Across the line contactors

A9 - A300
General information
AC operated, UL rated, 3 phase

Application

A-Line contactors are mainly used for controlling 3-phase motors and for controlling power circuits corresponding to their operating characteristics up to 690 and even 1000 VAC. and 440 VDC.

Description of 3 pole and 4 pole contactors A9 - A300

All A-Line contactors can be assembled side by side. The add-on or built-in auxiliary contacts are suitable for low level currents.

Control circuit types

- A-Line types: AC operated with laminated magnetic circuit.

Contactor types

- 3 pole contactors with NO or NC built in auxiliary contact for A9 - A40 contactors; factory assembled auxiliary contacts for A50 - A300 contactors
- 4 pole contactors: 4 NO or 2 NO & 2 NC without any auxiliary contacts. (A9 - A75)

Quick mounting on DIN rail: EN 50022 and EN 50023 standards:

35 x 7.5mm for A9 - A40

35 x 15mm for A9 - A75

75mm for A45 - A110

Location of side mounted accessories: on right or left hand side. Factory mounted on left hand side for CAL5 on A50 - A300

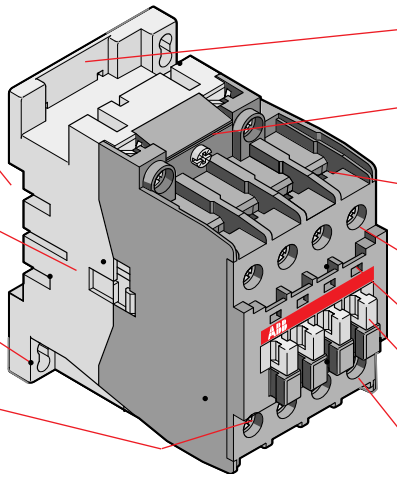
Holes for screw mounting (screws not supplied). Distance between holes according to EN 50003.

Terminals in A9 - A110 contactors are delivered in open position with captive screws (screws of unused terminals must be tightened).

Screwdriver guidance for all terminals makes it possible to use motorized screwdrivers.

All terminals provide protection against accidental direct contact with live parts according to VDE0106 - Part. 100.

All A9 - A40 contactor terminals as well as A45 - A300 contactor auxiliary contact and coil terminals ensure IP20 degree of protection according to IEC 947-1.



A9 - A300

Location of surge suppressors.

Clear marking of coil voltages and frequencies.

Connecting point for control leads in top part of main terminals of A50 - A75 contactors. For A95 & A110 contactors these are additional power connections.

Terminal marking according to IEC 947-4-1, EN 50005, EN 50012 and NEMA standards.

Location of function marker.

Stops for attaching front mounted accessories.

Terminal screws:

- Posidrive (+,-) No 2 for all A9 - A75
- M8 hex threaded socket screw for A95 - A300 main terminals.

Catalog number explanation

A9-30-10-84

Frame size

Power pole

30 = 3 NO
40 = 4 NO
22 = 2 NO & 2 NC

Coil voltage
(see coil voltage selection chart)

Auxiliary contacts

10 = 1 NO & 0 NC
01 = 0 NO & 1 NC
11 = 1 NO & 1 NC
00 = No auxiliary provided
22 = 2 NO & 2 NC

Coil voltage selection chart

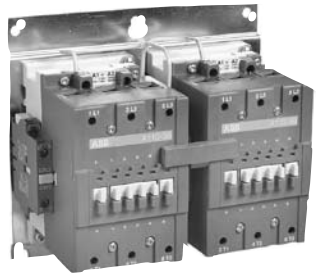
Hz	Cntr type	Volts															
		12	24	48	110	120	125	208	220	240	277	380	415	440	480	500	600
60	A		81	83	84	84		34	36	80	42		86	86	51	53	55
50	A		81	83	84				80			85	86			55	

For other voltages, see page 1.24.

A9 - A300
Non-reversing, mechanically interlocked, reversing AC operated, UL rated, 3 phase

Across the line contactors


A26-30-10-84


A110M-30-11-84


A110R-30-11-84

UL general purpose current	UL motor switching current	Maximum motor horsepower ratings				Standard Aux. contacts		Non-reversing	Mechanically interlocked	Reversing
		208V	240V	480V	575/600V	NO	NC	Catalog number	Catalog number	Catalog number
AC1		UL rated								
21	9	2	2	5	7.5	1 0	0 1	A9-30-10-84 A9-30-01-84	A9M-30-10-84 A9M-30-01-84	A9R-30-10-84 A9R-30-01-84
25	11	3	3	7.5	10	1 0	0 1	A12-30-10-84 A12-30-01-84	A12M-30-10-84 A12M-30-01-84	A12R-30-10-84 A12R-30-01-84
30	17	5	5	10	15	1 0	0 1	A16-30-10-84 A16-30-01-84	A16M-30-10-84 A16M-30-01-84	A16R-30-10-84 A16R-30-01-84
40	28	7.5	10	20	25	1 0	0 1	A26-30-10-84 A26-30-01-84	A26M-30-10-84 A26M-30-01-84	A26R-30-10-84 A26R-30-01-84
50	34	10	10	25	30	1 0	0 1	A30-30-10-84 A30-30-01-84	A30M-30-10-84 A30M-30-01-84	A30R-30-10-84 A30R-30-01-84
60	42	10	15	30	40	1 0	0 1	A40-30-10-84 A40-30-01-84	A40M-30-10-84 A40M-30-01-84	A40R-30-10-84 A40R-30-01-84
80	54	15	20	40	50	1	1	A50-30-11-84	A50M-30-11-84	A50R-30-11-84
90	65	20	25	50	60	1	1	A63-30-11-84	A63M-30-11-84	A63R-30-11-84
105	80	25	30	60	75	1	1	A75-30-11-84	A75M-30-11-84	A75R-30-11-84
125	95	30	30	60	75	1	1	A95-30-11-84	A95M-30-11-84	A95R-30-11-84
140	110	30	40	75	100	1	1	A110-30-11-84	A110M-30-11-84	A110R-30-11-84
230	130	40	50	100	125	1	1	A145-30-11-84	A145M-30-11-84	A145R-30-11-84
250	156	50	60	125	150	1	1	A185-30-11-84	A185M-30-11-84	A185R-30-11-84
300	192	60	75	150	200	1	1	A210-30-11-84	A210M-30-11-84	A210R-30-11-84
350	248	75	100	200	250	1	1	A260-30-11-84	A260M-30-11-84	A260R-30-11-84
400	302	100	100	250	300	1	1	A300-30-11-84	A300M-30-11-84	A300R-30-11-84
550	414	125	150	350	400	1	1			
650	480	150	200	400	500	1	1			
750	602	200	250	500	600	1	1			
900	810	250	300	600	700	1	1			
1350	960	—	400	800	900	1	1			
1650	1080	—	450	900	1000	1	1			

