



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

<b>product brand name</b>	SIRIUS
<b>product designation</b>	solid-state relay
<b>design of the product</b>	single-phase
<b>product type designation</b>	3RF21
<b>manufacturer's article number</b>	
<ul style="list-style-type: none"> <li>• _1 of the accessories that can be ordered</li> <li>• _2 of the accessories that can be ordered</li> <li>• _3 of the accessories that can be ordered</li> <li>• _4 of the accessories that can be ordered</li> <li>• _5 of the accessories that can be ordered</li> </ul>	3RF2900-3PA88 3RF2990-0HA16 3RF2900-0EA18 3RF2990-0GA16 3RF2920-0FA08
<b>product designation</b>	
<ul style="list-style-type: none"> <li>• _1 of the accessories that can be ordered</li> <li>• _2 of the accessories that can be ordered</li> <li>• _3 of the accessories that can be ordered</li> <li>• _4 of the accessories that can be ordered</li> <li>• _5 of the accessories that can be ordered</li> </ul>	terminal cover power regulator converter load monitoring load monitoring, basis
<b>General technical data</b>	
<b>product function</b>	zero-point switching
<b>power loss [V·A] maximum</b>	118 V·A
power loss [W] for rated value of the current at AC in hot operating state	118 W
<ul style="list-style-type: none"> <li>• per pole</li> </ul>	118 W
<b>power loss [W] for rated value of the current without load current share typical</b>	0.4 W
insulation voltage rated value	600 V
type of voltage of the control supply voltage	DC
shock resistance acc. to IEC 60068-2-27	15g / 11 ms
vibration resistance acc. to IEC 60068-2-6	2g
<b>reference code acc. to IEC 81346-2</b>	Q
<b>Main circuit</b>	
<b>number of poles for main current circuit</b>	1
<b>number of NO contacts for main contacts</b>	1
<b>number of NC contacts for main contacts</b>	0
<ul style="list-style-type: none"> <li>• operating voltage at AC               <ul style="list-style-type: none"> <li>— at 50 Hz rated value</li> <li>— at 60 Hz rated value</li> </ul> </li> </ul>	48 ... 460 V 48 ... 460 V
<b>operating frequency rated value</b>	50 ... 60 Hz
<b>relative symmetrical tolerance of the operating</b>	10 %

<b>frequency</b>	
<b>operating range relative to the operating voltage at AC</b>	
<ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>	40 ... 506 V 40 ... 506 V
<b>operational current</b>	
<ul style="list-style-type: none"> <li>• at AC-1 at 400 V rated value</li> <li>• at AC-51 rated value</li> <li>• acc. to UL 508 rated value</li> </ul>	90 A 50 A 50 A
<b>ampacity maximum</b>	90 A
<b>operational current minimum</b>	500 mA
<b>rate of voltage rise at the thyristor for main contacts maximum permissible</b>	1 000 V/μs
<b>blocking voltage at the thyristor for main contacts maximum permissible</b>	1 200 V
<b>reverse current of the thyristor</b>	10 mA
<b>derating temperature</b>	40 °C
<b>surge current resistance rated value</b>	1 150 A
<b>I<sup>2</sup>t value maximum</b>	6 600 A <sup>2</sup> ·s
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage 1</b>	
<ul style="list-style-type: none"> <li>• at DC rated value</li> <li>• at DC</li> </ul>	30 V 15 ... 24 V
<b>control supply voltage</b>	
<ul style="list-style-type: none"> <li>• at DC initial value for signal &lt;1&gt; detection</li> <li>• at DC full-scale value for signal&lt;0&gt; recognition</li> </ul>	15 V 5 V
<b>control current at minimum control supply voltage</b>	
<ul style="list-style-type: none"> <li>• at DC</li> </ul>	13 mA
control current at DC rated value	15 mA
<b>switch ON delay time</b>	1 ms; additionally max. one half-wave
<b>OFF delay time</b>	1 ms; additionally max. one half-wave
<b>Auxiliary circuit</b>	
<b>number of NC contacts for auxiliary contacts</b>	0
<b>number of NO contacts for auxiliary contacts</b>	0
number of CO contacts for auxiliary contacts	0
<b>Installation/ mounting/ dimensions</b>	
<b>fastening method</b>	screw fixing
<ul style="list-style-type: none"> <li>• side-by-side mounting</li> </ul>	Yes
<b>tightening torque of fixing screw maximum</b>	1.5 N·m
<b>tightening torque [lbf·in] of fixing screw maximum</b>	13 lbf·in
<b>height</b>	85 mm
<b>width</b>	22.5 mm
<b>depth</b>	48 mm
<b>Connections/ Terminals</b>	
<b>type of electrical connection</b>	
<ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control circuit</li> </ul>	screw-type terminals screw-type terminals
<b>type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>• for main contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• at AWG cables for main contacts</li> </ul>	2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ) 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup> 2x (14 ... 10)
<ul style="list-style-type: none"> <li>• connectable conductor cross-section for main contacts solid or stranded</li> <li>• connectable conductor cross-section for main contacts finely stranded with core end processing</li> </ul>	1.5 ... 6 mm <sup>2</sup> 1 ... 10 mm <sup>2</sup>
<b>type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>• for auxiliary and control contacts</li> </ul>	

