



semiconductor relay, 1-phase 3RF2 width 22.5 mm, 20 A 24-230 V / 110-230 V AC ring cable 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	
<ul style="list-style-type: none"> • _1 of the accessories that can be ordered • _4 of the accessories that can be ordered 	3RF2900-3PA88 3RF2920-0GA33
product designation	
<ul style="list-style-type: none"> • _1 of the accessories that can be ordered • _4 of the accessories that can be ordered 	terminal cover load monitoring
General technical data	
product function	zero-point switching
power loss [W] for rated value of the current	
<ul style="list-style-type: none"> • at AC in hot operating state • at AC in hot operating state per pole • without load current share typical 	28.6 W 28.6 W 3.5 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP00
protection class IP on the front according to IEC 60529	IP00
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
Weight	0.07 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	
<ul style="list-style-type: none"> • at AC <ul style="list-style-type: none"> — 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	
<ul style="list-style-type: none"> • at 50 Hz 	20 ... 253 V

• at 60 Hz	20 ... 253 V
operational current rated value maximum	20 A
operational current	
• at AC-51 rated value	20 A
• according to UL 508 rated value	20 A
operational current minimum	100 mA
rate of voltage rise at the thyristor for main contacts maximum permissible	500 V/ μ s
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	200 A
I²t value maximum	200 A ² ·s

Control circuit/ Control

type of voltage of the control supply voltage	AC
control supply voltage 1 at AC	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
control supply voltage frequency	
• 1 rated value	50 Hz
• 2 rated value	60 Hz
control supply voltage at AC	
• at 50 Hz full-scale value for signal<0> recognition	40 V
• at 60 Hz full-scale value for signal<0> recognition	40 V
control supply voltage	
• at AC initial value for signal <1> detection	90 V
symmetrical line frequency tolerance	5 Hz
control current at minimum control supply voltage	
• at AC	2 mA
control current at AC rated value	15 mA
ON-delay time	40 ms; additionally max. one half-wave
OFF-delay time	40 ms; additionally max. one half-wave

Auxiliary circuit

type of switching contact	normally open contact (NO)
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 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	Ring cable lug connection
• for auxiliary and control circuit	ring terminal lug connection
type of connectable conductor cross-sections	
• for main contacts for JIS cable lug	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5
• for DIN cable lug for main contacts	DIN 46234 -5-2,5, -5-6, -5-10, -5-16, -5-25
type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)
— finely stranded without core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)

<ul style="list-style-type: none"> for AWG cables for auxiliary and control contacts 	1x (20 ... 12)
tightening torque	
<ul style="list-style-type: none"> for main contacts with screw-type terminals 	2 ... 2.5 N·m
<ul style="list-style-type: none"> for auxiliary and control contacts with screw-type terminals 	0.5 ... 0.6 N·m
tightening torque [lbf·in]	
<ul style="list-style-type: none"> for main contacts with screw-type terminals 	7 ... 10.3 lbf·in
<ul style="list-style-type: none"> for auxiliary and control contacts with screw-type terminals 	4.5 ... 5.3 lbf·in
design of the thread of the connection screw	
<ul style="list-style-type: none"> for main contacts 	M5
<ul style="list-style-type: none"> of the auxiliary and control contacts 	M3
stripped length of the cable	
<ul style="list-style-type: none"> for main contacts 	10 mm
<ul style="list-style-type: none"> for auxiliary and control contacts 	7 mm
Electrical Safety	
protection class IP on the front according to IEC 60529	IP00; IP20 with cover
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front with cover
Ambient conditions	
installation altitude at height above sea level maximum	1 000 m
ambient temperature	
<ul style="list-style-type: none"> during operation 	-25 ... +60 °C
<ul style="list-style-type: none"> during storage 	-55 ... +80 °C
Electromagnetic compatibility	
conducted interference	
<ul style="list-style-type: none"> due to burst according to IEC 61000-4-4 	2 kV / 5 kHz behavior criterion 2
<ul style="list-style-type: none"> due to conductor-earth surge according to IEC 61000-4-5 	2 kV behavior criterion 2
<ul style="list-style-type: none"> due to conductor-conductor surge according to IEC 61000-4-5 	1 kV behavior criterion 2
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> of gS fuse for semiconductor protection at NH design usable 	3NE1814-0
<ul style="list-style-type: none"> of full range R fuse link for semiconductor protection at cylindrical design usable 	5SE1325
<ul style="list-style-type: none"> of back-up R fuse link for semiconductor protection at NH design usable 	3NE8015-1
<ul style="list-style-type: none"> of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable 	3NC1032
<ul style="list-style-type: none"> of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable 	3NC1430
<ul style="list-style-type: none"> of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable 	3NC2225
manufacturer's article number of the gG fuse	
<ul style="list-style-type: none"> at NH design usable 	3NA6803 ; These fuses have a smaller rated current than the semiconductor relays
<ul style="list-style-type: none"> at cylindrical design 10 x 38 mm usable 	3NW6001-1 ; These fuses have a smaller rated current than the semiconductor relays
<ul style="list-style-type: none"> at cylindrical design 14 x 51 mm usable 	3NW6101-1 ; These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number	
<ul style="list-style-type: none"> of NEOZED fuse usable 	5SE2313-2A ; These fuses have a smaller rated current than the semiconductor relays
Approvals Certificates	
General Product Approval	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=3RF2120-3AA22>

