



contactor AC-1, 140 A, 690 V / 40 °C, 3-pole, 230 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, main circuit: box terminal, control and auxiliary circuit: screw terminal, size: S3

<b>product brand name</b>	SIRIUS
<b>product designation</b>	Contacteur
<b>product type designation</b>	3RT24
<b>General technical data</b>	
<b>size of contactor</b>	S3
<b>product extension</b>	
• function module for communication	No
• auxiliary switch	Yes
<b>power loss [W] for rated value of the current</b>	
• at AC in hot operating state	29.4 W
• at AC in hot operating state per pole	9.8 W
• without load current share typical	8.8 W
<b>type of calculation of power loss depending on pole</b>	quadratic
<b>insulation voltage</b>	
• of main circuit with degree of pollution 3 rated value	1 000 V
• of auxiliary circuit with degree of pollution 3 rated value	690 V
<b>surge voltage resistance</b>	
• of main circuit rated value	8 kV
• of auxiliary circuit rated value	6 kV
<b>shock resistance at rectangular impulse</b>	
• at AC	10.3g / 5 ms, 6.g / 10 ms
<b>shock resistance with sine pulse</b>	
• at AC	16.3g / 5 ms, 10.g / 10 ms
<b>mechanical service life (operating cycles)</b>	
• of contactor typical	10 000 000
• of the contactor with added electronically optimized auxiliary switch block typical	5 000 000
• of the contactor with added auxiliary switch block typical	10 000 000
<b>reference code according to IEC 81346-2</b>	Q
<b>Substance Prohibition (Date)</b>	03/01/2017
<b>Weight</b>	1.722 kg
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m
<b>ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C
<b>relative humidity minimum</b>	10 %
<b>relative humidity at 55 °C according to IEC 60068-2-30 maximum</b>	95 %
<b>Main circuit</b>	
<b>number of poles for main current circuit</b>	3

<b>number of NO contacts for main contacts</b>	3
<b>number of NC contacts for main contacts</b>	0
<b>type of voltage for main current circuit</b>	AC
<b>operational current</b>	
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	140 A
— up to 690 V at ambient temperature 55 °C rated value	130 A
— up to 690 V at ambient temperature 60 °C rated value	130 A
• at AC-3	
— at 400 V rated value	44 A
— at 690 V rated value	44 A
minimum cross-section in main circuit at maximum AC-1 rated value	50 mm <sup>2</sup>
<b>operational current</b>	
• <b>at 1 current path at DC-1</b>	
— at 24 V rated value	130 A
— at 60 V rated value	80 A
— at 110 V rated value	12 A
— at 220 V rated value	2.5 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.48 A
• <b>with 2 current paths in series at DC-1</b>	
— at 24 V rated value	130 A
— at 60 V rated value	130 A
— at 110 V rated value	130 A
— at 220 V rated value	13 A
— at 440 V rated value	2.4 A
— at 600 V rated value	1.3 A
• <b>with 3 current paths in series at DC-1</b>	
— at 24 V rated value	130 A
— at 60 V rated value	130 A
— at 110 V rated value	130 A
— at 220 V rated value	130 A
— at 440 V rated value	6 A
— at 600 V rated value	3.4 A
• <b>at 1 current path at DC-3 at DC-5</b>	
— at 24 V rated value	6 A
— at 60 V rated value	3 A
— at 110 V rated value	1.25 A
— at 220 V rated value	0.35 A
— at 440 V rated value	0.15 A
— at 600 V rated value	0.1 A
• <b>with 2 current paths in series at DC-3 at DC-5</b>	
— at 24 V rated value	130 A
— at 60 V rated value	130 A
— at 110 V rated value	130 A
— at 220 V rated value	1.75 A
— at 440 V rated value	0.42 A
— at 600 V rated value	0.27 A
• <b>with 3 current paths in series at DC-3 at DC-5</b>	
— at 24 V rated value	130 A
— at 60 V rated value	130 A
— at 110 V rated value	130 A
— at 220 V rated value	4 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.45 A
<b>no-load switching frequency</b>	
• at AC	5 000 1/h
operating frequency at AC-1 maximum	650 1/h

