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SICOP

Bimetal Overload Relays Type 3UA5/6 & 3UC5/6

Introduction

The bimetal overload relays type 3UA5/6 & 3UC5/6 relays are indigenously manufactured and bring to the users a whole range of benefits, which are a direct result of extensive R & D efforts in design, materials and manufacturing technology. They also incorporate additional features/benefits as a result of feedback from the users of our 3UA19 relays.

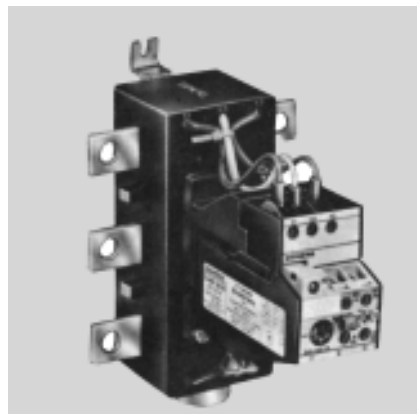
Application

3UA5 and 3UA6 are triple pole adjustable bimetal overload relays with built in single phasing protection. In conjunction with contactors and other motor control equipment, they provide accurate and reliable protection to motors against overload and single phasing as per 'Class 10A', in conformance to IEC 947-1-4 and IS 13947-4-1. They also offer protection against unbalanced voltages.

3UC5 and 3UC6 are triple pole adjustable, saturable C.T. operated bimetal overload relays (with built in single phasing protection feature). They are ideal for heavy starting applications, when heavy masses are to be put in motion with the resultant long starting period. In conjunction with contactors and other motor control equipment, they provide accurate

reliable protection to motors, with an acceleration time upto 30 sec. and starting current upto 6 times the rated current, against overload and single phasing as per 'Class 30', in conformance to IEC 947-4-1 and IS 13947-4-1. The 3UC5/6 relays comprise of 3 saturable current transformers, a resistance unit and a special bimetal relay connected to the secondary winding of the C.T. It is a composite unit with bimetal relay mounted on the C.T.s. For mounting the C.T. and relay separately, please enquire.

The saturable current transformers linearly transform the current upto approx. twice the set current, but above this value the transformer core gets saturated and the secondary current is proportionately less. Thus, these relays permit heavy starting conditions of motors and offer dependable protection against overload.



Description

Salient Features

Built-in single phasing protection

Besides 3 phase overload protection, the relays offer a built-in single phasing protection using differential slider principle.

Temperature Compensation

The relays are temperature compensated between service temperatures of -25° C to +55° C.

Overlapping Setting Ranges

For proper selection of overload relays to match the current drawn by the motors, a number of overlapping ranges are incorporated.

Short-circuit Protection

The relays protect themselves against overload upto 10 times the maximum setting. Beyond this, i.e. in the short circuit zone, the relays must be protected by a short circuit protection device (HRC fuses as per the details given in the selection table.)

Other features and benefits SIGUT® termination

The relays have the Siemens patented SIGUT® termination technique. It is acknowledged worldwide to be "user friendly". The SIGUT® feature increases safety and reduces wiring time. It includes the following:

- Shrouded auxiliary terminals increases safety as they protect against accidental contact with live parts.
- Ready to wire terminals and captive screws reduce wiring time. The screws being captive, do not fall out. Hence, the relays are delivered with untightened terminals, i.e. in ready-to-wire condition. This eliminates the operation of untightening terminals before wiring.
- Funnel shaped cable entrances reduce wiring time by facilitating quick location of the connecting wire.
- 'Cable-End-Stops' reduce wiring and testing time as they

decide the insertion depth of the connective wire. As the wire cannot now protrude into the relay housing, it does not hamper the movement of the auxiliary contacts.

- Further, since the insertion depth is predetermined, insulation of the cable can be cut accordingly and the possibility of insulation getting inadvertently caught under the terminal, is avoided,
- Screw-driver guides reduce wiring time as they allow the use of power screw-drivers.

Auxiliary Contacts

Potential free 1NO + 1NC contact arrangement is provided as a standard feature. The 1NO contact above can be used for various applications such as annunciation.

International Terminal Markings

The terminal markings on the relay conform to international standards. The clear markings for power and auxiliary terminals in accordance with IS/IEC are incorporated to facilitate easy wiring and to minimise wiring errors (Fig. 1).

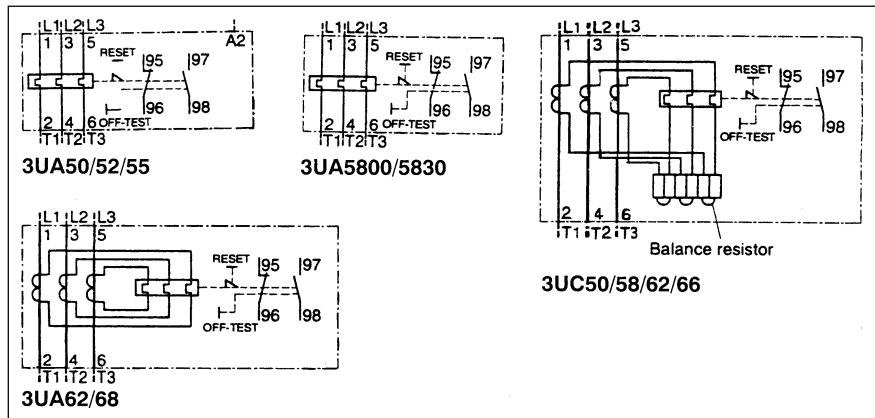


Fig. 1 Terminal markings & Internal connection diagrams

Mounting

Relays type 3UA50, 52, 55, 58 & 5830 are suitable for mounting on SICOP power contactors (Fig. 2). However, a simple accessory is available for converting contactor mounting relay to individual mounting, (Fig. 3) suitable for screw type mounting & DIN RAIL (35 mm) mounting.

Relays type 3UA68 & 3UC5/6 are suitable for screw type mounting and also for DIN RAIL (75 mm) mounting.



Fig. 3 Mounting Adaptor

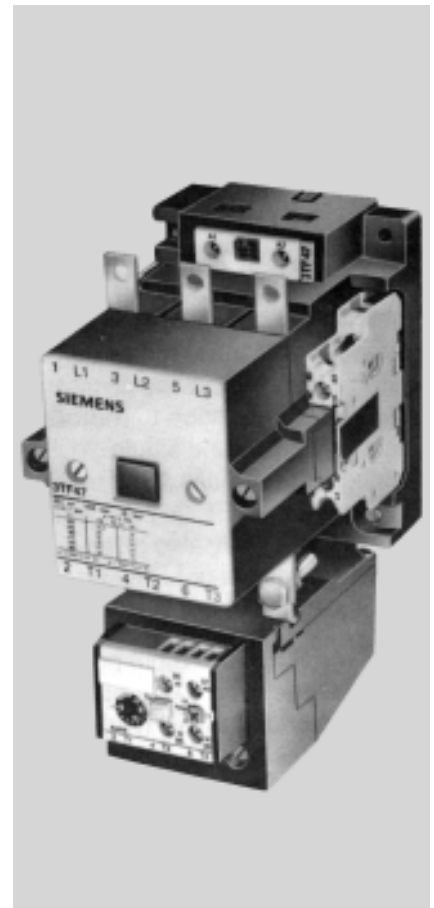


Fig. 2 Contactor mounting

Controls

Current setting (P1)

A recessed dial is provided for easy setting of the relay from the front. Since the dial is recessed, there is no possibility of accidental change in current setting.

