SIEMENS

Data sheet 3RT2028-1AP00



power contactor, AC-3e/AC-3, 38 A, 18.5 kW / 400 V, 3-pole, 230 V AC, 50 Hz, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S0

product designation product type designation General technical data size of contactor product extension • function module for communication • auxiliary switch power loss [W] for rated value of the current • at AC in hot operating state per pole • at AC in hot operating state per pole • without load current share typical insulation voltage • of main circuit with degree of pollution 3 rated value • of auxiliary circuit with degree of pollution 3 rated value Power contactor 3RT2 S0 90 No Yes 9.6 W 3.2 W 2.5 W 690 V
Size of contactor Size of contactor Size of contactor of unction module for communication of unxiliary switch power loss [W] for rated value of the current of at AC in hot operating state of at AC in hot operating state per pole of without load current share typical insulation voltage of main circuit with degree of pollution 3 rated value Size of contactor No Yes 9.6 W 9.6 W 2.5 W insulation voltage of main circuit with degree of pollution 3 rated value 690 V
size of contactor product extension • function module for communication • auxiliary switch power loss [W] for rated value of the current • at AC in hot operating state • at AC in hot operating state per pole • at AC in hot operating state per pole • without load current share typical insulation voltage • of main circuit with degree of pollution 3 rated value S0 No Yes 9.6 W 3.2 W 2.5 W
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power loss [W] for rated value of the current • at AC in hot operating state 9.6 W • at AC in hot operating state per pole 3.2 W • without load current share typical 2.5 W insulation voltage • of main circuit with degree of pollution 3 rated value 690 V
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without load current share typical insulation voltage of main circuit with degree of pollution 3 rated value 690 V
insulation voltage ● of main circuit with degree of pollution 3 rated value 690 V
• of main circuit with degree of pollution 3 rated value 690 V
of auxiliary circuit with degree of pollution 3 rated value
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
shock resistance at rectangular impulse
• at AC 8,3g / 5 ms, 5,3g / 10 ms
shock resistance with sine pulse
• at AC 13,5g / 5 ms, 8,3g / 10 ms
mechanical service life (operating cycles)
• of contactor typical 10 000 000
 of the contactor with added electronically optimized auxiliary switch block typical
• 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
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 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
at AC-3e rated value maximum	690 V
operational current	
 at AC-1 at 400 V at ambient temperature 40 °C rated 	50 A
value	
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated	50 A
value	40. A
 up to 690 V at ambient temperature 60 °C rated value 	42 A
• at AC-3	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-3e	2170
— at 400 V rated value	38 A
— at 500 V rated value	32 A
	21 A
— at 690 V rated value• at AC-4 at 400 V rated value	22 A
	44 A
at AC-5a up to 690 V rated value	
at AC-5b up to 400 V rated value	31.5 A
• at AC-6a	
— up to 230 V for current peak value n=20 rated value	30.8 A
— up to 400 V for current peak value n=20 rated value	30.8 A
— up to 500 V for current peak value n=20 rated value	30.8 A
— up to 690 V for current peak value n=20 rated value	21 A
• at AC-6a	
 up to 230 V for current peak value n=30 rated value 	20.5 A
 up to 400 V for current peak value n=30 rated value 	20.5 A
 up to 500 V for current peak value n=30 rated value 	21.4 A
 up to 690 V for current peak value n=30 rated value 	21 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm ²
operational current for approx. 200000 operating cycles at	
AC-4	
• at 400 V rated value	12 A
• at 690 V rated value	12 A
operational current	
at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	20 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1A
— 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	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 600 V rated value	0.8 A
with 3 current paths in series at DC-1	05 A
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	35 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 	