Coil voltage selection

All AC operated catalog numbers include a 120VAC coil. To select other coil voltages, substitute the code from the Coil Voltage Selection Chart for the two digits after the last dash in the catalog number.

Ex.: A 240V coil is required for an A75 contactor: A75-30-11-**80**

Mechanical interlock

Mechanically interlocked contactors are designed for reversing, 2 speed, reduced voltage, etc. type starter applications. The complete assembly consists of two mechanically and electrically interlocked contactors mounted as follows with line and load terminals:

- A9 - A16 — mounted on 35mm DIN rail
- A26 - A300 — mounted on common baseplate

Power wiring is not included. The NC electrical interlock is provided with the mechanical interlock for A9 - A110 contactors.

Coil voltage selection chart

Hz	Cntr type	Volts															
		12	24	48	110	120	125	208	220	240	277	380	415	440	480	500	600
60	A		81	83	84	84		34	36	80	42		86	86	51	53	55
50	A		81	83	84				80			85	86			55	

Reversing

Reversing contactors are designed for reversing type starter applications. The complete assembly consists of two mechanically and electrically interlocked contactors mounted as follows with line and load terminals:

- A9 - A16 — mounted on 35mm DIN rail
- A26 - A300 — mounted on common baseplate

The NC electrical interlock is provided with the mechanical interlock for A9 - A110 contactors.

Across the line contactors

Accessories
for A/AF/AL & AE contactors

CAL5-11 CA5-10

Auxiliary contact blocks – Standard

Positioning	Maximum number of contact blocks	Contact Description	Catalog number
Front mounting (single pole)	4 blocks: A9 – A26 AE9 – AE26 AL9 – AL26 5 blocks: A30, A40, AE30, AE40, AL30, AL40 6 blocks: A45 – A110 AE45 - AE110 AF45 - AF110	1 N.O. 1 N.C. 1 N.O. Early make 1 N.C. Late break	CA5-10 CA5-01 CC5-10 CC5-01
Front mounting (4 pole)	1 block: A9 – A26-40-00 A30 – A110 AE9 – AE110	4 N.O. 3 N.O. & 1 N.C. 2 N.O. & 2 N.C. 4 N.C. 2 N.O./2 N.C.①	CA5-40E CA5-31E CA5-22E CA5-04E CA5-11/11E
	1 block: A9 – A40-30-10 AL9 – AL40-30-10	3 N.O. & 1 N.C. 2 N.O. & 2 N.C. 1 N.O. & 3 N.C. 4 N.C. 4 N.O. 2 N.O./2 N.C.①	CA5-31M CA5-22M CA5-13M CA5-04M CA5-40N CA5-11/11M
Side mounting (2 pole)	2 blocks: A9 – A75, AE9-AE45 1 block: AE50 – AE75, AL9 – AL40	1 N.O. & 1 N.C.	CAL5-11
	1 block: A/AE/AF95 - A/AE/AF110	1 N.O. & 1 N.C.	CAL18-11
	2 blocks: A145 – A300, AF145-AF2050 2 blocks: A145 – A300, AF145-AF2050	1 N.O. & 1 N.C. (inside L or R) 1 N.O. & 1 N.C. (outside, L or R)	CAL18-11 CAL18-11B

Auxiliary contact blocks – Front mounting, switching low voltage and low current

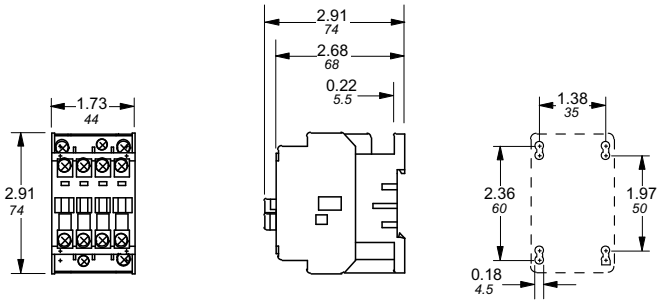
Positioning	Maximum number of contact blocks	Contact Description	Degree of protection	Catalog number
Front mounting (single pole)	4 blocks: A9 – A26 AE9 – AE26 AL9 – AL26	1 N.O. 1 N.C. 1 N.O. 1 N.C.	IP40 IP40 IP40 IP40	CE5-10D0.1 CE5-01D0.1 CE5-10D2 CE5-01D2
	5 blocks: A30, A40, AE30, AE40, AL30, AL40 6 blocks: A45 – A110 AE45 - AE110 AF45 - AF110	1 N.O. 1 N.C. 1 N.O. 1 N.C.	IP67 IP67 IP67 IP67	CE5-10W0.1 CE5-01W0.1 CE5-10W2 CE5-01W2

① Includes 1 N.O. & 1 N.C. overlapping

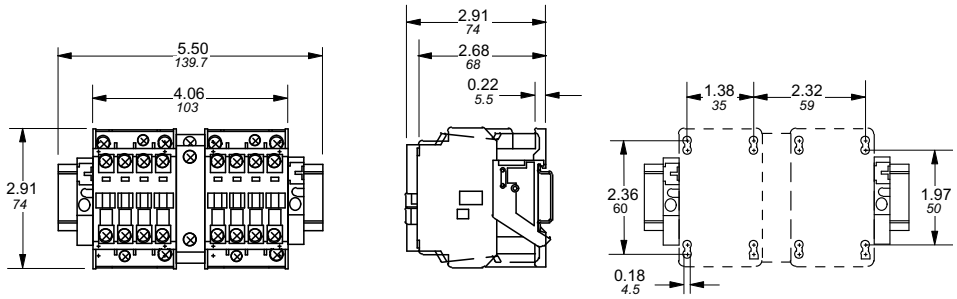
Approximate dimensions
A/AE9 – A/AE26, 3 pole