Changeover from manual reset to automatic reset (P2)

The relays are supplied in manual reset execution. They can be easily converted from manual reset mode to automatic reset mode from the front just by turning the blue knob. As a standard practice, trip free feature is incorporated in the Reset push button.

Test Button (P3)

The trip circuit can be manually checked by this Red button.

Accessories

Adaptor: To convert contactor mounting relay to individual mounting, (Fig. 3) suitable for screw type mounting & DIN RAIL (35 mm) mounting.

* **Protective cover:** To avoid tampering of the setting, auto

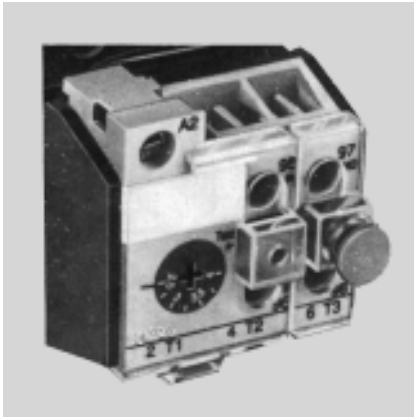


Fig. 5 Protective cover

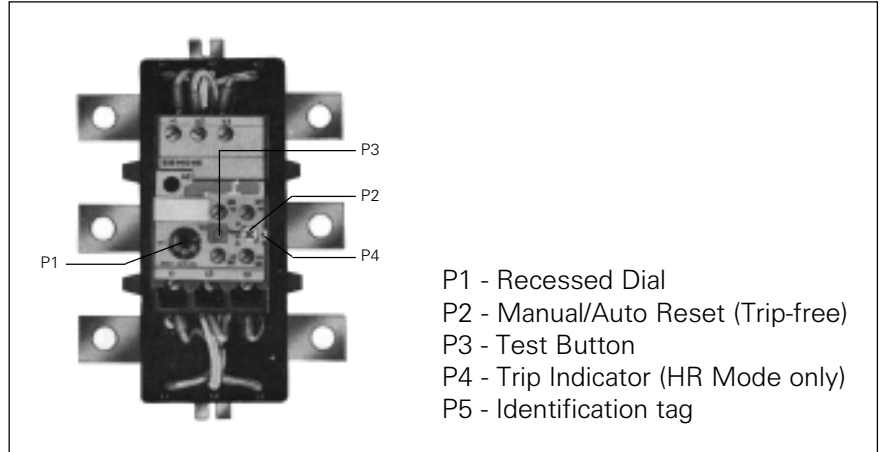


400mm-3UXI015
600mm-3UXI016

Fig. 6 Reset Cord with Holder

Trip indicator (P4)

A separate mechanical Green Trip Indicator is provided in the front cover of the relay to indicate the tripped state of the 'manual reset' relay.



P1 - Recessed Dial
P2 - Manual/Auto Reset (Trip-free)
P3 - Test Button
P4 - Trip Indicator (HR Mode only)
P5 - Identification tag

Fig. 4 Controls

manual mode or test button. (Fig. 5)

* **Reset cord:** To reset the relay in switchboard with door closed. (length: 400/600 mm) (Fig. 6)

* **Reset slider with funnel:**

Instead of reset cord for resetting the relay in switchboard with door closed. (Fig. 7)

Connection links: For connection of individual mounted relays to contactor. (Fig. 8)

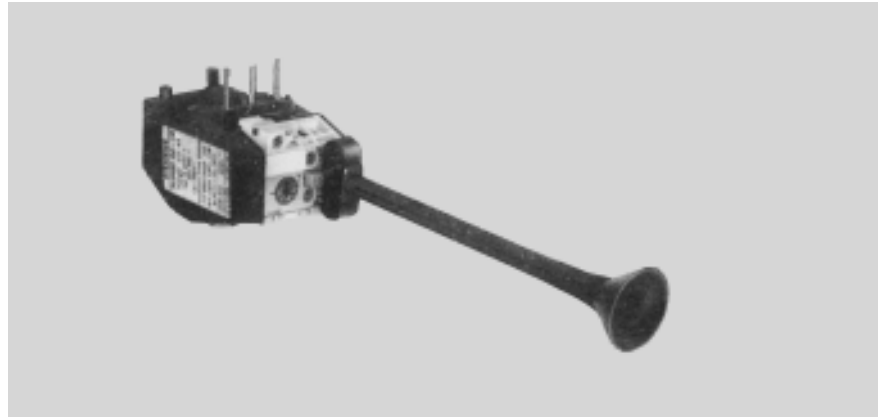


Fig. 7 Reset Slider + Funnel

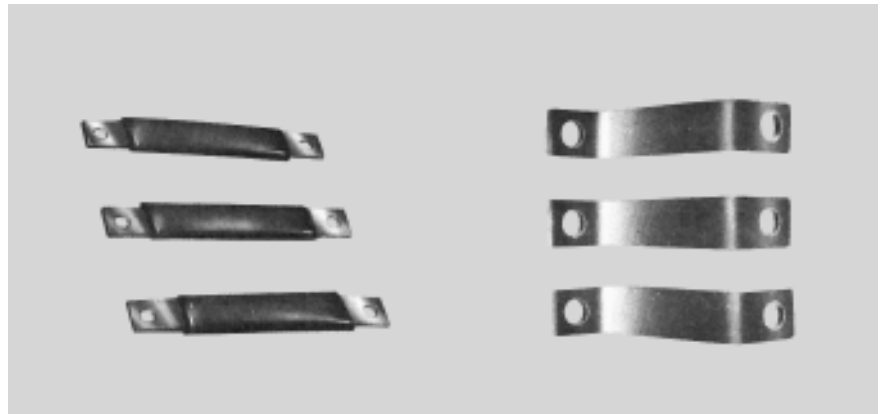


Fig. 8 Connecting link for 3UA62 30 & 3UC66 30

* Only one of the three can be used at a time.

Technical Data

Type		3UA50	3UA52	3UA55	3UA58			
Trip class		10A						
Phase failure protection		✓	✓	✓	✓			
Changeover to auto-reset at site		✓	✓	✓	✓			
RESET button (trip-free) Blue		✓	✓	✓	✓			
Ambient temperature compensation		✓	✓	✓	✓			
Trip indicator Green		✓	✓	✓	✓			
TEST button Red		✓	✓	✓	✓			
Terminal for contactor coil		✓	✓	✓	X			
Permissible service temperature		25°C to +55°C						
Mounting		Contactor/ 3TB40/41	Contactor/ 3TF42/43	Contactor/ 3TF44/45	Contactor/ 3TF46 to 49			
Main Circuit								
Rated current (Max)	A	14.5	25	45	80			
Rated insulation voltage U_i (Pollution degree 3)	V	690	690	690	1000			
Rated impulse withstand U_{imp}	kV	6	6	6	8			
Heating		Direct	Direct	Direct	Direct			
Conductor cross-section								
Solid or stranded	sqmm	2.5 to 6	2.5 to 6	1.5 to 25	2.5 to 35			
Finely stranded with end sleeve	sqmm	1.5 to 4	1.5 to 4	1 to 16	1.5 to 25			
Multi-conductors with cable lugs	sqmm	–	–	–	–			
Flats	sqmm	–	–	–	–			
Terminal screw		M4	M4	M5	M5			
Power loss per pole (max)								
Minimum setting	W(VA)	0.9	0.9	1.2	2.6			
Maximum setting	W(VA)	2.25	2.25	3	4			
Auxiliary Circuit (application for all types)								
Auxiliary contacts		1NO + 1NC (Potential free)						
Rated thermal current I_{th}	A	6						
Short circuit protection (max)	A	6 (HRC Fuse type 3NA1)						
Switching capacity	AC15	V	24	60	125	230	415	500
		A	2	1.5	1.25	1.15	1	1
	DC13	V	24	60	110	220		
		A	1	0.4	0.22	0.1		
Conductor cross-section								
Solid or stranded	sqmm	2 x (1 to 2.5)						
Finely started with end sleeve	sqmm	2 x (0.75 to 1.5)						
Terminal screw		M3.5						

