



semiconductor relay, 1-phase 3RF2 width 22.5 mm, 70 A 24-230 V / 24 V DC
screw terminal for mounting on available cooling surfaces

product brand name	SIRIUS
product designation	solid-state relay
design of the product	1-pole
product type designation	3RF21
manufacturer's article number	
_1 of the accessories that can be ordered _2 of the accessories that can be ordered _3 of the accessories that can be ordered _4 of the accessories that can be ordered _5 of the accessories that can be ordered	3RF2900-3PA88 3RF2990-0HA13 3RF2900-0EA18 3RF2990-0GA13 3RF2920-0FA08
product designation	
_1 of the accessories that can be ordered _2 of the accessories that can be ordered _3 of the accessories that can be ordered _4 of the accessories that can be ordered _5 of the accessories that can be ordered	terminal cover power regulator converter load monitoring load monitoring, basis
General technical data	
product function	zero-point switching
power loss [W] for rated value of the current	
- at AC in hot operating state - at AC in hot operating state per pole - without load current share typical	94 W 94 W 0.4 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP20
protection class IP on the front according to IEC 60529	IP20
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
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Net Weight	0.071 kg
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
type of voltage of the operating voltage	AC
operating voltage	

• at AC — at 50 Hz rated value — at 60 Hz rated value	24 ... 230 V 24 ... 230 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 • at 60 Hz	20 ... 253 V 20 ... 253 V
operational current rated value maximum	70 A
operational current • at AC-1 at 400 V rated value • at AC-51 rated value • according to UL 508 rated value	70 A 50 A 50 A
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	800 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	1 200 A
I²t value maximum	7 200 A ² ·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1 at DC rated value maximum permissible	30 V
control supply voltage 1 at DC	15 ... 24 V
control supply voltage • at DC initial value for signal <1> detection • at DC full-scale value for signal<0> recognition	15 V 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 CO contacts for auxiliary contacts	0
Installation/ mounting/ dimensions	
fastening method side-by-side mounting	Yes
fastening method	screw fixing
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	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection • for main current circuit • for auxiliary and control circuit	screw-type terminals screw-type terminals
type of connectable conductor cross-sections • for main contacts — solid — finely stranded with core end processing • for AWG cables for main contacts	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²) 2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ² 2x (14 ... 10)
connectable conductor cross-section for main contacts • solid or stranded • finely stranded with core end processing	1.5 ... 6 mm ² 1 ... 10 mm ²

type of connectable conductor cross-sections • for auxiliary and control contacts — solid — finely stranded with core end processing — finely stranded without core end processing • for AWG cables for auxiliary and control contacts	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	14 ... 10
tightening torque • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals	2 ... 2.5 N·m 0.5 ... 0.6 N·m
tightening torque [lbf·in] • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals	7 ... 10.3 lbf·in 4.5 ... 5.3 lbf·in
design of the thread of the connection screw • for main contacts • of the auxiliary and control contacts	M4 M3
stripped length of the cable • for main contacts • for auxiliary and control contacts	10 mm 7 mm
Electrical Safety	
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 • during storage	-25 ... +60 °C -55 ... +80 °C
Electromagnetic compatibility	
conducted interference • due to burst according to IEC 61000-4-4 • due to conductor-earth surge according to IEC 61000-4-5 • due to conductor-conductor surge according to IEC 61000-4-5 • due to high-frequency radiation according to IEC 61000-4-6	2 kV / 5 kHz behavior criterion 2 2 kV behavior criterion 2 1 kV behavior criterion 2 140 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 gS fuse for semiconductor protection at NH design usable • of full range R fuse link for semiconductor protection at cylindrical design usable • of back-up R fuse link for semiconductor protection at NH design usable • of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NE1820-0 5SE1363: These fuses have a smaller rated current than the semiconductor relays 3NE8020-1 3NC2200
manufacturer's article number of the gG fuse • at NH design usable • at cylindrical design 22 x 58 mm usable	3NA6817: These fuses have a smaller rated current than the semiconductor relays 3NW6217-1: These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number • of DIAZED fuse usable • of NEOZED fuse usable	5SB4111: These fuses have a smaller rated current than the semiconductor relays 5SE2335: These fuses have a smaller rated current than the semiconductor relays

