SIEMENS

Data sheet 3RT2038-3KB40



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

product brand name	SIRIUS
product designation	Coupling contactor
product type designation	3RT2
General technical data	
size of contactor	S2
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 	17.1 W
 at AC in hot operating state per pole 	5.7 W
 without load current share typical 	1 W
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 safe isolation between coil and main contacts according to EN 60947-1	400 V
shock resistance at rectangular impulse	
• at DC	7.7g / 5 ms, 4.5g / 10 ms
shock resistance with sine pulse	
• at DC	12g / 5 ms, 7g / 10 ms
mechanical service life (switching 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)	10/01/2014
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 %

lain circuit	
number of poles for main current circuit	3
number of NO contacts for main contacts	3
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	90 A
• at AC-1	
— up to 690 V at ambient temperature 40 °C	90 A
rated value	30 A
— up to 690 V at ambient temperature 60 °C	80 A
rated value	
• at AC-3	
— at 400 V rated value	80 A
— at 500 V rated value	80 A
— at 690 V rated value	58 A
• at AC-3e	
— at 400 V rated value	80 A
— at 500 V rated value	80 A
— at 690 V rated value	58 A
• at AC-4 at 400 V rated value	55 A
• at AC-5a up to 690 V rated value	79.2 A
• at AC-5b up to 400 V rated value	66.4 A
• at AC-6a	
 up to 230 V for current peak value n=20 rated value 	70 A
— up to 400 V for current peak value n=20 rated value	70 A
— up to 500 V for current peak value n=20 rated	70 A
value	
 up to 690 V for current peak value n=20 rated value 	58 A
• at AC-6a	
 up to 230 V for current peak value n=30 rated value 	46.7 A
— up to 400 V for current peak value n=30 rated value	46.7 A
— up to 500 V for current peak value n=30 rated value	46.7 A
up to 690 V for current peak value n=30 rated value minimum cross-section in main circuit at maximum AC-1	46.7 A 35 mm ²
rated value	
operational current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	30 A
at 690 V rated value	24 A
operational current	
• at 1 current path at DC-1	
— at 24 V rated value	55 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	55 A
— at 110 V rated value	45 A
— at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 440 V rated value— at 600 V rated value	1 A 0.8 A

— at 24 V rated value	55 A
— at 110 V rated value	55 A
— at 220 V rated value	45 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	35 A
— at 110 V rated value	2.5 A
	1.A
— at 220 V rated value	
— 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-2 at 400 V rated value	37 kW
• at AC-3	
— at 230 V rated value	22 kW
— at 250 V rated value — at 400 V rated value	37 kW
— at 500 V rated value	37 kW
— at 690 V rated value	45 kW
• at AC-3e	
— 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 power at AC-6a	
• up to 230 V for current peak value n=20 rated value	27.8 kVA
• up to 400 V for current peak value n=20 rated value	48.4 kVA
up to 500 V for current peak value n=20 rated value	60.6 kVA
• up to 690 V for current peak value n=20 rated value	69.3 kVA
operating apparent power at AC-6a	
• up to 230 V for current peak value n=30 rated value	18.6 kVA
• up to 400 V for current peak value n=30 rated value	32.3 kVA
 up to 400 V for current peak value n=30 rated value up to 500 V for current peak value n=30 rated value 	40.4 kVA
up to 690 V for current peak value n=30 rated value	55.8 kVA
short-time withstand current in cold operating state	00.0 KV/I
up to 40 °C	
Iimited to 1 s switching at zero current maximum	1 298 A; Use minimum cross-section acc. to AC-1 rated value
Ilmited to 5 s switching at zero current maximum	898 A; Use minimum cross-section acc. to AC-1 rated value
limited to 3 switching at zero current maximum limited to 10 s switching at zero current maximum	640 A; Use minimum cross-section acc. to AC-1 rated value
limited to 10 s switching at zero current maximum limited to 30 s switching at zero current maximum	414 A; Use minimum cross-section acc. to AC-1 rated value
Iimited to 60 s switching at zero current maximum	333 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	4 500 4 lb
• at DC	1 500 1/h
operating frequency	
	700 4 //-
at AC-1 maximumat AC-2 maximum	700 1/h 350 1/h