Cax online generator

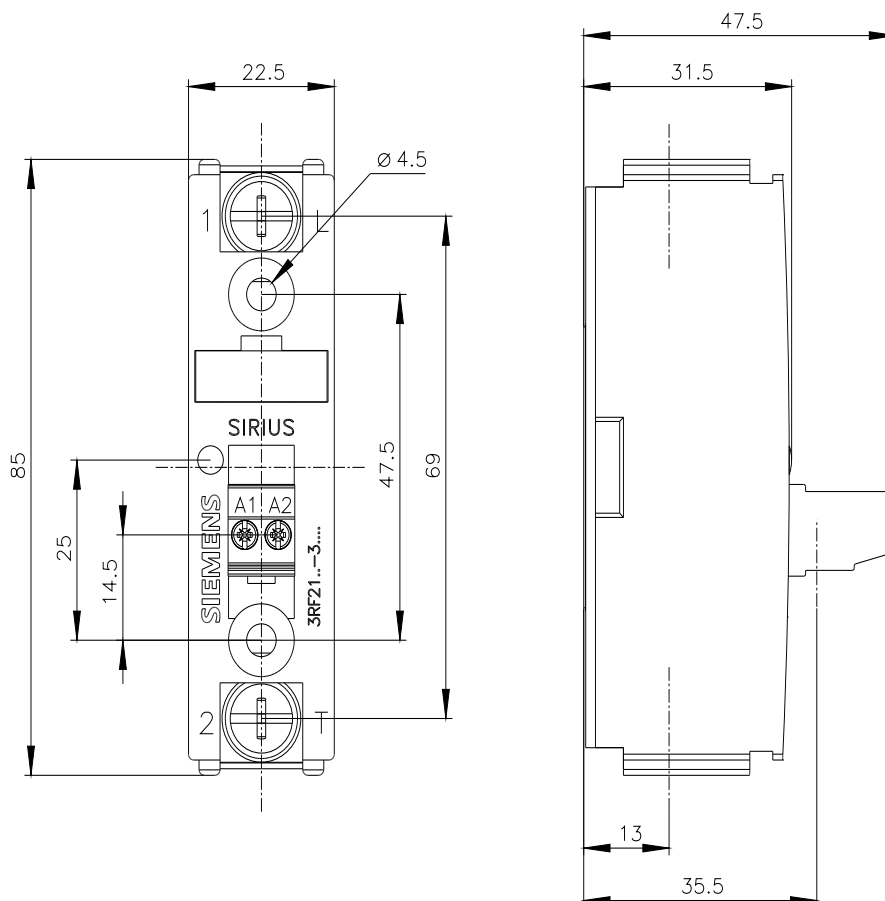
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-3AA22>