— solid	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )	
— finely stranded with core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )	
— finely stranded without core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )	
● 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	
● tightening torque for auxiliary and control contacts with screw-type terminals	0.5 ... 0.6 N·m	
● tightening torque [lbf·in] for main contacts with screw-type terminals	7 ... 10.3 lbf·in	
● tightening torque [lbf·in] for auxiliary and control contacts with screw-type terminals	4.5 ... 5.3 lbf·in	
<b>design of the thread of the connection screw</b>		
● for main contacts	M4	
● of the auxiliary and control contacts	M3	
<b>stripped length of the cable</b>		
● for main contacts	7 mm	
● for auxiliary and control contacts	7 mm	
<b>Safety related data</b>		
<b>protection class IP on the front acc. to IEC 60529</b>	IP20	
<b>touch protection on the front acc. to IEC 60529</b>	finger-safe, for vertical contact from the front	
<b>Ambient conditions</b>		
installation altitude at height above sea level maximum	1 000 m	
● ambient temperature during operation	-25 ... +60 °C	
● ambient temperature during storage	-55 ... +80 °C	
<b>Electromagnetic compatibility</b>		
<b>conducted interference</b>		
● due to burst acc. to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2	
● due to conductor-earth surge acc. to IEC 61000-4-5	2 kV behavior criterion 2	
● due to conductor-conductor surge acc. to IEC 61000-4-5	1 kV behavior criterion 2	
● due to high-frequency radiation acc. to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1	
<b>field-based interference acc. to IEC 61000-4-3</b>	80 MHz ... 1 GHz 10 V/m, behavior criterion 1	
<b>electrostatic discharge acc. to IEC 61000-4-2</b>	4 kV contact discharging / 8 kV air discharging, behavior criterion 2	
<b>conducted HF interference emissions acc. to CISPR11</b>	Class A for industrial environment	
<b>field-bound HF interference emission acc. to CISPR11</b>	Class B for the domestic, business and commercial environments	
<b>Short-circuit protection, design of the fuse link</b>		
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	
<b>Certificates/ approvals</b>		
<b>General Product Approval</b>	<b>EMC</b>	<b>Declaration of Conformity</b>



[Miscellaneous](#)

Test Certificates

other

Railway

[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)



[Vibration and Shock](#)

