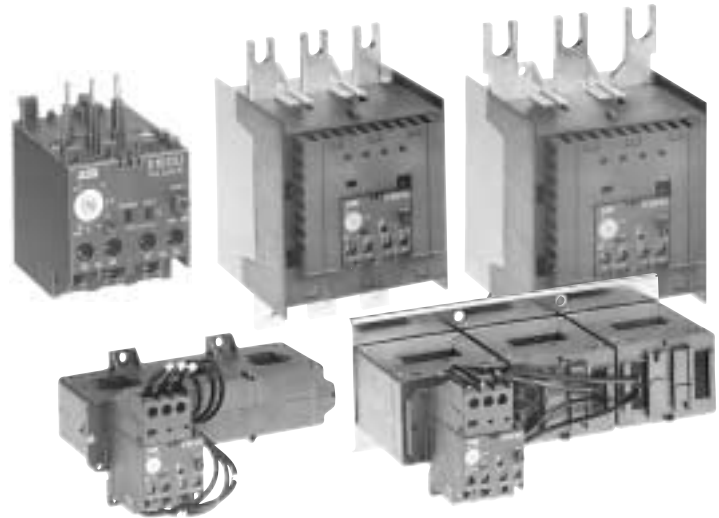


Electronic Overload relays



Electronic overload relays E16DU – E800DU



2

Description

- Available for starter construction with A Line contactors and separate panel mounting
- Designed for close couple mounting
- Separate base mounting available for all overload relays
- E16DU Class 10, 20, & 30, factory selectable
- E200DU – E800DU Class 10, 20 & 30, field selectable
- Stop button
- Screwdriver guide holes
- All terminal screws are available from the front
- Single phase and phase unbalance protection
- Isolated alarm circuit (N.O.) contact
- Ambient compensation: -25°C to +70°C (-13°F to +158°F)
- Manual test
- Manual or automatic reset
- Factory calibrated and tested
- Wide adjustment range
- UL File No: E48139
- CSA File No: LR98336

Tripping classes of the thermal overload relays

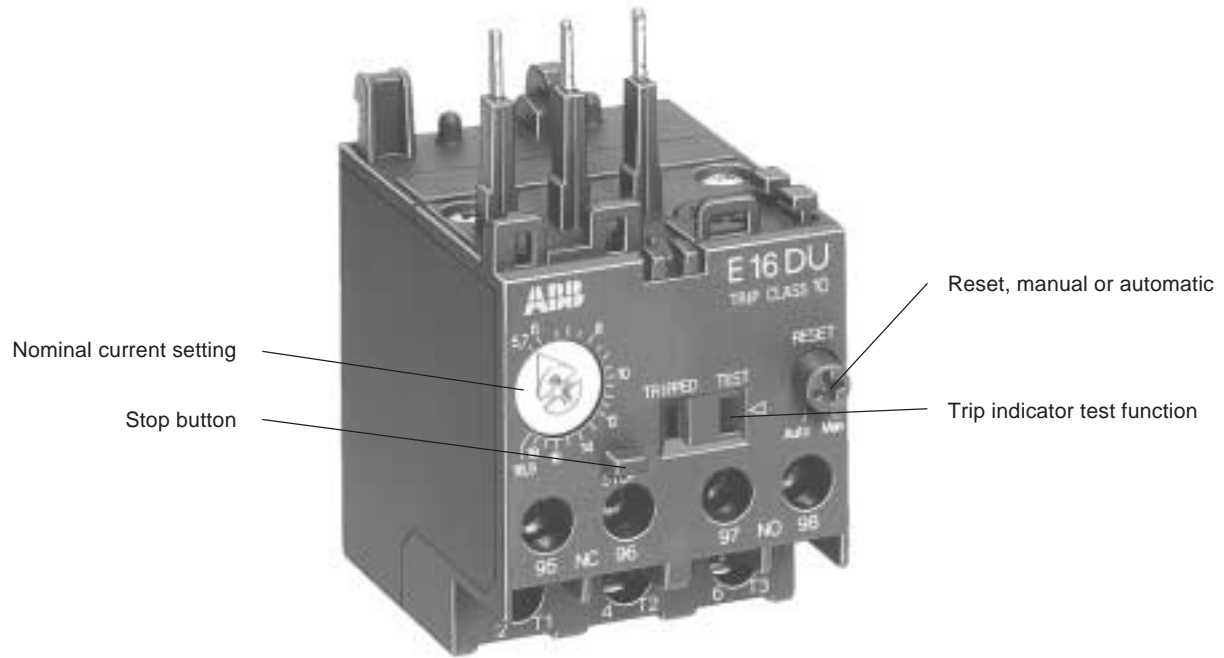
Standard classes in IEC 947-4-1 are classes: 10 A, 10, 20, 30. The tripping class indicates according to IEC 947-4-1 the maximum tripping time in seconds under specified conditions of test at 7.2 times the setting current and specifies tripping and non tripping times for 1.5 and 7.2 times the setting current. Mostly used class is 10 A.

Abstract from IEC 947-4-1

Tripping class	10 A	10	20	30
Max. tripping time at 1.5 x setting current (warm state) (s)	120	240	480	720
Tripping time at 7.2 x setting current (cold state) (s)	2 – 10	4 – 10	6 – 20	9 – 30
At 1.05 x setting current	no tripping			

Catalog number explanation

2



Catalog number explanation

E16DU 1.0 10

Frame size

E16DU
E200DU
E320DU
E500DU
E800DU

Class size

10
20
30

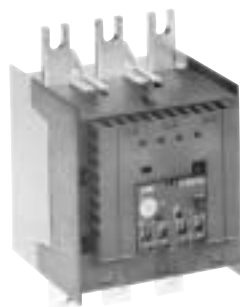
Amp rating

1.0
200
320
500
800

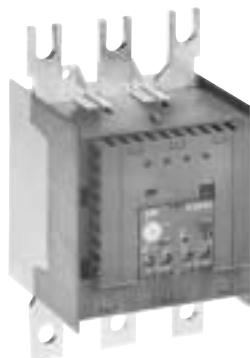
E16DU – E800DU for contactors and mini contactors



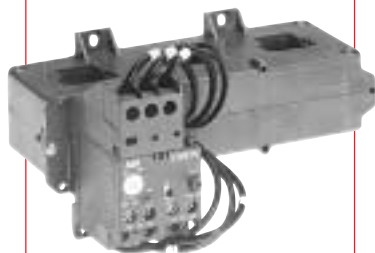
E16DU



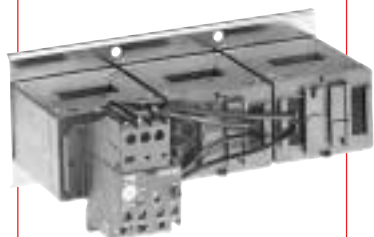
E200DU



E320DU



E500DU



E800DU

E16DU – Tripping Class 10

For contactor	Setting range	Suffix code	Catalog number ①	List price
B/BC6 – B/BC7 A/AE9 – A/AE16	0.1 – 0.32	A1	E16DU0.32-10	\$ 96
	0.3 – 1.0	B1	E16DU1.0-10	
	0.9 – 2.7	C1	E16DU2.7-10	
	2.0 – 6.3	D1	E16DU6.3-10	
	5.7 – 18.9	E1	E16DU18.9-10	

E16DU – Tripping class 20

For contactor	Setting range	Suffix code	Catalog number ①	List price
B/BC6 – B/BC7 A/AE9 – A/AE16	0.1 – 0.32	A2	E16DU0.32-20	\$ 96
	0.3 – 1.0	B2	E16DU1.0-20	
	0.9 – 2.7	C2	E16DU2.7-20	
	2.0 – 6.3	D2	E16DU6.3-20	
	5.7 – 18.9	E2	E16DU18.9-20	

E16DU – Tripping class 30

For contactor	Setting range	Suffix code	Catalog number ①	List price
B/BC6 – B/BC7 A/AE9 – A/AE16	0.1 – 0.32	A3	E16DU0.32-30	\$ 96
	0.3 – 1.0	B3	E16DU1.0-30	
	0.9 – 2.7	C3	E16DU2.7-30	
	2.0 – 6.3	D3	E16DU6.3-30	
	5.7 – 18.9	E3	E16DU18.9-30	

E200DU – E800DU – Tripping class 10, 20 & 30

For contactor	Setting range	Suffix code	Catalog number	List price
A/AF145 – A/AF185	65 – 200	E2	E200DU200	\$ 325
A/AF210 – A/AF300	105 – 320	E3	E320DU320	775
AF400 – AF460	170 – 500	E5	E500DU500	865
AF580 – AF750	270 – 800	E8	E800DU800	950

① Not suitable for single-phase motors and direct current (DC) motors.