Control circuit/ Control	
<b>type of voltage</b>	AC
<b>type of voltage of the control supply voltage</b>	AC
<b>control supply voltage at AC</b>	
• at 50 Hz rated value	230 V
• at 60 Hz rated value	230 V
<b>operating range factor control supply voltage rated value of magnet coil at AC</b>	
• at 50 Hz	0.8 ... 1.1
• at 60 Hz	0.85 ... 1.1
<b>apparent pick-up power of magnet coil at AC</b>	
• at 50 Hz	348 VA
• at 60 Hz	296 VA
<b>inductive power factor with closing power of the coil</b>	
• at 50 Hz	0.62
• at 60 Hz	0.55
<b>apparent holding power of magnet coil at AC</b>	
• at 50 Hz	25 VA
• at 60 Hz	18 VA
<b>inductive power factor with the holding power of the coil</b>	
• at 50 Hz	0.35
• at 60 Hz	0.41
<b>closing delay</b>	
• at AC	13 ... 50 ms
<b>opening delay</b>	
• at AC	10 ... 21 ms
<b>arcing time</b>	10 ... 20 ms
<b>control version of the switch operating mechanism</b>	Standard A1 - A2
Auxiliary circuit	
<b>number of NC contacts for auxiliary contacts</b>	1
• attachable	2
• instantaneous contact	1
<b>number of NO contacts for auxiliary contacts</b>	1
• attachable	2
• instantaneous contact	1
<b>operational current at AC-12 maximum</b>	10 A
<b>operational current at AC-15</b>	
• at 230 V rated value	6 A
• at 400 V rated value	3 A
• at 500 V rated value	2 A
• at 690 V rated value	1 A
<b>operational current at DC-13</b>	
• at 24 V rated value	10 A
• at 48 V rated value	2 A
• at 60 V rated value	2 A
• at 110 V rated value	1 A
• at 125 V rated value	0.9 A
• at 220 V rated value	0.3 A
• at 600 V rated value	0.1 A
<b>contact reliability of auxiliary contacts</b>	1 faulty switching per 100 million (17 V, 1 mA)
Short-circuit protection	
<b>design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V</b>	C characteristic: 10 A; 0.4 kA
<b>design of the fuse link</b>	
• for short-circuit protection of the main circuit	
— with type of coordination 1 required	gG: 250 A (690 V, 100 kA)
— with type of coordination 2 required	gR: 250 A (690 V, 100 kA)
• for short-circuit protection of the auxiliary switch required	gG: 10 A (690 V, 1 kA)
Installation/ mounting/ dimensions	
<b>mounting position</b>	+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface

fastening method side-by-side mounting	Yes
<b>fastening method</b>	screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715
<b>height</b>	140 mm
<b>width</b>	70 mm
<b>depth</b>	152 mm
<b>required spacing</b>	
<ul style="list-style-type: none"> <li>● with side-by-side mounting <ul style="list-style-type: none"> <li>— forwards 20 mm</li> <li>— upwards 10 mm</li> <li>— downwards 10 mm</li> <li>— at the side 0 mm</li> </ul> </li> <li>● for grounded parts <ul style="list-style-type: none"> <li>— forwards 20 mm</li> <li>— upwards 10 mm</li> <li>— at the side 10 mm</li> <li>— downwards 10 mm</li> </ul> </li> <li>● for live parts <ul style="list-style-type: none"> <li>— forwards 20 mm</li> <li>— upwards 10 mm</li> <li>— downwards 10 mm</li> <li>— at the side 10 mm</li> </ul> </li> </ul>	
<b>Connections/ Terminals</b>	
<b>type of electrical connection</b>	
<ul style="list-style-type: none"> <li>● for main current circuit box terminal</li> <li>● for auxiliary and control circuit screw-type terminals</li> <li>● at contactor for auxiliary contacts Screw-type terminals</li> <li>● of magnet coil Screw-type terminals</li> </ul>	
<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 2x (2.5 ... 16 mm<sup>2</sup>)</li> <li>— stranded 2x (2.5 ... 16 mm<sup>2</sup>), 2x (10 ... 50 mm<sup>2</sup>), 1x (10 ... 70 mm<sup>2</sup>)</li> <li>— solid or stranded 2x (2.5 ... 16 mm<sup>2</sup>), 2x (10 ... 50 mm<sup>2</sup>), 1x (10 ... 70 mm<sup>2</sup>)</li> <li>— finely stranded with core end processing 2x (2.5 ... 35 mm<sup>2</sup>), 1x (2.5 ... 50 mm<sup>2</sup>)</li> </ul> </li> <li>● for AWG cables for main contacts 2x (10 ... 1/0), 1x (10 ... 2/0)</li> </ul>	
<b>connectable conductor cross-section for main contacts</b>	
<ul style="list-style-type: none"> <li>● solid 2.5 ... 16 mm<sup>2</sup></li> <li>● solid or stranded 4 ... 70 mm<sup>2</sup></li> <li>● stranded 6 ... 70 mm<sup>2</sup></li> <li>● finely stranded with core end processing 2.5 ... 50 mm<sup>2</sup></li> </ul>	
<b>connectable conductor cross-section for auxiliary contacts</b>	
<ul style="list-style-type: none"> <li>● solid or stranded 0.5 ... 2.5 mm<sup>2</sup></li> <li>● finely stranded with core end processing 0.5 ... 2.5 mm<sup>2</sup></li> </ul>	
<b>type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>● for auxiliary contacts <ul style="list-style-type: none"> <li>— solid 2x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.75 ... 2.5 mm<sup>2</sup>)</li> <li>— solid or stranded 2x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.75 ... 2.5 mm<sup>2</sup>)</li> <li>— finely stranded with core end processing 2x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.75 ... 2.5 mm<sup>2</sup>)</li> </ul> </li> <li>● for AWG cables for auxiliary contacts 2x (20 ... 16), 2x (18 ... 14)</li> </ul>	
<b>AWG number extended as coded connectable conductor cross section for main contacts</b>	10 ... 2/0
<b>AWG number as coded connectable conductor cross section for auxiliary contacts</b>	20 ... 14
<b>Safety related data</b>	
<b>product function</b>	
<ul style="list-style-type: none"> <li>● mirror contact according to IEC 60947-4-1 Yes</li> <li>● positively driven operation according to IEC 60947-5-1 No</li> <li>● suitable for safety function Yes</li> </ul>	
suitability for use safety-related switching OFF	Yes
<b>service life maximum</b>	20 a
<b>proportion of dangerous failures</b>	
<ul style="list-style-type: none"> <li>● with low demand rate according to SN 31920 40 %</li> </ul>	

• with high demand rate according to SN 31920	73 %
<b>B10 value with high demand rate according to SN 31920</b>	1 000 000
<b>failure rate [FIT] with low demand rate according to SN 31920</b>	100 FIT
<b>ISO 13849</b>	
<b>device type according to ISO 13849-1</b>	3
<b>overdimensioning according to ISO 13849-2 necessary</b>	Yes
<b>IEC 61508</b>	
<b>safety device type according to IEC 61508-2</b>	Type A
<b>Electrical Safety</b>	
<b>protection class IP on the front according to IEC 60529</b>	IP20
<b>touch protection on the front according to IEC 60529</b>	finger-safe, for vertical contact from the front

**Approvals Certificates**

General Product Approval



KC



<b>EMV</b>	<b>Test Certificates</b>	<b>Maritime application</b>
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[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



<b>Maritime application</b>	<b>other</b>	<b>Railway</b>
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[Confirmation](#)

[Special Test Certificate](#)

<b>Dangerous goods</b>	<b>Environment</b>
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[Transport Information](#)

[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=3RT2446-1AL20>

Cax online generator

<https://support.industry.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2446-1AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2446-1AL20>

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

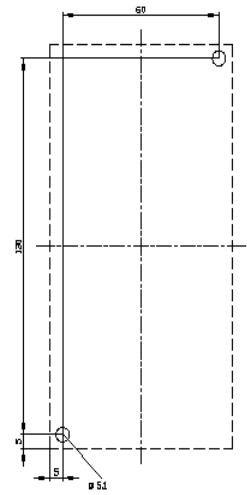
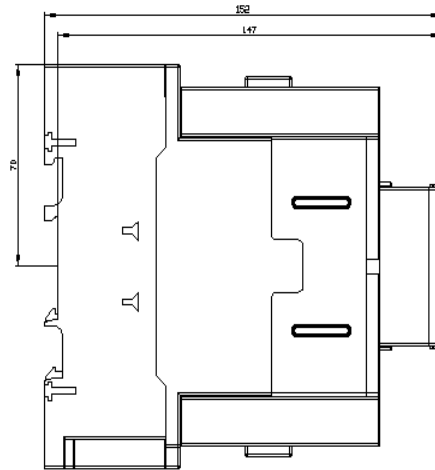
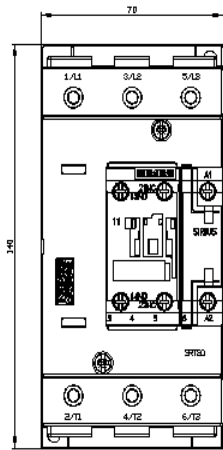
[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2446-1AL20&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2446-1AL20&lang=en)