#### Further information

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=3RF2190-1AA04>

Cax online generator

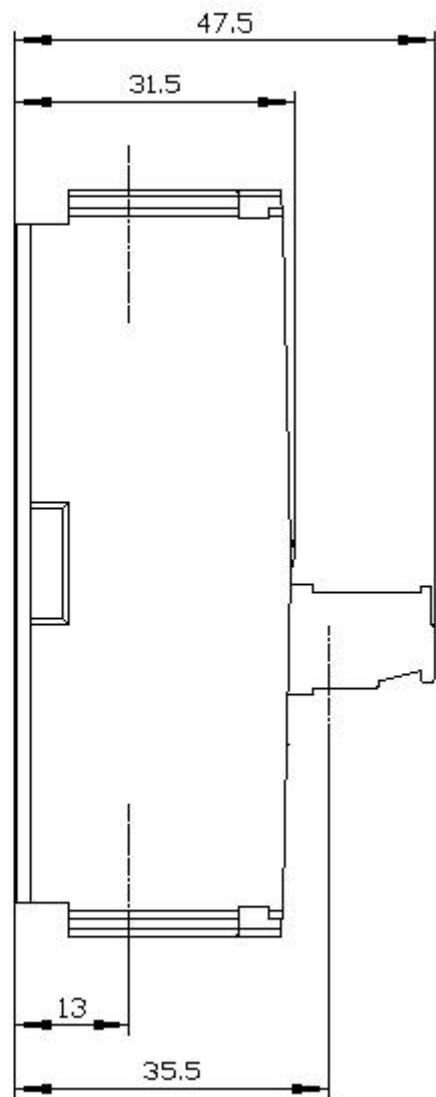
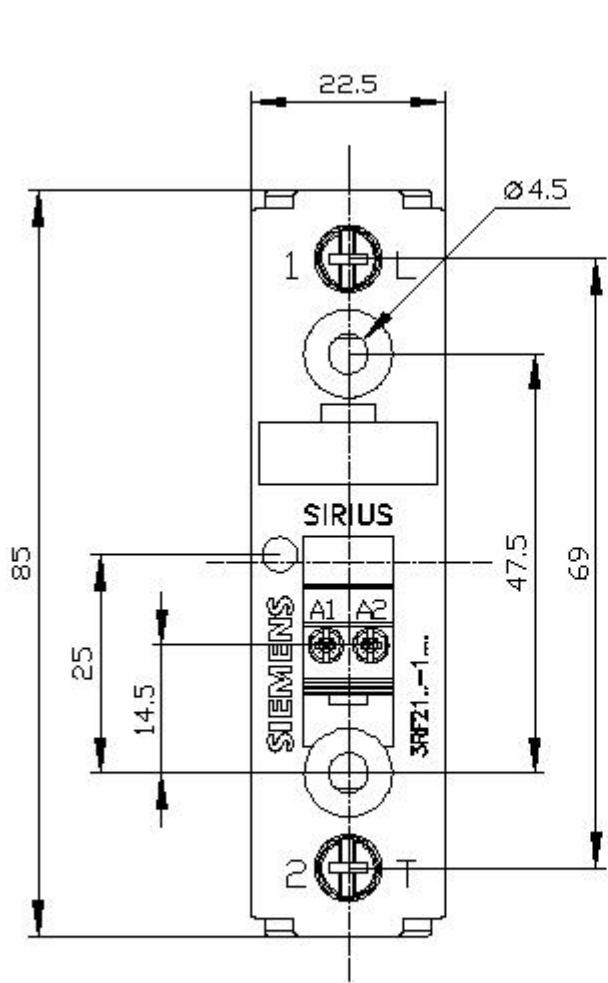
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-1AA04>