Accessories

Mounting kits

for direct mounting on contactors AF400 – AF750

For overload relays	On contactor	Catalog number	List price
E500DU	AF400 – AF460	DT500/AF460	395
E800DU	AF580 – AF750	DT800/AF750	415

Separate mounting kits

For overload relays	Catalog number	List price
E16DU	DB16E	\$ 50

Lug kits

Wire range	Electronic overload	Catalog number	List price
6 – 250 MCM	E200DU200	ATK185	\$ 45
4 – 400 MCM	E320DU320	ATK300	68
(2) 4 – 500 MCM	E320DU320	ATK300/2	110
(2) 2/0 – 500 MCM	E500DU500	ATK580/2	150
(3) 2/0 – 500 MCM	E800DU800	ATK750/3	225

Technical data

E16DU

Electronic
Overload
relays

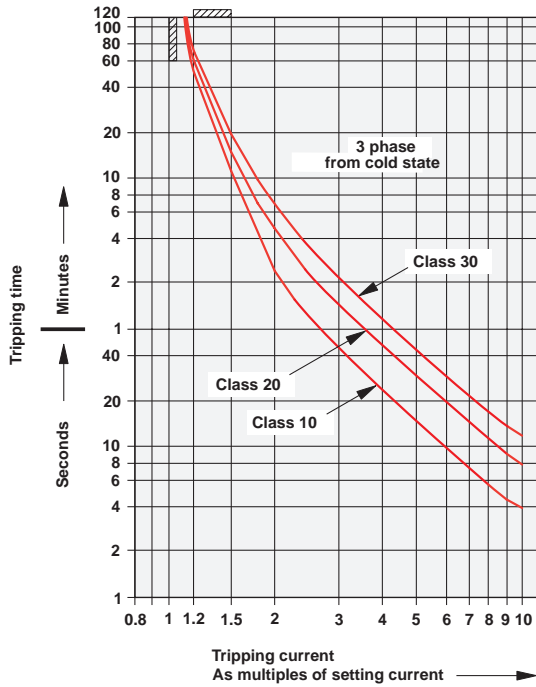
General technical data

Type	E 16 DU	
Standards:	UL508, IEC 60 947-4-1 / IEC 60 947-5-1 EN 60 947-4-1 / EN 60 947-5-1	
Rated insulation voltage U_i	UL / IEC V	600 / 690
Rated operational voltage U_o	UL / IEC V	600 / 690
Impulse withstand voltage U_{imp}	kV	6
Permissible ambient temperature		
- for storage	°C	- 25 to 70
- with compensated operation	°C	- 25 to 70
Climatic resistance acc. to	IEC 68-2-1, IEC 68-2-2, IEC 68-2-14, IEC 68-2-30	
Resistance to shock	Shock duration ms	11
	multiple of g	15
Resistance to vibrations (±1 mm, 10 ... 100 Hz)	multiple of g	5
Mounting	- on contactor - with AB... kit	Direct to contactor's main terminal
Terminal types and connecting capacity of main conductors (on load side) /and auxiliary contacts.		
- Screw terminals (screw size)		M3.5
- with self-disengaging clamping piece		-
- with terminal block		-
- with busbar or cable lugs		7 / 1.0
- Torque	lbin / Nm	7 / 1.0
- connection cross sections		
- copper stranded	AWG / mm ²	10 - 20 / 2X0.75...4
- flexible with connector sleeve	AWG / mm ²	10 - 20 / 2X0.75...4
Protection degree to IEC 947-1/EN 60 947-1	All terminals are safe from finger-touch and touch by the back of the hand in acc. with VDE 0106, Part 100	
Weight	lbs / kg	.33 / .15

Technical data of the current paths

Type	E 16 DU	
Number of paths	3	
Setting ranges	see page 2.21	
Tripping class acc. to IEC 947-4-1/EN 60 947-4-1	see page 2.21	
Operating frequency	Hz	50 and 60
Switching frequency without early tripping	up to 80 ops./h with 40 % continuous duty if starting current not higher than $6 \times I_n$ and starting time not longer than 1s	
Resistance per phase q and heat dissipation per phase in W acc. to max. setting current	see page 2.24	
Required fuses for short circuit protection	see page 2.24	

Tripping characteristics



Resistance and power dissipation

Setting range	gL/gG	Short circuit protection		Resistance per phase		Joule losses per phase at upper current setting
		UL/CSA 600V 5kA	UL/CSA 480V/50kA	m	q	
A - A	A	RK5	Class J			
0.1 - 0.32	1	2	2	970	0.97	0.1
0.3 - 1.0	4	2	2	113	0.113	0.11
0.9 - 2.7	10	4	4	14	0.014	0.1
2.0 - 6.3	20	15	15	2.4	0.0024	0.1
5.7 - 18.9	50	30	30	0.8	0.0008	0.29

Technical characteristics of auxiliary contacts

Type	N.C.		N.O.	
	95-96	97-98	95-96	97-98
Rated operational voltage U_e	V		500	
Conventional free air thermal current I_{th}	A		6	
Rated operational current I_{th}				
on AC-15, 230V	A		3	
on AC-15, 400V	A		1.1	
on AC-15, 500V	A		0.9	
on AC-15, 690V	A		0.7	
on DC-13, 24V	A		1.5	
on DC-13, 60V	A		0.5	
on DC-13, 110V	A		0.4	
on DC-13, 220V	A		0.2	
Short circuit protection gG (gf) fuses	A		6	

Technical data

E200DU – E800DU

Electronic
Overload
relays

Type	E200DU	E320DU	E500DU	E800DU
Standards: (major international & European standards)	IEC 60947-4-1, EN 60947-4-1, IEC 60947-5-1, EN 60947-5-1			
Approvals, certificates	UL, CSA			
Rated insulation voltage U_i according to IEC 158-1, IEC 60947-4-1	V	690		
Impulse withstand voltage U_{imp} according to IEC 60947-4-1	kV	6		
Permissible ambient temperature • for storage • with compensated operation	°C °C	-25 to +70 -25 to +70		
Climatic resistance according to:	IEC 68-2-1, IEC 68-2-2, IEC 68-2-14, IEC 68-2-30		IEC 68-2-1, IEC 68-2-2, IEC 68-2-30	
Mounting positions	multiple			
Resistance to shock (EN 61373)	Shock duration ms multiple of g	30 5		
Resistance to vibrations (EN 61373)	Category 1, Class B			
Mounting • on contactor • single mounting	2 x M4	2 x M4	2 x M4	2 x M4
Terminal types and connecting capacity of auxiliary contacts • Screw terminals (screw size) • with self-disengaging clamping piece • Torque	Nm	M3.5 1.0		
Connection cross sections – Single core or stranded – Flexible with connector sleeve	mm ² mm ²	2 x 0.75...4 2 x 0.75...4		
Terminal types and connecting capacity of main conductors • Screw terminals (screw size) • with busbar or cable lugs	M8	M10	M10 (bars are accessories)	M12 (bars are accessories)
Protection degree to IEC 947-1/EN 60 947-1	All auxiliary contact terminals are safe from finger touch and touch by the back of the hand in accordance with VDE 0106, Part 100. Main contact terminals are safe from finger touch only with appropriate terminal covers			
Number of current paths	3			
Setting ranges	A	65 – 200	105 – 320	170 – 500 270 – 800
Tripping class according to IEC 947-4-1/EN 60 947-4-1	10, 20, 30			
Operating frequency	Hz	50 and 60 for three phase current only		
Weight	lb/kg	1.72 / .78	1.85 / .84	2.60 / 1.18 9.35 / 4.24

NOTE: • Installation and maintenance have to be performed according to the technical rules, codes and relevant standards by skilled electricians only.
• When using the "Auto" setting, remember that this means the overload will automatically reset after tripping and the motor may restart automatically. This automatic restart could cause harm to personnel and material.
• The overload relay must be exchanged for a new one in case of mechanical and/or electrical damage to prevent harm to personnel and material.

Altitude

Characterizes the place of use. It is expressed in meters above sea level.

Circuits

- **Auxiliary circuit** – all the conductive parts of a contactor designed to be inserted in a different circuit from the main circuit and the contactor control circuits.
- **Control circuit** – all the conductive parts of a contactor (other than the main circuit and the auxiliary circuit) used to control the contactor's closing operation or opening operation or both.
- **Main circuit** – all the conductive parts of a contactor designed to be inserted in the circuit that it controls.

Insulation Class according to NFC 20 040 and VDE 0110

Characterizes adaptation of the devices to ambient temperature and operating conditions. For given clearances and creepage distances, a device will have different insulating voltages depending on insulation classes A, B, C & D. Class C corresponds to most industrial applications. The devices in this catalog belong to Class C.

Coordination of equipment protections during a short circuit

This is the addition upstream of the contactor and thermal overload relay of a short circuit (SCP) protection device such as a circuit breaker, a fuse with a high breaking capacity or other fuses.

IEC publication 947-4-1 defines coordination Types 1 & 2:

- **Type 1** – Coordination requires that, in the event of a short circuit, the contactor or starter does not endanger persons or installations and will not be able to operate without being repaired or parts being replaced.
- **Type 2** – Coordination requires that, in short circuit conditions, the contactor or starter does not endanger persons or installations and will be able to operate afterwards. The risk of contacts being welded is acceptable. In this case, the manufacturer must stipulate the measures to be taken with respect to maintenance of the equipment.

Rated operational current I_e

Current rated by the manufacturer. It is mainly based on the rated operational voltage U_e , the rated frequency, the utilization category, the rated duty and the type of protective enclosure, if necessary.

Conventional free air thermal current I_{th}

Current that the contactor can withstand in free air for a duty time of 8 hours without the temperature rise of its various parts exceeding the maximum values given by the standard.

Cycle time

Cycle time is the sum of the current flow time and the no-current time for given cycle.

Electrical durability

Number of on-load operations that the contactor is able to carry out; it depends on the utilization category.

Mechanical durability

Number of no-current operations that a contactor is able to carry out.