* For relay above 180 A

3UA5830	3UA6230	3UA6830	3UC5030	3UC5830	3UC6230	3UC6630
10A			30			
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
X	X	X	X	X	X	X
Contactor/ 3TF50	Individual	Individual	Individual	Individual	Individual	Individual
120	400	630	12.5	63	160	400
1000	1000	1000	1000	1000	1000	1000
8	8	8	8	8	8	8
Direct	Indirect	Indirect	Indirect	Indirect	Indirect	Indirect
35 to 70	50 to 120/ 240*	2 x 240	1 to 4	-	-	-
-	-	-	1 to 2.5	35	120	240
-	50 to 120/ 240*	2 x 240 240*	-	-	-	-
-	1 x 20 x 3/ M10	2 x 30 x 5 M10	-	1 x 15 x 3 M6	1 x 20 x 5 M8	2 x 30 x 5 2 x 3- x 5* M10
M8	M10	M10	M4	M6	M8	M10
2.8	5	6(9)	2.5	2.5	3.5	5.5
4	7	15(22)	6.5	6.5	9	14

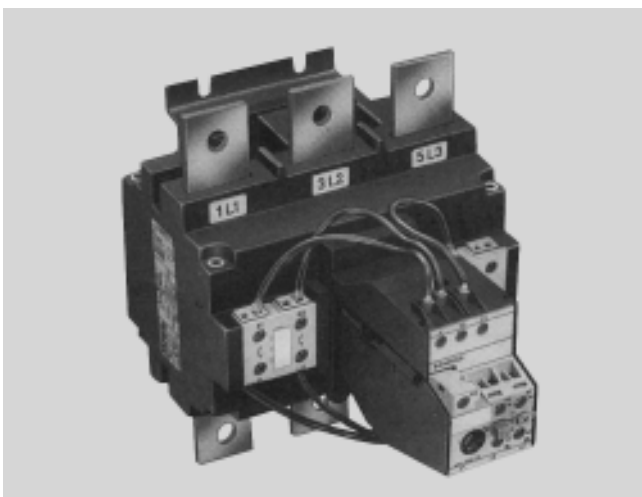


Fig. 9 3UC66

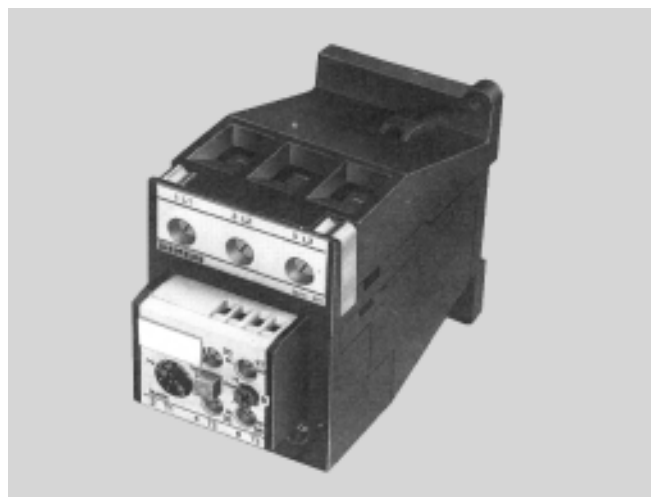


Fig. 10 Birelay with adaptor for individual mounting

Selection Table

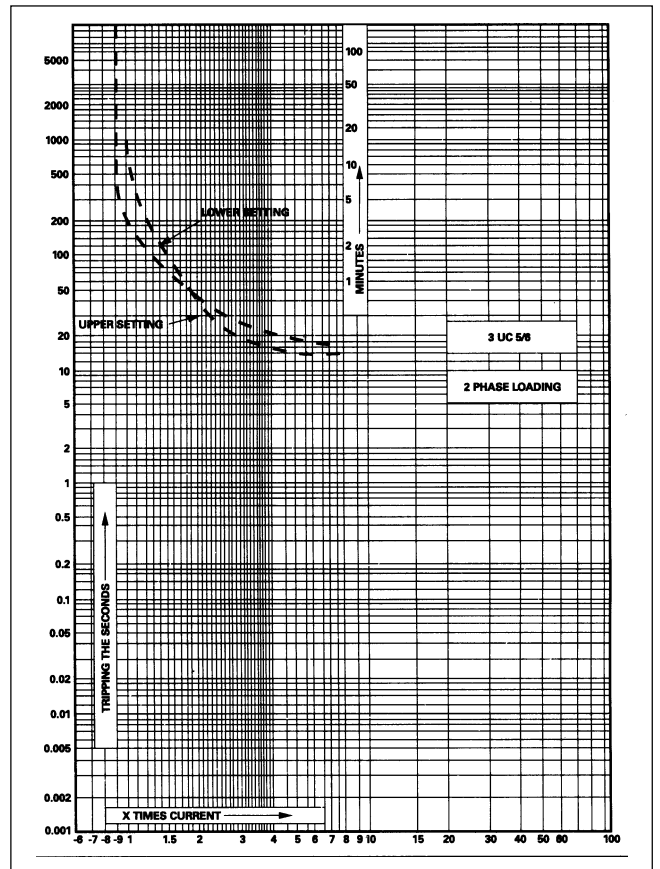
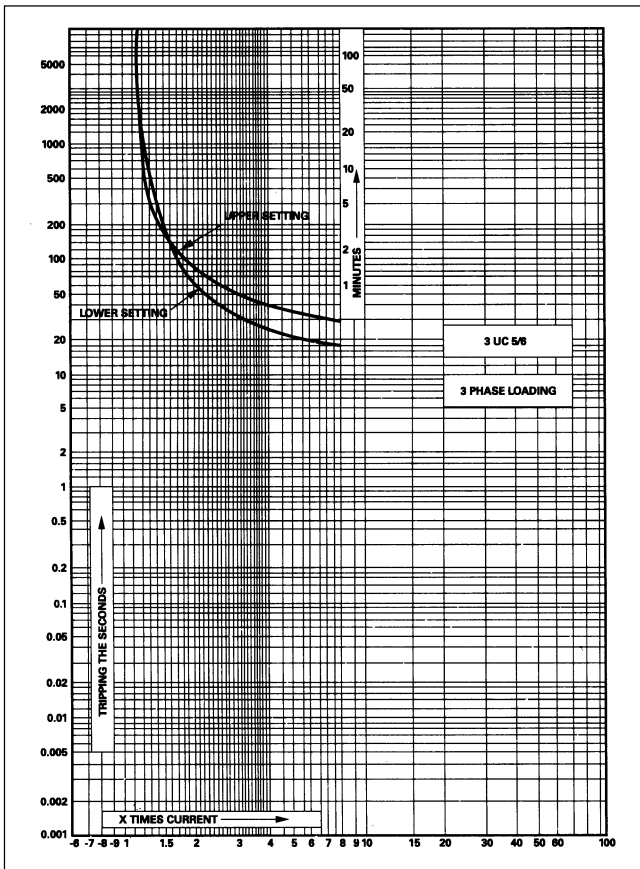
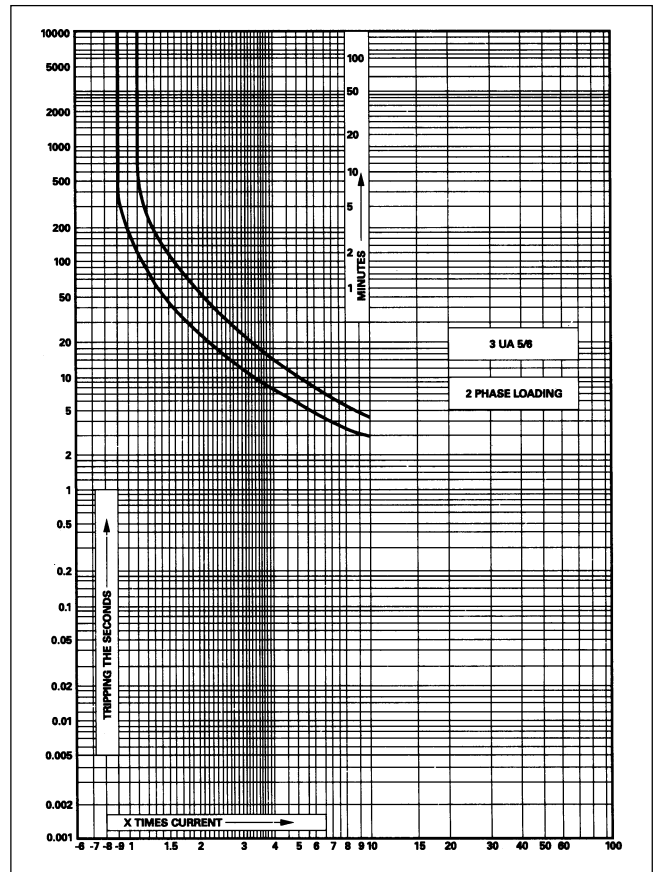
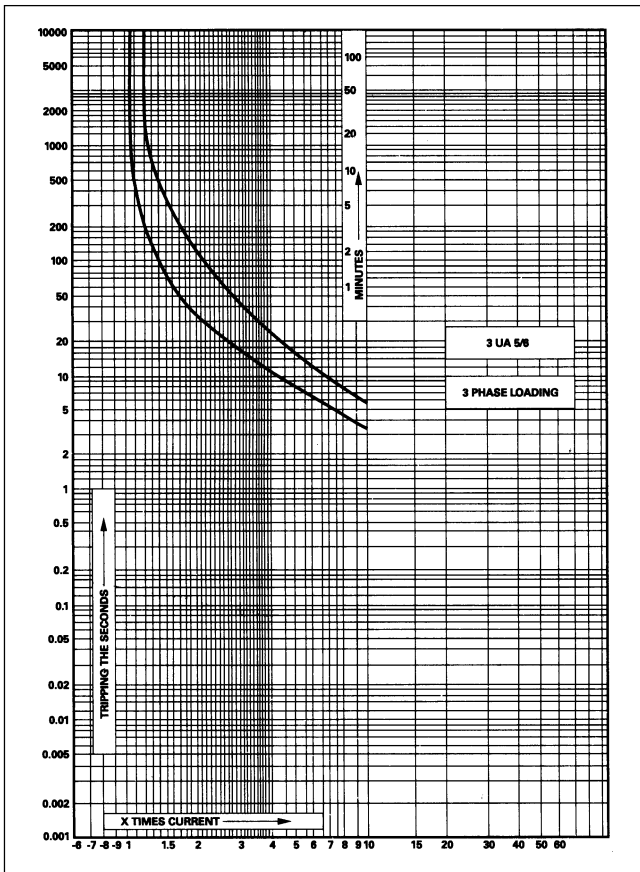
Setting range (A)	Type reference	Backup HRC fuse 3NA1 A (max)	Mounting	
Normal Motor Starting time				
3UA50				
0.1 - 0.16	3UA50 00-0A	2	With Contactor 3TB40/41	
0.16 - 0.25	3UA50 00-0C	2		
0.25 - 0.4	3UA50 00-0E	2		
0.4 - 0.63	3UA50 00-0G	2		
0.63 - 1	3UA50 00-0J	2		
0.6 - 1.25	3UA50 00-0K	4		
1 - 1.60	3UA50 00-1A	6		
1.25 - 2	3UA50 00-1B	6		
1.6 - 2.5	3UA50 00-1C	6		
2 - 3.2	3UA50 00-1D	10		