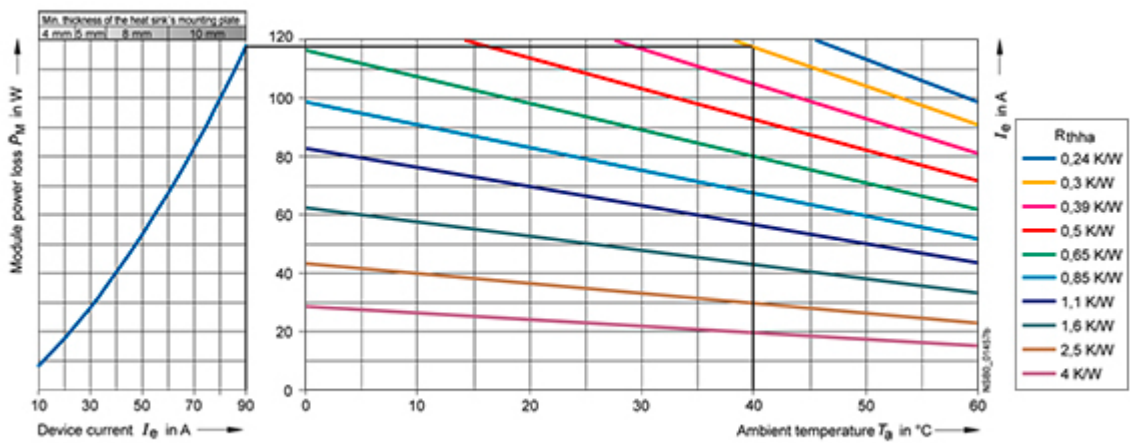
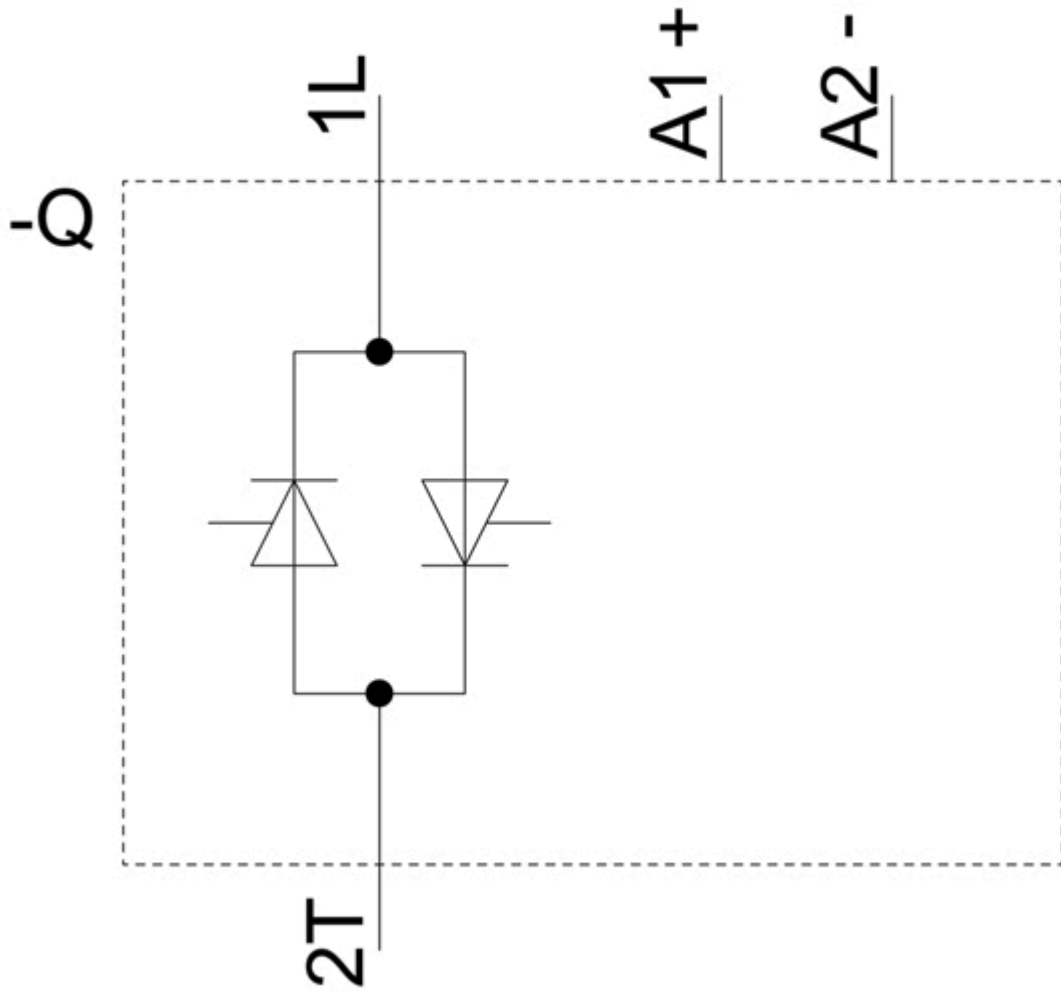
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-1AA04>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2190-1AA04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-1AA04&lang=en)





last modified:

12/15/2020