



Semiconductor relay, 1-phase 3RF2 Width 45 mm, 20 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>	3RF20
<b>General technical data</b>	
<b>product function</b>	zero-point switching
power loss [W] for rated value of the current at AC in hot operating state	28.6 W
• per pole	28.6 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
• operating voltage at AC	
— at 50 Hz rated value	48 ... 460 V
— at 60 Hz rated value	48 ... 460 V
<b>operating frequency rated value</b>	50 ... 60 Hz
<b>relative symmetrical tolerance of the operating frequency</b>	10 %
<b>operating range relative to the operating voltage at AC</b>	
• at 50 Hz	40 ... 506 V
• at 60 Hz	40 ... 506 V
<b>operational current</b>	
• at AC-1 at 400 V rated value	20 A
• at AC-51 rated value	20 A
• acc. to UL 508 rated value	20 A
<b>ampacity maximum</b>	20 A
<b>operational current minimum</b>	100 mA
<b>rate of voltage rise at the thyristor for main contacts maximum permissible</b>	500 V/μs
<b>blocking voltage at the thyristor for main contacts</b>	1 200 V

<b>maximum permissible</b>	
<b>reverse current of the thyristor</b>	10 mA
<b>derating temperature</b>	40 °C
<b>surge current resistance rated value</b>	200 A
<b>I<sup>2</sup>t value maximum</b>	200 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>	
• at DC rated value	30 V
• at DC	15 ... 24 V
<b>control supply voltage</b>	
• at DC initial value for signal <1> detection	15 V
• at DC full-scale value for signal <0> recognition	5 V
<b>control current at minimum control supply voltage</b>	
• at DC	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
• side-by-side mounting	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>	58 mm
<b>width</b>	45 mm
<b>depth</b>	48 mm
<b>Connections/ Terminals</b>	
<b>type of electrical connection</b>	
• for main current circuit	screw-type terminals
• for auxiliary and control circuit	screw-type terminals
<b>type of connectable conductor cross-sections</b>	
• for main contacts	
— solid	2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )
— finely stranded with core end processing	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup>
• at AWG cables for main contacts	2x (14 ... 10)
• connectable conductor cross-section for main contacts solid or stranded	1.5 ... 6 mm <sup>2</sup>
• connectable conductor cross-section for main contacts finely stranded with core end processing	1 ... 10 mm <sup>2</sup>
<b>type of connectable conductor cross-sections</b>	
• for auxiliary and control contacts	
— 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	4.5 ... 5.3 lbf·in

contacts with screw-type terminals		
<b>design of the thread of the connection screw</b> <ul style="list-style-type: none"><li>• for main contacts</li><li>• of the auxiliary and control contacts</li></ul>	M4 M3	
<b>stripped length of the cable</b> <ul style="list-style-type: none"><li>• for main contacts</li><li>• for auxiliary and control contacts</li></ul>	10 mm 7 mm	
UL/CSA ratings		
Safety related data		
<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	
Ambient conditions		
installation altitude at height above sea level maximum	1 000 m	
<ul style="list-style-type: none"><li>• ambient temperature during operation</li><li>• ambient temperature during storage</li></ul>	-25 ... +60 °C -55 ... +80 °C	
Electromagnetic compatibility		
<b>conducted interference</b> <ul style="list-style-type: none"><li>• due to burst acc. to IEC 61000-4-4</li><li>• due to conductor-earth surge acc. to IEC 61000-4-5</li><li>• due to conductor-conductor surge acc. to IEC 61000-4-5</li><li>• due to high-frequency radiation acc. to IEC 61000-4-6</li></ul>	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	
<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	
Short-circuit protection, design of the fuse link		
manufacturer's article number <ul style="list-style-type: none"><li>• of gS fuse for semiconductor protection at NH design usable</li><li>• of full range R fuse link for semiconductor protection at cylindrical design usable</li><li>• of back-up R fuse link for semiconductor protection at NH design usable</li><li>• of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable</li><li>• of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable</li><li>• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable</li></ul>	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"><li>• at NH design usable</li><li>• at cylindrical design 14 x 51 mm usable</li></ul>	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"><li>• of DIAZED fuse usable</li><li>• of NEOZED fuse usable</li></ul>	5SB141; These fuses have a smaller rated current than the semiconductor relays 5SE2306; These fuses have a smaller rated current than the semiconductor relays	
Certificates/ approvals		
General Product Approval	EMC	Declaration of Conformity