2.5 - 4	3UA50 00-1E	10		
3.2 - 5	3UA50 00-1F	16		
4 - 6.3	3UA50 00-1G	16		
5 - 8	3UA50 00-1H	20		
6.3 - 10	3UA50 00-1J	25		
8 - 12.5	3UA50 00-1K	25		
10 - 14.5	3UA50 00-2S	25		
3UA52				
1 - 1.6	3UA52 00-1A	6	With Contactor 3TF42/43	
1.25 - 2	3UA52 00-1B	6		
1.6 - 2.5	3UA52 00-1C	6		
2 - 3.2	3UA52 00-1D	10		
2.5 - 4	3UA52 00-1E	10		
3.2 - 5	3UA52 00-1F	16		
4 - 6.3	3UA52 00-1K	16		
5 - 8	3UA52 00-1H	20		
6.3 - 10	3UA52 00-1J	25		
8 - 12.5	3UA52 00-1K	25		
10 - 16	3UA52 00-2A	32		
12.5 - 20	3UA52 00-2B	50		
16 - 25	3UA52 00-2C	50		
3UA55				
10 - 16	3UA55 00-2A	32	With Contactor	
12.5 - 20	3UA55 00-2B	50		
16 - 25	3UA55 00-2C	50		
20 - 32	3UA55 00-2D	80		
25 - 36	3UA55 00-2Q	80		
32 - 40	3UA55 00-2R	80		
36 - 45	3UA55 00-8M	80		
3UA58				
16 - 25	3UA58 00-2CZ1	50		With Contactor 3TF46-Z/ 3TF47-Z 3TF48 3TF49
20 - 32	3UA58 00-2DZ1	63		
25 - 40	3UA58 00-2EZ1	80		
32 - 50	3UA58 00-2FZ1	100		
40 - 57	3UA58 00-2TZ1	100		
50 - 63	3UA58 00-2PZ1	125		
57 - 70	3UA58 00-2VZ1	125		
63 - 80	3UA58 00-2UZ1	160		
70 - 95	3UA58 00-8YZ1	160		
16 - 25	3UA58 00-2CZ2	50	With Contactor 3TF47 7	
20 - 32	3UA58 00-2DZ2	63		
25 - 40	3UA58 00-2EZ2	80		
32 - 50	3UA58 00-2FZ2	100		
40 - 57	3UA58 00-2TZ2	100		
50 - 63	3UA58 00-2PZ2	125		
57 - 70	3UA58 00-2VZ2	125		
63 - 80	3UA58 00-2UZ2	160		
3UA58 30				
70 - 95	3UA58 30-5B	160		With Contactor 3TF50
85 - 105	3UA58 30-5C	160		
95 - 120	3UA58 30-5D	200		