* at AC-5 maximum 500 1/h * at AC-5 maximum 500 1/h * at AC-5 maximum 500 1/h * at AC-4 maximum 600 1/h * at A	a at AC 2 maximum	500 1/h
### APC-4 maximum Type of votage of the control supply votage Control supply votage at DC * related vature operating range factor control supply votage rated value of magnet coll at DC * initial value obeging of the surge suppressor initial value design of the surge suppressor initial value obselved for current peak 2.6 A duration of initial current peak 5.9 is locked-voto current mean value 0.9 A locked-voto current mean value 1.1 W closing power of magnet coil at DC 2.15 W holding power of magnet coil at DC 2.15 W loliding power of magnet coil at DC 2.15 W loliding power of magnet coil at DC 2.15 W loliding power of magnet coil at DC 2.15 W locked-voto current walue 2.10 Locked-voto current 2.20 W maximum operational current at AC-12 maximum operational current at AC-15 2.2 a V rated value 2.2 A 2.3 A 2.4 B 2.4 W rated value 2.5 A 2.6 C 2.7 C rated value 2.7 A 2.8 C V rated value 2.8 C A 2.9 C rated value 2.9 A 2.10 V rated value 2.10 A 2	• at AC-3 maximum	500 1/h
Control surply voltage at DC		
Symbol Voltage at DC Control supply voltage at DC Voltage rated value Coperating range factor control supply voltage rated value of magnet coil at DC Voltage rated value of magnet peak Collage		150 1/h
control supply voltage at DC		
e rated value of magnet col at DC value value of the surge suppressor with varistor innush current peak 2.5 Å duration of inrush current peak 50 µs locked-rotor current man value 0.9 Å locked-rotor current man value 2.1 Å duration of locked-rotor current value 4.0 mA closing power of magnet col at DC 21.5 W loding power of magnet col at DC 1W closing power of magnet col at DC 1W closing delay at DC 35 80 ms or Standard A1 - A2 Avantiary critical value 10 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operating mechanism 20 20 ms control version of the switch operational current at AC-12 maximum 20 20 ms 20		DC
poperating range factor control supply voltage rated value of magnet coil at DC vilidal value 0.8	control supply voltage at DC	
Value of magnet coil at DC	rated value	24 V
• full-scale value 1.2 design of the surge suppressor with varistor mursh current peak 2.6 A duration of inrush current peak 50 µs	_	
design of the surge suppressor with varistor inrush current peak 2.6 A		
Inrush current peak 2.6 A duration of inrush current peak 0.9 A 0.9 A 0.0		· · · · ·
duration of inrush current peak 50 µs locked-rotor current mean value 0.9 A clocked-rotor current peak 2.1 A duration of locked-rotor current 230 ms holding current mean value 40 mA closing power of magnet coil at DC 1 W closing power of magnet coil at DC 35 80 ms oat DC 35 80 ms opening delay at DC 30 55 ms artificial mine 30		
locked-rotor current mean value 0.9 A locked-rotor current peak 2.1 A duration of locked-rotor current 230 ms holding current mean value 40 mA closing power of magnet coil at DC 1 W closing power of magnet coil at DC 1 W closing delay 3		
Locked-rotor current peak 2.1 A 230 ms	<u> </u>	
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Notiding current mean value 40 mA		
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Nolding power of magnet coil at DC 1 W 1		
closing delay		
• at DC opening delay • at DC arcing time control version of the switch operating mechanism Auxiliary circuit number of NC contacts for auxiliary contacts instantaneous contact number of NC contacts for auxiliary contacts instantaneous contact operational current at AC-12 maximum operational current at AC-15 • at 230 V rated value • at 400 V rated value • at 690 V rated value • at 690 V rated value • at 48 V rated value • at 125 V rated value • at 125 V rated value • at 120 V rated value • at 220 V rated value • at 120 V rated value • at 110 V rated value • at 120 V rated value • at 110 V rated value • at 120 V rated value • at 110 V rated value • at 120 V rated value • at 110 V rated value • at 120 V rated value • at 110 V rated value • at 120 V rated value • at 110 V rated value • at 1		1 W
opening delay	closing delay	
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arcing time	opening delay	
control version of the switch operating mechanism Standard A1 - A2 Auxiliary circuit Instantaneous contacts for auxiliary contacts instantaneous contact contacts contact	• at DC	30 55 ms
Auxiliary circuit number of NC contacts for auxiliary contacts number of NC contacts for auxiliary contacts number of NO contact number of NO conta	arcing time	10 20 ms
number of NC contacts for auxiliary contacts instantaneous contact 1	control version of the switch operating mechanism	Standard A1 - A2
instantaneous contact number of NO contacts for auxiliary contacts instantaneous contact operational current at AC-12 maximum 10 A operational current at AC-15	Auxiliary circuit	
instantaneous contact operational current at AC-12 maximum operational current at AC-15 • at 230 V rated value • at 400 V rated value • at 690 V rated value • at 600 V rated value • at 110 V rated value • at 110 V rated value • at 110 V rated value • at 125 V rated value • at 120 V rated value • at 600 V rated value		1
Operational current at AC-12 maximum 10 A		1
operational current at AC-15	operational current at AC-12 maximum	10 A
 at 230 V rated value at 400 V rated value at 500 V rated value at 690 V rated value at 690 V rated value 1A operational current at DC-12 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 200 V rated value at 200 V rated value at 20 V rated value at 20 V rated value at 25 V rated value at 26 V rated value at 27 V rated value at 24 V rated value at 24 V rated value at 24 V rated value at 48 V rated value at 48 V rated value at 24 V rated value at 20 V rated value at 600 V rated value at	-	
■ at 400 V rated value ■ at 500 V rated value ■ at 690 V rated value ■ at 690 V rated value ■ at 690 V rated value ■ at 24 V rated value ■ at 24 V rated value ■ at 48 V rated value ■ at 48 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 125 V rated value ■ at 220 V rated value ■ at 220 V rated value ■ at 600 V rated value ■ at 480 V rated value ■ at 48 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 125 V rated value ■ at 48 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 125 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 120 V rated value ■ at 120 V rated value ■ at 125 V rated value ■ at 220 V rated value ■ at 480 V rated value ■ at 480 V rated value ■ at 600 V rated value ■ at 480 V rated value	•	10 A
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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 10 A • at 24 V rated value 2 A • at 60 V rated value 2 A • at 60 V rated value 1 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 3-phase AC motor 65 A • at 600 V rated value 65 A • at 600 V rated value 62 A		
 at 24 V rated value 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 at 220 V rated value 1 A at 200 V rated value 1 A at 600 V rated value 0.15 A operational current at DC-13 at 24 V rated value at 48 V rated value at 60 V rated value at 110 V rated value at 110 V rated value at 125 V rated value at 220 V rated value at 220 V rated value at 220 V rated value at 3 A at 600 V rated value 1 A at 220 V rated value 1 A at 220 V rated value 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 3-phase AC motor at 480 V rated value at 600 V rated value 65 A at 600 V rated value 		
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 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 ot 600 V rated value ot 24 V rated value at 60 V rated value at 110 V rated value at 110 V rated value at 125 V rated value at 220 V rated value at 600 V rated value at 480 V rated value at 600 V rated value at 480 V rated value at 600 V rated value 		
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• at 125 V rated value • at 220 V rated value • at 600 V rated value • at 600 V rated value • at 24 V rated value • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 60 V rated value • at 110 V rated value • at 110 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 220 V rated value • at 600 V rated value		
■ at 220 V rated value ■ at 600 V rated value Operational current at DC-13 ■ at 24 V rated value ■ at 48 V rated value ■ at 60 V rated value ■ at 60 V rated value ■ at 110 V rated value ■ at 110 V rated value ■ at 125 V rated value ■ at 125 V rated value ■ at 220 V rated value ■ at 600 V rated value		
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operational current at DC-13 • 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 • at 220 V rated value • at 600 V rated value • at 480 V rated value • at 600 V rated value		
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 at 110 V rated value at 125 V rated value at 220 V rated value at 600 V rated value 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 3-phase AC motor at 480 V rated value at 600 V rated value at 600 V rated value 65 A at 600 V rated value 62 A yielded mechanical performance [hp] 		
 at 125 V rated value at 220 V rated value at 600 V rated value 1 faulty switching per 100 million (17 V, 1 mA) UL/CSA ratings full-load current (FLA) for 3-phase AC motor at 480 V rated value at 600 V rated value 65 A at 600 V rated value at 600 V rated value at 600 V rated value 		
 at 220 V rated value 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 3-phase AC motor at 480 V rated value at 600 V rated value 65 A at 600 V rated value 62 A yielded mechanical performance [hp] 		
 at 600 V rated value 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 at 480 V rated value at 600 V rated value 62 A yielded mechanical performance [hp] 		
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 • at 480 V rated value • at 600 V rated value yielded mechanical performance [hp]		
UL/CSA ratings full-load current (FLA) for 3-phase AC motor • at 480 V rated value 65 A • at 600 V rated value 62 A yielded mechanical performance [hp]		
full-load current (FLA) for 3-phase AC motor • at 480 V rated value • at 600 V rated value full-load current (FLA) for 3-phase AC motor 65 A 62 A full-load current (FLA) for 3-phase AC motor 65 A 62 A		r rauny switching per 100 million (17 V, 1 mA)
• at 480 V rated value • at 600 V rated value • 65 A • ided mechanical performance [hp]		
• at 600 V rated value 62 A yielded mechanical performance [hp]		65 A
yielded mechanical performance [hp]		
		02 A
■ for single-priase AC motor		
	● ior single-phase AC motor	

