

Power contactor, AC-3 80 A, 37 kW / 400 V 1 NO + 1 NC, 24 V DC with varistor 3-pole, Size S2 Screw terminal Suitable for 2 A PLC outputs



Product brand name	SIRIUS
Product designation	Coupling relay
Product type designation	3RT2

General technical data	
Size of contactor	S2
Product extension	
<ul style="list-style-type: none"> function module for communication 	No
<ul style="list-style-type: none"> Auxiliary switch 	Yes
Power loss [W] for rated value of the current	
<ul style="list-style-type: none"> at AC in hot operating state 	17.1 W
<ul style="list-style-type: none"> at AC in hot operating state per pole 	5.7 W
Power loss [W] for rated value of the current without load current share typical	1 W
Surge voltage resistance	
<ul style="list-style-type: none"> of main circuit rated value 	6 kV
<ul style="list-style-type: none"> of auxiliary circuit rated value 	6 kV
maximum permissible voltage for safe isolation	
<ul style="list-style-type: none"> between coil and main contacts acc. to EN 60947-1 	400 V

Protection class IP	
<ul style="list-style-type: none"> • on the front • of the terminal 	IP20 IP00
Shock resistance at rectangular impulse	
<ul style="list-style-type: none"> • at DC 	7.7g / 5 ms, 4.5g / 10 ms
Shock resistance with sine pulse	
<ul style="list-style-type: none"> • at DC 	12g / 5 ms, 7g / 10 ms
Mechanical service life (switching cycles)	
<ul style="list-style-type: none"> • of contactor typical • of the contactor with added electronics-compatible auxiliary switch block typical • of the contactor with added auxiliary switch block typical 	10 000 000 5 000 000 10 000 000
Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750	K
Reference code acc. to DIN EN 81346-2	Q

Ambient conditions

Installation altitude at height above sea level	
<ul style="list-style-type: none"> • maximum 	2 000 m
Ambient temperature	
<ul style="list-style-type: none"> • during operation • during storage 	-25 ... +60 °C -55 ... +80 °C

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 	690 V
Operating current	
<ul style="list-style-type: none"> • at AC-1 at 400 V <ul style="list-style-type: none"> — at ambient temperature 40 °C rated value • at AC-1 <ul style="list-style-type: none"> — up to 690 V at ambient temperature 40 °C rated value — up to 690 V at ambient temperature 60 °C rated value • at AC-2 at 400 V rated value • 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 AC-4 at 400 V rated value • at AC-5a up to 690 V rated value 	90 A 90 A 80 A 80 A 80 A 80 A 80 A 58 A 55 A 79.2 A

<ul style="list-style-type: none"> • at AC-5b up to 400 V rated value 	66.4 A
<ul style="list-style-type: none"> • at AC-6a <ul style="list-style-type: none"> — up to 230 V for current peak value n=20 rated value — up to 400 V for current peak value n=20 rated value — up to 500 V for current peak value n=20 rated value — up to 690 V for current peak value n=20 rated value 	70 A 70 A 70 A 58 A
<ul style="list-style-type: none"> • at AC-6a <ul style="list-style-type: none"> — up to 230 V for current peak value n=30 rated value — up to 400 V for current peak value n=30 rated value — up to 500 V for current peak value n=30 rated value — up to 690 V for current peak value n=30 rated value 	46.7 A 46.7 A 46.7 A 46.7 A
Minimum cross-section in main circuit	
<ul style="list-style-type: none"> • at maximum AC-1 rated value 	35 mm ²
Operating current for approx. 200000 operating cycles at AC-4	
<ul style="list-style-type: none"> • at 400 V rated value • at 690 V rated value 	30 A 24 A
Operating 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 • 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 • 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 — at 220 V rated value — at 440 V rated value 	55 A 4.5 A 1 A 0.4 A 0.25 A 55 A 45 A 5 A 1 A 0.8 A 55 A 55 A 45 A 2.9 A