Load factor

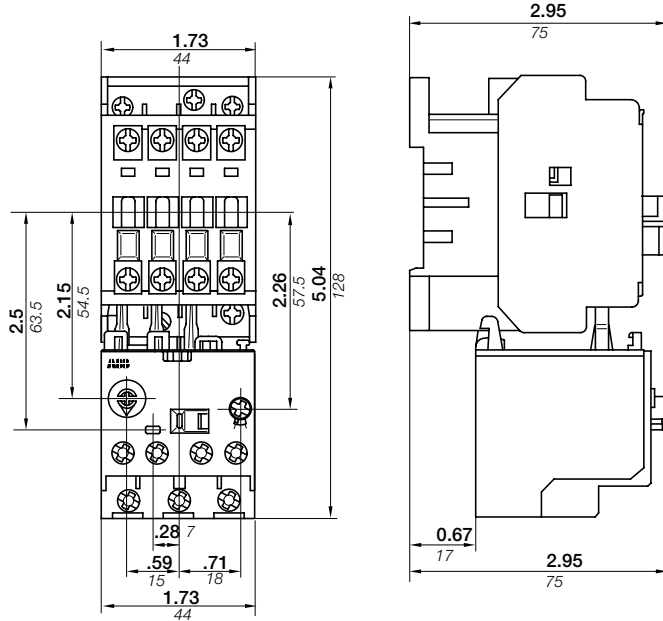
Ratio of the on-load operating time to the total cycle time x 100.

Switching frequency

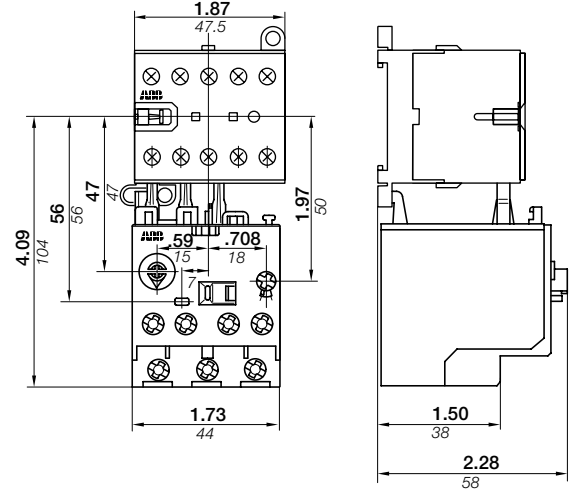
Number of switching cycles per hour.

Approximate dimensions E16DU – E200DU

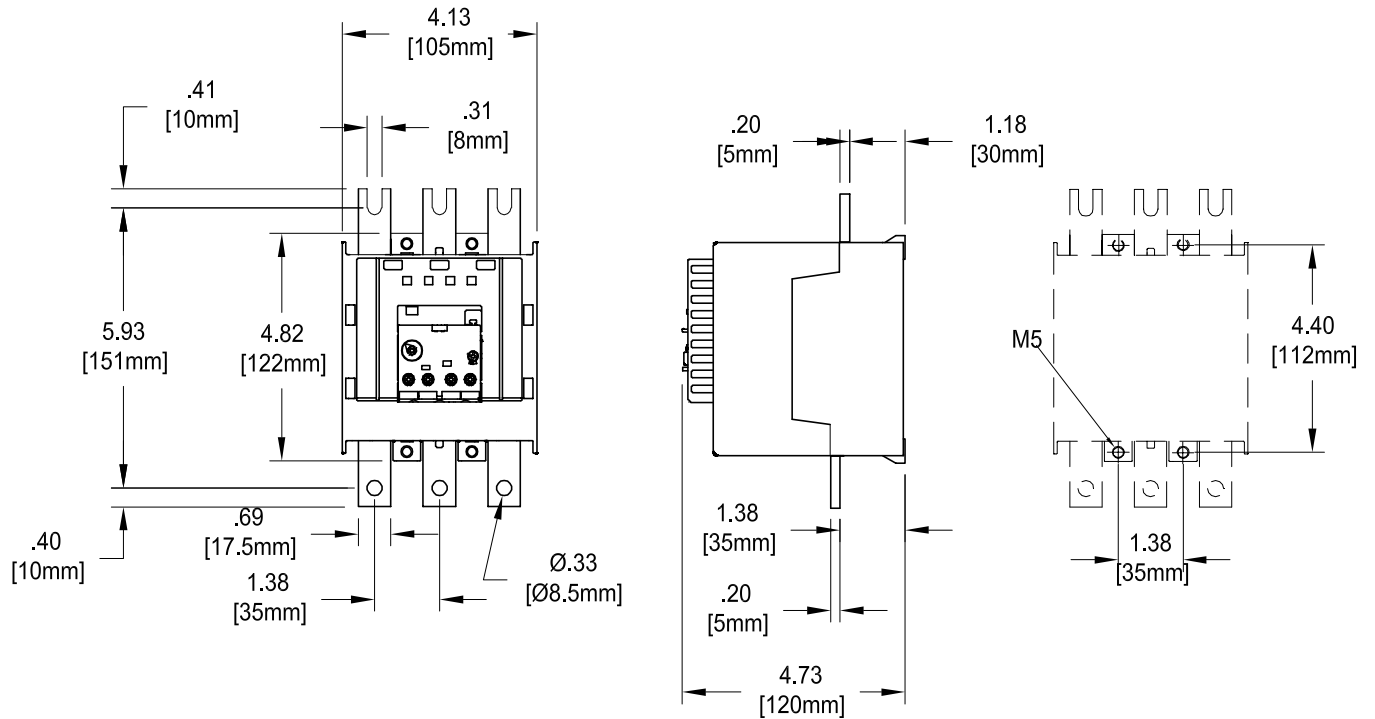
E16DU with A/AE9, A/AE12, A/AE16



E16DU with B/BC6, B/BC7

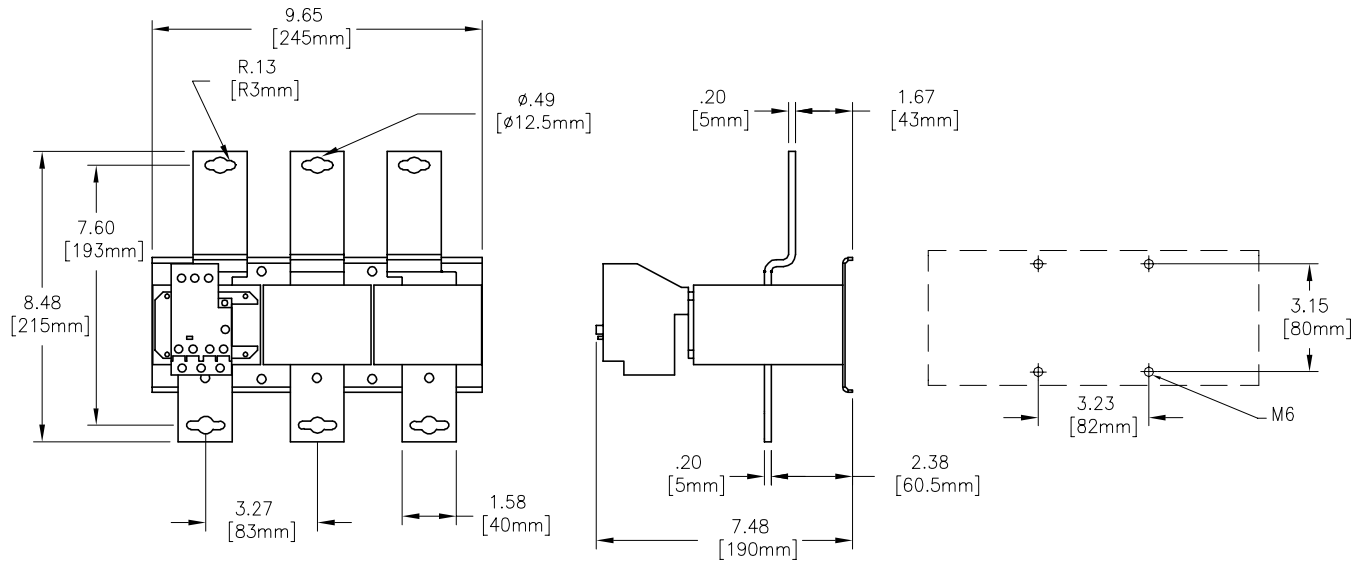


E200DU



Approximate dimensions E800DU

E800DU

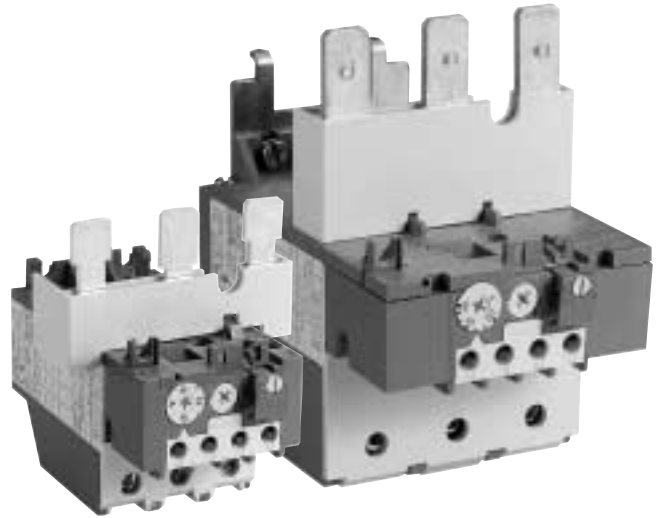


Thermal Overload relays



Thermal overload relays

Type TA
Class 10



Description

- Available for starter construction with A Line contactors and separate panel mounting
- Designed for close couple mounting
- Separate base mounting available for all overload relays
- Class 10 adjustable overload relays are standard with all ABB Line starters
- Reset can also be adjusted to function as a stop button
- Screwdriver guide holes
- All terminal screws are available from the front
- UL File No: E48139
- CSA File No: LR98336
- Trip indication
- Remote trip and reset option available
- Single phase and phase unbalance protection
- Isolated alarm circuit (N.O.) contact
- Ambient compensation: -25°C to +55°C (-13°F to +131°F)
- Manual test
- Manual or automatic reset
- Factory calibrated and tested
- Wide adjustment range

Tripping classes of the thermal overload relays

Standard classes in IEC 947-4-1 are classes: 10 A, 10, 20, 30. The tripping class indicates according to IEC 947-4-1 the maximum tripping time in seconds under specified conditions of test at 7.2 times the setting current and specifies tripping and non tripping times for 1.5 and 7.2 times the setting current. Mostly used class is 10 A.