at 440/400 V ==4= d · ==b · =	5 ha
— at 110/120 V rated value	5 hp
— at 230 V rated value	15 hp
• for 3-phase AC motor	00 h
— at 200/208 V rated value	20 hp
— at 220/230 V rated value	25 hp
— at 460/480 V rated value	50 hp
— at 575/600 V rated value	60 hp
contact rating of auxiliary contacts according to UL	A600 / P600
Short-circuit protection	
design of the fuse link	
for short-circuit protection of the main circuit	
 — with type of coordination 1 required 	gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)
 — with type of assignment 2 required 	gG: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (415V,80kA)
 for short-circuit protection of the auxiliary switch required 	gG: 10 A (500 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	screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715
side-by-side mounting	Yes
height	114 mm
width	55 mm
depth	130 mm
required spacing	
with side-by-side mounting	
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
• for grounded parts	
— forwards	10 mm
— upwards	10 mm
— at the side	6 mm
— downwards	10 mm
 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 circuit 	spring-loaded terminals
 at contactor for auxiliary contacts 	Spring-type terminals
of magnet coil	Spring-type terminals
type of connectable conductor cross-sections	
• for main contacts	
— solid or stranded	2x (1 35 mm²), 1x (1 50 mm²)
 finely stranded with core end processing 	2x (1 25 mm²), 1x (1 35 mm²)
at AWG cables for main contacts	2x (18 2), 1x (18 1)
connectable conductor cross-section for main contacts	
finely stranded with core end processing	1 35 mm²
connectable conductor cross-section for auxiliary contacts	
 solid or stranded 	0.5 2.5 mm²
	0.5 4.5 3
 finely stranded with core end processing 	0.5 1.5 mm²

