



Semiconductor relay, 1-phase 3RF2 Width 22.5 mm, 20 A 48-460 V / 24 V
DC screw terminal Instantaneous switching

product brand name	SIRIUS
product designation	solid-state relay
design of the product	single-phase
product type designation	3RF21
manufacturer's article number	
<ul style="list-style-type: none">• _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 3RF2920-0HA16 3RF2900-0EA18 3RF2920-0GA16 3RF2920-0FA08
product designation	
<ul style="list-style-type: none">• _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	instantaneous switching
power loss [V·A] maximum	28.6 VA
power loss [W] for rated value of the current	
<ul style="list-style-type: none">• at AC in hot operating state	28.6 W
<ul style="list-style-type: none">• at AC in hot operating state per pole	28.6 W
<ul style="list-style-type: none">• 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)	07/01/2006
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	
<ul style="list-style-type: none">• at 50 Hz rated value	48 ... 460 V
<ul style="list-style-type: none">• 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	
<ul style="list-style-type: none">• 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	20 A
operational current minimum	100 mA
rate of voltage rise at the thyristor for main contacts maximum permissible	500 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	200 A
I²t value maximum	200 A ² ·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
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	screw-type terminals
• for auxiliary and control circuit	screw-type terminals
type of connectable conductor cross-sections	
• for main contacts	
— solid	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²)
— finely stranded with core end processing	2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ²
• at AWG cables for main contacts	2x (14 ... 10)
connectable conductor cross-section for main contacts	
• solid or stranded	1.5 ... 6 mm ²
• finely stranded with core end processing	1 ... 10 mm ²
type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
— finely stranded without core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
• at AWG cables for auxiliary and control contacts	1x (AWG 20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	14 ... 10
tightening torque	
• 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• 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		
<ul style="list-style-type: none">• for main contacts• of the auxiliary and control contacts	M4 M3	
stripped length of the cable		
<ul style="list-style-type: none">• for main contacts• for auxiliary and control contacts	7 mm 7 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		
<ul style="list-style-type: none">• during operation• during storage	-25 ... +60 °C -55 ... +80 °C	
Electromagnetic compatibility		
conducted interference		
<ul style="list-style-type: none">• 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		
<ul style="list-style-type: none">• 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 10 x 38 mm usable• of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NE1813-0 ; These fuses have a smaller rated current than the semiconductor relays 5SE1320 3NE8015-1 3NC1016 ; These fuses have a smaller rated current than the semiconductor relays 3NC1425 3NC2220	
manufacturer's article number of the gG fuse		
<ul style="list-style-type: none">• at NH design usable• at cylindrical design 14 x 51 mm usable	3NA6801 ; These fuses have a smaller rated current than the semiconductor relays 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	5SE2306 ; These fuses have a smaller rated current than the semiconductor relays	
Certificates/ approvals		
General Product Approval	EMC	Declaration of Conformity



[Confirmation](#)



Declaration of Conformity	Test Certificates	other	Railway
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[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)

[Confirmation](#)



[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=3RF2120-1BA04>

Cax online generator

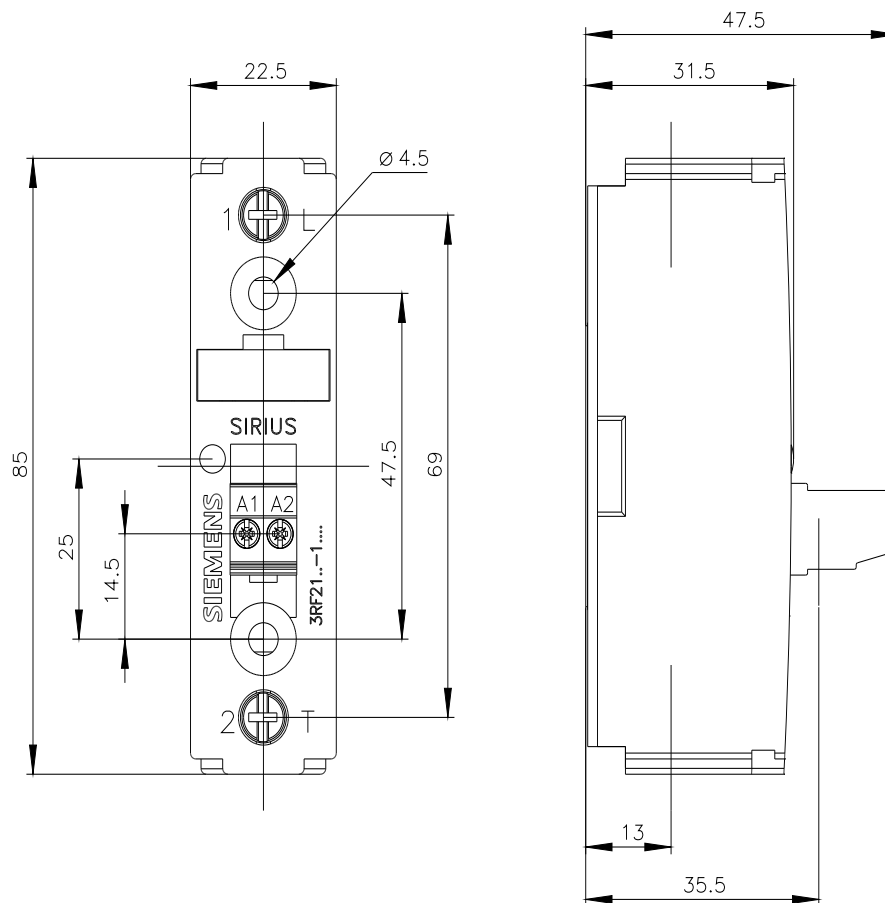
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-1BA04>