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#### 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=3RF2020-1AA04>

Cax online generator

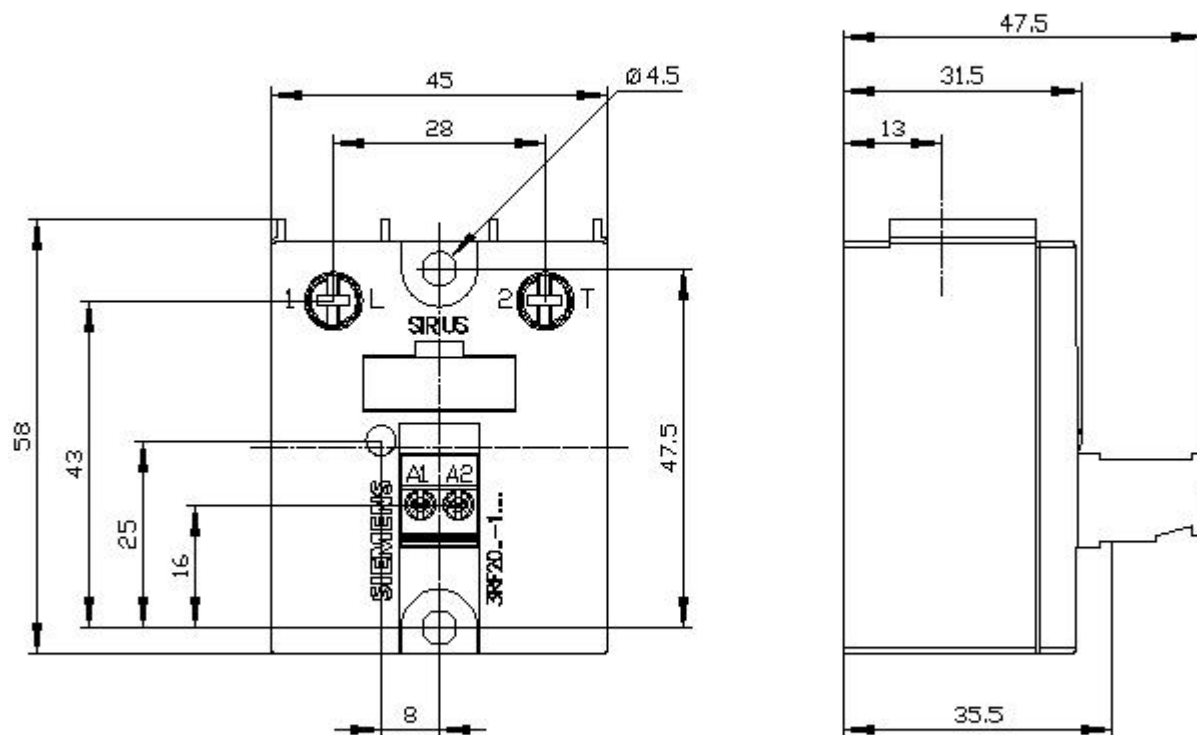
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2020-1AA04>

