

3UA Thermally Delayed Overload Relays

CLASS 10

Technical data according to IEC 947-4										
Type	3UA70 11/ 3UA70 21	3UA50/ 3UA52	3UA55	3UA58	3UA59	3UA60	3UA61/ 3UA62	3UA66	3UA68	
Trip class	CLASS 10A (2 s < $t_A \leq 10$ s at $7.2 \times I_e$ from cold state and $t_A \leq 2$ min at $1.5 \times I_e$ from hot state)									
Phase failure sensitivity by differential phase shift	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Changeover to automatic reset	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
RESET button with trip-free feature	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Temperature compensation	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Switch position indicator	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Test button actuates the NO and NC contacts	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Terminal for contactor coil	no ¹⁾	yes	yes	no ¹⁾	no ¹⁾	no ¹⁾	no ¹⁾	no ¹⁾	no ¹⁾	no ¹⁾
Permissible ambient temperature °C	-25 to +55 ²⁾		-25 to +55							
Degree of protection	IP 00/open or IP 20 to IEC 947-1 and DIN 40 050									
Shock resistance g/ms	8/10									
Main circuit										
Rated insulation voltage U_i AC/DC V (pollution degree 3)	690	690	690	1000	690	1000	1000	1000	1000	1000
Rated impulse withstand voltage U_{imp} kV	6	6	6	8	6	8	8	8	8	8
Type of current, frequency range	DC; AC up to 400 Hz								AC 50 to 400 Hz	
Conductor cross-sections									Setting range (≤ 200 A / > 200 A)	
Terminal screw solid or stranded	mm ²	M 3 0.5 to 2.5	M 4 2.5 to 6	M 5 1.5 to 25	M 5 2.5 to 35	M 5 1.5 to 25	M 6 25 to 70	M 8 50 to 120	M 8/M 10 185/240	M 10 2×240
finely stranded with end sleeve	mm ²	0.5 to 1.5	1.5 to 4	1 to 16	1.5 to 25	1 to 16	25 to 50	25 to 95	–	–
Flat bars	mm	–	–	–	–	–	–	20×3	20×3/2×30×5	2×30×5
Tightening torque	Nm lb. in Nm lb. in	0.4 to 0.7 4 to 6.5	1 to 1.5 9 to 13	2.5 to 3 22 to 26.5	2.5 to 3 22 to 26.5	2.5 to 3 22 to 26.5	6 to 8 52 to 50	10 to 14 89 to 124	10 to 14 89 to 124/ 14 to 24 124 to 210	14 to 24 124 to 210
Power loss per conducting path (max.)										
at lowest value	W (VA)	0.6	0.9	1.2	2.6	0.8	5	5	4 (5)	6 (9)
at highest value of the setting range	W (VA)	2.3	2.25	3	4	2	7	7	10 (12)	15 (22)

1) Not required.

2) The upper setting I_o is to be reduced by 0.5% per 1°C excess temperature or a min. space of 5 mm is to be maintained between the units when several overload relays are series mounted and simultaneously operated at ambient temperatures exceeding 25 °C.

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Type	3UA70 11/ 3UA70 21	3UA50/ 3UA52	3UA55	3UA58	3UA59	3UA60	3UA61/ 3UA62	3UA66	3UA68			
Auxiliary circuit												
Auxiliary contacts	1 NO + 1 NC		1 NO + 1 NC			1 NO + 1 NC						
Conductor cross-sections	M 3 2×(0.5 to 2.5)		M 3.5 2×(0.5 to 1)/2×(1 to 2.5)									
Terminal screw solid or stranded	mm ²	2×(0.5 to 1.5)		2×(0.5 to 1)/2×(0.75 to 2.5)								
finely stranded with end sleeve	mm ²	0.4 to 0.7		0.8 to 1.4								
Tightening torque	Nm lb. in	4 to 6.5		7 to 12								
Rated insulation voltage U_i (pollution degree 3)	NC	Unequal potential (NO + NC)			Equal potential (NO + NC connected as changeover contact)							
V	690	400			690							
Rated impulse withstand voltage U_{imp}	kV	6										
Switching capacity	at AC-15:				at DC-13:							
Rated operational voltage U_e	V	24	60	125	230	400	500	690	24	60	110	220
Rated operational current I_e	A	2	1.5	1.25	1.15	1.1	1	0.8	2	0.5	0.3	0.2
Conventional thermal current I_{th}	A	6										
Short-circuit protection	Fuses LV HRC Type 3NA, DIAZED Type 5SA/5SB, NEOZED Type 5SE: utilization category gL/gG 6 A Miniature circuit-breaker (C characteristic): 3 A											
a - , U - , r -Ratings, main circuit												
Rated current	A	12	14.5 (25) ¹⁾	45	88	63	135	150/180	400	630		
Rated voltage	AC V	600	600	600	600	600	600	600	600	600		
a - , U - , r -Ratings, auxiliary circuit												
Rated voltage	AC V	600, >150 same polarity										
Switching capacity		B 600, R 300										
Adapter for installing the relay as a single unit												
Type	3UX1 418		3UX1 420		3UX1 421		3UX1 424		3UX1 425			
For overload relay	3UA50		3UA52		3UA58		3UA60		3UA55			
Conductor cross-sections	M 3.5 1 to 4		M 4 2.5 to 10		M 6 2.5 to 35		M 6 2×25 to 70		M 5 1 to 25			
Terminal screw solid or stranded	mm ²	0.75 to 2.5		1.5 to 6		1.5 to 25		2×25 to 50				
finely stranded with end sleeve	mm ²							1 to 16				

