuit	spring-loaded terminals
type of connectable conductor cross-sections	
● for main contacts	
— solid	2x (0.5 ... 2.5 mm²)
— finely stranded with core end processing	2x (0.5 ... 1.5 mm²)
— finely stranded without core end processing	2x (0.5 ... 2.5 mm²)
● at AWG cables for main contacts	2x (18 ... 14)
connectable conductor cross-section for main contacts	
● solid or stranded	0.5 ... 2.5 mm²
● finely stranded with core end processing	0.5 ... 1.5 mm²
● finely stranded without core end processing	0.5 ... 2.5 mm²
type of connectable conductor cross-sections	
● for auxiliary and control contacts	
— solid	0.5 ... 1.5 mm²
— finely stranded with core end processing	0.5 ... 2.5 mm²
— finely stranded without core end processing	0.5 ... 2.5 mm²
● at AWG cables for auxiliary and control contacts	1x (AWG 20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	18 ... 14
tightening torque	
● for main contacts with screw-type terminals	2 ... 2.5 N·m
stripped length of the cable	
● for main contacts	10 mm
● for auxiliary and control contacts	10 mm
Safety related data	
protection class IP on the front according to IEC 60529	IP20

touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
Ambient conditions	
installation altitude at height above sea level maximum	1 000 m
ambient temperature	
● during operation	-25 ... +60 °C
● during storage	-55 ... +80 °C
Electromagnetic compatibility	
conducted interference	
● due to burst according to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2
● due to conductor-earth surge according to IEC 61000-4-5	2 kV behavior criterion 2
● due to conductor-conductor surge according to IEC 61000-4-5	1 kV behavior criterion 2
● due to high-frequency radiation according to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
field-based interference according to IEC 61000-4-3	80 MHz ... 1 GHz 10 V/m, behavior criterion 1
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
conducted HF interference emissions according to CISPR11	Class A for industrial environment
field-bound HF interference emission according to CISPR11	Class B for the domestic, business and commercial environments
Short-circuit protection, design of the fuse link	
manufacturer's article number	
● of full range R fuse link for semiconductor protection at NH design usable	3NE1021-2
● of back-up R fuse link for semiconductor protection at NH design usable	3NE8021-1
● of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NC2280; These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number of the gG fuse	
● at NH design usable	3NA6812; These fuses have a smaller rated current than the semiconductor relays
● at cylindrical design 22 x 58 mm usable	3NW6212-1; These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number	
● of DIAZED fuse usable	5SB4111; These fuses have a smaller rated current than the semiconductor relays
● of NEOZED fuse usable	5SE2335; These fuses have a smaller rated current than the semiconductor relays

Certificates/ approvals

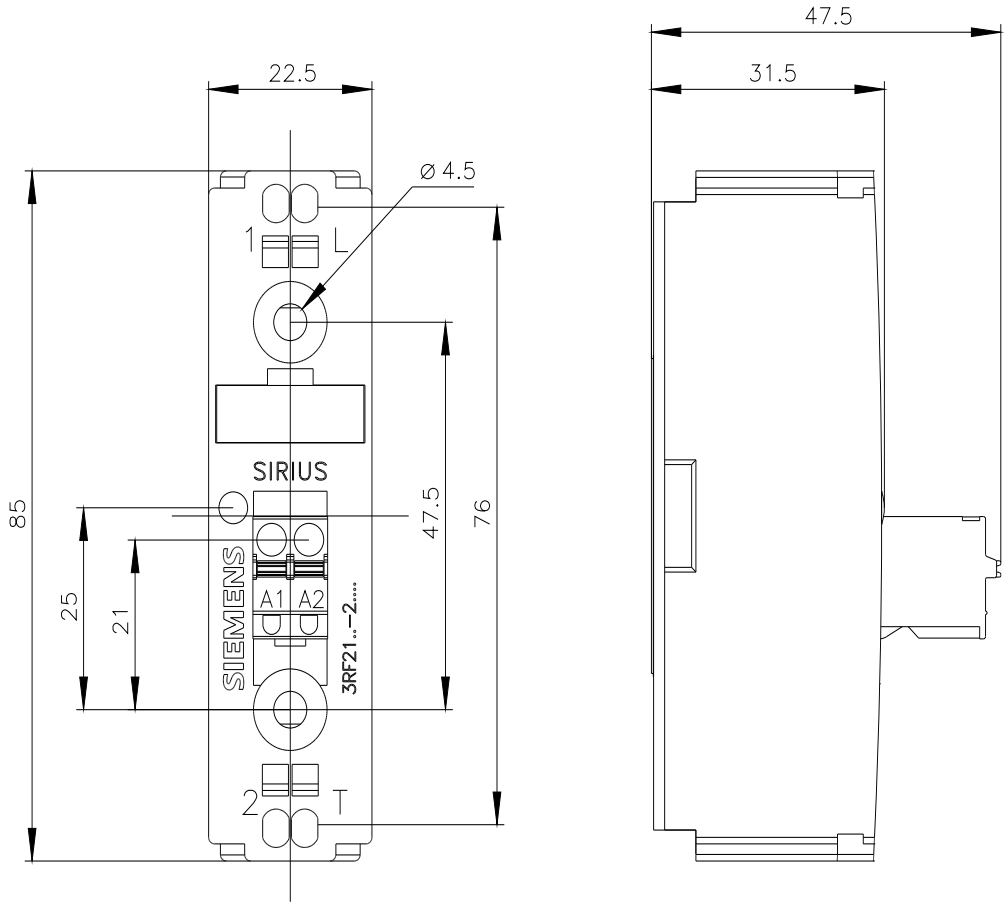
General Product Approval				EMC	Declaration of Conformity
CSA	Confirmation	UR	EAC	RCM	CE EG-Konf.