00.00
00.00
Inches
[Millimeters]

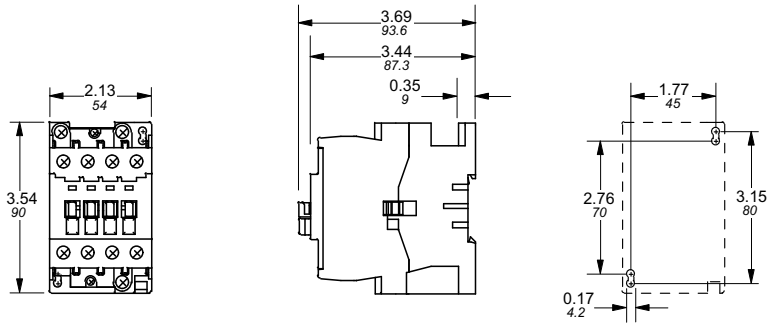
A/AE9 – A/AE16 — Contactor, 3 pole



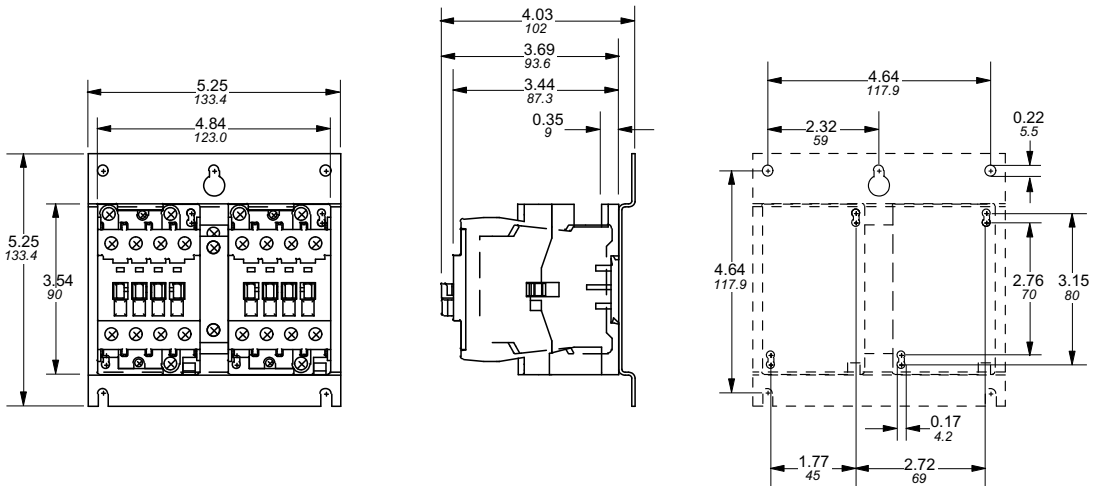
A/AE9 – A/AE16 + VM5 or VE5 — Mechanically interlocked contactor, 3 pole



A/AE26 — Contactor, 3 pole



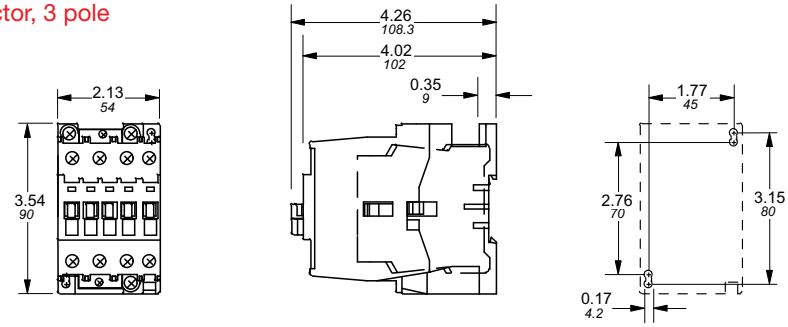
A/AE26 + VM5 or VE5 — Mechanically interlocked contactor, 3 pole



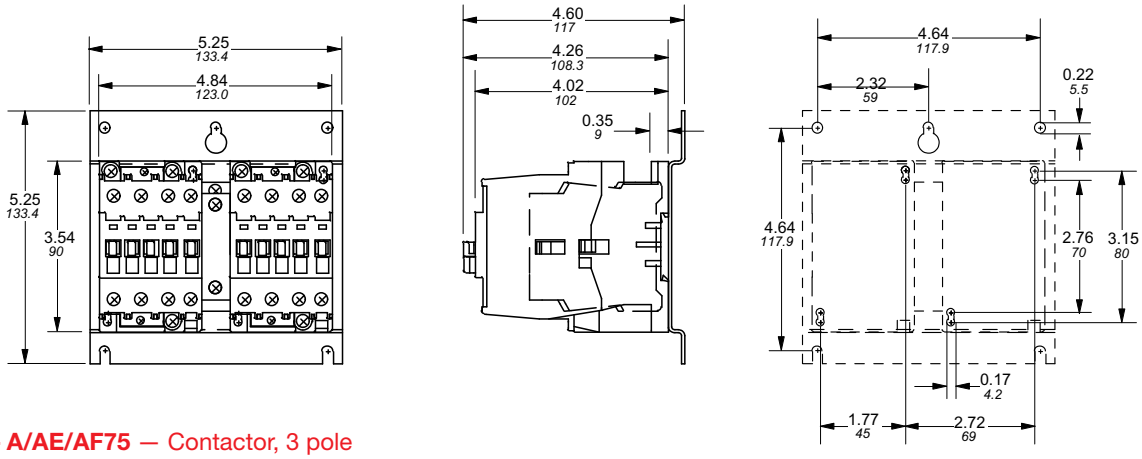
Approximate dimensions
A/AE30 – A/AE/AF75, 3 pole