— at 600 V rated value	1.4 A
Operating current	
• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	35 A
— at 110 V rated value	2.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.1 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	55 A
— at 110 V rated value	25 A
— at 220 V rated value	5 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	55 A
— at 110 V rated value	55 A
— at 220 V rated value	25 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.35 A
Operating power	
• at AC-1	
— at 230 V rated value	34 kW
— at 230 V at 60 °C rated value	28 kW
— at 400 V rated value	59 kW
— at 400 V at 60 °C rated value	49 kW
— at 690 V rated value	102 kW
— at 690 V at 60 °C rated value	85 kW
• at AC-2 at 400 V rated value	37 kW
• at AC-3	
— at 230 V rated value	22 kW
— at 400 V rated value	37 kW
— at 500 V rated value	37 kW
— at 690 V rated value	45 kW
Operating power for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	15.8 kW
• at 690 V rated value	21.8 kW
Operating apparent output at AC-6a	
• up to 230 V for current peak value n=20 rated value	27 800 V·A

<ul style="list-style-type: none"> • up to 400 V for current peak value n=20 rated value 	48 400 V·A
<ul style="list-style-type: none"> • up to 500 V for current peak value n=20 rated value 	60 600 V·A
<ul style="list-style-type: none"> • up to 690 V for current peak value n=20 rated value 	69 300 V·A
Operating apparent output at AC-6a	
<ul style="list-style-type: none"> • up to 230 V for current peak value n=30 rated value 	18 600 V·A
<ul style="list-style-type: none"> • up to 400 V for current peak value n=30 rated value 	32 300 V·A
<ul style="list-style-type: none"> • up to 500 V for current peak value n=30 rated value 	40 400 V·A
<ul style="list-style-type: none"> • up to 690 V for current peak value n=30 rated value 	55 800 V·A
Short-time withstand current in cold operating state up to 40 °C	
<ul style="list-style-type: none"> • limited to 1 s switching at zero current maximum 	1 298 A; Use minimum cross-section acc. to AC-1 rated value
<ul style="list-style-type: none"> • limited to 5 s switching at zero current maximum 	898 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 	640 A; Use minimum cross-section acc. to AC-1 rated value
<ul style="list-style-type: none"> • limited to 30 s switching at zero current maximum 	414 A; Use minimum cross-section acc. to AC-1 rated value
<ul style="list-style-type: none"> • limited to 60 s switching at zero current maximum 	333 A; Use minimum cross-section acc. to AC-1 rated value
No-load switching frequency	
<ul style="list-style-type: none"> • at DC 	1 500 1/h
Operating frequency	
<ul style="list-style-type: none"> • at AC-1 maximum 	700 1/h
<ul style="list-style-type: none"> • at AC-2 maximum 	350 1/h
<ul style="list-style-type: none"> • at AC-3 maximum 	500 1/h
<ul style="list-style-type: none"> • at AC-4 maximum 	150 1/h
Control circuit/ Control	
Type of voltage of the control supply voltage	DC
Control supply voltage at DC	
<ul style="list-style-type: none"> • rated value 	24 V
Operating range factor control supply voltage rated value of magnet coil at DC	
<ul style="list-style-type: none"> • initial value 	0.8
<ul style="list-style-type: none"> • Full-scale value 	1.2
Design of the surge suppressor	with varistor
Inrush current peak	

• at 24 V	2 A
Duration of inrush current peak	
• at 24 V	15 µs
Closing power of magnet coil at DC	21.5 W
Holding power of magnet coil at DC	1 W
Closing delay	
• at DC	45 ... 60 ms
Opening delay	
• at DC	35 ... 55 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	
• instantaneous contact	1
Number of NO contacts for auxiliary contacts	
• instantaneous contact	1
Operating current at AC-12 maximum	10 A
Operating current at AC-15	
• 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
Operating 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
Operating current at DC-13	
• 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
Contact reliability of auxiliary contacts	1 faulty switching per 100 million (17 V, 1 mA)

UL/CSA ratings

Full-load current (FLA) for three-phase AC motor	
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<ul style="list-style-type: none"> • at 480 V rated value • at 600 V rated value 	<p>65 A</p> <p>62 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 three-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>5 hp</p> <p>15 hp</p> <p>20 hp</p> <p>25 hp</p> <p>50 hp</p> <p>60 hp</p>
Contact rating of auxiliary contacts according to UL	<p>A600 / P600</p>

Short-circuit protection

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 assignment 2 required • for short-circuit protection of the auxiliary switch required 	<p>gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)</p> <p>gG: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (415V,80kA)</p> <p>gG: 10 A (500 V, 1 kA)</p>
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Installation/ mounting/ dimensions

