



traction contactor, AC-3e/AC-3, 9 A, 4 kW / 400 V, 3-pole, 110 V DC, 0.7-1.25\* Uc, solid-state operating mechanism, with integrated varistor, auxiliary contacts: 1 NO + 1 NC, screw terminal, frame size: S0

<b>product brand name</b>	SIRIUS
<b>product designation</b>	Power contactor
<b>design of the product</b>	With extended operating range
<b>product type designation</b>	3RT2
<b>General technical data</b>	
<b>size of contactor</b>	S0
<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	1.2 W
• at AC in hot operating state per pole	0.4 W
• without load current share typical	1.3 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	690 V
• of auxiliary circuit with degree of pollution 3 rated value	690 V
<b>surge voltage resistance</b>	
• of main circuit rated value	6 kV
• of auxiliary circuit rated value	6 kV
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	400 V
<b>shock resistance at rectangular impulse</b>	
• at DC	10g / 5 ms, 7.5g / 10 ms
<b>shock resistance with sine pulse</b>	
• at DC	15g / 5 ms, 10g / 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>	10/01/2009
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
<b>Weight</b>	0.543 kg
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m
<b>ambient temperature</b>	
• during operation	-40 ... +70 °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>operating voltage</b>	
• at AC-3 rated value maximum	690 V
• at AC-3e rated value maximum	690 V
<b>operational current</b>	
• at AC-1 at 400 V at ambient temperature 40 °C rated value	40 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	40 A
— up to 690 V at ambient temperature 60 °C rated value	35 A
• at AC-2 at 400 V rated value	9 A
• at AC-3	
— at 400 V rated value	9 A
— at 500 V rated value	9 A
— at 690 V rated value	9 A
• at AC-3e	
— at 400 V rated value	9 A
— at 500 V rated value	9 A
— at 690 V rated value	9 A
• at AC-4 at 400 V rated value	8.5 A
<b>minimum cross-section in main circuit</b>	
• at maximum AC-1 rated value	10 mm <sup>2</sup>
• at maximum Ith rated value	10 mm <sup>2</sup>
<b>operational current for approx. 200000 operating cycles at AC-4</b>	
• at 400 V rated value	4.1 A
• at 690 V rated value	3.3 A
<b>operational current</b>	
• <b>at 1 current path at DC-1</b>	
— at 24 V rated value	35 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.4 A
— at 600 V rated value	0.25 A
• <b>with 2 current paths in series at DC-1</b>	
— at 24 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 600 V rated value	0.8 A
• <b>with 3 current paths in series at DC-1</b>	
— at 24 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	35 A
— at 440 V rated value	2.9 A
— at 600 V rated value	1.4 A
• <b>at 1 current path at DC-3 at DC-5</b>	
— at 24 V rated value	20 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.09 A
— at 600 V rated value	0.06 A

<ul style="list-style-type: none"> <li>● with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> <li>— at 24 V rated value</li> <li>— at 110 V rated value</li> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> <li>● with 3 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> <li>— at 24 V rated value</li> <li>— at 110 V rated value</li> <li>— at 220 V rated value</li> <li>— at 440 V rated value</li> <li>— at 600 V rated value</li> </ul> </li> </ul>	35 A 15 A 3 A 0.27 A 0.16 A  35 A 35 A 10 A 0.6 A 0.6 A
<b>operating power</b> <ul style="list-style-type: none"> <li>● at AC-2 at 400 V rated value</li> <li>● at AC-3 <ul style="list-style-type: none"> <li>— at 230 V rated value</li> <li>— at 400 V rated value</li> <li>— at 500 V rated value</li> <li>— at 690 V rated value</li> </ul> </li> <li>● at AC-3e <ul style="list-style-type: none"> <li>— at 230 V rated value</li> <li>— at 400 V rated value</li> <li>— at 500 V rated value</li> <li>— at 690 V rated value</li> </ul> </li> </ul>	4 kW  2.2 kW 4 kW 4 kW 7.5 kW  2.2 kW 4 kW 4 kW 7.5 kW
<b>operating power for approx. 200000 operating cycles at AC-4</b> <ul style="list-style-type: none"> <li>● at 400 V rated value</li> <li>● at 690 V rated value</li> </ul>	2 kW 2.5 kW
<b>short-time withstand current in cold operating state up to 40 °C</b> <ul style="list-style-type: none"> <li>● limited to 1 s switching at zero current maximum</li> <li>● limited to 5 s switching at zero current maximum</li> <li>● limited to 10 s switching at zero current maximum</li> <li>● limited to 30 s switching at zero current maximum</li> <li>● limited to 60 s switching at zero current maximum</li> </ul>	170 A; Use minimum cross-section acc. to AC-1 rated value 170 A; Use minimum cross-section acc. to AC-1 rated value 140 A; Use minimum cross-section acc. to AC-1 rated value 104 A; Use minimum cross-section acc. to AC-1 rated value 88 A; Use minimum cross-section acc. to AC-1 rated value
<b>no-load switching frequency</b> <ul style="list-style-type: none"> <li>● at DC</li> </ul>	1 500 1/h
<b>operating frequency</b> <ul style="list-style-type: none"> <li>● at AC-1 maximum</li> <li>● at AC-2 maximum</li> <li>● at AC-3 maximum</li> <li>● at AC-3e maximum</li> <li>● at AC-2 at AC-3e maximum</li> <li>● at AC-4 maximum</li> </ul>	1 000 1/h 1 000 1/h 1 000 1/h 1 000 1/h 1 000 1/h 300 1/h
<b>Ratings for railway applications</b>	
<b>thermal current (I<sub>th</sub>) up to 690 V</b> <ul style="list-style-type: none"> <li>● up to 40 °C according to IEC 60077 rated value</li> <li>● up to 70 °C according to IEC 60077 rated value</li> </ul>	40 A 30 A
<b>Control circuit/ Control</b>	
<b>type of voltage</b>	DC
<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage at DC rated value</b>	110 V
<b>operating range factor control supply voltage rated value of magnet coil at DC</b> <ul style="list-style-type: none"> <li>● initial value</li> <li>● full-scale value</li> </ul>	0.7 1.25
<b>design of the surge suppressor</b>	with varistor
<b>inrush current peak</b>	15 A
<b>duration of inrush current peak</b>	30 μs
<b>locked-rotor current mean value</b>	0.13 A

