



power contactor, AC-3e/AC-3, 38 A, 18.5 kW / 400 V, 3-pole, 230 V AC, 50/60 Hz, with plugged-in varistor, auxiliary contacts: 2 NO + 2 NC, spring-loaded terminal, size: S0, captive auxiliary switch

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S0
product extension	
• function module for communication	No
• auxiliary switch	No
power loss [W] for rated value of the current	
• at AC in hot operating state	9.6 W
• at AC in hot operating state per pole	3.2 W
• without load current share typical	2.7 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
• of main circuit with degree of pollution 3 rated value	690 V
• of auxiliary circuit with degree of pollution 3 rated value	690 V
surge voltage resistance	
• 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
shock resistance at rectangular impulse	
• at AC	8,3g / 5 ms, 5,3g / 10 ms
shock resistance with sine pulse	
• at AC	13,5g / 5 ms, 8,3g / 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 Prohibitation (Date)	10/01/2009
SVHC substance name	Lead - 7439-92-1 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol (UV-329) - 3147-75-9
Weight	0.525 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
• during operation	-25 ... +60 °C
• 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	74.2 kg
global warming potential [CO2 eq] during manufacturing	1.9 kg
global warming potential [CO2 eq] during operation	72.4 kg
global warming potential [CO2 eq] after end of life	-0.117 kg
Main circuit	
number of poles for main current circuit	3
number of NO contacts for main contacts	3
number of NC contacts for main contacts	0
operating voltage	
• at AC-3 rated value maximum	690 V
• at AC-3e rated value maximum	690 V
operational current	
• at AC-1 at 400 V at ambient temperature 40 °C rated value	50 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	50 A
— up to 690 V at ambient temperature 60 °C rated value	42 A
• at AC-3	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-3e	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-4 at 400 V rated value	22 A
• at AC-5a up to 690 V rated value	44 A
• at AC-5b up to 400 V rated value	31.5 A
• at AC-6a	
— up to 230 V for current peak value n=20 rated value	30.8 A
— up to 400 V for current peak value n=20 rated value	30.8 A
— up to 500 V for current peak value n=20 rated value	30.8 A
— up to 690 V for current peak value n=20 rated value	21 A
• at AC-6a	
— up to 230 V for current peak value n=30 rated value	20.5 A
— up to 400 V for current peak value n=30 rated value	20.5 A
— up to 500 V for current peak value n=30 rated value	21.4 A
— up to 690 V for current peak value n=30 rated value	21 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm ²
operational current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	12 A
• at 690 V rated value	12 A
operational current	
• at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	20 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
• with 2 current paths in series at DC-1	
— at 24 V rated value	35 A
— at 60 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
● with 3 current paths in series at DC-1	
— at 24 V rated value	35 A
— at 60 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
● at 1 current path at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 60 V rated value	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
● with 2 current paths in series at DC-3 at DC-5	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	15 A
— at 220 V rated value	3 A
— at 440 V rated value	0.27 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	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	10 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
operating power	
● at AC-2 at 400 V rated value	18.5 kW
● at AC-3	
— at 230 V rated value	11 kW
— at 400 V rated value	18.5 kW
— at 500 V rated value	18.5 kW
— at 690 V rated value	18.5 kW
● at AC-3e	
— at 230 V rated value	11 kW
— at 400 V rated value	18.5 kW
— at 500 V rated value	18.5 kW
— at 690 V rated value	18.5 kW
operating power for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	6 kW
● at 690 V rated value	10.3 kW
operating apparent power at AC-6a	
● up to 230 V for current peak value n=20 rated value	12.2 kVA
● up to 400 V for current peak value n=20 rated value	21.3 kVA
● up to 500 V for current peak value n=20 rated value	26.6 kVA
● up to 690 V for current peak value n=20 rated value	25 kVA
operating apparent power at AC-6a	
● up to 230 V for current peak value n=30 rated value	8.1 kVA
● up to 400 V for current peak value n=30 rated value	14.2 kVA
● up to 500 V for current peak value n=30 rated value	18.5 kVA
● up to 690 V for current peak value n=30 rated value	25 kVA
short-time withstand current in cold operating state up to 40 °C	
● limited to 1 s switching at zero current maximum	593 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 5 s switching at zero current maximum	341 A; Use minimum cross-section acc. to AC-1 rated value