Approvals Certificates

General Product Approval

EMV

Test Certificates



[Type Test Certificates/Test Report](#)

other

Environment



[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=3RF2170-1AA02>

Cax online generator

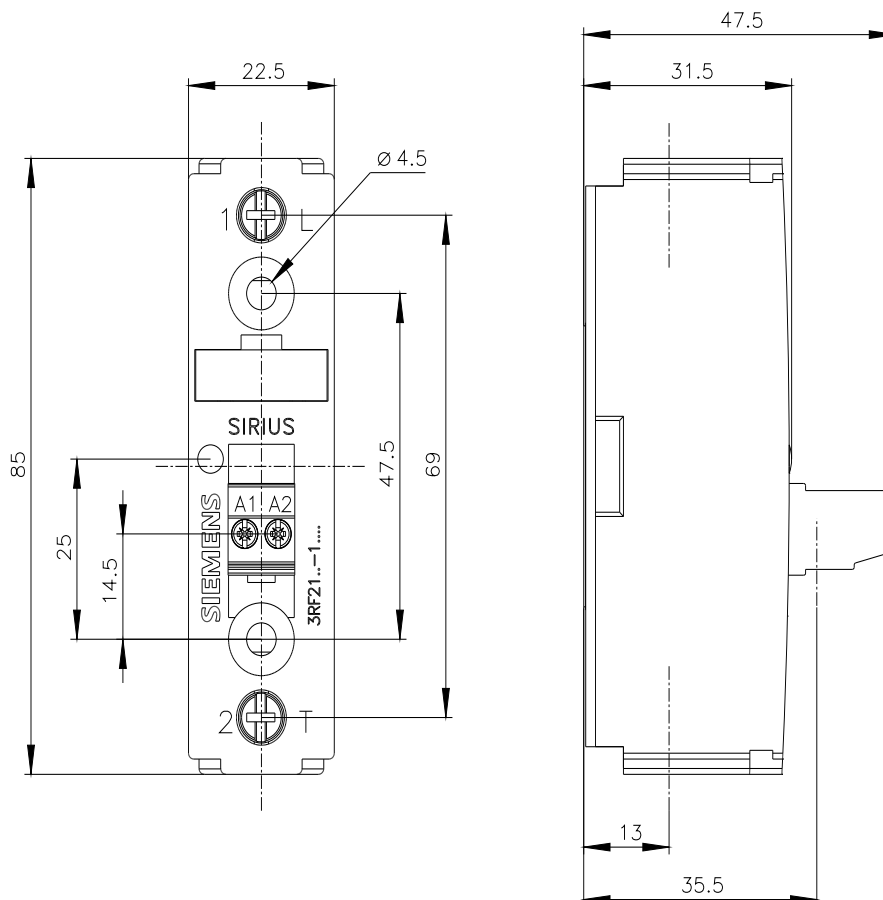
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2170-1AA02>

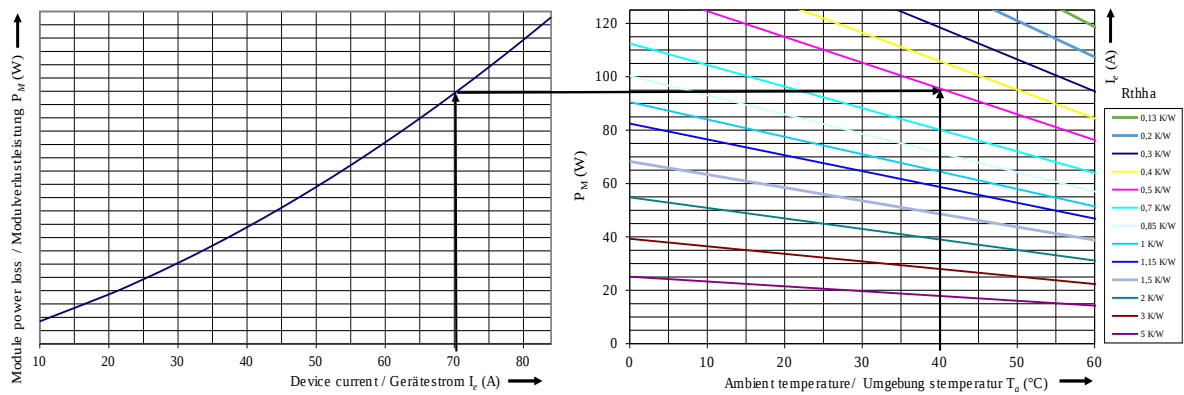
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2170-1AA02>

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

https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2170-1AA02&lang=en





last modified:

8/4/2025