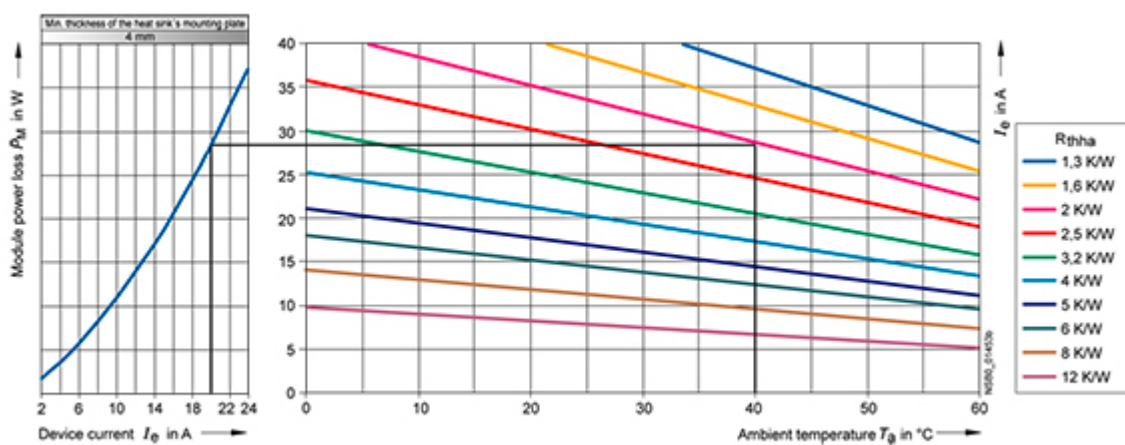
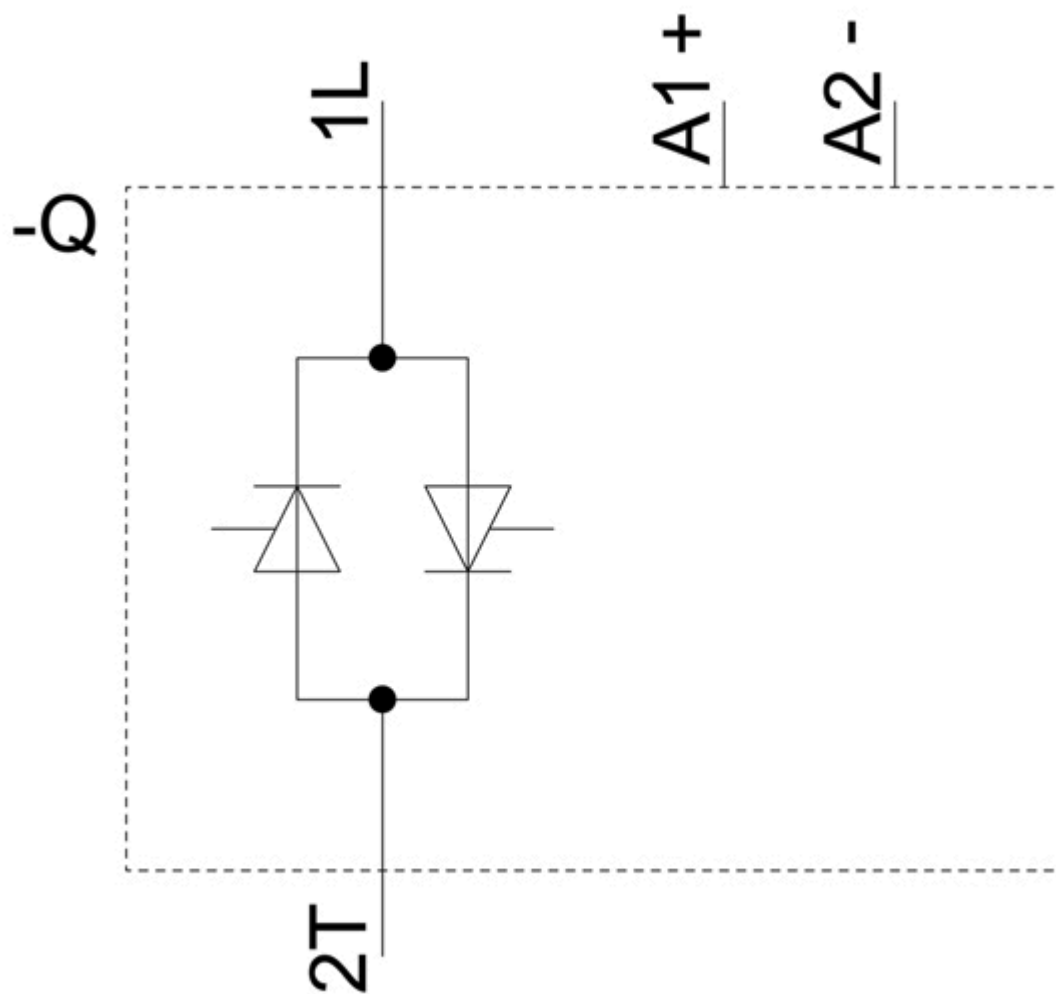
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2020-1AA04>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2020-1AA04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2020-1AA04&lang=en)





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