Abstract from IEC 947-4-1

Tripping class	10 A	10	20	30
Max. tripping time at 1.5 x setting current (s) (warm state)	120	240	480	720
Tripping time at 7.2 x setting current (s) (cold state)	2 – 10	4 – 10	6 – 20	9 – 30
At 1.05 x setting current	no tripping			

Description

TA thermal overload relays are used with A Line contactors for the protection of motors having a nominal voltage of up to 600VAC max per UL/CSA (690VAC and 800VDC per IEC).

Product range

• Standard relays:

Types: TA25DU, TA42DU, TA75DU, TA80DU, TA110DU, TA200DU and TA450DU

- TA25 to TA110 and TA200 are directly connected in the motor circuit.
- TA450DU relays are fed through a linear type transformer

• Special construction

Thermal overload relays with different certifications and approvals.
Relays for protection EEx e motors.

2 Construction and function

• General

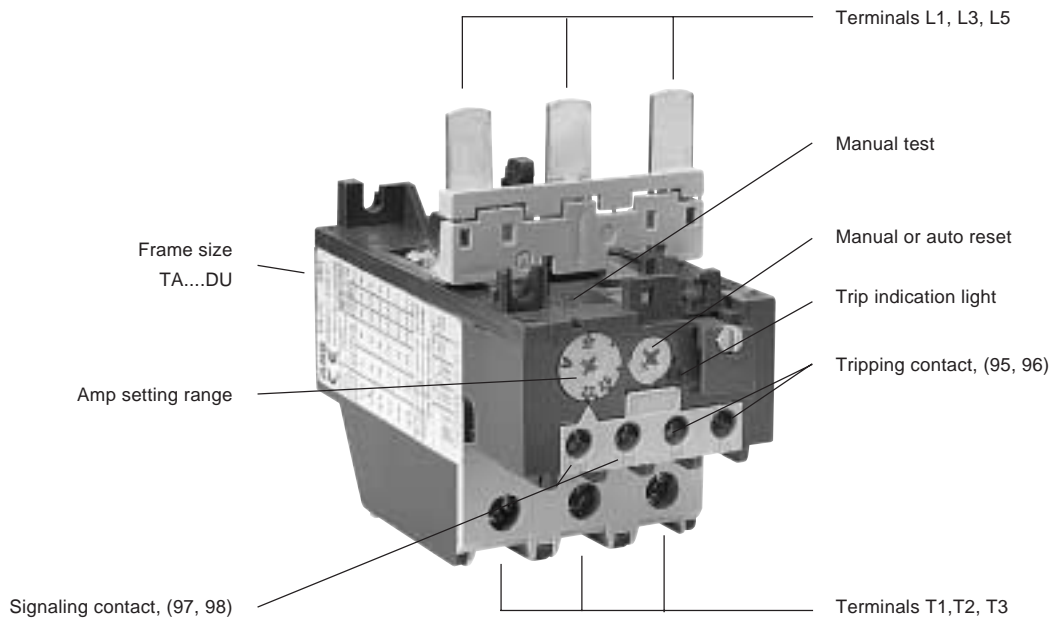
Thermal O/L relays and their accessories meet UL, CSA and most other important international standards (IEC), European standards (EN) and the most important national standards (DIN-VDE, NFC-UTE, BS, etc.). They meet the certification and approval directives required throughout the world.

Thermal overload relays are 3 pole. The motor current flows through their bimetals (1 per phase) which are indirectly heated. Under the effect of the heating, the bimetals bend, cause the relay to trip and the position of the auxiliary contacts to change.

The relay setting range is graduated in amps. In compliance with international and national standards, the setting current is the motor nominal current and not the tripping current (no tripping at 1.05 x setting current, tripping at 1.2 times setting current).

The tripping curves (cold or warm starting, 3 phases and 2 phases) are shown on page 2.14.

The relays are built to be self protecting in the event of an overload until the short circuit protection device is activated.



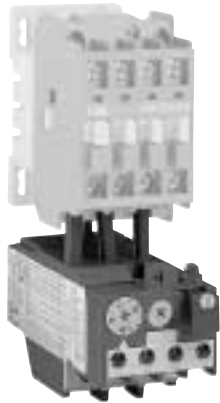
Catalog number explanation

TA25DU 0.16

Frame size ————— | ————— Amp rating

Description

Thermal
overload
relays



TA25DU

Application

Technical data

• All the relays have:

- Free tripping: the resetting button, even if held in, does not prevent tripping of the thermal overload relay in the event of a fault.
- Temperature compensation
- Phase failure protection according to IEC 947-4-1: Within the limits of the setting range, a reduced tripping time, and thus improved motor protection, is obtained in case of a phase failure.
- Tripping class: 10A, for TA relays
- Test functions and resetting: see table below.

• Auxiliary contacts

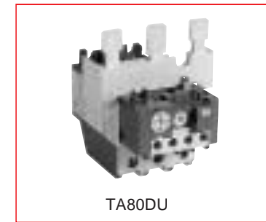
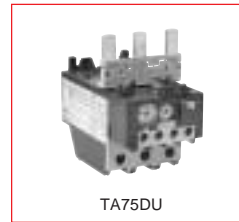
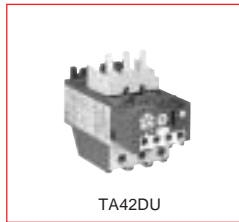
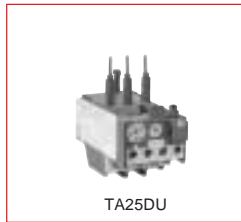
The relays have two built in auxiliary contacts: NC marked 95-96; NO marked 97-98. Both contacts are physically separate and can thus be used for 2 different circuits (control circuit and indication circuit).

Function of TA25DU – TA450DU thermal O/L relays

	Resetting Contacts	Relay tripped { 95-96 Open 97-98 Closed		Relay not tripped { 95-96 Closed 97-98 Open
		Manual	Automatic	Both manual and automatic
Effect of blue button indexed on R (RESET ONLY)	Resetting	Yes	No	No
	95-96	Closed when the button is pressed	No effect	No effect
	97-98	Open when the button is pressed		
Effect of blue button indexed on R/O (RESET/OFF)	Resetting	Yes	No	No
	95-96	Closed when the button is released	No effect	Open when the button is pressed Closed when the button is released
	97-98	Open when the button is pressed		No effect

2

Selection guide TA25DU – TA80DU

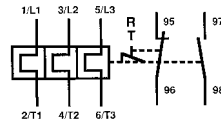


Types

Main characteristics

2

Construction	3 pole with ambient temperature variation compensation. Protection against single phase operation. Built in auxiliary contacts: 1N.O. + 1N.C.				
Resetting	Convertible: Manual to Automatic				
Setting ranges	Number	18	3	6	4
	from to	0.1 – 0.16A 24 – 32A	18 – 25A 29 – 42A	18 – 25A 60 – 80A	29 – 42A 60 – 80A



Mounted with contactors

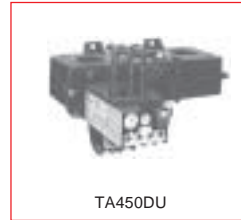
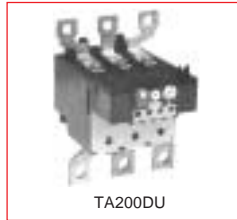
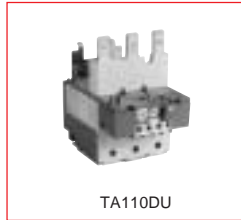
Mounting kit	No kit is required for mounting thermal O/L relays below contactors			
Types of contactors for combined mounting	A/AE9 BC9	A/AE30 A/AE40	A/AE/AF50 A/AE/AF63 A/AE/AF75	A/AE/AF95 A/AE/AF110
	A/AE12 BC16 A/AE16 BC18 A/AE26 BC25 A/AE30 BC30 A/AE40			

Mounted separately (i.e. separate from contactor)

Separate mounting kit	DB25	DB80
Accessories		
Tripping coil	DS25-A	
Resetting coil	DR25-A	
Terminal shroud	Terminals protected against direct contact (without the addition of terminal shrouds)	
Function markers	BA5-50	

Selection guide TA110DU – TA450DU

Thermal
overload
relays



Types

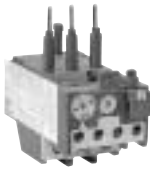
Main characteristics

Construction		<p>3 pole with ambient temperature variation compensation. Protection against single phase operation. Built in auxiliary contacts: 1N.O. + 1N.C.</p>			2
Resetting		Convertible: manual to automatic			
Setting ranges	Number	2	6	3	
	from A to A	65 – 90 80 – 110	65 – 90 150 – 200	130 – 185 220 – 310	
Mounted with contactors					
Mounting kit		No kit is required for mounting thermal O/L relays		See page 2.7.	
Types of contactors for combined mounting		A/AE/AF95 A/AE/AF110		A/AF145 A/AF185	
				A/AF210 + DT450/A300 A/AF260 + DT450/A300 A/AF300 + DT450/A300	
Mounted separately (i.e. separate from contactor)					
Separate mounting kit		DB200		No kit required for separate mounting of thermal O/L relays	
Accessories					
Tripping coil					
Resetting coil					
Terminal shroud		① LT200 –		LT450 –	
Function markers		BA5-50			