Setting range (A)	Type reference	Backup HRC fuse 3NA1 A (max)	Mounting
3UA62 30			
85 - 135	3UA62 30-5A	224	Individual
115 - 180	3UA62 30-5B	250	
160 - 250	3UA62 30-5C	400	
200 - 320	3UA62 30-5D	400	
250 - 400	3UA62 30-5E	500	
3UA68 30			
320 - 500	3UA68 30-3F	500	Individual
400 - 630	3UA68 30-3G	630	
Long Motor Starting time (Heavy duty)			
3UC50 30			
2.5 - 4	3UC50 30-1E	16	Individual
4 - 6.3	3UC50 30-1G	25	
6.3 - 10	3UC50 30-1J	25	
8 - 12.5	3UC50 30-1K	32	
3UC58 30			
10 - 16	3UC58 30-2A	32	Individual
16 - 25	3UC58 30-2C	63	
25 - 40	3UC58 30-2E	100	
40 - 63	3UC58 30-2G	125	
3UC62 30			
63 - 100	3UC62 30-2J	250	Individual
100 - 160	3UC62 30-3A	315	
3UC66 30			
125 - 200	3UC66 30-3B	500	Individual
160 - 250	3UC66 30-3C	630	
200 - 320	3UC66 30-3D	630	
250 - 400	3UC66 30-3E	630	

Accessories

Description	Type reference	Relay type
Reset Plunger	3UX1 011	
Funnel	3UX1 013	3UA50/3UA6230
Reset cord with Holder (400mm)	3UX1 015	3UC50/58/62/66
Reset cord with Holder (600mm)	3UX1 016	
Protection Cover	3UX1 111	3UA50/3UA6230/ 3UA6830/52/55 3UC50/58/62/66
Protection Cover	3UX1 110	3UA58/3UA5830
Adaptor to convert to individual mounting	3UX1 418 3UX1 420 3UX1 425 3UX1 421 3UX1 421 - 0XA	3UA50 3UA52 3UA55 3UA58 3UA5830
Connecting Strips	3UX 1206	3UC58 with 3TF48/49
	3UX 1221 0YA	3UC62 with 3TF48/49
	3UX 1221 0YA	3UA62 or 3UC62 or 3UC66 with 3TF50/51/52
	3UX 1211	3UA62 or 3UC66 with 3TF53/54/55/56
	3UX 1211	3UA68 with 3TF56
	3UX 1218	3UA68 with 3TF57/68
Set of terminals convert relay type	3UX58 11	3UA5800-2 or to 3UA5800-2 Z2 to 3UA5800-2 Z1
	3UX58 12	3UA5800-2 Z1 or 3UA5800-2 Z2 to 3UA5800-2
	3UX58 13	3UA5800-2 or 3UA5800-2 Z1 to 3UA5800-3 Z2

Characteristic Curves

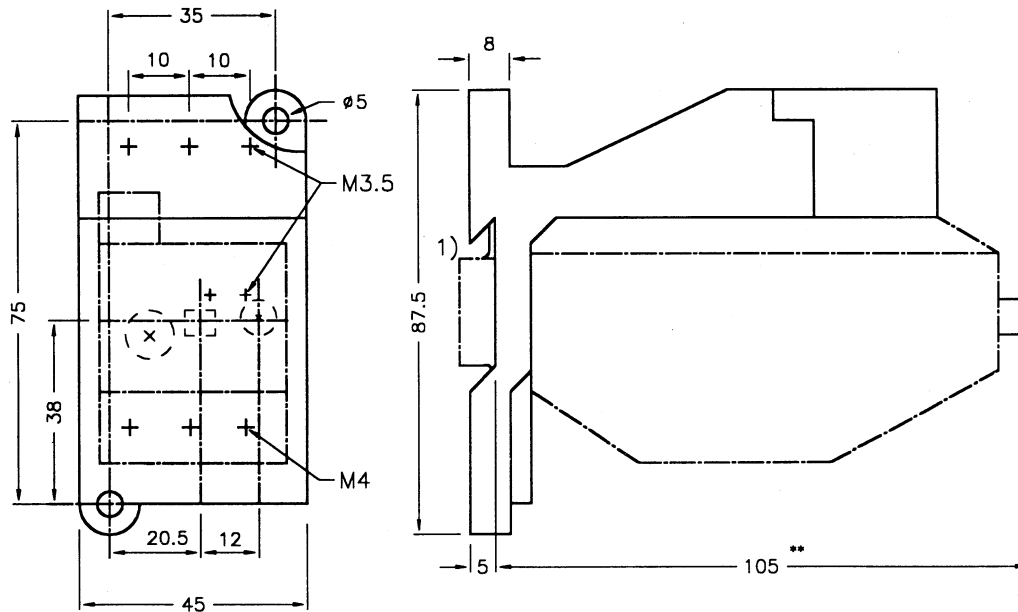


The characteristics given are mainly intended the inverse time current characteristics of the same, the tripping times shown are for relay starting from the cold state. At operating temperatures (heated at rated current) these are reduced to about 25% of the value obtained from these characteristics curves.

The above curves are the general characteristics curves; for individual characteristics curves of each rating, please contact our nearest sales office.

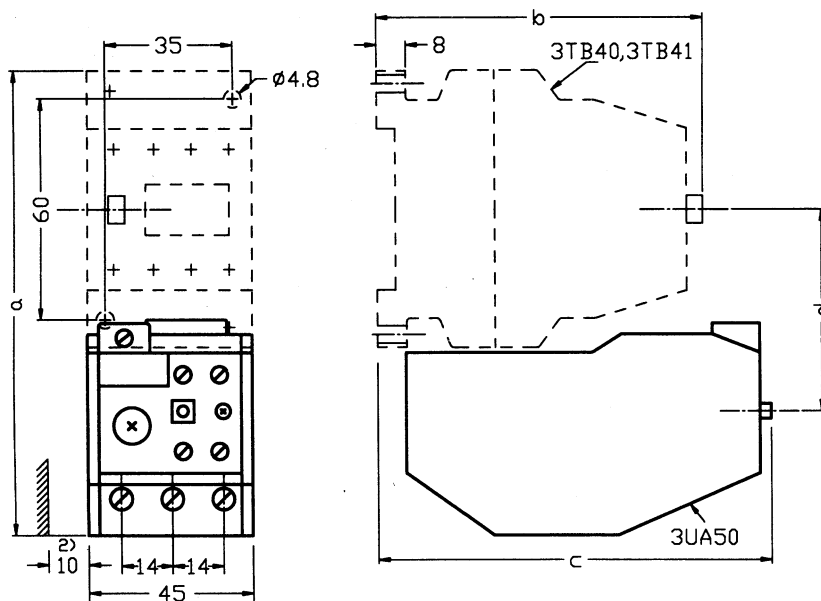
Dimensions (mm)

3UA50 with individual Mounting Adapter Type 3UX1 418



- ** Dimension for the square OFF-button (stroke 3mm)
 Dimension for the round RESET-button (stroke 2.5mm) less 2.5mm
 1) For 35mm standard (DIN) mounting rail

