3RT1056-6XF46-0LA2

Data sheet



power contactor, AC-3e/AC-3 185 A, 90 kW / 400 V Uc: 110 V DC x (0.7-1.25) PLC input 24-110 V DC 3-pole, auxiliary contacts 2 NO + 2 NC drive: electronic main circuit: busbar control and auxiliary circuit: screw terminal extended rated condition railroad IEC 60077

product brand name	SIRIUS	
product designation	Power contactor	
design of the product	With extended operating range	
product type designation	3RT1	
General technical data		
size of contactor	S6	
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 	39 W	
 at AC in hot operating state per pole 	13 W	
type of calculation of power loss depending on pole	quadratic	
insulation voltage		
 of main circuit with degree of pollution 3 rated value 	1 000 V	
 of auxiliary circuit with degree of pollution 3 rated value 	500 V	
surge voltage resistance		
 of main circuit rated value 	8 kV	
of auxiliary circuit rated value	6 kV	
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	690 V	
shock resistance for railway applications according to EN 61373	Category 1, Class B	
shock resistance at rectangular impulse		
• at DC	8,5g / 5 ms, 4,2g / 10 ms	
shock resistance with sine pulse		
• at DC	13,4g / 5 ms, 6,5g / 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 Prohibitance (Date)	09/06/2016	
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 Melamine - 108-78-1 Perfluorobutane sulfonic acid (PFBS) and its salts	
Weight	3.323 kg	
umbient conditions		
installation altitude at height above sea level maximum	2 000 m	
ambient temperature		

during operation	-40 +70 °C
during operationduring storage	-55 +80 °C
relative humidity minimum	-55 +80 C
relative numidity minimum relative humidity at 55 °C according to IEC 60068-2-30	95 %
maximum	50.70
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 	1 000 V
at AC-3e rated value maximum	1 000 V
operational current	
 at AC-1 at 400 V at ambient temperature 40 °C rated value at AC-1 	215 A
— up to 690 V at ambient temperature 40 °C rated value	215 A
— up to 690 V at ambient temperature 60 °C rated value	185 A
— up to 1000 V at ambient temperature 60 $^{\circ}\text{C}$ rated value	100 A
• at AC-2 at 400 V rated value	185 A
• at AC-3	
— at 400 V rated value	185 A
— at 500 V rated value	185 A
— at 690 V rated value	170 A
— at 1000 V rated value	65 A
• at AC-3e	
— at 400 V rated value	185 A
— at 500 V rated value	185 A
— at 690 V rated value	170 A
— at 1000 V rated value	65 A
at AC-4 at 400 V rated value	160 A
minimum cross-section in main circuit	
at maximum AC-1 rated value	95 mm²
at maximum lth rated value	95 mm²
operational current for approx. 200000 operating cycles at AC-4	
at 400 V rated value	81 A
at 690 V rated value	65 A
operational current	
• at 1 current path at DC-1	400 A
— at 24 V rated value	160 A
— at 110 V rated value	18 A
— at 220 V rated value	3.4 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.5 A
 with 2 current paths in series at DC-1 — at 24 V rated value 	160 A
— at 24 V rated value — at 110 V rated value	160 A
— at 110 V rated value — at 220 V rated value	20 A
— at 440 V rated value	3.2 A
— at 440 V rated value — at 600 V rated value	1.6 A
with 3 current paths in series at DC-1	1.071
— at 24 V rated value	160 A
— at 110 V rated value	160 A
— at 220 V rated value	160 A
— at 440 V rated value	11.5 A
— at 600 V rated value	4 A
at 1 current path at DC-3 at DC-5	
— at 24 V rated value	160 A