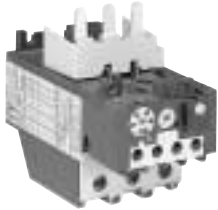
① Terminals protected against direct contact (without the addition of terminal shrouds)

Type TA, Class 10 for Contactors A9 – A/AF300

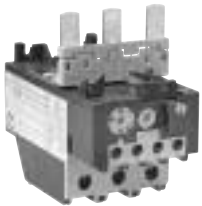
2



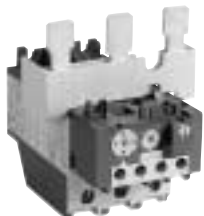
TA25DU



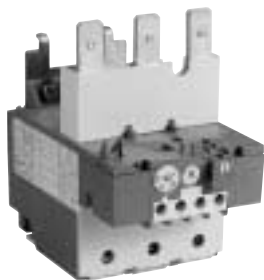
TA42DU



TA75DU



TA80DU



TA110DU

For contactor	Setting range A	Suffix Code	Catalog number	List price
A/AE9 – A/AE40 BC9 – BC30	0.1 – 0.16	A	TA25DU0.16	\$ 63
	0.16 – 0.25	B	TA25DU0.25	
	0.25 – 0.4	C	TA25DU0.4	
	0.4 – 0.63	D	TA25DU0.63	
	0.63 – 1.0	E	TA25DU1.0	
	1.0 – 1.4	F	TA25DU1.4	
	1.3 – 1.8	G	TA25DU1.8	
	1.7 – 2.4	H	TA25DU2.4	
	2.2 – 3.1	J	TA25DU3.1	
	2.8 – 4.0	K	TA25DU4.0	
	3.5 – 5.0	L	TA25DU5.0	
	4.5 – 6.5	M	TA25DU6.5	
	6.0 – 8.5	N	TA25DU8.5	
	7.5 – 11	P	TA25DU11	
	10 – 14	Q	TA25DU14	
	13 – 19	R	TA25DU19	
18 – 25	S	TA25DU25		
24 – 32	T	TA25DU32		
A/AE30 – A/AE40	18 – 25	A	TA42DU25	78
	22 – 32	B	TA42DU32	
	29 – 42	C	TA42DU42	
A/AE/AF50 – A/AE/AF75	18 – 25	A	TA75DU25	102
	22 – 32	B	TA75DU32	
	29 – 42	C	TA75DU42	
	36 – 52	D	TA75DU52	
	45 – 63	E	TA75DU63	
	60 – 80	F	TA75DU80	
A/AE/AF95 – A/AE/AF110	29 – 42	C	TA80DU42	135
	36 – 52	D	TA80DU52	
	45 – 63	E	TA80DU63	
	60 – 80	F	TA80DU80	
A/AF145 – A/AF185	65 – 90	A	TA110DU90	165
	80 – 110	B	TA110DU110	
A/AF210 – A/AF300	65 – 90	A	TA200DU90	165
	80 – 110	B	TA200DU110	
	100 – 135	C	TA200DU135	225
	110 – 150	D	TA200DU150	
	130 – 175	E	TA200DU175	
	150 – 200	F	TA200DU200	
A/AF210 – A/AF300	130 – 185	A	TA450DU185 ^①	488
	165 – 235	B	TA450DU235	
	220 – 310	C	TA450DU310	
AF400 – AF750	See electronic overloads, pages 2.21			

① TA450 overloads require mounting kits for installation.

Accessories

Thermal
overload
relays



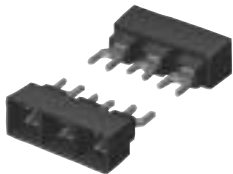
DB25/25A



DB80



DB200



LC26-B1

Separate mounting kits

For O/L relays	Amps	Catalog number	List price
TA25DU	0.1 – 25	DB25/25A	\$ 30
TA25DU	24 – 32	DB25/32A	38
TA42DU, TA75DU, TA80DU	18 – 80	DB80	45
TA110DU, TA200DU	100 – 200	DB200	60

Flat pin terminal blocks

Mounting on:	Catalog number	List price
TA25DU relay	LC30-T	\$ 6
DB25/25A or DB25/32A	LC26-B1	

Terminal block — AWG #8 cable

Mounting on:	Catalog number	List price
TA25DU (25A or less) or DB25/25A	DX25	\$ 15

LC terminal blocks can be used to convert standard connections into Faston connections: 2 x 6.3mm or 4 x 2.8mm per pole. The connections are protected against accidental contact.

The LC30-T has a terminal block for the 3 power terminals and a second for the 4 auxiliary terminals of a TA25DU thermal O/L relay.

The LC26-B1 has two identical terminal blocks each for 3 power terminals. This block allows the power terminals to be mounted with two DB25 kits or a TA25DU thermal O/L relay and DB25 kit assembly.

NOTE: According to DIN 46429 part 1 and NFC 20-120 the max. capacity of a Faston connection is 25 A.

Mounting kit – for TA450 overload relay

For contactor	Catalog number	List price
A145 – A185 A210 – A300	DT450/A185 DT450/A300	\$ 225

Terminal shrouds – for contactors and overload relays

Contactors	Overload relay	Catalog number	List price
A9 – A16 A26 – A40	TA25DU	Included	—
A30 – A40	TA42DU	Included	—
A50 – A75	TA75DU	Included	—
A95 – A110	TA80DU TA110DU	Included	—
A145 – A185 A145 – A185	TA200DU Load side of TA200DU	LT185-AY LT200A185	\$ 50 90

Terminal lug kits

Wire range	For overloads	Catalog number	List price
6 – 250MCM	TA200DU	EHTK210	\$ 45
4 – 400MCM	TA450DU185	ATK300	68
(2) 4 – 500MCM	TA450DU310	ATK300/2	110

2



DS25A



DR25A

Remote tripping coils

	U voltage at 50/60 Hz	Catalog number ①	List price
DS25-A remote tripping coil	24V	DS25-A-24	\$ 60
	48V	DS25-A-48	
	110V	DS25-A-110	
	220/380V	DS25-A-220/380	
	500V	DS25-A-500	
DS25-A remote resetting coil	24V	DR25-A-24	
	48V	DR25-A-48	
	110V	DR25-A-110	
	220/380V	DR25-A-220/380	
	500V	DR25-A-500	

Application

• The DS25-A coil is used for remote electrical tripping of the TA25 DU thermal O/L relay and is connected to the relay's normally closed 95-96 auxiliary contact.

• The DR 25-A coil is used for remote electrical resetting of the TA25DU thermal O/L relay which is adjusted for "Manual resetting;" it is connected to the relay's normally open 97-98 auxiliary contact.

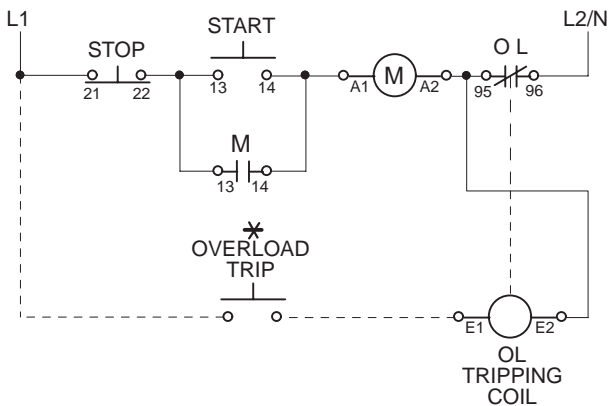
The coils are not designed for continuous duty. Impulse duration: 0.2 to 0.35 s.

Set the button to "Man" (Manual resetting).

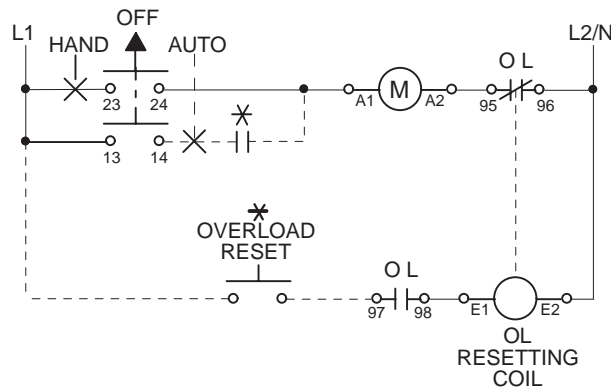
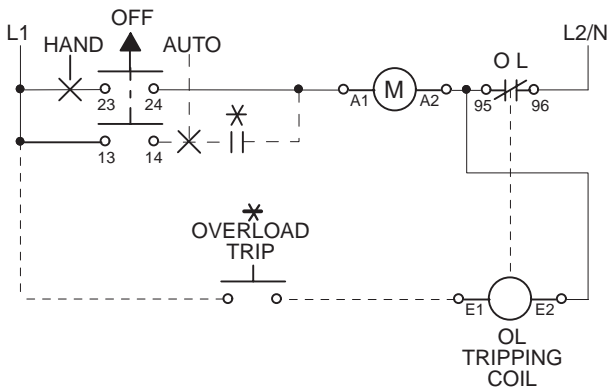
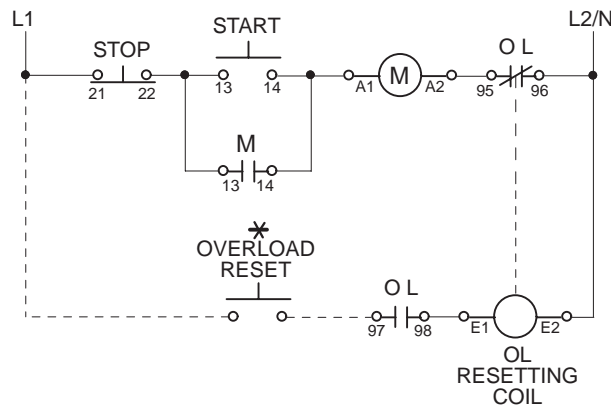
Mounting: clipped on to TA25DU thermal O/L relay.