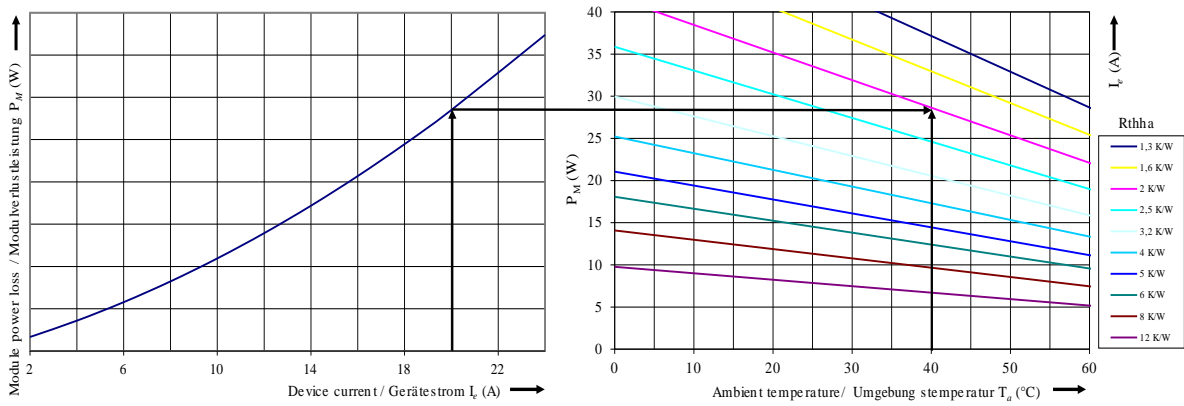
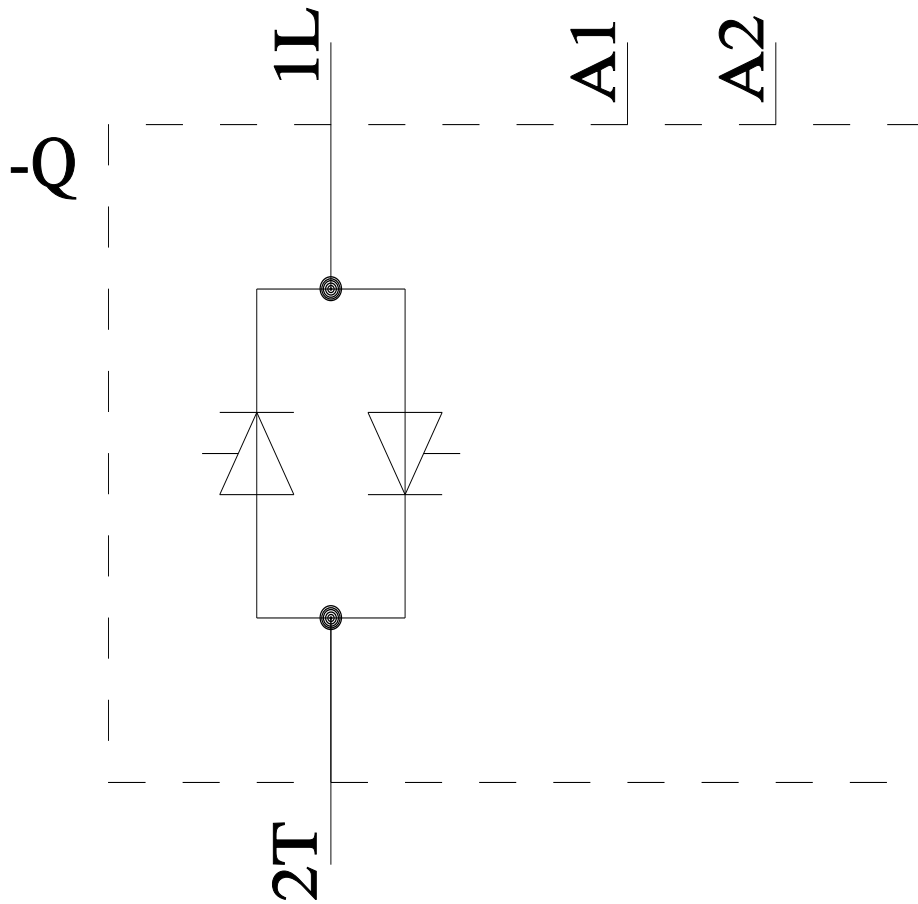
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-3AA22>

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

https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-3AA22&lang=en





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