<ul style="list-style-type: none"> • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s switching at zero current maximum 	260 A; Use minimum cross-section acc. to AC-1 rated value 199 A; Use minimum cross-section acc. to AC-1 rated value 162 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
<ul style="list-style-type: none"> • at AC 	5 000 1/h
operating frequency	
<ul style="list-style-type: none"> • at AC-1 maximum • at AC-2 maximum • at AC-3 maximum • at AC-3e <ul style="list-style-type: none"> — maximum • at AC-4 maximum 	1 000 1/h 750 1/h 750 1/h 750 1/h 250 1/h
Control circuit/ Control	
type of voltage of the control supply voltage	AC
control supply voltage at AC	
<ul style="list-style-type: none"> • at 50 Hz rated value • at 60 Hz rated value 	230 V 230 V
operating range factor control supply voltage rated value of magnet coil at AC	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	0.8 ... 1.1 0.85 ... 1.1
design of the surge suppressor	with varistor
apparent pick-up power of magnet coil at AC	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	81 VA 79 VA
inductive power factor with closing power of the coil	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	0.72 0.74
apparent holding power of magnet coil at AC	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	10.5 VA 8.5 VA
inductive power factor with the holding power of the coil	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	0.25 0.28
closing delay	
<ul style="list-style-type: none"> • at AC 	8 ... 40 ms
opening delay	
<ul style="list-style-type: none"> • at AC 	4 ... 16 ms
arcing time	10 ... 10 ms
control version of the switch operating mechanism	Standard A1 - A2
Auxiliary circuit	
design of the auxiliary switch	on the front, non-detachable
number of NC contacts for auxiliary contacts instantaneous contact	2
number of NO contacts for auxiliary contacts instantaneous contact	2
operational current at AC-12 maximum	10 A
operational current at AC-15	
<ul style="list-style-type: none"> • at 230 V rated value • at 400 V rated value • at 500 V rated value • at 690 V rated value 	6 A 3 A 2 A 1 A
operational current at DC-12	
<ul style="list-style-type: none"> • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value 	10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
operational current at DC-13	

<ul style="list-style-type: none"> • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value 	<p>6 A</p> <p>2 A</p> <p>2 A</p> <p>1 A</p> <p>0.9 A</p> <p>0.3 A</p> <p>0.1 A</p>
contact reliability of auxiliary contacts	1 faulty switching per 100 million (17 V, 1 mA)
UL/CSA ratings	
full-load current (FLA) for 3-phase AC motor	
<ul style="list-style-type: none"> • at 480 V rated value • at 600 V rated value 	<p>34 A</p> <p>27 A</p>
yielded mechanical performance [hp]	
<ul style="list-style-type: none"> • for single-phase AC motor <ul style="list-style-type: none"> — at 110/120 V rated value — at 230 V rated value • for 3-phase AC motor <ul style="list-style-type: none"> — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value — at 575/600 V rated value 	<p>3 hp</p> <p>5 hp</p> <p>10 hp</p> <p>10 hp</p> <p>25 hp</p> <p>25 hp</p>
contact rating of auxiliary contacts according to UL	A600 / Q600
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 	<p>gG: 125 A (690 V, 100 kA), aM: 50 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA)</p> <p>gG: 50 A (690 V, 100 kA), aM: 25 A (690 V, 100 kA), BS88: 50 A (415 V, 80 kA)</p> <p>gG: 10 A (500 V, 1 kA)</p>
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	102 mm
width	45 mm
depth	144 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 	<p>10 mm</p> <p>10 mm</p> <p>10 mm</p> <p>0 mm</p> <p>10 mm</p> <p>10 mm</p> <p>6 mm</p> <p>10 mm</p> <p>10 mm</p> <p>10 mm</p> <p>10 mm</p> <p>6 mm</p>
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 	<p>spring-loaded terminals</p> <p>spring-loaded terminals</p> <p>Spring-type terminals</p> <p>Spring-type terminals</p>