Installation diagrams

For connection of DS25-A to TA25DU relay



For connection of DR25-A to TA25DU relay

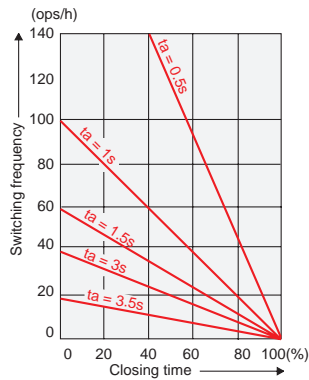


① Cannot be used with TA42, TA75, or TA200 overload relays.

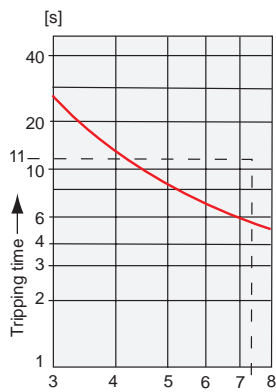
Technical data

TA25DU – TA450DU

Intermittent duty



Switching frequency in relation to load factor.
t_a: motor starting time.



Multiple of the setting current

TA thermal O/L relay cold-state tripping characteristics

Switching frequency:

To avoid untimely tripping, TA and T thermal O/L relays have been designed to withstand roughly 15 switching operations per hour with an approximately equal distribution between working and rest cycles.

In these conditions, the motor starting time must not exceed 1 second and the starting current must be lower than or equal to 6 times the motor I_n.

For intermittent operations, the diagram opposite specifies relay operating limits.

Example: Motor starting time: 1 sec.

Load factor: 40 %

Switching frequency: 60 ops./h according to diagram

For a higher number of operations and for load variations (e.g. frequent starting and braking), it is advisable to use CUSTORAPID® protection.

For motors subject to particularly severe operating conditions (e.g. locked rotor) it is advisable to use protection combined with a thermal O/L relay and the CUSTORAPID® system.

Protection of motors with long starting time

See electronic overload relay section, pages 2.21 - 2.32.

Mounting position

On a support at an angle of ± 30° in relation to the vertical plane (standard position).

Other mounting positions possible, except mounting on a horizontal plane (in this case the tripping mechanism would be located above the bimetals).

Special version for EEx e motors

Consult factory.

Tripping limits at ambient temperatures varying by + 20°C

Ambient temperature compensation

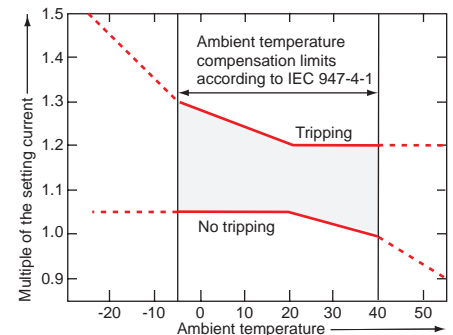
Thermal O/L relays are compensated against ambient temperature variations by a compensation bimetal which is sensitive to the ambient temperature.

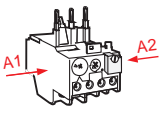
Thermal O/L relays are designed to operate between -5 °C and +40 °C in compliance with standard IEC 947-4-1. For a wider range of -25° C to +55 °C consult the graph opposite.

Example: tripping at -25 °C. Tripping takes place before 1.5 times the setting current.

Resetting: TA25DU – TA450 DU thermal O/L relays have convertible manual/automatic resetting.

Delivery: in manual resetting mode.



Types	TA25DU	TA42DU	TA75DU	TA80DU															
Standards: (international, European)	IEC 947-4-1, EN 60947-4-1																		
Rated insulation voltage U_i according to IEC 947-4-1	V	690																	
Rated impulse withstand voltage U_{imp} according to IEC 947-4-1	kV	6																	
Permissible ambient temperature – for storage – for operation	°C °C	–40 to +70 –25 to +55 with temperature compensation (maximum values: see page 2.9)																	
Climatic withstand DIN 50017	Humidity in alternate climate KFW, 30 cycles																		
Mounting positions	On a support at an angle of $\pm 30^\circ$ in relation to the vertical plane (standard position). Other positions possible except mounting on a horizontal plane (in this case the tripping mechanism would be located above the bimetals).																		
Shock withstand at nominal I_e Critical direction of shocks A1, A2	shock duration ms multiples of g	15 12																	
Resistance to vibrations (± 1 mm, 50 Hz)	multiples of g 8																		
Mounting – on contactor – separate with DB - kit	Latching below the contactor, screw fixing on main terminals Using screws: 2 x M4 or 35 mm EN 50022																		
Terminals and cross-sectional areas for main conductors (motor side)	TA25DU setting ranges: from 0.1-0.16A 24-32 A to 18-25A																		
• screw terminal – with cable clamp – via tunnel connector – flat type for lug or bar	 <table border="1"> <tr> <td>M4</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>–</td> <td>M5</td> <td>M6</td> <td>M6</td> <td>M6</td> </tr> <tr> <td>–</td> <td>–</td> <td>–</td> <td>–</td> <td>–</td> </tr> </table>				M4	–	–	–	–	–	M5	M6	M6	M6	–	–	–	–	–
M4	–	–	–	–															
–	M5	M6	M6	M6															
–	–	–	–	–															
• conductor cross-sectional area – rigid solid or rigid stranded – flexible with cable end – recommended bars	mm ² mm ² mm	2 x 1.5 - 6 2 x 1.5 - 4 –	1 x 10 2 x 0.75 - 6 –	1 x 2.5 - 35 or 2 x 2.5 x 16 1 x 2.5 - 25 or 2 x 2.5 x 10 –															
Terminals and cross-sectional area for auxiliary conductors																			
• screw terminal (screw size) – with cable clamp	M 3.5																		
• conductor cross-sectional area – rigid solid or rigid stranded – flexible with cable end	2 x mm ² 2 x mm ²	0.75 - 4 0.75 - 2.5																	
Degree of protection	All the terminals are protected against direct contact according to VDE 0106/Part. 100. (without additional terminal shrouds)			All the terminals are protected against direct															
				direct contact according to VDE0106/part 100 (with additional terminal shrouds for the main terminals)															

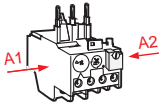
Pole Technical Characteristics

Types	TA25 DU	TA42 DU	TA75 DU	TA80 DU	TA10 DU	TA200 DU	TA450 DU
Number of poles	3						
Setting ranges	see page 2.6						
Tripping class according to IEC 947-4-1, EN 60947-1	10 A						
Rated operational frequencies	Hz						50/60
Max. switching frequency without untimely tripping	Up to 15 starts/h or 60 starts/h with 40 % on-load factor when neither the starting current of $6 \times I_n$ nor the starting time 1 s are exceeded.						
Resistance per phase in m and heat dissipation in W	see page 2.13						

Technical data

TA110DU – TA450DU

Thermal
overload
relays

Types	TA110DU	TA200DU	TA450DU	
Standards: (international, European)	IEC 947-4-1, EN 60947-4-1			
Rated insulation voltage U_i according to IEC 947-4-1	V	690	1000	
Rated impulse withstand voltage U_{imp} according to IEC 947-4-1	kV	6	8	
Permissible ambient temperature – for storage – for operation	°C °C	–40 to +70 –25 to +55 with temperature compensation (maximum values: see page 2.9)		
Climatic withstand DIN 50017	Humidity in alternate climate KFW, 30 cycles			
Mounting positions	On a support at an angle of $\pm 30^\circ$ in relation to the vertical plane (standard position). Other positions possible except mounting on a horizontal plane (in this case the tripping mechanism would be located above the bimetals).			
Shock withstand at nominal I_e Critical direction of shocks A1, A2	shock duration ms multiples of g	15 12		
Resistance to vibrations (± 1 mm, 50 Hz)	multiples of g	8		
Mounting – on contactor – separate with DB - kit	4 x M5 screws			
Terminals and cross-sectional areas for main conductors (motor side)				
• screw terminal – with cable clamp – via tunnel connector – flat type for lug or bar		– HC, M8 –	– – M10	– – M10
• conductor cross-sectional area – rigid solid or rigid stranded – flexible with cable end – recommended bars		mm ² mm ² mm	16 – 35 16 – 35 12 x 3	25 – 120 25 – 95 20 x 4
Terminals and cross-sectional area for auxiliary conductors				
• screw terminal (screw size) – with cable clamp	M 3.5			
• conductor cross-sectional area – rigid solid or rigid stranded – flexible with cable end	2 x mm ² 2 x mm ²	0.75 - 4 0.75 - 2.5		
Degree of protection	All the terminals are protected against direct contact according to VDE 0106/Part. 100. (with additional terminal shrouds)			

Technical characteristics of auxiliary contacts for thermal O/L relays: TA25DU to TA450DU

Auxiliary contacts		normally closed N.C.	normally open N.O.
Terminal marking		95-96	97-98
Rated operational voltage U_o	VAC	500	500
Conventional thermal current (in free air) I_{th}	A	10	6
Rated operational current I_o , AC-15			
up to 240 V	A	3.0	1.5
up to 440 V	A	1.9	0.95
up to 500 V	A	1.0	0.75
Rated operational current I_o , DC-13			
up to 250 V	A	0.12	0.04
Protection against short circuits gG (gI) fuses (according to IEC 269) S 271/S 281 circuit-breaker	A A	10 k3	6 k1
Maximum potential difference between N.C. and N.O. auxiliary contacts	VAC VDC	500 440	500 440

Motor Protection — general

It is very important to choose an adequate protective device for the safety of the motor during operation and for its durability.