3UA50 mounted on 3TB40/41

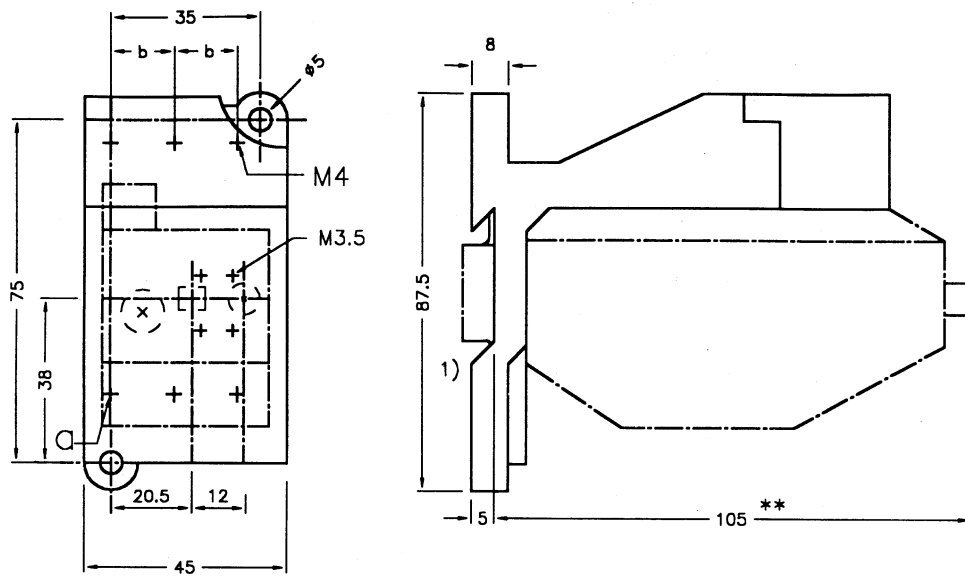


Auxiliary Contact	a	b	c	d
1NO or 1NC	125	85	108	55
1NO + 1NC or 2NO + 2NC	130	100	100	60

2) Minimum clearance from earthed element 10mm

Dimensions (mm)

3AU52/55 with individual mounting

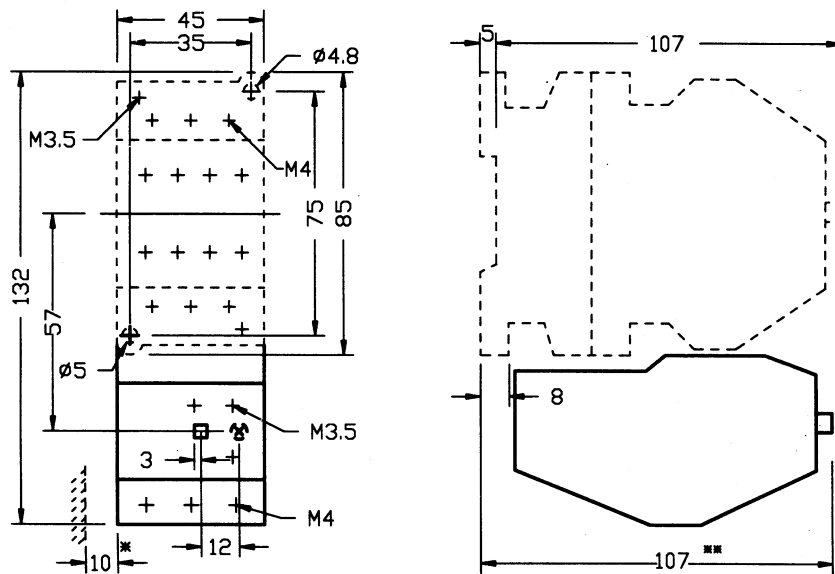


** Dimension – For square OFF button (Stroke 3mm)
 – For Round RESET button (Stroke 2.5mm) less 2.5 mm

1) Suitable for DIN RAIL 35mm as per DIN EN 50022

Type	Dim	
	a	b
3UA52 + 3UX1420	M4	14.3
3UA55 + 3UX1425	M5	18.2

3UA52 mounted on 3TF 42/43

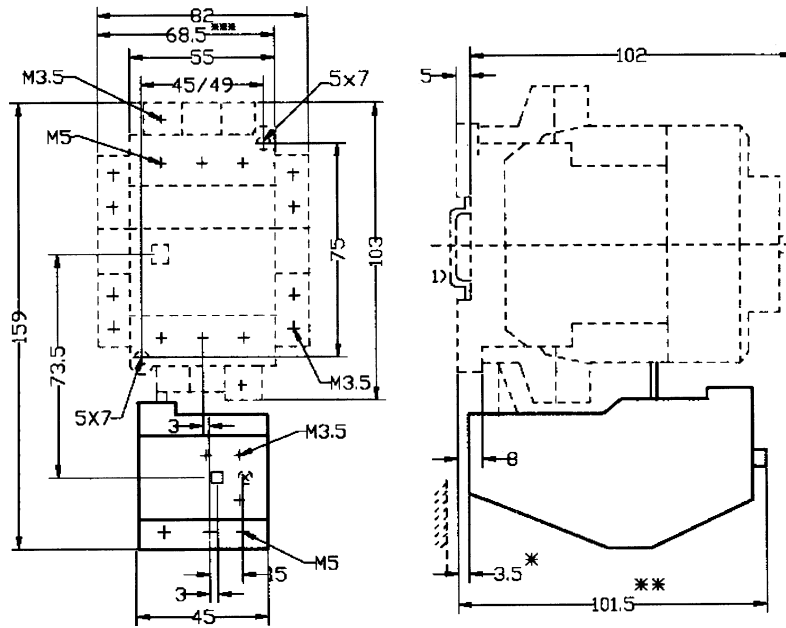


* Minimum clearance from the earthed components.

** Dimension – For square OFF button (Stroke 3mm)
 – For Round RESET button (Stroke 2.5mm) less 2.5mm

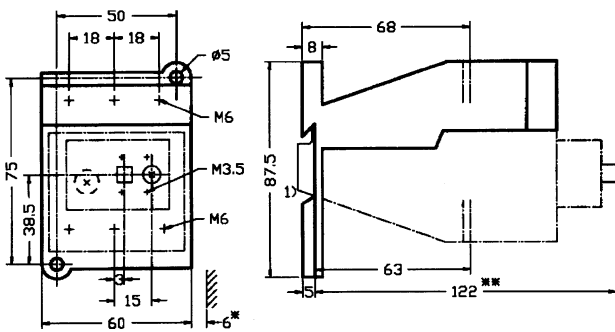
Dimensions (mm)

3UA55 mounted on 3TF 44/45



- * Minimum clearance from the earthed components.
- ** Dimension – For square OFF button (Stroke 3mm)
– For round RESET button (Stroke 2.5mm) less 2.5mm
- *** Width for the 3TF4411 and 3TF4511 contactors
- 1) Suitable for DIN RAIL 35mm as per DIN 50022

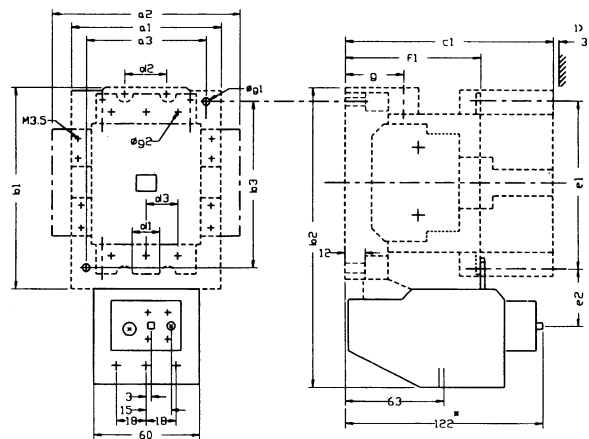
3UA58 with individual mounting adaptor type 3UX1 421