type of connectable conductor cross-sections	
<ul style="list-style-type: none"> ● for main contacts <ul style="list-style-type: none"> — solid — solid or stranded — finely stranded with core end processing — finely stranded without core end processing ● for AWG cables for main contacts 	<p>2x (1 ... 10 mm²)</p> <p>2x (1 ... 10 mm²)</p> <p>2x (1 ... 6 mm²)</p> <p>2x (1 ... 6 mm²)</p> <p>2x (18 ... 8)</p>
connectable conductor cross-section for main contacts	
<ul style="list-style-type: none"> ● solid ● stranded ● finely stranded with core end processing ● finely stranded without core end processing 	<p>1 ... 10 mm²</p> <p>1 ... 10 mm²</p> <p>1 ... 6 mm²</p> <p>1 ... 6 mm²</p>
connectable conductor cross-section for auxiliary contacts	
<ul style="list-style-type: none"> ● solid or stranded ● finely stranded with core end processing ● finely stranded without core end processing 	<p>0.5 ... 2.5 mm²</p> <p>0.5 ... 1.5 mm²</p> <p>0.5 ... 2.5 mm²</p>
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 	<p>2x (0.5 ... 2.5 mm²)</p> <p>2x (0.5 ... 1.5 mm²)</p> <p>2x (0.5 ... 2.5 mm²)</p> <p>2x (20 ... 14)</p>
AWG number as coded connectable conductor cross section for main contacts	18 ... 8
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 	<p>Yes</p> <p>No</p> <p>Yes</p>
suitability for use safety-related switching OFF	Yes
service life maximum	20 a
test wear-related service life necessary	Yes
proportion of dangerous failures	
<ul style="list-style-type: none"> ● with low demand rate according to SN 31920 ● with high demand rate according to SN 31920 	<p>40 %</p> <p>73 %</p>
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

Approvals Certificates

General Product Approval



[KC](#)

General Product Approval	EMV	Test Certificates	Maritime application
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[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)



Maritime application

other



[Miscellaneous](#)



[Confirmation](#)

other

Railway

Environment

[Confirmation](#)

[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=3RT2028-2CL24-3MA0>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2028-2CL24-3MA0>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-2CL24-3MA0>

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

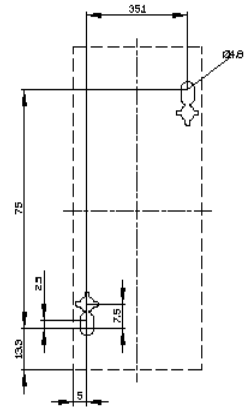
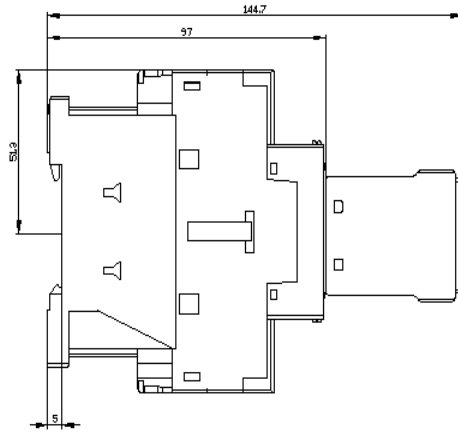
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2028-2CL24-3MA0&lang=en

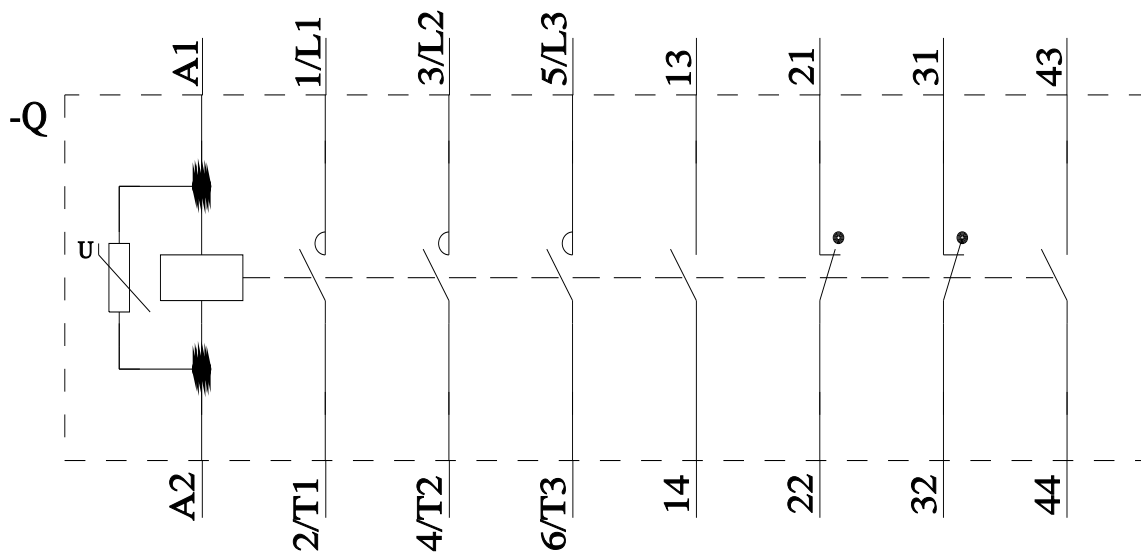
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-2CL24-3MA0/char>

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

<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-2CL24-3MA0&objecttype=14&gridview=view1>





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