



traction contactor, AC-3e/AC-3, 95 A, 45 kW / 400 V, 3-pole, 110 V DC, 0.7-1.25*
Uc, solid-state operating mechanism, with integrated varistor, auxiliary contacts: 2
NO + 2 NC, main circuit: screw terminal, control and auxiliary circuit: spring-loaded
terminal, frame size: S3, removable auxiliary switch

product brand name	SIRIUS
product designation	Power contactor
design of the product	With extended operating range
product type designation	3RT2
General technical data	
size of contactor	S3
product extension	
• function module for communication	No
• auxiliary switch	Yes
power loss [W] for rated value of the current	
• at AC in hot operating state	19.8 W
• at AC in hot operating state per pole	6.6 W
• without load current share typical	1 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
• 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
surge voltage resistance	
• of main circuit rated value	8 kV
• of auxiliary circuit rated value	6 kV
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	690 V
shock resistance at rectangular impulse	
• at DC	6.7 g / 5 ms, 4g / 10 ms
shock resistance with sine pulse	
• at DC	10.6 g / 5 ms, 6.3 g / 10 ms
mechanical service life (operating cycles)	
• 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
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	03/01/2017
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5
Weight	1.847 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	

<ul style="list-style-type: none"> during operation 	-40 ... +70 °C
<ul style="list-style-type: none"> during storage 	-55 ... +80 °C
relative humidity minimum	10 %
relative humidity at 55 °C according to IEC 60068-2-30 maximum	95 %
Environmental footprint	
Environmental Product Declaration(EPD)	Yes
global warming potential [CO2 eq] total	267 kg
global warming potential [CO2 eq] during manufacturing	9.35 kg
global warming potential [CO2 eq] during operation	259 kg
global warming potential [CO2 eq] after end of life	-1.55 kg
Main circuit	
number of poles for main current circuit	3
number of NO contacts for main contacts	3
operating voltage	
<ul style="list-style-type: none"> at AC-3 rated value maximum 	1 000 V
<ul style="list-style-type: none"> at AC-3e rated value maximum 	1 000 V
operational current	
<ul style="list-style-type: none"> at AC-1 at 400 V at ambient temperature 40 °C rated value 	130 A
<ul style="list-style-type: none"> at AC-1 <ul style="list-style-type: none"> — up to 690 V at ambient temperature 40 °C rated value 	130 A
<ul style="list-style-type: none"> — up to 690 V at ambient temperature 60 °C rated value 	110 A
<ul style="list-style-type: none"> at AC-2 at 400 V rated value 	95 A
<ul style="list-style-type: none"> at AC-3 <ul style="list-style-type: none"> — at 400 V rated value — at 500 V rated value — at 690 V rated value — at 1000 V rated value 	95 A
	95 A
	78 A
	30 A
<ul style="list-style-type: none"> at AC-3e <ul style="list-style-type: none"> — at 400 V rated value — at 500 V rated value — at 690 V rated value — at 1000 V rated value 	95 A
	95 A
	78 A
	30 A
<ul style="list-style-type: none"> at AC-4 at 400 V rated value 	80 A
minimum cross-section in main circuit	
<ul style="list-style-type: none"> at maximum AC-1 rated value 	50 mm ²
<ul style="list-style-type: none"> at maximum Ith rated value 	50 mm ²
operational current for approx. 200000 operating cycles at AC-4	
<ul style="list-style-type: none"> at 400 V rated value 	42 A
<ul style="list-style-type: none"> at 690 V rated value 	30 A
operational current	
<ul style="list-style-type: none"> at 1 current path at DC-1 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value 	100 A
	9 A
	2 A
	0.6 A
	0.4 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value 	100 A
	100 A
	10 A
	1.8 A
	1 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value 	100 A
	100 A

— at 220 V rated value	80 A
— at 440 V rated value	4.5 A
— at 600 V rated value	2.6 A
• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	40 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.15 A
— at 600 V rated value	0.06 A
• with 2 current paths in series at DC-3 at DC-5	
— at 24 V rated value	100 A
— at 110 V rated value	100 A
— at 220 V rated value	7 A
— at 440 V rated value	0.42 A
— at 600 V rated value	0.16 A
• with 3 current paths in series at DC-3 at DC-5	
— at 24 V rated value	100 A
— at 110 V rated value	100 A
— at 220 V rated value	35 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.35 A
operating power	
• at AC-2 at 400 V rated value	45 kW
• at AC-3	
— at 230 V rated value	22 kW
— at 400 V rated value	45 kW
— at 500 V rated value	55 kW
— at 690 V rated value	75 kW
— at 1000 V rated value	37 kW
• at AC-3e	
— at 230 V rated value	22 kW
— at 400 V rated value	45 kW
— at 500 V rated value	55 kW
— at 690 V rated value	75 kW
— at 1000 V rated value	37 kW
operating power for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	22 kW
• at 690 V rated value	27.4 kW
short-time withstand current in cold operating state up to 40 °C	
• limited to 1 s switching at zero current maximum	1 725 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 5 s switching at zero current maximum	1 297 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 10 s switching at zero current maximum	946 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 30 s switching at zero current maximum	610 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 60 s switching at zero current maximum	486 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at DC	1 000 1/h
operating frequency	
• at AC-2 at AC-3e maximum	350 1/h
• at AC-4 maximum	250 1/h
Ratings for railway applications	
thermal current (I_{th}) up to 690 V	
• up to 40 °C according to IEC 60077 rated value	130 A
• up to 70 °C according to IEC 60077 rated value	95 A
Control circuit/ Control	
type of voltage	DC
type of voltage of the control supply voltage	DC
control supply voltage at DC rated value	110 V