00.00 / 00.00 Inches [Millimeters]

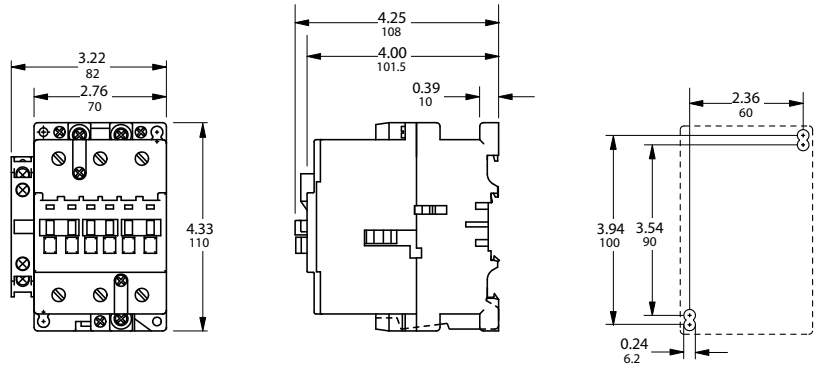
A/AE30 & A/AE40 — Contactor, 3 pole



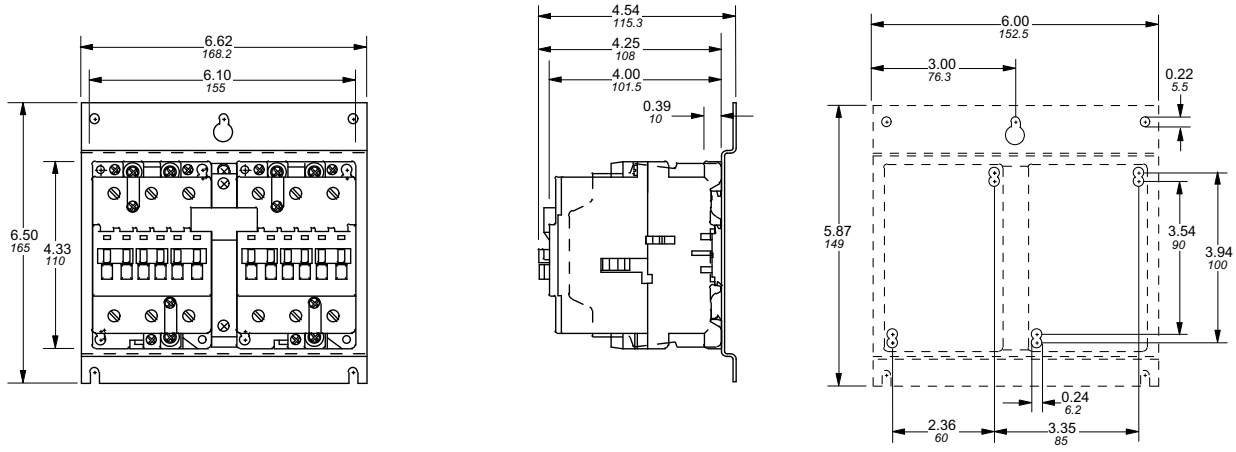
A/AE30 & A/AE40 + VM5 or VE5 — Mechanically interlocked contactor, 3 pole



A/AE/AF50 – A/AE/AF75 — Contactor, 3 pole



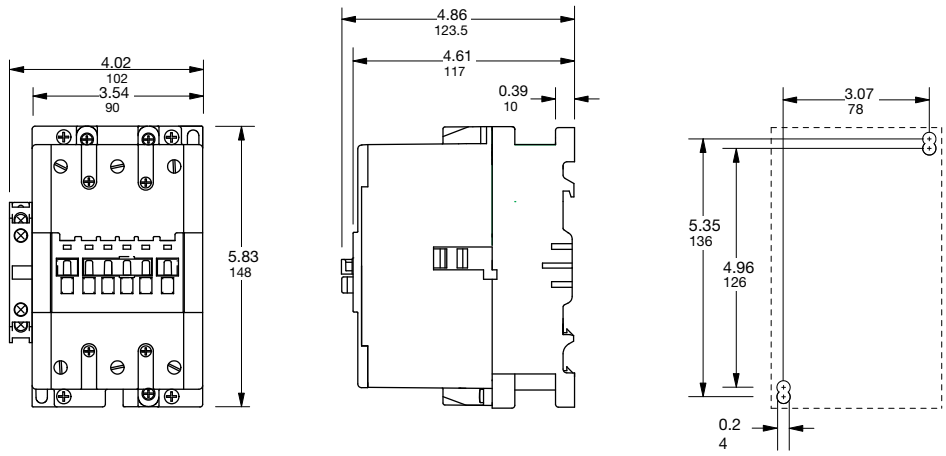
A/AE/AF50 – A/AE/AF75 + VM5 or VE5 — Mechanically interlocked contactor, 3 pole