1440.77	0.5.4
— at 110 V rated value	2.5 A
— at 220 V rated value	0.6 A
— at 440 V rated value	0.17 A
— at 600 V rated value	0.12 A
 with 2 current paths in series at DC-3 at DC-5 	
— at 24 V rated value	160 A
— at 110 V rated value	160 A
— at 220 V rated value	2.5 A
— at 440 V rated value	0.65 A
— at 600 V rated value	0.37 A
 with 3 current paths in series at DC-3 at DC-5 	
— at 24 V rated value	160 A
— at 110 V rated value	160 A
— at 220 V rated value	160 A
— at 440 V rated value	1.4 A
— at 600 V rated value	0.75 A
operating power	
• at AC-2 at 400 V rated value	90 kW
• at AC-3	
— at 230 V rated value	61 kW
— at 400 V rated value	90 kW
— at 500 V rated value	132 kW
— at 690 V rated value	160 kW
— at 1000 V rated value	90 kW
• at AC-3e	
— at 230 V rated value	61 kW
— at 400 V rated value	90 kW
— at 500 V rated value	132 kW
— at 690 V rated value	160 kW
— at 1000 V rated value	90 kW
operating power for approx. 200000 operating cycles at AC-	
4	
• at 400 V rated value	45 kW
at 690 V rated value	65 kW
short-time withstand current in cold operating state up to 40 °C	
 limited to 1 s switching at zero current maximum 	2 900 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 5 s switching at zero current maximum 	2 084 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 10 s switching at zero current maximum 	1 480 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 30 s switching at zero current maximum 	968 A; Use minimum cross-section acc. to AC-1 rated value
 limited to 60 s switching at zero current maximum 	801 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at DC	1 000 1/h
operating frequency	
• at AC-1 maximum	800 1/h
• at AC-2 maximum	300 1/h
• at AC-3 maximum	750 1/h
• at AC-3e maximum	750 1/h
• at AC-2 at AC-3e maximum	300 1/h
• at AC-4 maximum	130 1/h
an anathra direction of	
operating frequency	
at DC-1 maximum	400 1/h
	400 1/h 350 1/h
• at DC-1 maximum	
at DC-1 maximumat DC-3 maximum	350 1/h
at DC-1 maximumat DC-3 maximumat DC-5 maximum	350 1/h
 at DC-1 maximum at DC-3 maximum at DC-5 maximum Ratings for railway applications	350 1/h
at DC-1 maximum at DC-3 maximum at DC-5 maximum at DC-5 maximum Ratings for railway applications thermal current (Ith) up to 690 V up to 40 °C according to IEC 60077 rated value	350 1/h 350 1/h
at DC-1 maximum at DC-3 maximum at DC-5 maximum Ratings for railway applications thermal current (Ith) up to 690 V up to 40 °C according to IEC 60077 rated value up to 70 °C according to IEC 60077 rated value	350 1/h 350 1/h 215 A
at DC-1 maximum at DC-3 maximum at DC-5 maximum at DC-5 maximum Ratings for railway applications thermal current (Ith) up to 690 V up to 40 °C according to IEC 60077 rated value up to 70 °C according to IEC 60077 rated value Control circuit/ Control	350 1/h 350 1/h 215 A 145 A
at DC-1 maximum at DC-3 maximum at DC-5 maximum at DC-5 maximum Ratings for railway applications thermal current (Ith) up to 690 V up to 40 °C according to IEC 60077 rated value up to 70 °C according to IEC 60077 rated value	350 1/h 350 1/h 215 A