- * Minimum clearance from the earthed components.
- ** Dimension – For square OFF button (Stroke 3mm)
– For round RESET button (Stroke 2.5mm) less 2.5mm
- 1) Suitable for DIN RAIL 35mm as per DIN 50022

Dimensions (mm)

3UA5800 mounted on 3TF46/47 3UA5800... Z1 mounted on 3TF48/49

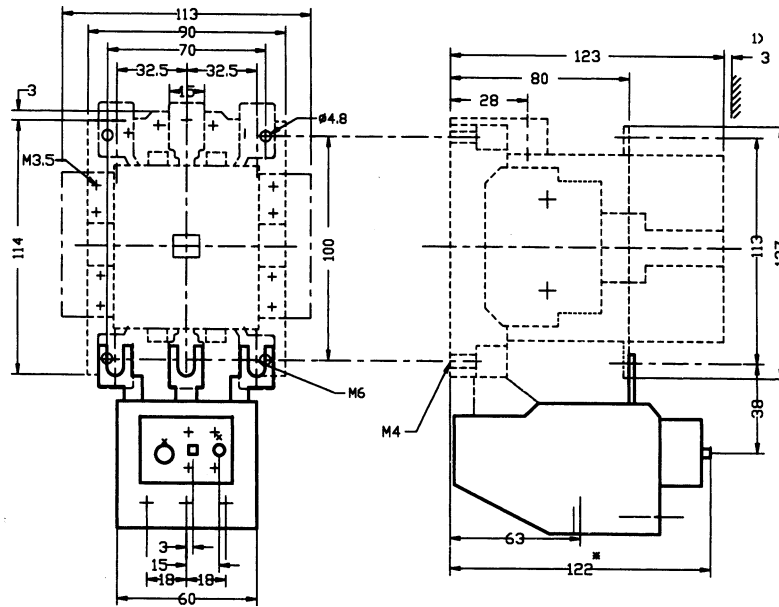


- * Dimension – For square OFF button (Stroke 3mm) 1) Minimum clearance from insulated components: 3mm
– For round RESET button (Stroke = 2.5mm) Minimum clearance from earthed components: 10mm less 2.5mm

3UA58+	a1	a2	a3	b1	b2	b3	c1	d1	d2	d3	e1	e2	f1	f2	f3	g	øg1	øg2
3TF46/47	90	113	70	117	175	100	123	8	25	25	94	34	80	63	122	28	4.8	6.1
3TF48/49	100	123	80	133	194	110	140	10.5	25	26.5	116	31.5	89	71	132	39	5.5	6.1

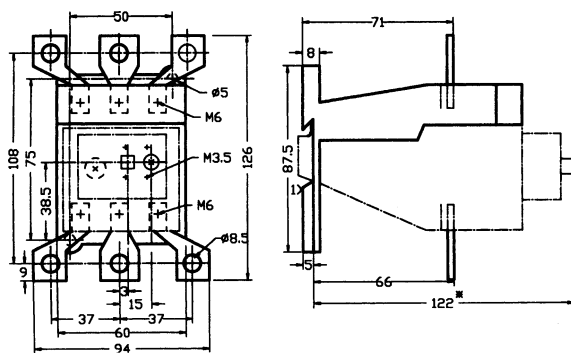
Dimensions (mm)

3UA5800... Z2 mounted on 3TF47 7



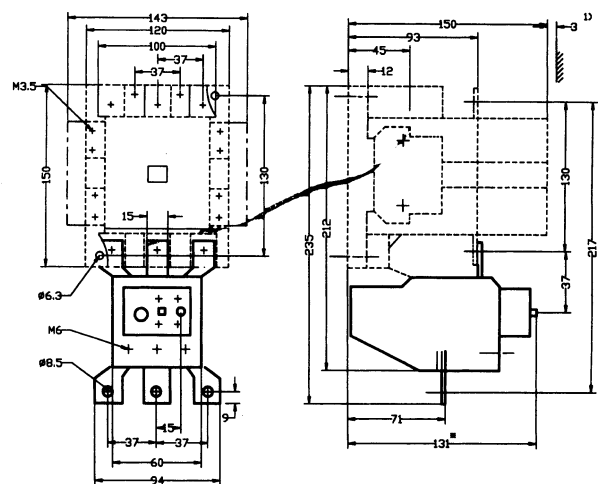
- * Dimension – For square OFF button (Stroke 3mm)
 – For round RESET button (Stroke = 2.5mm) less 2.5mm
- 1) Minimum clearance from insulated components : 3mm
 Minimum clearance from earthed components: 10mm

3UA5830 with individual mounting adaptor type 3UX1 421 - OXA



- * Dimension – For square OFF button (Stroke 3mm)
 – For round RESET button (Stroke 2.5mm) less 2.5mm
- 1) Suitable for DIN RAIL 35mm as per DIN 50022

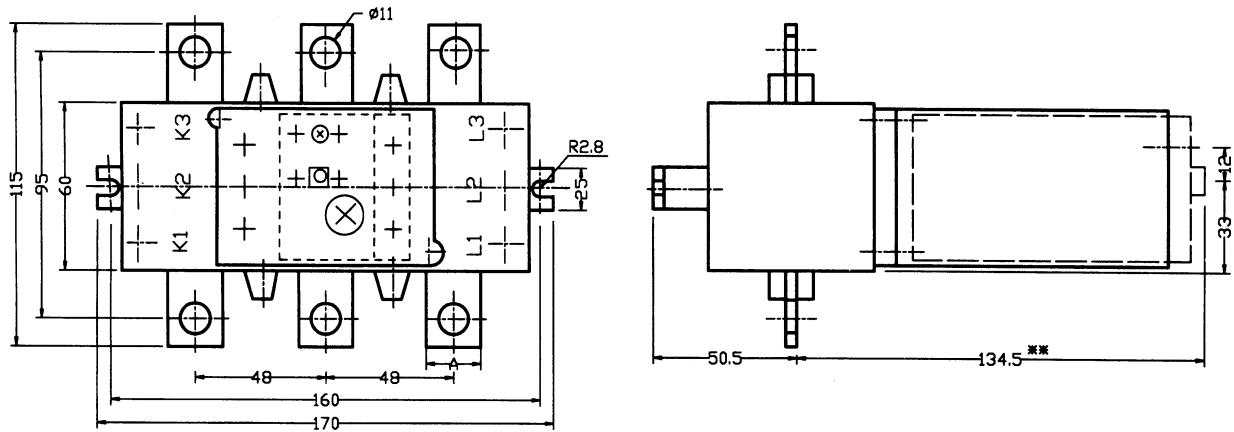
3UA5830 mounting on 3TF50



- * Dimension – For square OFF button (Stroke 3mm)
 – For round RESET button (Stroke 2.5mm) less 2.5mm
- 1) Minimum clearance from insulated components : 3mm
 Minimum clearance from earthed components: 10mm

Dimensions (mm)