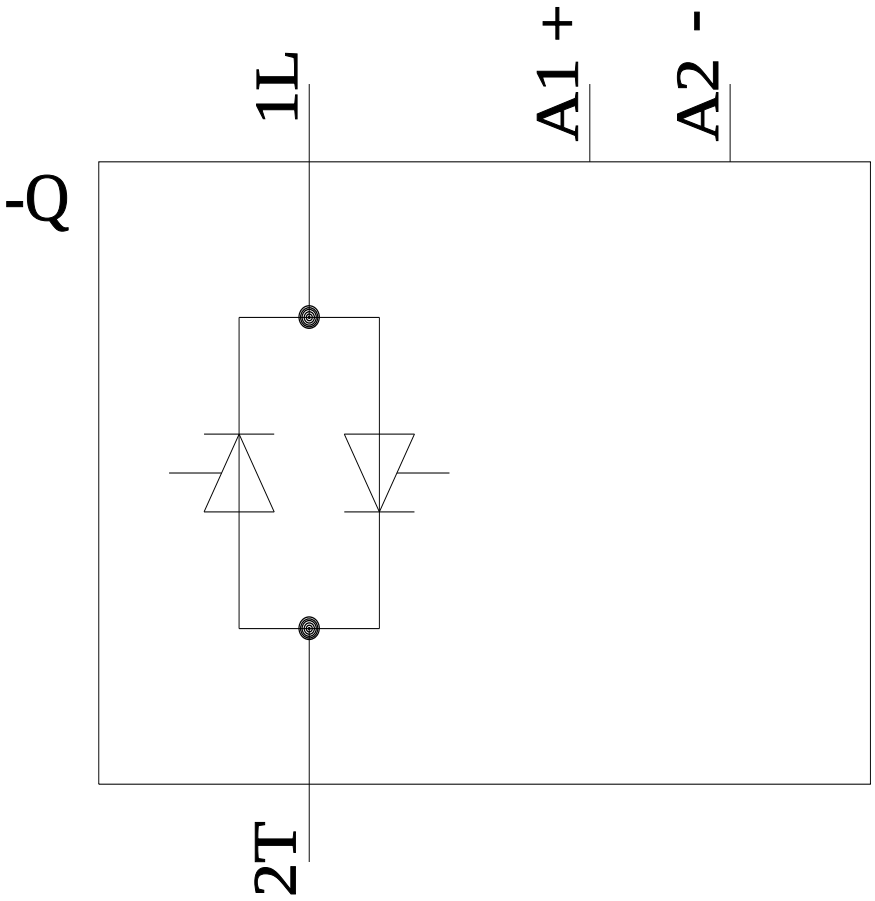
Declaration of Conformity	Test Certificates		other		Railway
UKCA	Type Test Certific-ates/Test Report	Special Test Certific-ate	Confirmation	VDE	Vibration and Shock

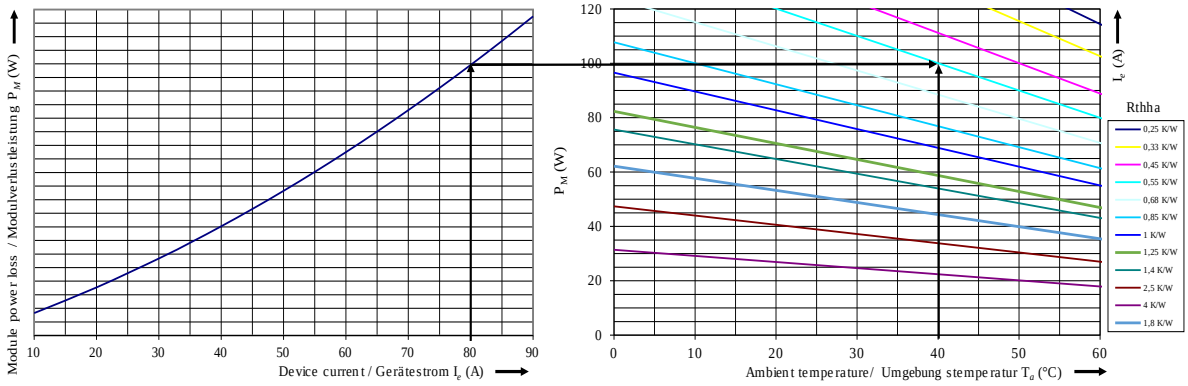
Further information

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=3RF2190-2AA04

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-2AA04
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-2AA04
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-2AA04&lang=en







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