operating range factor control supply voltage rated value of magnet coil at DC	
• initial value	0.7
• full-scale value	1.25
design of the surge suppressor	with varistor
inrush current peak	1.5 A
duration of inrush current peak	50 µs
locked-rotor current mean value	1.1 A
locked-rotor current peak	2.7 A
duration of locked-rotor current	150 ms
holding current mean value	15 mA
closing power of magnet coil at DC	64 W
holding power of magnet coil at DC	1 W
closing delay	
• at DC	50 ... 70 ms
opening delay	
• at DC	38 ... 57 ms
arcing time	10 ... 20 ms
control version of the switch operating mechanism	Standard A1 - A2
Auxiliary circuit	
number of NC contacts for auxiliary contacts	2
• instantaneous contact	2
number of NO contacts for auxiliary contacts	2
• instantaneous contact	2
operational current at AC-12 maximum	10 A
operational current at AC-15	
• 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
operational current at DC-12	
• 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
operational current at DC-13	
• at 24 V rated value	6 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
UL/CSA ratings	
full-load current (FLA) for 3-phase AC motor	
• at 480 V rated value	96 A
• at 600 V rated value	77 A
yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 110/120 V rated value	10 hp
— at 230 V rated value	20 hp
• for 3-phase AC motor	
— at 200/208 V rated value	30 hp
— at 220/230 V rated value	30 hp
— at 460/480 V rated value	75 hp
— at 575/600 V rated value	75 hp

contact rating of auxiliary contacts according to UL	A600 / P600
Short-circuit protection	
design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V	C characteristic: 10 A; 0.4 kA
design of the fuse link	
<ul style="list-style-type: none"> ● for short-circuit protection of the main circuit <ul style="list-style-type: none"> — with type of coordination 1 required — with type of coordination 2 required ● for short-circuit protection of the auxiliary switch required 	gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA) gG: 160 A (690 V, 100 kA), aM: 100 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA) gG: 10 A (690 V, 1 kA)
Installation/ mounting/ dimensions	
mounting position	+/-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
fastening method	screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715
height	140 mm
width	70 mm
depth	200 mm
required spacing	
<ul style="list-style-type: none"> ● with side-by-side mounting <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side ● for grounded parts <ul style="list-style-type: none"> — forwards — upwards — at the side — downwards ● for live parts <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side 	20 mm 10 mm 10 mm 0 mm 20 mm 10 mm 10 mm 10 mm 20 mm 10 mm 10 mm 10 mm
Connections/ Terminals	
type of electrical connection	
<ul style="list-style-type: none"> ● for main current circuit ● for auxiliary and control circuit ● at contactor for auxiliary contacts ● of magnet coil 	screw-type terminals spring-loaded terminals Spring-type terminals Spring-type terminals
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> ● for main contacts <ul style="list-style-type: none"> — finely stranded with core end processing ● for AWG cables for main contacts 	2x (2.5 ... 35 mm ²), 1x (2.5 ... 50 mm ²) 2x (10 ... 1/0), 1x (10 ... 2/0)
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> ● for auxiliary contacts <ul style="list-style-type: none"> — solid or stranded — finely stranded with core end processing — finely stranded without core end processing ● for AWG cables for auxiliary contacts 	2x (0.5 ... 2.5 mm ²) 2x (0.5 ... 1.5 mm ²) 2x (0.5 ... 2.5 mm ²) 2x (20 ... 16)
AWG number extended as coded connectable conductor cross section for main contacts	10 ... 2/0
AWG number as coded connectable conductor cross section for auxiliary contacts	20 ... 14
Safety related data	
product function	
<ul style="list-style-type: none"> ● mirror contact according to IEC 60947-4-1 ● positively driven operation according to IEC 60947-5-1 ● suitable for safety function 	Yes No Yes

suitability for use safety-related switching OFF	Yes
service life maximum	20 a
test wear-related service life necessary	Yes
proportion of dangerous failures	
• with low demand rate according to SN 31920	40 %
• with high demand rate according to SN 31920	73 %
B10 value with high demand rate according to SN 31920	1 000 000
failure rate [FIT] with low demand rate according to SN 31920	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	