	1041/	00.4
	— at 24 V rated value	20 A
- with 2 current paths in series at DC-3 at DC-5 - at 24 V raied value - at 60 V raied value - at 110 V raied value - at 220 V raied value - at 440 V raied value - at 600 V raied val		
		0.06 A
	·	
	— at 24 V rated value	35 A
	— at 60 V rated value	35 A
	— at 110 V rated value	15 A
■ with 3 current paths in series at DC-3 at DC-5	— at 220 V rated value	3 A
With 3 current paths in series at DC-3 at DC-5	— 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	35 A
- at 220 V rated value - at 440 V rated value - 20 A A - 24 A C A - 25 A C A - 25 A C A - 26 A C A -	— at 60 V rated value	35 A
	— at 110 V rated value	35 A
A	— at 220 V rated value	10 A
at AC-3	— at 440 V rated value	0.6 A
* at AC-3	— at 600 V rated value	0.6 A
at 230 V rated value at 400 V rated value at 690 V rated value at 690 V rated value at 690 V rated value at 230 V rated value at 250 V rated value at 590 V rated value at 590 V rated value at 690 V rated value at	operating power	
at 400 V rated value at 690 V rated value at 690 V rated value at 690 V rated value at 400 V rated value at 690 V roted value at 690 V for current peak value n=20 rated value up to 500 V for current peak value n=20 rated value up to 500 V for current peak value n=20 rated value up to 500 V for current peak value n=30		
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at 500 V rated value at 690 V rated value at 230 V rated value at 230 V rated value at 400 V rated value at 400 V rated value at 690 V rot current peak value n=20 rated value at 690 V rot current peak value n=20 rated value at 690 V for current peak value n=20 rated value at 690 V for current peak value n=20 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current peak value n=30 rated value at 690 V for current for 600 V for 600 V for current for 600 V	— at 400 V rated value	
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at AC-3e —at 230 V rated value —at 690 V rated value —at 680 V r		
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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 up to 690 V for current peak value n=20 rated value up to 230 V for current peak value n=30 rated value 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 500 V for current peak value n=30 rated value up to 690 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 c	 at 690 V rated value 	10.3 kW
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=30 rated value 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 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 c	operating apparent power at AC-6a	
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• up to 690 V for current peak value n=20 rated value operating apparent power at AC-6a • 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 • up to 690 V for current peak value n=30 rated value short-time withstand current in cold operating state up to 40 °C • limited to 1 s switching at zero current maximum • limited to 5 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s sw	 up to 400 V for current peak value n=20 rated value 	21.3 kVA
• up to 690 V for current peak value n=20 rated value operating apparent power at AC-6a • 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 • up to 690 V for current peak value n=30 rated value short-time withstand current in cold operating state up to 40 °C • limited to 1 s switching at zero current maximum • limited to 5 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s sw	 up to 500 V for current peak value n=20 rated value 	26.6 kVA
operating apparent power at AC-6a • 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 • up to 690 V for current peak value n=30 rated value short-time withstand current in cold operating state up to 40 °C • limited to 1 s switching at zero current maximum • limited to 5 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum 1000 1/h • at AC-1 maximum • at AC-2 maximum • at AC-2 maximum • at AC-3 maximum • at AC-3 maximum • at AC-3 maximum • at AC-4 maximum		25 kVA
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 up to 690 V for current peak value n=30 rated value short-time withstand current in cold operating state up to 40 °C ilimited to 1 s switching at zero current maximum ilimited to 5 s switching at zero current maximum ilimited to 10 s switching at zero current maximum ilimited to 30 s switching at zero current maximum ilimited to 60 s switching at zero current		
 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 short-time withstand current in cold operating state up to 40 °C limited to 1 s switching at zero current maximum limited to 5 s switching at zero current maximum limited to 10 s switching at zero current maximum limited to 30 s switching at zero current maximum limited to 60 s switching at zero current maximum limited to 60 s switching at zero current maximum limited to 60 s switching at zero current maximum limited to 60 s switching at zero current maximum 1000 1/h at AC-1 maximum at AC-2 maximum at AC-3 maximum at AC-3 maximum at AC-4 maximum at AC-5 maximum at AC-4 maximum at AC-5 maximum at AC-4 maximum at AC-4 maximum at AC-4 maximum 		8.1 kVA
up to 500 V for current peak value n=30 rated value up to 690 V for current peak value n=30 rated value short-time withstand current in cold operating state up to 40 °C ilimited to 1 s switching at zero current maximum ilimited to 5 s switching at zero current maximum ilimited to 10 s switching at zero current maximum ilimited to 30 s switching at zero current maximum ilimited to 60 s switching at zero current maximum ilimited to 60 s switching at zero current maximum ilimited to 60 s switching at zero current maximum no-load switching frequency at AC at AC-1 maximum at AC-2 maximum at AC-3 maximum at AC-3 maximum at AC-4 maximum at AC		
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short-time withstand current in cold operating state up to 40 °C • limited to 1 s switching at zero current maximum • limited to 5 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum • limited to 60 s switching at zero current maximum 100 A; Use minimum cross-section acc. to AC-1 rated value 102 A; Use minimum cross-section acc. to AC-1 rated value 103 A; Use minimum cross-section acc. to AC-1 rated value 104 A; Use minimum cross-section acc. to AC-1 rated value 105 A; Use minimum cross-section acc. to AC-1 rated value 106 A; Use minimum cross-section acc. to AC-1 rated value 107 A; Use minimum cross-section acc. to AC-1 rated value 108 A; Use minimum cross-section acc. to AC-1 rated value 109 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 109 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 109 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-section acc. to AC-1 rated value 100 A; Use minimum cross-secti		
1		
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 at AC-3e maximum at AC-4 maximum Control circuit/ Control 		
• at AC-4 maximum Control circuit/ Control		
Control circuit/ Control		
		200 1/11
type of voltage of the control supply voltage		AC
	type of voltage of the control supply voltage	AC

control supply voltage at AC	
at 50 Hz rated value	230 V
operating range factor control supply voltage rated value of magnet coil at AC	
• at 50 Hz	0.8 1.1
apparent pick-up power of magnet coil at AC	0.6 1.1
	77 VA
• at 50 Hz	// VA
inductive power factor with closing power of the coil	0.00
• at 50 Hz	0.82
apparent holding power of magnet coil at AC	0.01/4
• at 50 Hz	9.8 VA
inductive power factor with the holding power of the coil	0.05
• at 50 Hz	0.25
closing delay	0. 40
• at AC	8 40 ms
opening delay	4. 40
• at AC	4 16 ms
arcing time	10 10 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	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	1 A
at 600 V rated value	0.15 A
operational 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 3-phase AC motor	
• at 480 V rated value	34 A
at 600 V rated value	27 A
yielded mechanical performance [hp]	
for single-phase AC motor	
— at 110/120 V rated value	3 hp
— at 230 V rated value	5 hp
• for 3-phase AC motor	
— at 200/208 V rated value	10 hp
— at 220/230 V rated value	10 hp
— at 460/480 V rated value	25 hp
— at 575/600 V rated value	25 hp
contact rating of auxiliary contacts according to UL	A600 / P600
contact ruting of dustrially contacts according to the	7100077 000