The efficiency of protection methods varies according to the application. The overview below will help you to choose.

There is no general rule and we are available to advise you for special applications and especially in the case of difficult starting.

Protective devices and efficiency

	Protection in relation to current:		Protection in relation to temperature:	
	Fuses	Protective relay with phase fault protection	Motor protection via CUSTORAPID® thermistor	Motor protection via SPEM electronic relay
2				

Causes of dangerous overloads for the motor windings

1 Overload with current 1.2 times the nominal current	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2 S1-S8 nominal duties according to IEC 34-I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3 Operation with starting, braking, reversal in operating direction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4 Operation with starting rate at > 15 cycles/hour	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5 Locked rotor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> for motors with special rotor	<input checked="" type="checkbox"/>
6 Overloads due to phase failure	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7 Network undervoltage or overvoltage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8 Fluctuation of network frequency	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9 Ambient temperature too high	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10 Overheating due to external cause (i.e. overheating of bearings)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11 Motor cooling disturbed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12				Undercurrent protection on drop in load
13				Protection of asymmetry: wrong phase direction rotation or asymmetrical load
14				Earth fault protection
15				Automatic disconnection for auxiliary load fault

Protection efficiency:

- unsuitable
- very average efficiency
- perfectly efficient

Note: Fuses

Fuses do not protect motors against overloads. They are only used to protect installations and lines against short circuits.

To ensure efficient protection of a motor against short circuits, it is advisable to use aM type fuses in association with thermal OLR relays.

For the selection of fuses or circuit-breakers, refer to the indications given in this catalogue concerning contactors on the one hand and thermal O/L relays on the other.

In general, fuse protection for direct-on-line starting must be sized as follows:

– aM fuses: choose the fuse rating immediately above the full load value of the motor current.

– gG (gl) fuses: determine the fuse rating immediately above the motor current value and choose the next highest fuse rating.

Technical data

Resistance and Joule losses per phase

Short circuit protection

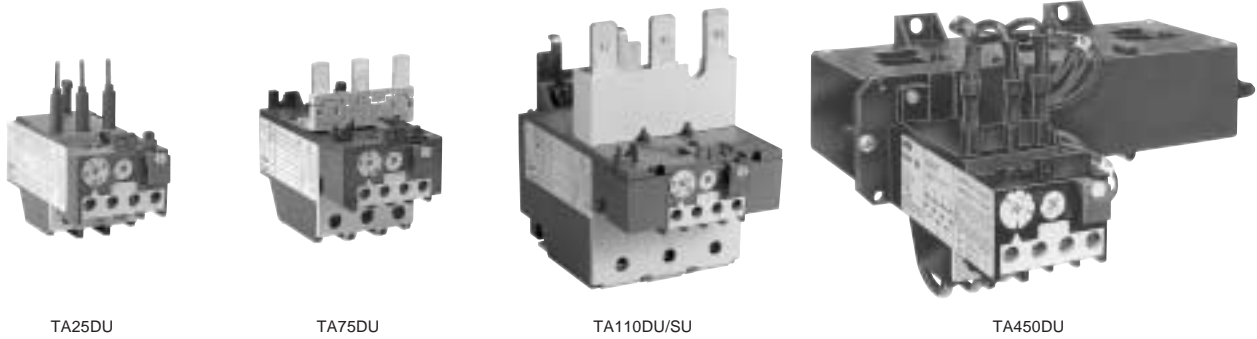
Thermal
overload
relays

Resistance and Joule losses per phase, short circuit protection

Setting range current from – to A A	Resistance per phase m	Joule losses per phase at max. setting W
TA25DU		
0.1 – 0.16	85850	2.2
0.16 – 0.25	85150	2.2
0.25 – 0.4	13750	2.2
0.4 – 0.63	5370	2.2
0.63 – 1.0	2190	2.2
1.0 – 1.4	1120	2.2
1.3 – 1.8	670	2.2
1.7 – 2.4	383	2.2
2.2 – 3.1	229	2.2
2.8 – 4.0	137	2.2
3.5 – 5.0	87.5	2.2
4.5 – 6.5	61	2.2
6.0 – 8.5	30.4	2.2
7.5 – 11	18.2	2.2
10 – 14	11.2	2.2
13 – 19	6.3	2.3
18 – 25	4.7	2.9
24 – 32	3.2	3.3
TA42DU		
18 – 25	5.5	3.43
22 – 32	2.89	2.91
29 – 42	1.84	3.24
TA75DU		
18 – 25	5.5	3.43
22 – 32	2.89	2.91
29 – 42	1.84	3.24
36 – 52	1.3	3.51
45 – 63	0.936	3.72
60 – 80	0.615	3.94
TA80DU		
29 – 42	1.84	3.24
36 – 52	1.3	3.51
45 – 63	0.936	3.72
60 – 80	0.615	3.94

Setting range current from – to A A	Resistance per phase m	Joule losses per phase at max. setting W
TA110DU		
80 – 110	0.378	3.78
TA200DU		
100 – 135	0.318	5.79
110 – 150	0.255	5.74
130 – 175	0.214	6.55
150 – 200	0.182	7.28
TA450DU		
130 – 185	—	2.5
165 – 235	—	2.5
220 – 310	—	2.5

2



TA-DU thermal O/L relays are 3-pole with manual or automatic resetting mode selection.

The resetting button can also be used for stopping.

Built-in auxiliary contacts are physically separate and, consequently, can be used in different circuits (control circuit/indication circuit).

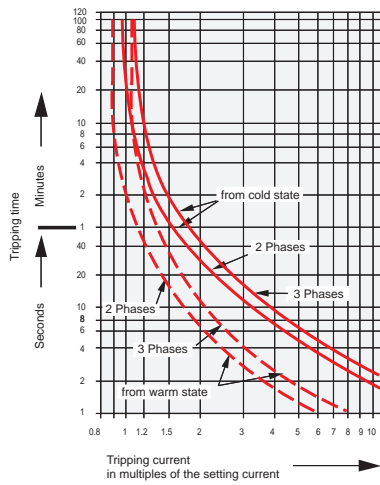
Each relay is temperature compensated and ensures phase failure protection.

Protective relays up to size TA75DU are protected against direct contact via the front face. Terminal shrouds are available for TA200DU to TA450DU size relays.

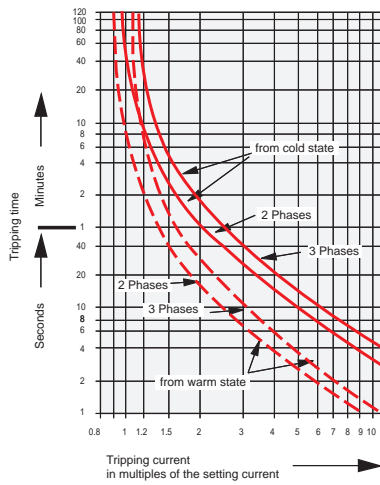
The connecting terminals are delivered in open position with (+,-) pozidriv screws and screwdriver guidance. It is advisable to tighten unused terminal screws.

Thermal O/L relay tripping curves

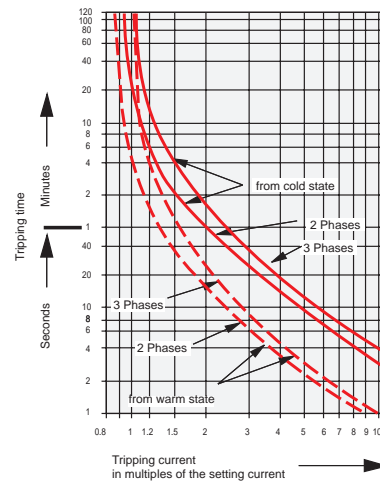
TA25DU
(tripping class 10A)



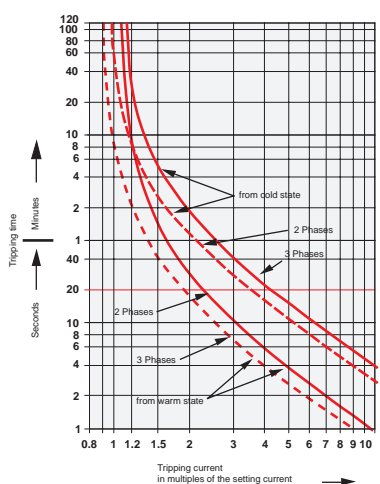
TA42DU, TA75DU and TA80DU
(tripping class 10A)



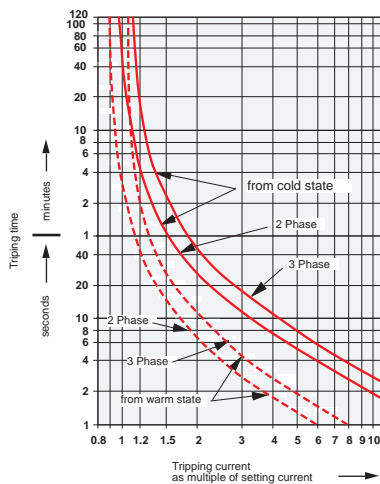
TA110DU
(tripping class 10A)



TA200DU
(tripping class 10A)



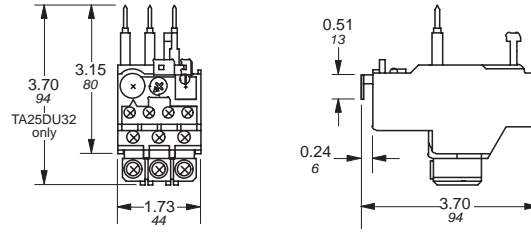
TA450DU
(tripping class 10A)