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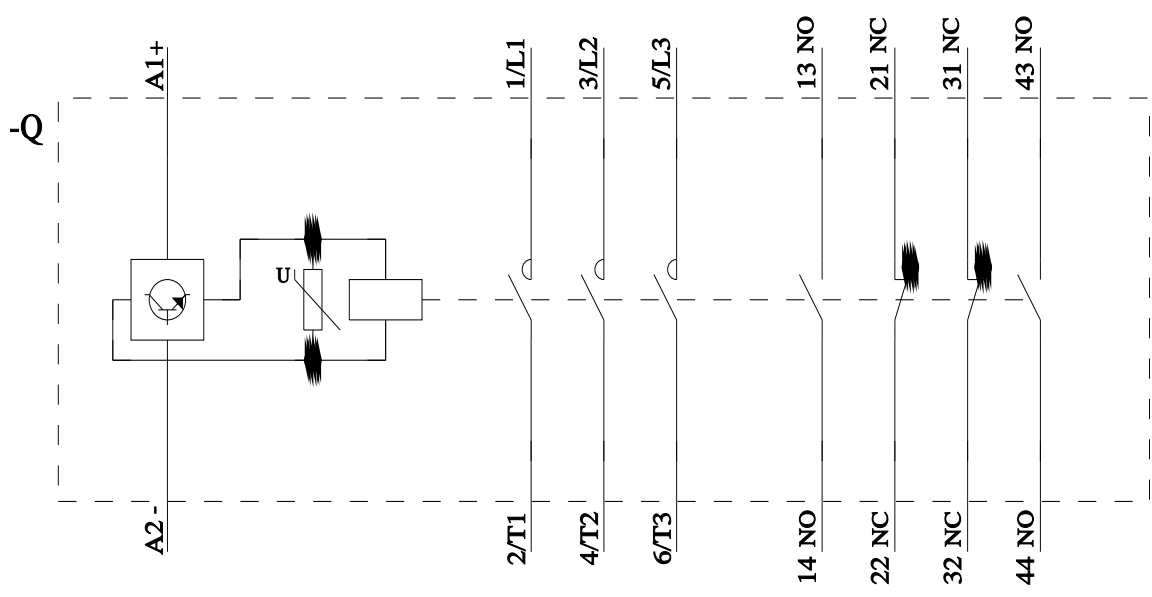
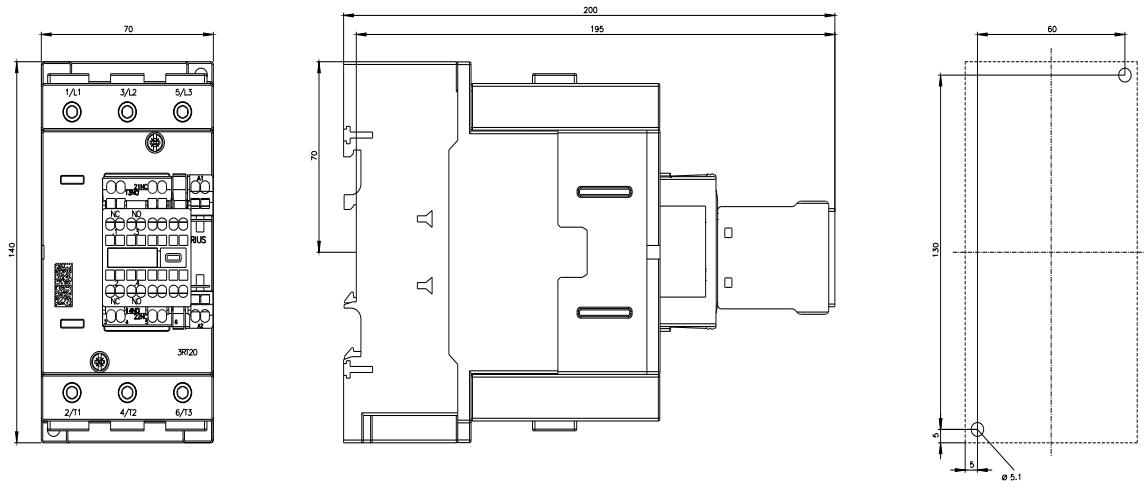


EMV	Test Certificates	Maritime application
	Special Test Certificate	

other	Railway	Environment
	Confirmation	Type Test Certificates/Test Report
		Special Test Certificate
		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=3RT2046-3XF44-0LA2>
- Cax online generator
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2046-3XF44-0LA2>
- Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3XF44-0LA2>
- Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2046-3XF44-0LA2&lang=en
- Characteristic: Tripping characteristics, I^t, Let-through current
<https://support.industry.siemens.com/cs/ww/en/ps/3RT2046-3XF44-0LA2/char>
- Further characteristics (e.g. electrical endurance, switching frequency)
<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2046-3XF44-0LA2&objecttype=14&gridview=view1>



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