Trip classes of thermal, delayed magnetic or solid-state overload relays – Excerpt from IEC 947-4

Trip class A	Tripping time t_A in seconds at $7.2 \times I_e$ from cold state
10	$2 < t_A \leq 10$
10	$4 < t_A \leq 10$
20	$6 < t_A \leq 20$
30	$9 < t_A \leq 30$

1) Value in brackets only valid for 3UA52.

3UA Thermally Delayed Overload Relays CLASS 10

Technical data according to IEC 947-4 and DIN VDE 0660 Part 102

Short circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA at 690 V¹⁾, 50/60 Hz

Overload relay Type	Permissible short-circuit fuses for motor starters consisting of overload relay and contactor, contactor assembly					u-listed fuses CLASS R K5
	Fuse links LV HRC DIAZED NEOZED Utilization category gL/gG	Type 3NA Type 5SB Type 5SE	LV HRC Type 3ND Utilization category aM	British standards fuses BS 88 Type T		
Setting range A	Type of coordination ²⁾ "1"	Type of coordination ²⁾ "2"	Type of coordination ²⁾ "2"	Type of coordination ²⁾ "1"	Type of coordination ²⁾ "2"	A
3UA70 21						
0.1 – 0.16	25	0.5 slow ³⁾	–	25	–	1
0.16– 0.25	25	1 ³⁾		25		1
0.25– 0.4	25	1.6 ³⁾		25		2
0.4 – 0.63	25	2	–	25	2	3
0.63– 1	25	4		25	4	5
0.8 – 1.25	25	4		25	4	6
1 – 1.6	25	6	–	25	6	8
1.25– 2	25	6		25	6	10
1.6 – 2.5	25	6		25	10	12
2 – 3.2	25	10	–	25	10	12
2.5 – 4	25	10		25	10	12
3.2 – 5	25	10		25	10	12
4 – 6.3	25	10	–	25	10	15
5 – 8	25	10		25	10	20
6.3 –10	25	10		25	10	20
3UA50						
0.1 – 0.16	35	0.5 slow ³⁾	–	25	–	1
0.16– 0.25	35	1 ³⁾		25		1
0.25– 0.4	35	1.6 ³⁾		25		2
0.4 – 0.63	35	2	–	25	2	3
0.63– 1	35	4		25	4	5
0.8 – 1.25	35	4		25	4	6
1 – 1.6	35	6	–	25	6	8
1.25– 2	35	6		25	6	10
1.6 – 2.5	35	6		25	10	12
2 – 3.2	35	10	–	25	10	12
2.5 – 4	35	10		25	10	12
3.2 – 5	35	16		25	16	12
4 – 6.3	35	16	–	25	16	15
5 – 8	35	20		25	16	20
6.3 –10	35	25		25	20	20
8 –12.5	35	25	–	25	20	20
10 –14.5	35	25		35	32	20
3UA52						
0.1 – 0.16	63	0.5 slow ³⁾	–	63	–	1
0.16– 0.25	63	1 ³⁾		63		1
0.25– 0.4	63	1.6 ³⁾		63		2
0.4 – 0.63	63	2	–	63	2	3
0.63– 1	63	4		63	4	5
0.8 – 1.25	63	4		63	4	6
1 – 1.6	63	6	–	63	6	8
1.25– 2	63	6		63	6	10
1.6 – 2.5	63	6		63	10	12
2 – 3.2	63	10	–	63	10	12
2.5 – 4	63	10		63	10	12
3.2 – 5	63	16		63	16	12
4 – 6.3	63	16	–	63	16	15
5 – 8	63	20		63	20	20
6.3 –10	63	25		63	20	20
8 –12.5	63	25	16	63	20	30
10 –16	63	25	20	63	25	30
12.5 –20	63	25	20	63	35	30
16 –25	63	25	20	63	35	45
3UA55						
1 – 1.6	80	6	–	100	6	8
1.25– 2	80	6		100	6	10
1.6 – 2.5	80	6		100	10	12
2 – 3.2	80	10	–	100	10	12
2.5 – 4	80	10		100	10	12
3.2 – 5	80	16		100	16	15
4 – 6.3	80	16	–	100	16	15
5 – 8	80	20		100	20	20
6.3 –10	80	25		100	25	25
8 –12.5	80	25	16	100	20	25
10 –16	80	35	20	100	40	40
12.5 –20	80	50	20	100	50	50
16 –25	80	50	40	100	63	60
20 –32	80	80	50	100	80	60
25 –36	80	80	50	100	80	60
32 –40	80	80	50	100	80	60
36 –45	80	80	50	100	80	60

Short-circuit protection with circuit breakers, fuseless motor feeders, combination of devices for mounting onto busbars, see "Circuit breakers" and "Fuseless load feeders".