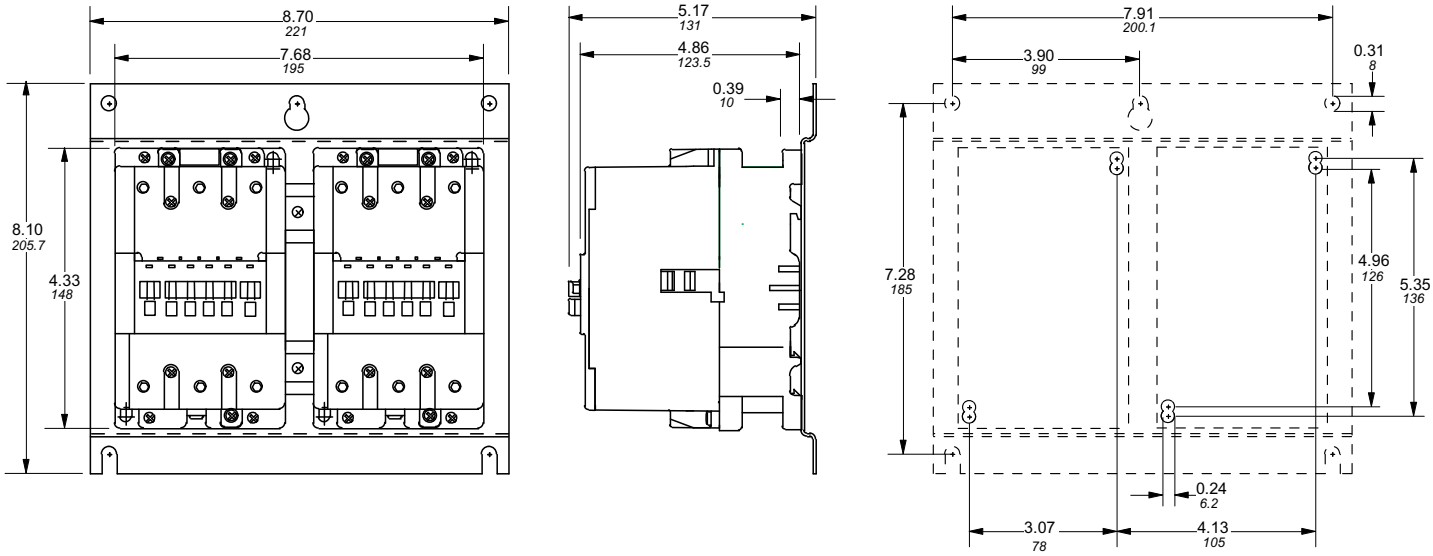
Approximate dimensions
A/AE/AF95 & A/AE/AF110, 3 pole

00.00
00.00
Inches
[Millimeters]

A/AE/AF95 & A/AE/AF110 — Contactor, 3 pole

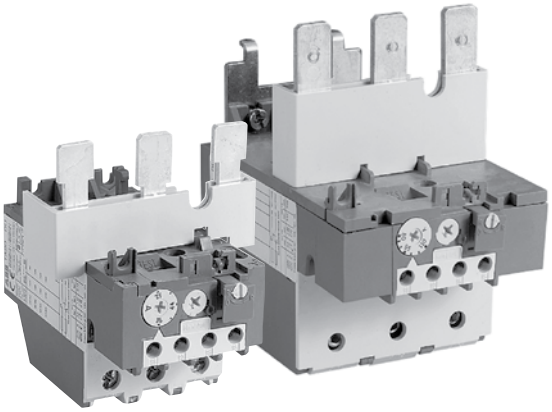


A/AE/AF95 & A/AE/AF110 + VE5 — Mechanically interlocked contactor, 3 pole



Thermal Overload relays

Thermal overload relays
Type TA
Class 10
Class 20



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 (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			

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.

Construction and function

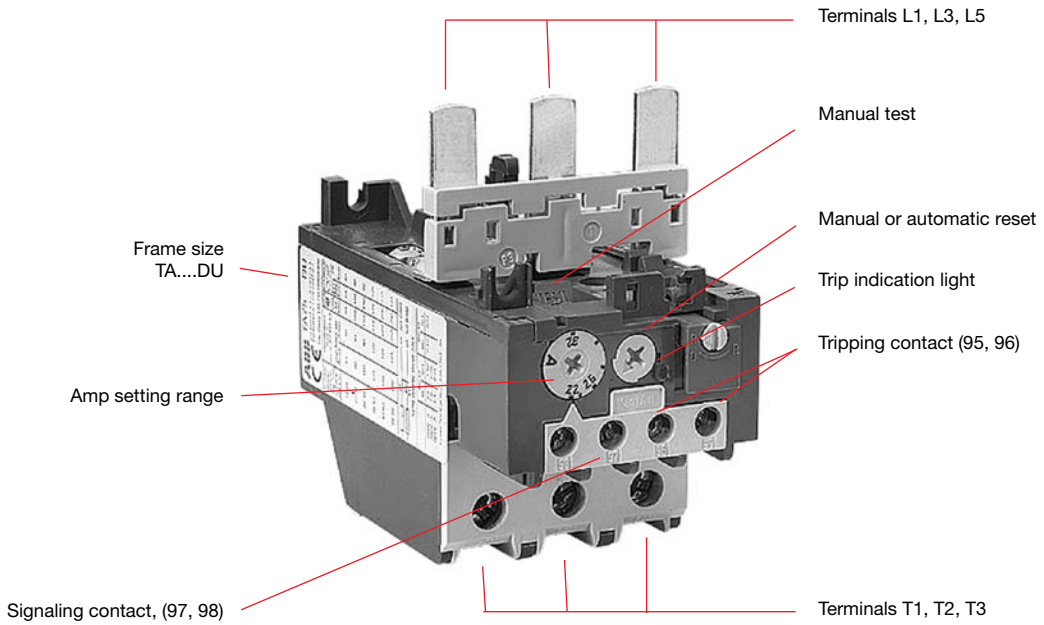
- **General**

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



Description

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

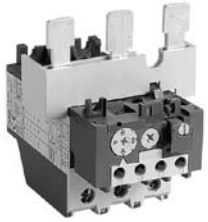
	Resetting / Contacts	**Relay tripped** {**95-96 Open** **97-98 Closed**		**Relay not tripped** {**95-96 Closed** **97-98 Open**
		Manual	Automatic	Both manual and automatic
Effect of blue	Resetting	Yes	No	No
button indexed on R (RESET ONLY)	95-96	Closed when the button is pressed	No effect	No effect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