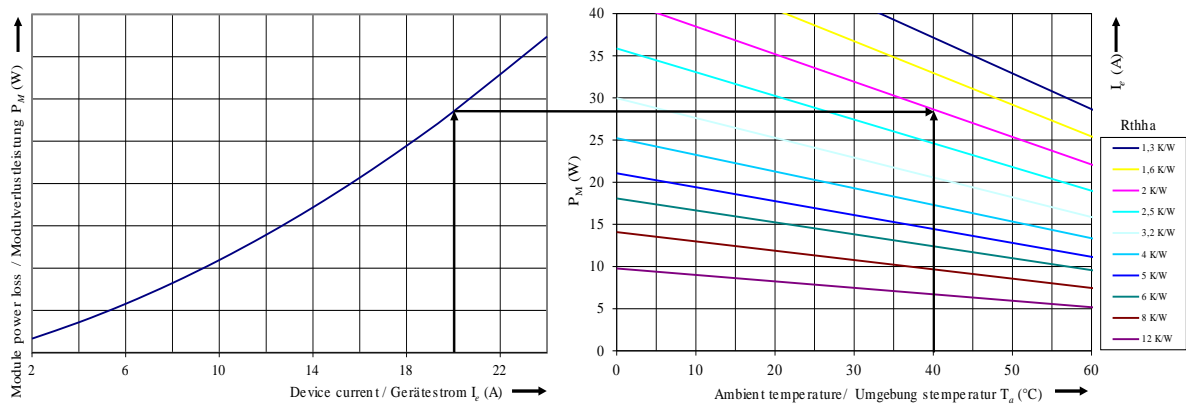
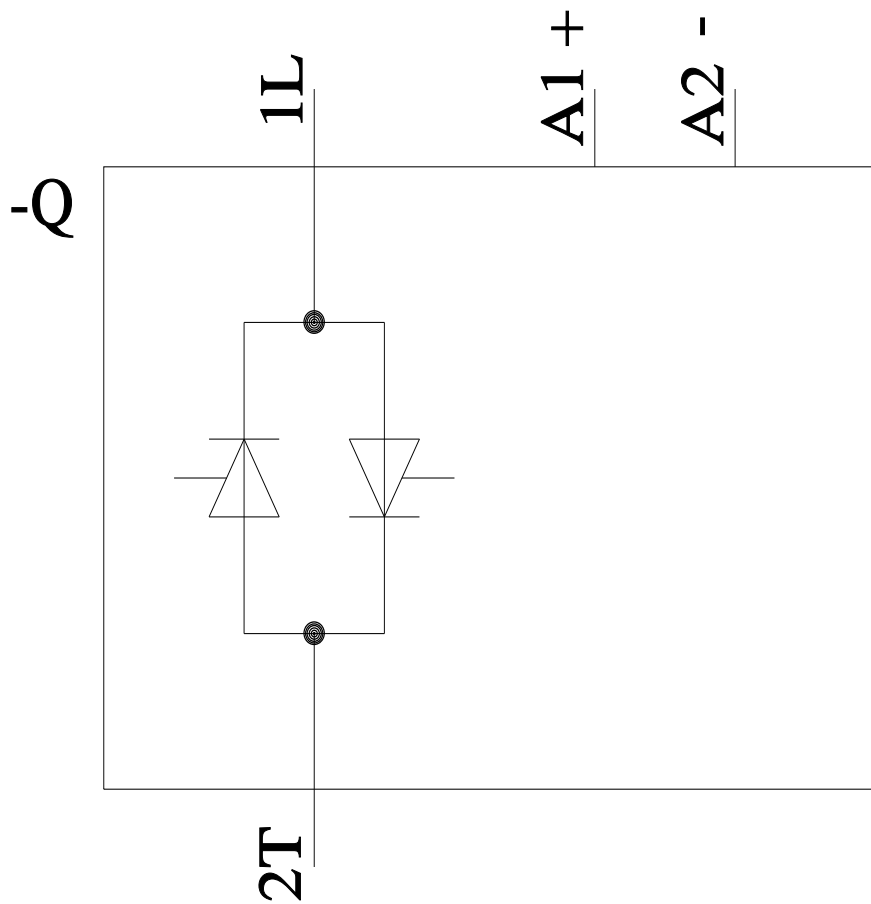
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-1BA04>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-1BA04&lang=en





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1/12/2022