<b>locked-rotor current peak</b>	0.19 A
<b>duration of locked-rotor current</b>	180 ms
<b>holding current mean value</b>	19 mA
<b>closing power of magnet coil at DC</b>	13.2 W
<b>holding power of magnet coil at DC</b>	1.3 W
<b>closing delay</b>	
• at DC	50 ... 75 ms
<b>opening delay</b>	
• at DC	30 ... 50 ms
<b>arcing time</b>	10 ... 10 ms
<b>Auxiliary circuit</b>	
<b>number of NC contacts for auxiliary contacts</b>	1
• instantaneous contact	1
<b>number of NO contacts for auxiliary contacts</b>	1
• 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	10 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-12</b>	
• at 24 V rated value	10 A
• at 48 V rated value	6 A
• at 60 V rated value	6 A
• at 110 V rated value	3 A
• at 125 V rated value	2 A
• at 220 V rated value	1 A
• at 600 V rated value	0.15 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>UL/CSA ratings</b>	
<b>full-load current (FLA) for 3-phase AC motor</b>	
• at 480 V rated value	7.6 A
• at 600 V rated value	9 A
<b>yielded mechanical performance [hp]</b>	
• for single-phase AC motor	
— at 110/120 V rated value	1 hp
— at 230 V rated value	1 hp
• for 3-phase AC motor	
— at 200/208 V rated value	2 hp
— at 220/230 V rated value	3 hp
— at 460/480 V rated value	5 hp
— at 575/600 V rated value	7.5 hp
<b>contact rating of auxiliary contacts according to UL</b>	A600 / Q600
<b>Category Control Number (CCN)</b>	E31519 (NLDX, NLDX7)
<b>Short-circuit protection</b>	
<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: 63 A (690 V, 100 kA), aM: 32 A (690 V, 100 kA), BS88: 63 A (415 V, 80 kA)
— with type of coordination 2 required	gG: 25 A (690 V, 100 kA), aM: 20 A (690 V, 100 kA), BS88: 25 A (415 V, 80 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>	85 mm
<b>width</b>	45 mm
<b>depth</b>	107 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</li> <li>— upwards</li> <li>— downwards</li> <li>— at the side</li> </ul> </li> <li>• for grounded parts           <ul style="list-style-type: none"> <li>— forwards</li> <li>— upwards</li> <li>— at the side</li> <li>— downwards</li> </ul> </li> <li>• for live parts           <ul style="list-style-type: none"> <li>— forwards</li> <li>— upwards</li> <li>— downwards</li> <li>— at the side</li> </ul> </li> </ul>	10 mm 10 mm 10 mm 0 mm  10 mm 10 mm 6 mm 10 mm  10 mm 10 mm 10 mm 6 mm

### Connections/ Terminals

<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> <li>• at contactor for auxiliary contacts</li> <li>• of magnet coil</li> </ul>	screw-type terminals screw-type terminals 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>— solid or stranded</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• for AWG cables for main contacts</li> </ul>	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 10 mm <sup>2</sup> ) 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 10 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 (16 ... 12), 2x (14 ... 8)
<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 or stranded</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• for AWG cables for auxiliary contacts</li> </ul>	2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ) 2x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.75 ... 2.5 mm <sup>2</sup> ) 2x (20 ... 16), 2x (18 ... 14)
<b>AWG number as coded connectable conductor cross section for main contacts</b>	16 ... 8
<b>AWG number as coded connectable conductor cross section for auxiliary contacts</b>	20 ... 14

### Safety related data

<b>product function</b>	
<ul style="list-style-type: none"> <li>• mirror contact according to IEC 60947-4-1</li> <li>• positively driven operation according to IEC 60947-5-1</li> <li>• suitable for safety function</li> </ul>	Yes No Yes
suitability for use safety-related switching OFF	Yes
<b>service life maximum</b>	20 a
<b>test wear-related service life necessary</b>	Yes
<b>proportion of dangerous failures</b>	
<ul style="list-style-type: none"> <li>• with low demand rate according to SN 31920</li> <li>• with high demand rate according to SN 31920</li> </ul>	40 % 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

ISO 13849	
device type according to ISO 13849-1	3
overdimensioning according to ISO 13849-2 necessary	Yes
IEC 61508	
safety device type according to IEC 61508-2	Type A
Electrical Safety	
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
Communication/ Protocol	
product function bus communication	No
Approvals Certificates	
General Product Approval	



[KC](#)

General Product Approval	EMV	Test Certificates	Maritime application
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[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



Maritime application	other
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[Miscellaneous](#)

other	Railway	Dangerous goods	Environment
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[Confirmation](#)

[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

[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=3RT2023-1XF40-0LA2>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2023-1XF40-0LA2>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1XF40-0LA2>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RT2023-1XF40-0LA2&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2023-1XF40-0LA2&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1XF40-0LA2/char>

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

<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2023-1XF40-0LA2&objecttype=14&gridview=view1>