TA25 - TA450
Class 10
for Contactors A9 – A/AF300


TA25DU


TA42DU


TA75DU


TA80DU


TA110DU

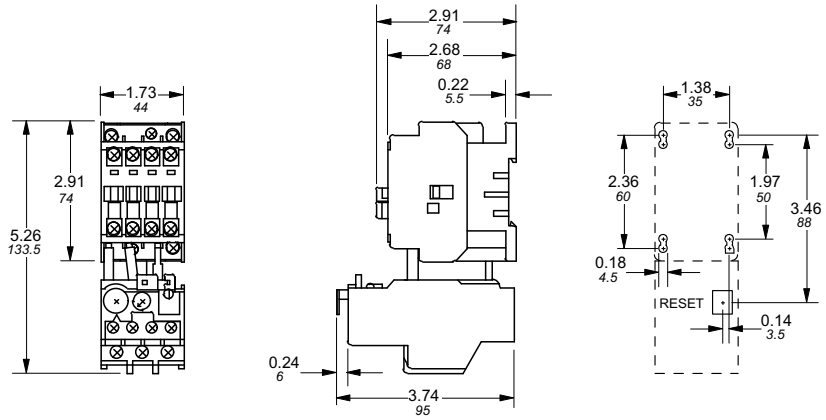
For Contactor	Setting Range A	Suffix Code	Catalog Number
A/AE/AL9 – A/AE/AL40	0.1 - 0.16	A	TA25DU0.16
	0.16 - 0.25	B	TA25DU0.25
	0.25 - 0.4	C	TA25DU0.4
	0.4 - 0.63	D	TA25DU0.63
	0.63 - 1.0	E	TA25DU1.0
	1.0 - 1.4	F	TA25DU1.4
	1.3 - 1.8	G	TA25DU1.8
	1.7 - 2.4	H	TA25DU2.4
	2.2 - 3.1	J	TA25DU3.1
	2.8 - 4.0	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/AE/40	18 - 25	A	TA42DU25
	22 - 32	B	TA42DU32
	29 - 42	C	TA42DU42
A/AE/AF50 - A/AE/AF75	18 - 25	A	TA75DU25
	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
	36 - 52	D	TA80DU52
	45 - 63	E	TA80DU63
	60 - 80	F	TA80DU80
	65 - 90	A	TA110DU90
	80 - 110	B	TA110DU110
A/AF145 - A/AF185	65 - 90	A	TA200DU90
	80 - 110	B	TA200DU110
	100 - 135	C	TA200DU135
	110 - 150	D	TA200DU150
	130 - 175	E	TA200DU175
	150 - 200	F	TA200DU200
A/AF210 - A/AF300	130 - 185	A	TA450DU185 ①
	165 - 235	B	TA450DU235
	220 - 310	C	TA450DU310
AF400 - AF750	See electronic overloads, pages 2.21		

① TA450 overloads require mounting kits for installation.

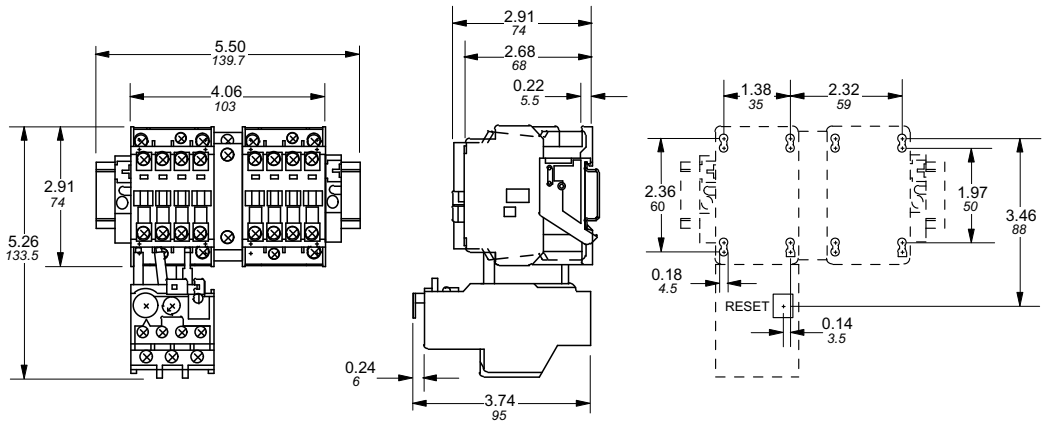
Approximate dimensions
A/AE9 – A/AE16 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