Short-circuit protection	
design of the fuse link	
for short-circuit protection of the main circuit	
with type of coordination 1 required	gG: 125A (690V,100kA), aM: 50A (690V,100kA), BS88: 125A (415V,80kA)
with type of assignment 2 required	gG: 50A (690V,100kA), aM: 25A (690V, 100kA), BS88: 50A (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 DIN rail according to DIN EN 60715
side-by-side mounting	Yes
height	85 mm
width	45 mm
depth	97 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	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 (1 2.5 mm²), 2x (2.5 10 mm²)
solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)
finely stranded with core end processing	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²
connectable conductor cross-section for main contacts	4.40
• solid	1 10 mm²
• stranded	1 10 mm²
finely stranded with core end processing	1 10 mm²
connectable conductor cross-section for auxiliary contacts	05 052
solid or stranded	0.5 2.5 mm²
finely stranded with core end processing	0.5 2.5 mm ²
type of connectable conductor cross-sections	
for auxiliary contacts	0. (0.5. 4.5 mm²) 0. (0.75. 0.5. 3)
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 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)
AWG number as coded connectable conductor cross section	
• for main contacts	16 8
	20 14
	EV 17
for auxiliary contacts Safety related data	
Safety related data	
Safety related data product function	Ves
Safety related data	Yes Yes

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 a
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
Cartificates/approvals	

Certificates/ approvals

General Product Approval



Confirmation





<u>KC</u>



EMC

Functional Safety/Safety of Machinery

Declaration of Conformity

Test Certificates



Type Examination Certificate





Special Test Certificate

Type Test Certificates/Test Report

Marine / Shipping













other

Railway Environment

Confirmation



Confirmation

Vibration and Shock

Environmental Confirmations

Further information

Siemens has decided to exit the Russian market (see here).

https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business

Siemens is working on the renewal of the current EAC certificates.

Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

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=3RT2028-1AP00

Cax online generator

 $\underline{\text{http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en\&mlfb=3RT2028-1AP00}$

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AP00

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

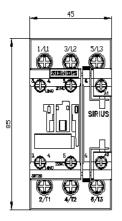
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2028-1AP00&lang=en

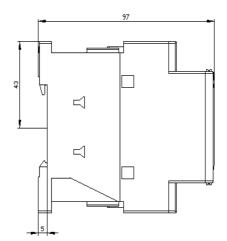
Characteristic: Tripping characteristics, I²t, Let-through current

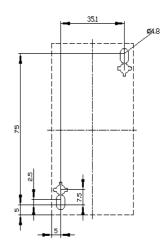
https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AP00/char

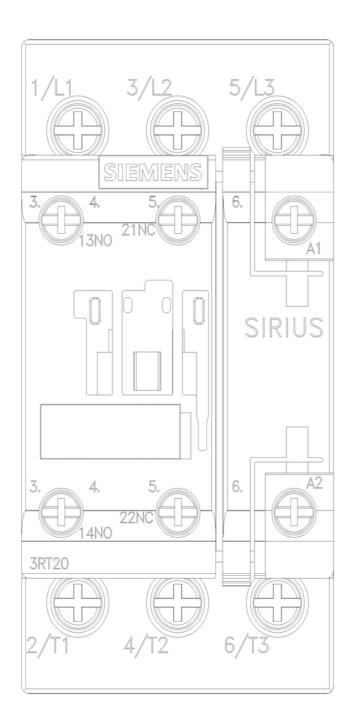
Further characteristics (e.g. electrical endurance, switching frequency)

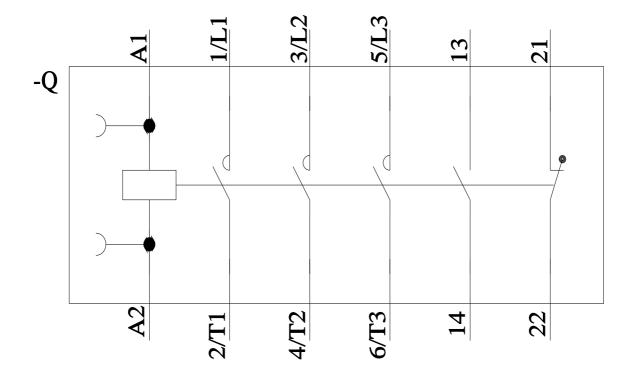
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1AP00&objecttype=14&gridview=view1











last modified: 8/15/2023 🖸