- 1) Voltage tolerance +5%.
- 2) Coordination of short-circuit equipment according to IEC 947-4/DIN VDE 0660 Part 102:
Type of coordination "1":
 The contactor or starter must not endanger persons or the installation in the event of a short-circuit. They do not need to be suitable for further operation without repair and the renewal of parts.
Type of coordination "2":
 The contactor or starter must not endanger persons or the installation and must be suitable for further use. There is a danger of contact welding.
- 3) D-fuse links U_N = 500 V, make SIBA.

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Technical data according to IEC 947-4 and DIN VDE 0660 Part 102

Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA at 690 V¹⁾, 50/60 Hz

Overload relay Type	Permissible short-circuit fuses for motor starters consisting of overload relay and contactor, contactor assembly						Short-circuit protection with circuit breakers, fuseless motor feeders, combination of devices for mounting onto busbars, see "Circuit breakers" and "Fuseless load feeders".
	Fuse links LV HRC DIAZED NEOZED Utilization category g/LgG	Type 3NA Type 5SB Type 5SE	LV HRC Type 3ND Utilization category aM	British standards fuses BS 88 Type T	u-listed fuses CLASS R K5		
Setting range A	Type of coordination ³⁾ "1" A	Type of coordination ³⁾ "2" A	Type of coordination ³⁾ "1" A	Type of coordination ³⁾ "2" A		A	
3UA58							
16 – 25	160	50	25	160	63	60	
20 – 32	160	63	35	160	63	70	
25 – 40	160	80	40	160	80	70	
32 – 50	160	125	50	160	80	70	
40 – 57	160	125	63	160	100	70	
50 – 63	160	125	63	160	100	100	
57 – 70	160	125	63	160	100	125	
63 – 80	250	160	80	160	125	150	
70 – 88	250	160	100	160	125	175	
3UA70 11, 3UA59							
0.1 – 0.16	25	0.5 slow ⁴⁾	–	25	–	1	
0.16 – 0.25	25	1 ⁴⁾	–	25	–	1	
0.25 – 0.4	25	1.6 ⁴⁾	–	25	–	2	
0.4 – 0.63	25	2	–	25	2	3	
0.63 – 1	25	4	–	25	4	5	
0.8 – 1.25	25	4	–	25	4	6	
1 – 1.6	25	6	–	25	6	8	
1.25 – 2	25	6	–	25	6	10	
1.6 – 2.5	25	6	–	25	10	12	
2 – 3.2	25	10	–	25	10	12	
2.5 – 4	25	10	–	25	10	12	
3.2 – 5	25	10	–	25	16	12	
4 – 6.3	25	10	–	25	16	15	
5 – 8	25	10	–	35	16	20	
6.3 – 10	25	10	–	35	20	20	
8 – 12.5 ²⁾	35	16	–	63	32	20	
10 – 16	63	25	16	63	32	30	
12.5 – 20	63	25	20	63	35	45	
16 – 25	63	25	25	80	50	45	
20 – 32	80	63	35	80	63	60	
25 – 40	125	80	40	160	80	70	
32 – 45	160	100	50	160	80	70	
40 – 57	160	125	63	160	100	100	
50 – 63	160	125	63	160	100	100	
3UA60, 3UA61, 3UA62							
55 – 80	250	160	80	160	125	150	
63 – 90	250	160	100	160	125	150	
80 – 110	400	200	125	315	160	175	
90 – 120	400	224	125	315	200	175	
110 – 135	400	224	160	315	200	175	
120 – 150	400	250	160	315	200	200	
135 – 160	400	250	160	355	250	200	
150 – 180	400	250	200	355	250	200	
3UA66, 3UA68							
80 – 125	355	224	125	355	224	300	
125 – 200	355	224	200	355	224	300	
160 – 250	500	400	250	500	355	300	
200 – 320	500	400	315	500	400	300	
250 – 400	800	500	400	800	450	400	
320 – 500	800	500	630	800	500	400	
400 – 630	1000	500 (630) ⁵⁾	630	1000	500	1200 CLASS L	

- 1) Voltage tolerance +5%.
- 2) For 3UA70 11 setting range 8 to 12 A.
- 3) Coordination of short-circuit equipment according to IEC 947-4/DIN VDE 0660 Part 102:
Type of coordination "1":
 The contactor or starter must not endanger persons or the installation in the event of a short-circuit. They do not need to be suitable for further operation without repair and the renewal of parts.
Type of coordination "2":
 The contactor or starter must not endanger persons or the installation and must be suitable for further use. There is a danger of contact welding.
- 4) D-fuse links $U_N = 500$ V, make SIBA.
- 5) Valid for 3TB contactor.