type of connectable conductor cross-sections	
 for auxiliary contacts 	
 solid or stranded 	2x (0.5 2.5 mm²)
 finely stranded with core end processing 	2x (0.5 1.5 mm²)
 finely stranded without core end processing 	2x (0.5 2.5 mm²)
 at AWG cables for auxiliary contacts 	2x (20 14)
AWG number as coded connectable conductor cross section	
 for main contacts 	18 1
 for auxiliary contacts 	20 14
Safety related data	
product function	
 mirror contact according to IEC 60947-4-1 	Yes
 positively driven operation according to IEC 60947- 5-1 	No
B10 value with high demand rate according to SN 31920	1 000 000
proportion of dangerous failures	
 with low demand rate according to SN 31920 	40 %
with high demand rate according to SN 31920	73 %
failure rate [FIT] with low demand rate according to SN 31920	100 FIT
T1 value for proof test interval or service life according to IEC 61508	20 y
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
suitability for use	
 safety-related switching OFF 	Yes
Certificates/ approvals	

Certificates/ approvals

General Product Approval





Confirmation



<u>KC</u>



|--|



Type Examination Certificate





Type Test Certificates/Test Report

Special Test Certificate

Marine / Shipping













Marine / Shipping other Railway



Confirmation

Vibration and Shock

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=3RT2038-3KB40

Cax online generator

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

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

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

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

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

Characteristic: Tripping characteristics, I2t, Let-through current

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

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

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

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