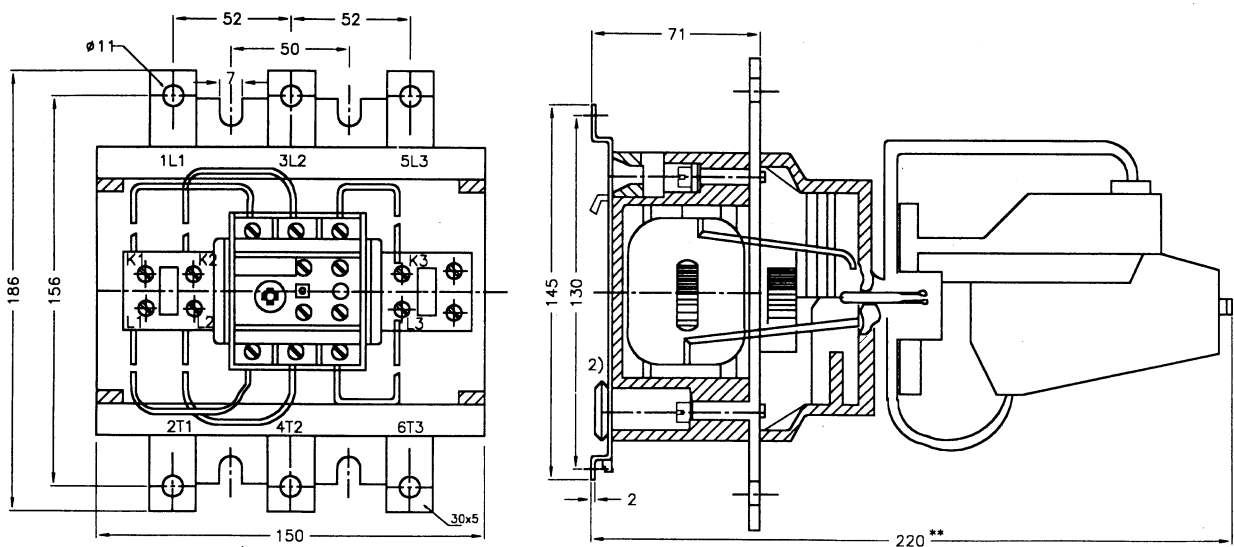
3UA6230 CT Operated Birelay



Range	A
85-135A 115-180A	20
160-250A 200-320A 250-400A	25

** Dimension – For square OFF button (Stroke 3mm)
– For round RESET button (Stroke 2.5mm) less 2.5mm

3UA68 CT Operated Birelay

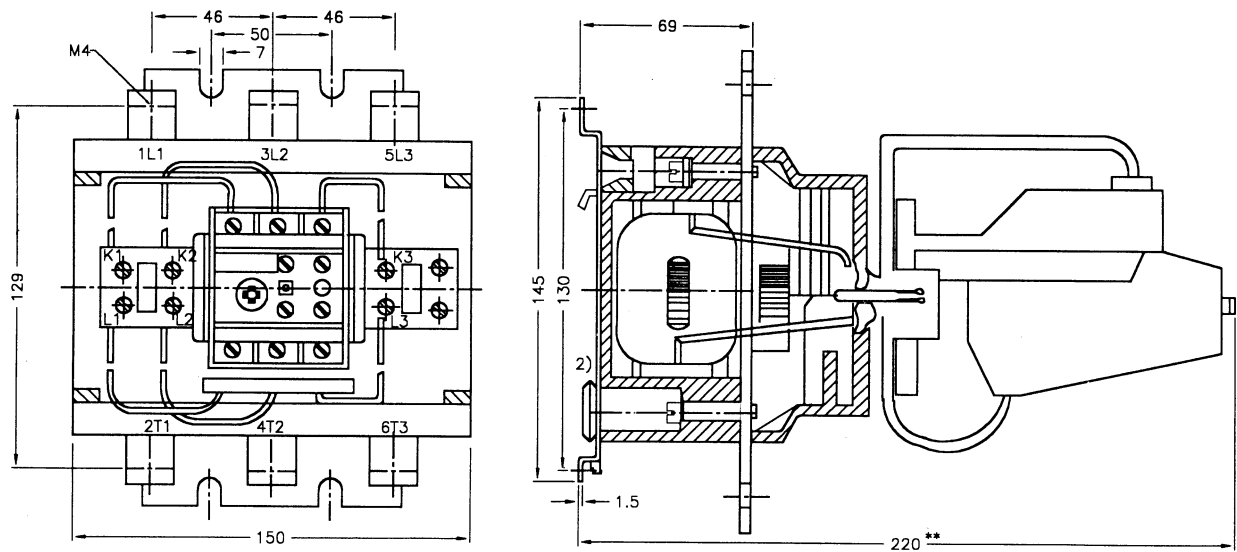


** Dimension – For TEST button (Stroke 3mm)
– For Round RESET button (Stroke 2.5mm) less 2.5mm

2) Suitable for DIN RAIL 75mm as per DIN EN 50023

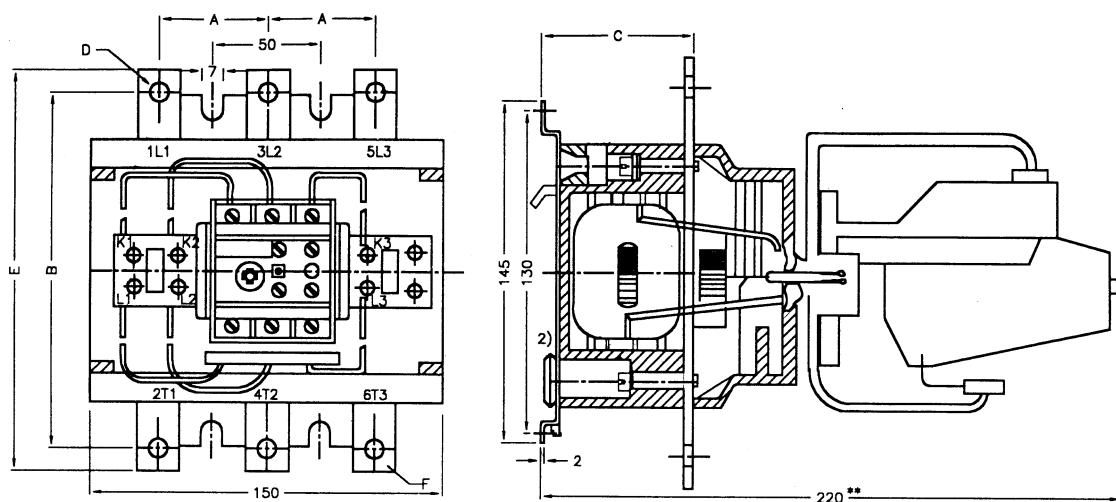
Dimensions (mm)

3UC50 CT Operated Birelay



- ** Dimension – For Square OFF button (Stroke 3mm)
 – For Round RESET button (Stroke 2.5mm) less 2.5mm
- 2) Suitable for DIN RAIL 75mm as per DIN EN 50023

3UC5830/3UC6230/3UC6630 CT Operated Birelay



Relay Type	A	B	C	D	E	F
3UC5830	46	135	69	6.6	150	15x3
3UC6230	46	140	69	9	160	20x3
3UC6630-3B (200A)	50	146	69	9	160	20x3
3UC6630-3C/3D-3E(400A)	50	146	70	11	171	25x4

- ** Dimension – For TEST button (Stroke 3mm)
 – For Round RESET button
 (Stroke 2.5mm) less 2.5mm

2) Suitable for DIN RAIL 75mm as per DIN EN 50023

Switchgear Division
Control Systems & Products
P.B. No. 85
Thane Belapur Road
Thane 400 601
Tel : (022) 7692381-4
Fax : (022) 7694626

Siemens Ltd.
SGR-01-102-023
This replaces SGR-01-102-016

Product upgradation is a continuous process. Hence, data in this booklet is subject to change without prior notice. For the latest information, please get in touch with our Sales Offices.

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