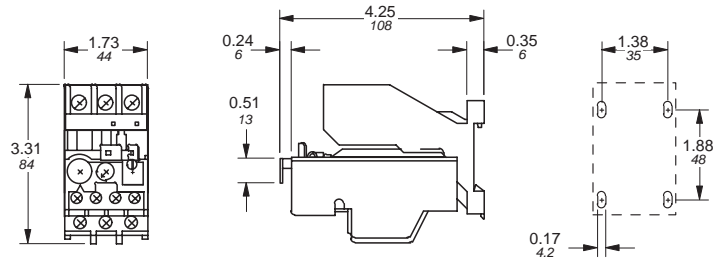
Approximate dimensions T25DU – TA42DU

00.00 Inches
00.00 Millimeters

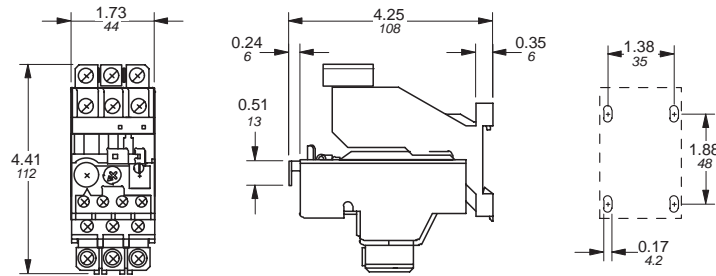
TA25DU



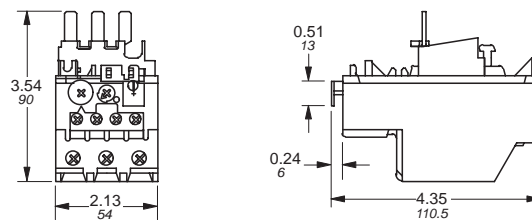
TA25DU & DB25



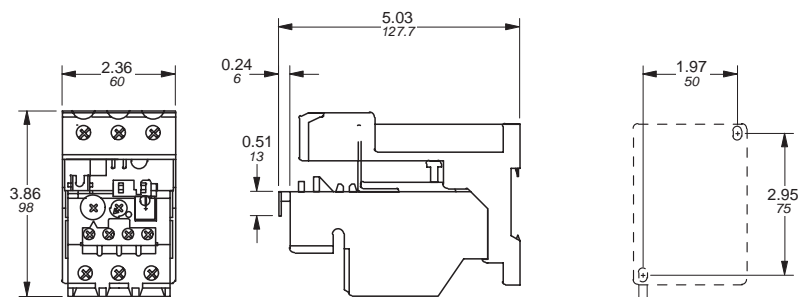
TA25DU & DB25/32



TA42DU



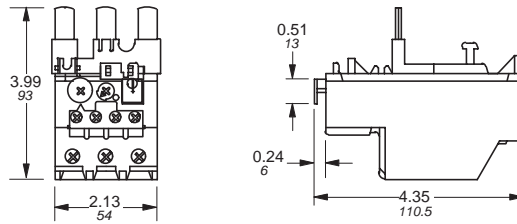
TA42DU / TA75DU & DB80



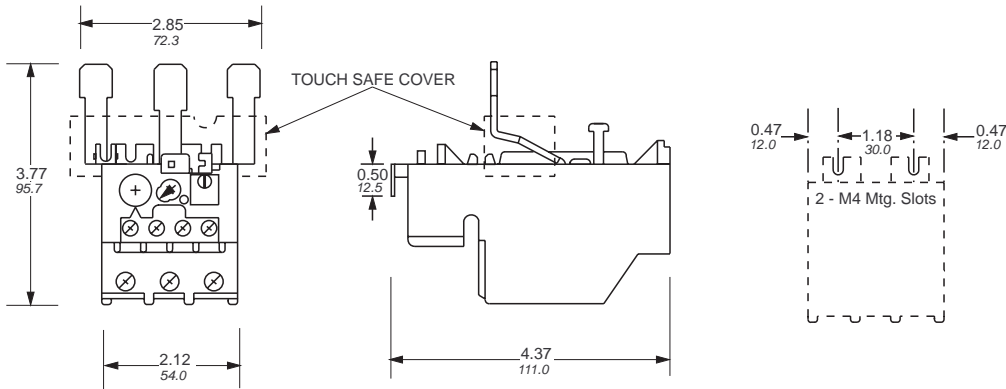
Approximate dimensions TA75DU – TA200DU

00.00 Inches
00.00 Millimeters

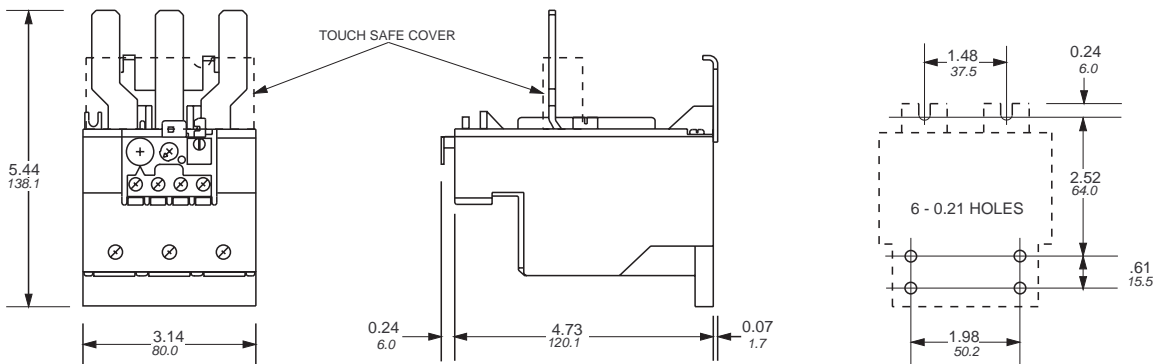
TA75DU



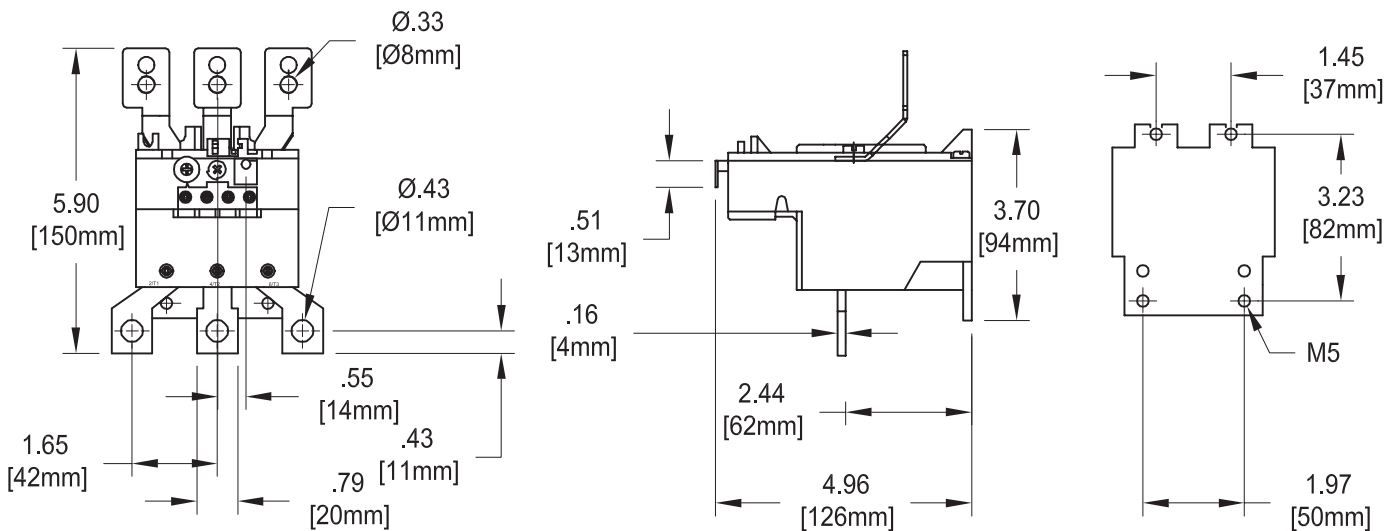
2 TA80DU



TA110DU



TA200DU

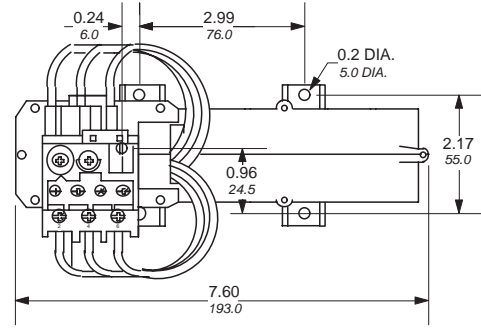
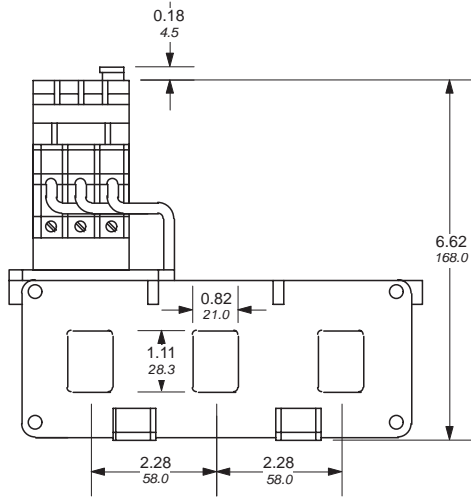


Approximate dimensions TA450DU

Thermal
overload
relays

00.00 Inches
00.00 Millimeters

TA450DU



2