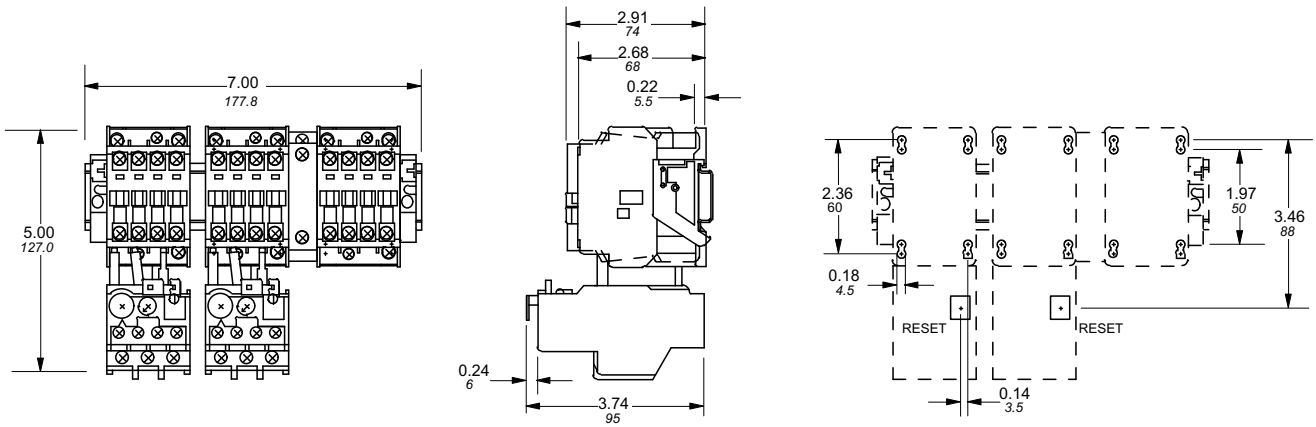
A/AE9 – A/AE16 + TA25 — Starter



A/AE9 – A/AE16 + VM5 or VE5 + TA25 — Reversing starter



A/AE9 – A/AE16 — 2 Speed, 1 winding starter

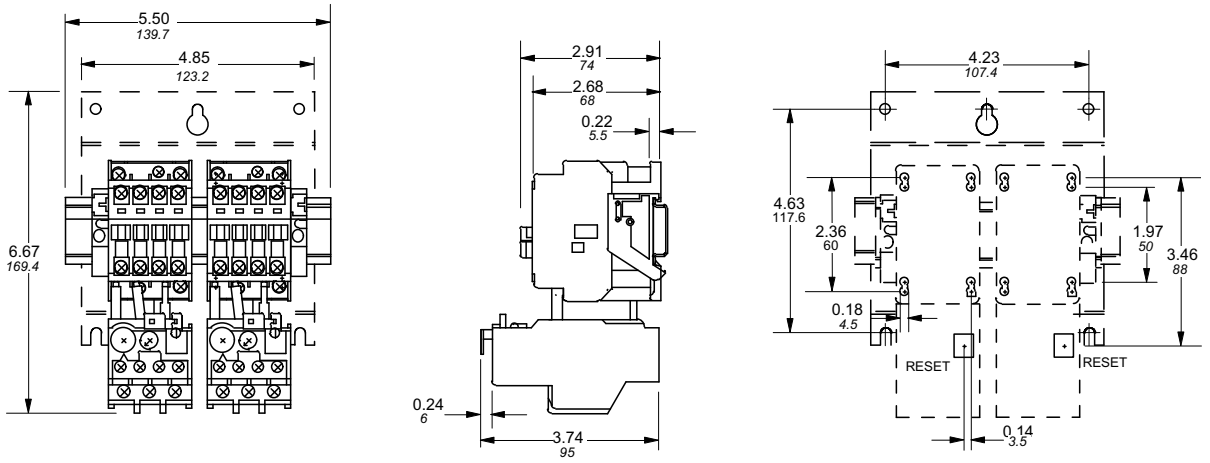


① Starter/contactor size.

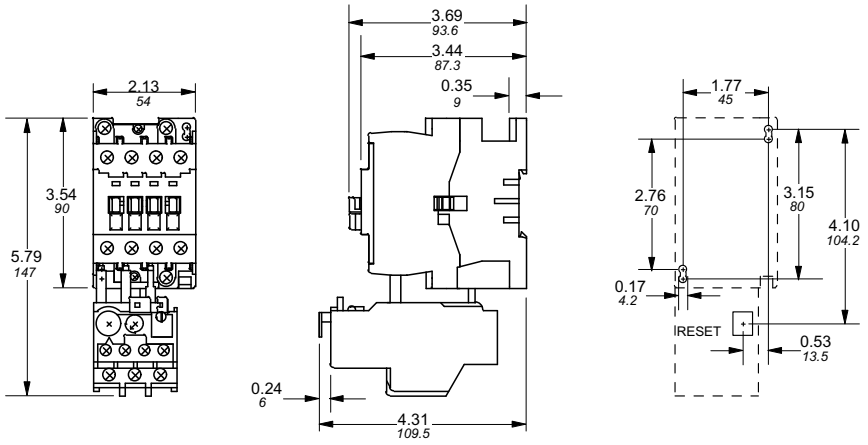
Approximate dimensions
A/AE9 – A/AE26 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

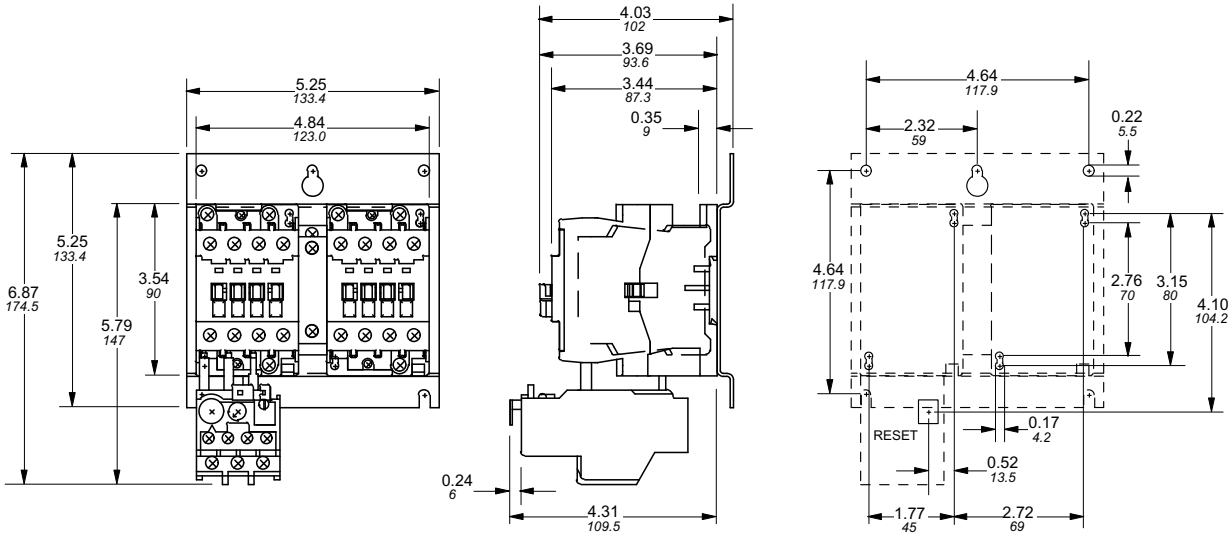
A/AE9 – A/AE16 — 2 Speed, 2 winding starter



