SIEMENS

Data sheet

3RT2016-1AK61



power contactor, AC-3e/AC-3, 9 A, 4 kW / 400 V, 3-pole, 110 V AC, 50 Hz / 120 V, 60 Hz, auxiliary contacts: 1 NO, screw terminal, size: S00

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S00
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 	0.9 W
 at AC in hot operating state per pole 	0.3 W
 without load current share typical 	1.2 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	6,7g / 5 ms, 4,2g / 10 ms
shock resistance with sine pulse	
• at AC	10,5g / 5 ms, 6,6g / 10 ms
mechanical service life (operating cycles)	
 of contactor typical 	30 000 000
 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)	10/01/2009
Weight	0.23 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	39.6 kg
global warming potential [CO2 eq] during manufacturing	1.18 kg
global warming potential [CO2 eq] during operation	38.5 kg
global warming potential [CO2 eq] after end of life	-0.155 kg
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
 at AC-3e rated value maximum 	690 V
operational current	
 at AC-1 at 400 V at ambient temperature 40 °C rated value at AC-1 	22 A
up to 690 V at ambient temperature 40 °C rated value	22 A
— up to 690 V at ambient temperature 60 °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
• at AC-3e	
— at 400 V rated value	9 A
— at 500 V rated value	7.7 A
- at 690 V rated value	6.7 A
 at AC-4 at 400 V rated value at AC 5a up to 690 V rated value 	8.5 A 19.4 A
 at AC-5a up to 690 V rated value at AC-5b up to 400 V rated value 	19.4 A 7.4 A
 at AC-6a 	
 up to 230 V for current peak value n=20 rated value 	5.3 A
— up to 400 V for current peak value n=20 rated value	5.3 A
— up to 500 V for current peak value n=20 rated value	5.3 A
— up to 690 V for current peak value n=20 rated value	5 A
● at AC-6a	
— up to 230 V for current peak value n=30 rated value	3.5 A
— up to 400 V for current peak value n=30 rated value	3.5 A
— up to 500 V for current peak value n=30 rated value	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 ²
operational current for approx. 200000 operating cycles at AC-4	
 at 400 V rated value at 690 V rated value 	4.1 A 3.3 A
operational current	
• at 1 current path at DC-1	
- at 24 V rated value	20 A
— at 60 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 60 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	20.4			
— at 24 V rated value	20 A			
— at 60 V rated value	20 A			
— at 110 V rated value	20 A			
— at 220 V rated value	20 A			
— at 440 V rated value	1.3 A			
— 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 60 V rated value	0.5 A			
— at 110 V rated value	0.15 A			
• with 2 current paths in series at DC-3 at DC-5				
— at 24 V rated value	20 A			
— at 60 V rated value	5 A			
— at 110 V rated value	0.35 A			
 with 3 current paths in series at DC-3 at DC-5 				
— at 24 V rated value	20 A			
— at 60 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				
• 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			
• at AC-3e				
— 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	0.1444			
at 400 V rated value	2 kW			
• at 690 V rated value	2.5 kW			
operating apparent power at AC-6a	0.11/4			
• up to 230 V for current peak value n=20 rated value	2 kVA			
up to 400 V for current peak value n=20 rated value	3.6 kVA			
• up to 500 V for current peak value n=20 rated value	4.6 kVA			
up to 690 V for current peak value n=20 rated value	5.9 kVA			
operating apparent power at AC-6a	4.013/4			
up to 230 V for current peak value n=30 rated value	1.3 kVA			
up to 400 V for current peak value n=30 rated value	2.4 kVA			
up to 500 V for current peak value n=30 rated value	3.1 kVA			
up to 690 V for current peak value n=30 rated value	4 kVA			
short-time withstand current in cold operating state up to 40 °C				
Imited to 1 s switching at zero current maximum	155 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 5 s switching at zero current maximum	111 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 10 s switching at zero current maximum	86 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 30 s switching at zero current maximum	66 A; Use minimum cross-section acc. to AC-1 rated value			
Imited to 60 s switching at zero current maximum	55 A; Use minimum cross-section acc. to AC-1 rated value			
no-load switching frequency				
• at AC	10 000 1/h			
operating frequency				
• at AC-1 maximum	1 000 1/h			
• at AC-2 maximum	750 1/h			
• at AC-3 maximum	750 1/h			
 at AC-3e maximum 	750 1/h			

