## **SIEMENS**

Data sheet 3RT2016-1BA41



Power contactor, AC-3 9 A, 4 kW / 400 V 1 NO, 12 V DC 3-pole, Size S00 screw terminal

product type designation  eneral technical data  size of contactor  oroduct extension  • function module for communication	Power contactor BRT2 G00
eneral technical data  size of contactor  product extension  • function module for communication  N	
size of contactor  oroduct extension  • function module for communication  N	600
• function module for communication	500
• function module for communication N	
auxiliary switch     Y	No
	/es
power loss [W] for rated value of the current at AC in hot operating state	2.1 W
• per pole 0	).7 W
power loss [W] for rated value of the current without oad current share typical	ł W
nsulation voltage	
• of main circuit with degree of pollution 3 rated value 6	990 V
• of auxiliary circuit with degree of pollution 3 rated value	590 V
surge voltage resistance	
• of main circuit rated value 6	S kV
• of auxiliary circuit rated value 6	S kV
maximum permissible voltage for safe isolation between coil and main contacts acc. to EN 60947-1	100 V
shock resistance at rectangular impulse	
• at DC 6	5,7g / 5 ms, 4,2g / 10 ms
shock resistance with sine pulse	
• at DC	0,5g / 5 ms, 6,6g / 10 ms
mechanical service life (switching cycles)	
• of contactor typical 3	30 000 000
<ul> <li>of the contactor with added electronically optimized auxiliary switch block typical</li> </ul>	5 000 000
• of the contactor with added auxiliary switch block typical	0 000 000
reference code acc. to IEC 81346-2	Q
Substance Prohibitance (Date) 0	01.10.2009
nbient conditions	
nstallation altitude at height above sea level maximum 2	2 000 m
ambient temperature	
• during operation -2	25 +60 °C
• during storage -5	55 +80 °C
relative humidity minimum 1	0 %
relative humidity at 55 °C acc. to IEC 60068-2-30	95 %

maximum	
Main 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
operational current	
at AC-1 at 400 V at ambient temperature 40 °C	22 A
rated value	
• at AC-1	
<ul> <li>up to 690 V at ambient temperature 40 °C rated value</li> </ul>	22 A
— up to 690 V at ambient temperature 60 $^{\circ}\text{C}$ rated value	20 A
• at AC-3	
— at 400 V rated value	9 A
— at 500 V rated value	7.7 A
— at 690 V rated value	6.7 A
<ul> <li>at AC-4 at 400 V rated value</li> </ul>	8.5 A
<ul> <li>at AC-5a up to 690 V rated value</li> </ul>	19.4 A
<ul> <li>at AC-5b up to 400 V rated value</li> </ul>	7.4 A
• at AC-6a	
<ul> <li>up to 230 V for current peak value n=20 rated value</li> </ul>	5.3 A
<ul> <li>up to 400 V for current peak value n=20 rated value</li> </ul>	5.3 A
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	5.3 A
<ul> <li>up to 690 V for current peak value n=20 rated value</li> </ul>	5 A
• at AC-6a	
<ul> <li>up to 230 V for current peak value n=30 rated value</li> </ul>	3.5 A
<ul> <li>up to 400 V for current peak value n=30 rated value</li> </ul>	3.5 A
<ul> <li>up to 500 V for current peak value n=30 rated value</li> </ul>	3.6 A
— up to 690 V for current peak value n=30 rated value	3.3 A
minimum cross-section in main circuit at maximum AC-1 rated value	4 mm <sup>2</sup>
operational current for approx. 200000 operating cycles at AC-4	
at 400 V rated value	4.1 A
at 690 V rated value	3.3 A
operational current	
at 1 current path at DC-1	
— at 24 V rated value	20 A
— at 110 V rated value	2.1 A
— at 220 V rated value	0.8 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
with 2 current paths in series at DC-1	
— at 24 V rated value	20 A
— at 110 V rated value	12 A
— at 220 V rated value	1.6 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.7 A
with 3 current paths in series at DC-1	
— at 24 V rated value	20 A
— at 110 V rated value	20 A
	20 A
— at 220 V rated value	1.3 A
— at 440 V rated value	
— at 600 V rated value	1 A

• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 110 V rated value	0.1 A
<ul> <li>with 2 current paths in series at DC-3 at DC-5</li> </ul>	
— at 24 V rated value	20 A
— at 110 V rated value	0.35 A
<ul> <li>with 3 current paths in series at DC-3 at DC-5</li> </ul>	
— at 24 V rated value	20 A
— at 110 V rated value	20 A
— at 220 V rated value	1.5 A
— at 440 V rated value	0.2 A
— at 600 V rated value	0.2 A
operating power	
<ul> <li>at AC-2 at 400 V rated value</li> </ul>	4 kW
• at AC-3	
— at 230 V rated value	2.2 kW
— at 400 V rated value	4 kW
— at 500 V rated value	4 kW
— at 690 V rated value	5.5 kW
operating power for approx. 200000 operating cycles at AC-4	
<ul> <li>at 400 V rated value</li> </ul>	2 kW
at 690 V rated value	2.5 kW
operating apparent power at AC-6a	
• up to 230 V for current peak value n=20 rated value	2 kV·A
• up to 400 V for current peak value n=20 rated value	3.6 kV·A
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	4.6 kV·A
• up to 690 V for current peak value n=20 rated value	5.9 kV·A
operating apparent power at AC-6a	
• up to 230 V for current peak value n=30 rated value	1.3 kV·A
• up to 400 V for current peak value n=30 rated value	2.4 kV·A
• up to 500 V for current peak value n=30 rated value	3.1 kV·A
• up to 690 V for current peak value n=30 rated value	4 kV·A
short-time withstand current in cold operating state up to 40 °C	
Iimited to 1 s switching at zero current maximum	155 A: Use minimum cross-section acc. to AC-1 rated value
Ilmited to 1's switching at zero current maximum     Imited to 5's switching at zero current maximum	111 A; Use minimum cross-section acc. to AC-1 rated value
Imited to 5 s switching at zero current maximum     Imited to 10 s switching at zero current maximum	86 A; Use minimum cross-section acc. to AC-1 rated value
limited to 30 s switching at zero current maximum     limited to 60 s switching at zero current maximum	66 A; Use minimum cross-section acc. to AC-1 rated value
Iimited to 60 s switching at zero current maximum  Policial switching frequency  Policial s	55 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	10 000 1/b
• at DC	10 000 1/h
operating frequency	1 000 1/b
at AC-1 maximum     at AC-2 maximum	1 000 1/h
• at AC 2 maximum	750 1/h
• at AC-3 maximum	750 1/h
• at AC-4 maximum	250 1/h
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage at DC	40.17
rated value     operating range factor control supply voltage rated	12 V
value of magnet coil at DC	
• initial value	0.8
full-scale value	1.1
closing power of magnet coil at DC	4 W
holding power of magnet coil at DC	4 W
closing delay	
1.00	
• at DC	30 100 ms
opening delay  • at DC	30 100 ms

arcing time	10 15 ms
control version of the switch operating mechanism	Standard A1 - A2
Auxiliary circuit	
number of NO contacts for auxiliary contacts	1
instantaneous contact	
operational current at AC-12 maximum	10 A
operational 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
operational current at DC-12	40.4
• at 24 V rated value	10 A
at 48 V rated value     at 60 V rated value	6 A
at 400 V rated value	6 A
at 110 V rated value     at 125 V rated value	3 A
at 125 V rated value     at 220 V rated value	2 A 1 A
<ul><li>at 220 V rated value</li><li>at 600 V rated value</li></ul>	0.15 A
operational current at DC-13	0.10 A
at 24 V rated value	10 A
at 48 V rated value	2 A
at 40 V rated value      at 60 V rated value	2 A
at 10 V rated value     at 110 V rated value	1A
at 170 V rated value     at 125 V rated value	0.9 A
at 123 V rated value     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	
at 480 V rated value	7.6 A
at 400 V rated value     at 600 V rated value	9 A
yielded mechanical performance [hp]	
for single-phase AC motor	
— at 110/120 V rated value	0.33 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
contact rating of auxiliary contacts according to UL	A600 / Q600
Short-circuit protection	
design of the fuse link	
for short-circuit protection of the main circuit	
with type of coordination 1 required	gG: 35A (690V,100kA), aM: 20A (690V,100kA), BS88: 35A (415V,80kA)
— with type of assignment 2 required	gG: 20A (690V,100kA), aM: 16A (690V, 100kA), BS88: 20A (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	58 mm
width	45 mm
depth	73 mm
required spacing	
with side-by-side mounting	

— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
<ul> <li>for grounded parts</li> </ul>	
— forwards	10 mm
— upwards	10 mm
— at the side	6 mm
— downwards	10 mm
for live parts	10 111111
•	10
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	6 mm
Connections/ Terminals	
type of electrical connection	
<ul> <li>for main current circuit</li> </ul>	screw-type terminals
<ul> <li>for auxiliary and control circuit</li> </ul>	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	
— solid	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), 2x 4 mm²
— solid or stranded	2x (0,5 1,5 mm²), 2x (0,75 2,5 mm²), 2x 4 mm²
finely stranded with core end processing	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
at AWG cables for main contacts	2x (20 16), 2x (18 14), 2x 12
connectable conductor cross-section for main	28 (20 10), 28 (10 14), 28 12
contacts	
• solid	0.5 4 mm²
stranded	0.5 4 mm²
finely stranded with core end processing	0.5 2.5 mm <sup>2</sup>
connectable conductor cross-section for auxiliary	0.5 2.5 11111
contacts	
solid or stranded	0.5 4 mm²
finely stranded with core end processing	0.5 2.5 mm²
type of connectable conductor cross-sections	0.5 2.5 mm
for auxiliary contacts	0 (0.5
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), 2x 4 mm²
— finely stranded with core end processing	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
at AWG cables for auxiliary contacts	2x (20 16), 2x (18 14), 2x 12
AWG number as coded connectable conductor cross section	
• for main contacts	20 12
	20 12
for auxiliary contacts	20 12
Safety related data	
B10 value with high demand rate acc. to SN 31920	1 000 000
proportion of dangerous failures	
<ul> <li>with low demand rate acc. to SN 31920</li> </ul>	40 %
with high demand rate acc. to SN 31920	73 %
failure rate [FIT] with low demand rate acc. to SN 31920	100 FIT
T1 value for proof test interval or service life acc. to IEC 61508	20 y
protection class IP on the front acc. to IEC 60529	IP20
touch protection on the front acc. to IEC 60529	finger-safe, for vertical contact from the front
suitability for use	
safety-related switching OFF	Yes
Certificates/ approvals	
General Product Approval	
Schelar Floudet Approval	





Confirmation







EMC

Functional Safety/Safety of Machinery

**Declaration of Conformity** 

**Test Certificates** 



Type Examination Certificate UK Declaration of Conformity



Special Test Certificate

Type Test Certificates/Test Report

## Marine / Shipping













Marine / Shipping

other

Confirmation



Transport Information

**Dangerous Good** 

## 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=3RT2016-1BA41

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2016-1BA41

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1BA41

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

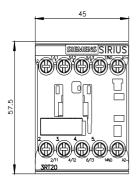
http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RT2016-1BA41&lang=en

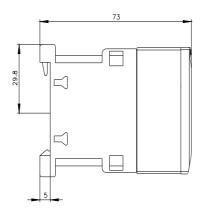
Characteristic: Tripping characteristics, I2t, Let-through current

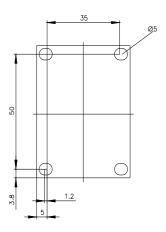
https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1BA41/char

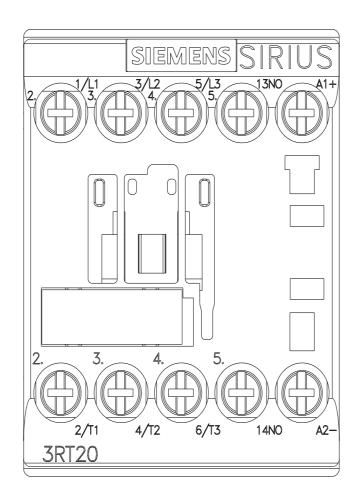
Further characteristics (e.g. electrical endurance, switching frequency)

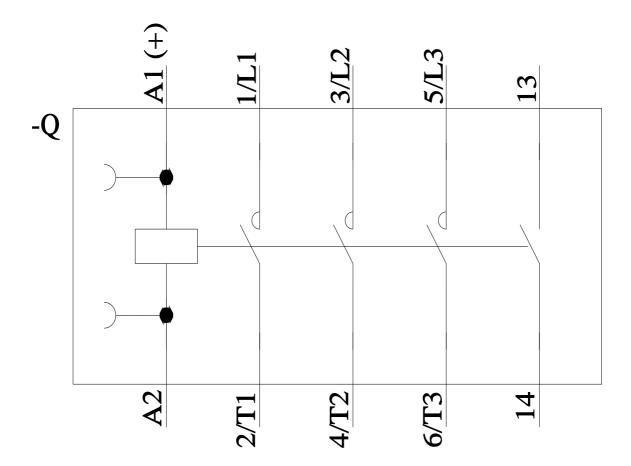
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2016-1BA41&objecttype=14&gridview=view1











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