Mounting position	<p>+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface</p>
Mounting type <ul style="list-style-type: none"> • Side-by-side mounting 	<p>screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715</p> <p>Yes</p>
Height	<p>114 mm</p>
Width	<p>55 mm</p>
Depth	<p>130 mm</p>
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 	<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>

• for live parts	
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	6 mm

Connections/ Terminals

Type of electrical connection	
• for main current circuit	screw-type terminals
• for auxiliary and control current circuit	screw-type terminals
• at contactor for auxiliary contacts	Screw-type terminals
• of magnet coil	Screw-type terminals
Type of connectable conductor cross-sections	
• for main contacts	
— single or multi-stranded	2x (1 ... 35 mm ²), 1x (1 ... 50 mm ²)
— finely stranded with core end processing	2x (1 ... 25 mm ²), 1x (1 ... 35 mm ²)
• at AWG conductors for main contacts	2x (18 ... 2), 1x (18 ... 1)
Connectable conductor cross-section for main contacts	
• finely stranded with core end processing	1 ... 35 mm ²
Connectable conductor cross-section for auxiliary contacts	
• single or multi-stranded	0.5 ... 2.5 mm ²
• finely stranded with core end processing	0.5 ... 2.5 mm ²
Type of connectable conductor cross-sections	
• for auxiliary contacts	
— single or multi-stranded	2x (0,5 ... 1,5 mm ²), 2x (0,75 ... 2,5 mm ²)
— finely stranded with core end processing	2x (0.5 ... 1.5 mm ²), 2x (0.75 ... 2.5 mm ²)
• at AWG conductors for auxiliary contacts	2x (20 ... 16), 2x (18 ... 14)
AWG number as coded connectable conductor cross section	
• for main contacts	18 ... 1
• for auxiliary contacts	20 ... 14




Safety related data





B10 value	
• with high demand rate acc. to SN 31920	1 000 000
Proportion of dangerous failures	
• with low demand rate acc. to SN 31920	40 %
• with high demand rate acc. to SN 31920	73 %
Failure rate [FIT]	
• with low demand rate acc. to SN 31920	100 FIT
Product function	

<ul style="list-style-type: none"> • Mirror contact acc. to IEC 60947-4-1 • positively driven operation acc. to IEC 60947-5-1 	<p>Yes</p> <p>No</p>
T1 value for proof test interval or service life acc. to IEC 61508	20 y
Protection against electrical shock	finger-safe when touched vertically from front acc. to IEC 60529

Certificates/ approvals

General Product Approval	EMC	Functional Safety/Safety of Machinery
 CCC  CSA  UL  EAC  RCM		Type Examination Certificate

Declaration of Conformity	Test Certificates	Marine / Shipping
 EG-Konf.	Miscellaneous Special Test Certificate Type Test Certificates/Test Report	 ABS  BUREAU VERITAS

Marine / Shipping	other
 LRS  PRS  RINA  DNV-GL	Confirmation

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=3RT2038-1KB40>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2038-1KB40>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2038-1KB40>

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

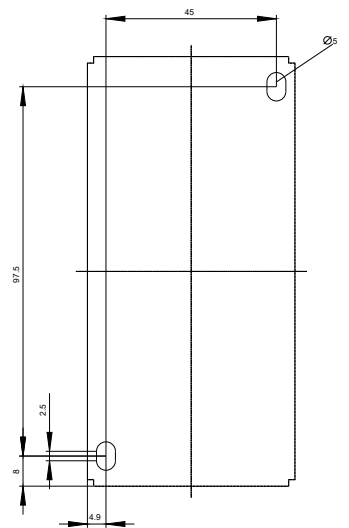
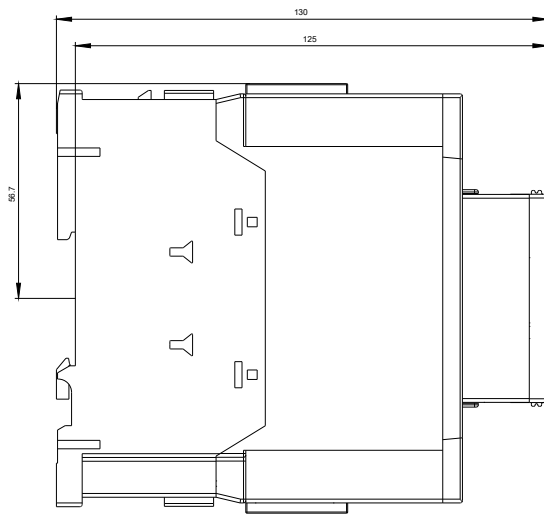
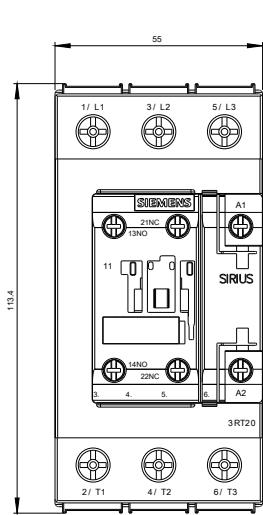
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2038-1KB40&lang=en