control complexiolters -4 DO4	440.1/
control supply voltage at DC rated value	110 V
operating range factor control supply voltage rated value of magnet coil at DC	
• initial value	0.7
• full-scale value	1.25
consumed current at PLC-control input according to IEC	2 mA
60947-1 maximum	ZIIIA
voltage at PLC-control input	24 110 V
design of the surge suppressor	with varistor
closing power of magnet coil at DC	320 W
holding power of magnet coil at DC	2.8 W
closing delay	
• at DC	35 75 ms
opening delay	
• at DC	80 90 ms
arcing time	10 15 ms
control version of the switch operating mechanism	PLC-IN or Standard A1 - A2 (adjustable)
Auxiliary circuit	
number of NC contacts for auxiliary contacts	2
• instantaneous contact	2
number of NO contacts for auxiliary contacts	2
• instantaneous contact	2
operational current at AC-12 maximum	10 A
operational current at AC-15	
• at 230 V rated value	6 A
• at 400 V rated value	3 A
at 500 V rated value	2 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	1 A
at 600 V rated value	0.15 A
operational current at DC-13	
• at 24 V rated value	6 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
UL/CSA ratings	
full-load current (FLA) for 3-phase AC motor	
• at 480 V rated value	180 A
at 600 V rated value	192 A
yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 230 V rated value	230 hp
• for 3-phase AC motor	
— at 200/208 V rated value	60 hp
— at 220/230 V rated value	75 hp
— at 460/480 V rated value	150 hp
— at 575/600 V rated value	200 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: 355 A (690 V, 100 kA)
with type of assignment 2 required	gG: 315 A (690 V, 100 kA), aM: 200 A (690 V, 50 kA), BS88: 315 A (415 V, 50
At a second-more reduing	kA)
for short-circuit protection of the auxiliary switch required	gG: 10 A (500 V, 1 kA)
Installation/ mounting/ dimensions	
mounting position	with vertical mounting surface +/-90° rotatable, with vertical mounting surface +/- 22.5° tiltable to the front and back
fastening method side-by-side mounting	Yes
fastening method	screw fixing
height	172 mm
width	120 mm
depth	170 mm
required spacing	
with side-by-side mounting	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	10 mm
for grounded parts	
— forwards	20 mm
— upwards	10 mm
— at the side	10 mm
— downwards	10 mm
• for live parts	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	10 mm
Connections/ Terminals	
type of electrical connection	
for main current circuit	screw-type terminals
for auxiliary and control circuit	screw-type terminals
width of connection bar	17 mm
thickness of connection bar	3 mm
diameter of holes	9 mm
number of holes	1
type of connectable conductor cross-sections for main contacts	
solid or stranded	max. 1x 50, 1x 70 mm²
type of connectable conductor cross-sections	
• for auxiliary contacts	
— solid	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²), max. 2x (0.75 4 mm²)
— solid or stranded	2x (0,5 1,5 mm²), 2x (0,75 2,5 mm²), max. 2x (0,75 4 mm²)
— finely stranded with core end processing	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
• for AWG cables for auxiliary contacts	2x (20 16), 2x (18 14), 1x 12
AWG number as coded connectable conductor cross	
section	40 44
• for auxiliary contacts	18 14
Safety related data	
product function	Voo
mirror contact according to IEC 60947-4-1 positively driven energial according to IEC 60047-5-4.	Yes
positively driven operation according to IEC 60947-5-1 putable for acfety function.	No Voo
suitable for safety function authorities for use safety related authorities OFF	Yes
suitability for use safety-related switching OFF	Yes; safety-related disconnection via A1 A2
service life maximum	20 a
test wear-related service life necessary	Yes
proportion of dangerous failures	40.0/
with low demand rate according to SN 31920 with high demand rate according to SN 31920	40 %
with high demand rate according to SN 31920 P40 value with high demand rate according to SN 34930	73 %
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	IP00; IP20 with box terminal/cover
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front with box terminal/cover
Communication/ Protocol	
product function bus communication	No
Approvals Certificates	

General Product Approval









<u>KC</u>



EMV Functional Saftey Test Certificates other



Type Examination Certificate

Special Test Certificate

Type Test Certificates/Test Report

Miscellaneous

Confirmation

other Railway **Environment**

Special Test Certific-**Miscellaneous** Type Test Certific-**Environmental Con**ates/Test Report <u>ate</u> <u>firmations</u>

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=3RT1056-6XF46-0LA2

Cax online generator

 $\underline{http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en\&mlfb=3RT1056-6XF46-0LA2}$

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT1056-6XF46-0LA2

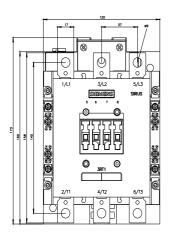
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

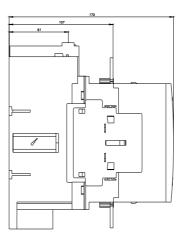
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT1056-6XF46-0LA2&lang=en

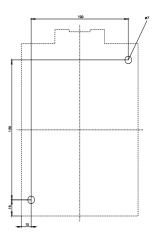
Characteristic: Tripping characteristics, I2t, Let-through current

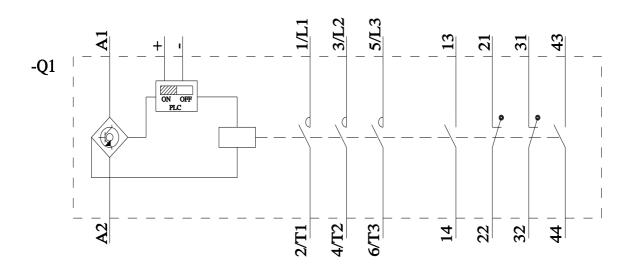
https://support.industry.siemens.com/cs/ww/en/ps/3RT1056-6XF46-0LA2/char

Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT1056-6XF46-0LA2&objecttype=14&gridview=view1









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