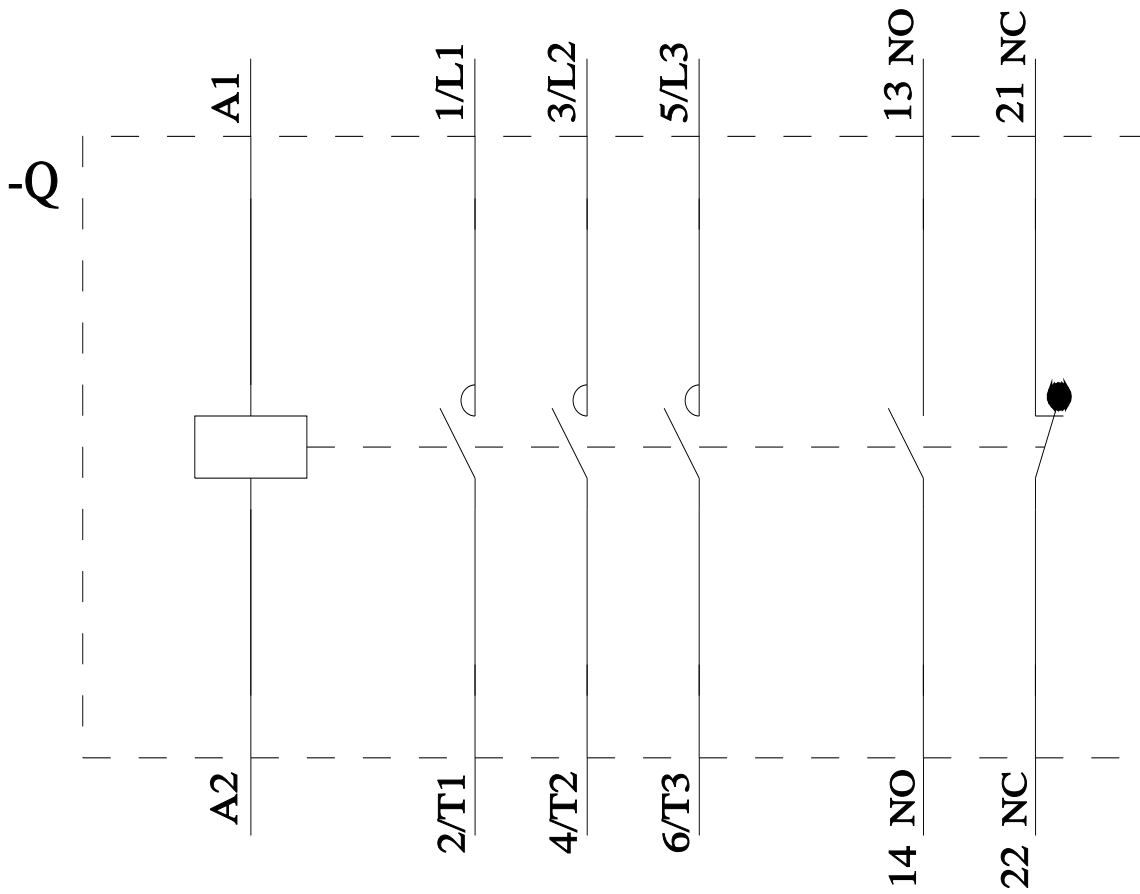
Characteristic: Tripping characteristics, I<sub>t</sub>, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2446-1AL20/char>

Further characteristics (e.g. electrical endurance, switching frequency)

<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2446-1AL20&objecttype=14&gridview=view1>





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