• at AC-4 maximum	250 1/h			
Control circuit/ Control				
type of voltage of the control supply voltage	AC			
control supply voltage at AC				
• at 50 Hz rated value	110 V			
• at 60 Hz rated value	120 V			
operating range factor control supply voltage rated value of				
magnet coil at AC				
• at 50 Hz	0.8 1.1			
• at 60 Hz	0.8 1.1			
apparent pick-up power of magnet coil at AC				
• at 50 Hz	26.4 VA			
• at 60 Hz	26.4 VA			
inductive power factor with closing power of the coil				
• at 50 Hz	0.81			
• at 60 Hz	0.81			
apparent holding power of magnet coil at AC				
• at 50 Hz	4.4 VA			
• at 60 Hz	4.4 VA			
inductive power factor with the holding power of the coil	0.24			
• at 50 Hz	0.24			
• at 60 Hz	0.24			
closing delay	9 35 ms			
• at AC				
opening delay • at AC	4 15 ms			
arcing time	4 15 ms			
control version of the switch operating mechanism	Standard A1 - A2			
Auxiliary circuit				
number of NO contacts for auxiliary contacts instantaneous	1			
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				
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	1A			
at 600 V rated value	0.15 A			
operational current at DC-13	40.4			
at 24 V rated value at 48 V rated value	10 A			
at 48 V rated value at 60 V rated value	2 A 2 A			
at 60 V rated value at 110 V rated value	2 A 1 A			
 at 110 V rated value at 125 V rated value 	0.9 A			
at 125 V rated value at 220 V rated value	0.9 A 0.3 A			
at 220 V rated value at 600 V rated value	0.3 A 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	9A			
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 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					
 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				
inouning poolion	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	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				
	0 11111				
for grounded parts	10 mm				
— forwards					
— 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 	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 mm ²), 2x (0.75 2.5 mm ²)				
for AWG cables for main contacts	2x (20 16), 2x (18 14), 2x 12				
connectable conductor cross-section for main contacts					
solid	0.5 4 mm²				
stranded	0.5 4 mm²				
 finely stranded with core end processing 	0.5 4 mm				
	0.0 2.0 mm				
connectable conductor cross-section for auxiliary contacts solid or stranded 	0.5 4 mm²				
finely stranded with core end processing	0.5 2.5 mm ²				
type of connectable conductor cross-sections					
for auxiliary contacts					
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), 2x 4 mm²				

 finely stranded with core end process 	sing 2x (0	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)			
 for AWG cables for auxiliary contacts 	2x (2	2x (20 16), 2x (18 14), 2x 12			
AWG number as coded connectable conducto section	or cross				
 for main contacts 	20	12			
 for auxiliary contacts 	20	20 12			
Safety related data					
product function					
 mirror contact according to IEC 60947-4-1 	Yes;	Yes; with 3RH29			
 positively driven operation according to IE 	C 60947-5-1 No	No			
 suitable for safety function 	Yes				
suitability for use safety-related switching OFF	Yes				
service life maximum	20 a	20 a			
test wear-related service life necessary	Yes	Yes			
proportion of dangerous failures					
 with low demand rate according to SN 319 	40 %	40 %			
 with high demand rate according to SN 31 	920 73 %	73 %			
B10 value with high demand rate according to	SN 31920 1 000	1 000 000			
failure rate [FIT] with low demand rate accord 31920	ing to SN 100 I	100 FIT			
ISO 13849					
device type according to ISO 13849-1	3				
overdimensioning according to ISO 13849-2 r	recessary Yes				
IEC 61508					
safety device type according to IEC 61508-2	Туре	A			
Electrical Safety					
protection class IP on the front according to I	EC 60529 IP20	IP20			
touch protection on the front according to IEC	C 60529 finge	finger-safe, for vertical contact from the front			
Approvals Certificates					
General Product Approval					
CCC CCC CCC EG-Konf.	UK CA	<u>Confirmation</u>		<u>KC</u>	
General Product Ap- proval	Test Certificates		Marine / Shipping		

proval Type Test Certific-ates/Test Report Special Test Certific-EHC ate VERITAS Marine / Shipping other Miscellaneous ovas Re LRS Railway Environment other **Confirmation** Special Test Certific-Environmental Con-firmations **Confirmation** <u>ate</u> EPD Further information

Information on the packaging https://support.industry.siemens.com/cs/ww/en/view/109813875

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=3RT2016-1AK61

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2016-1AK61

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AK61

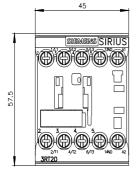
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

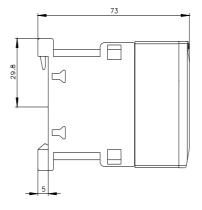
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2016-1AK61&lang=en

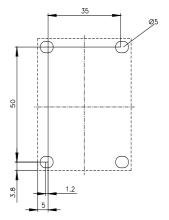
Characteristic: Tripping characteristics, I²t, Let-through current

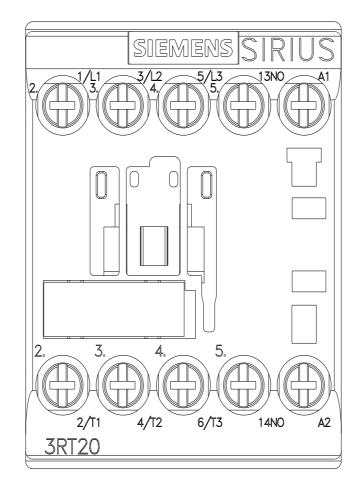
https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AK61/char

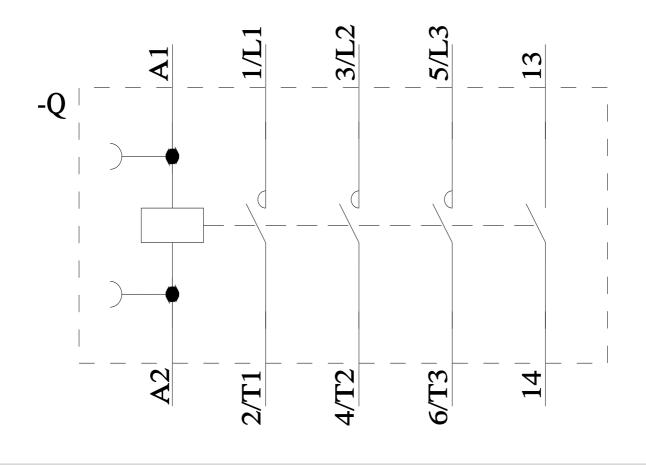
Further characteristics (e.g. electrical endurance, switching frequency) http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2016-1AK61&objecttype=14&gridview=view1











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