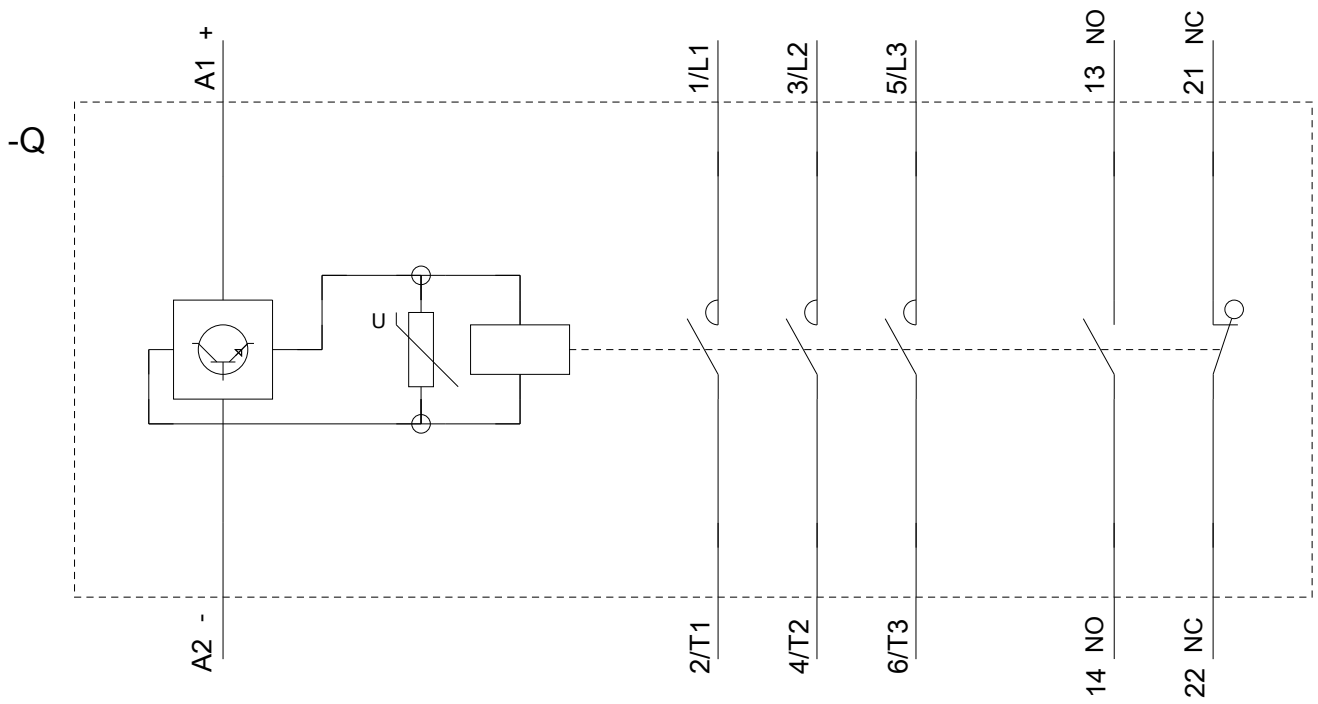
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2038-1KB40/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2038-1KB40&objecttype=14&gridview=view1>





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