A/AE26 + TA25 — Starter



A/AE26 + VM5 or VE5 + TA25 — Reversing starter

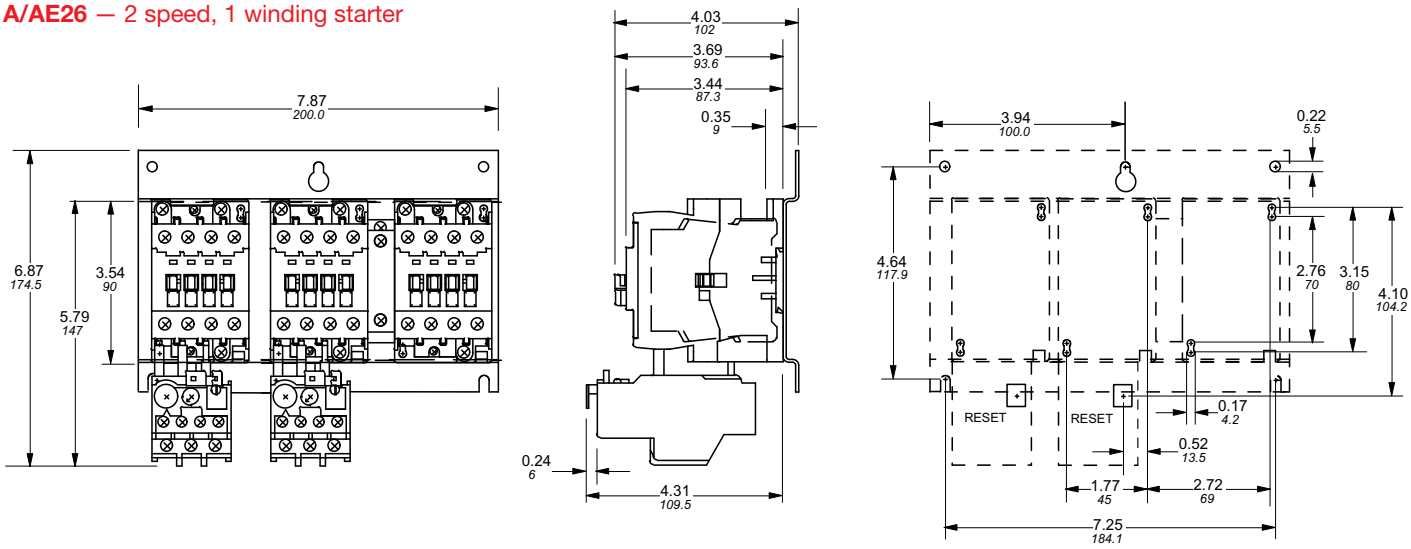


① Starter/contactor size.

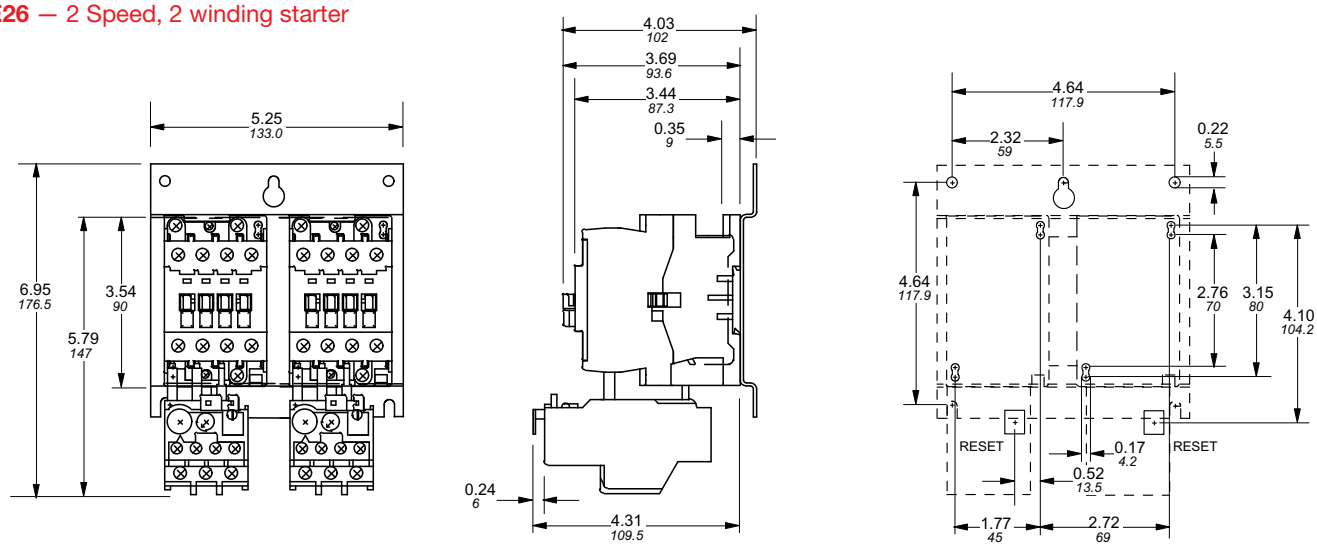
Approximate dimensions
A/AE26 to A/AE40 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

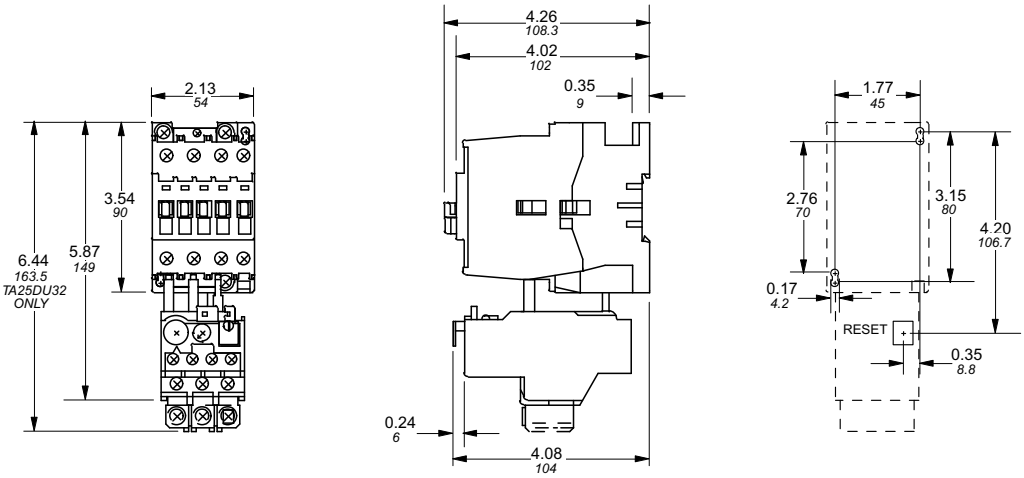
A/AE26 — 2 speed, 1 winding starter



A/AE26 — 2 Speed, 2 winding starter



A/AE30 & A/AE40 + TA25 — Starter

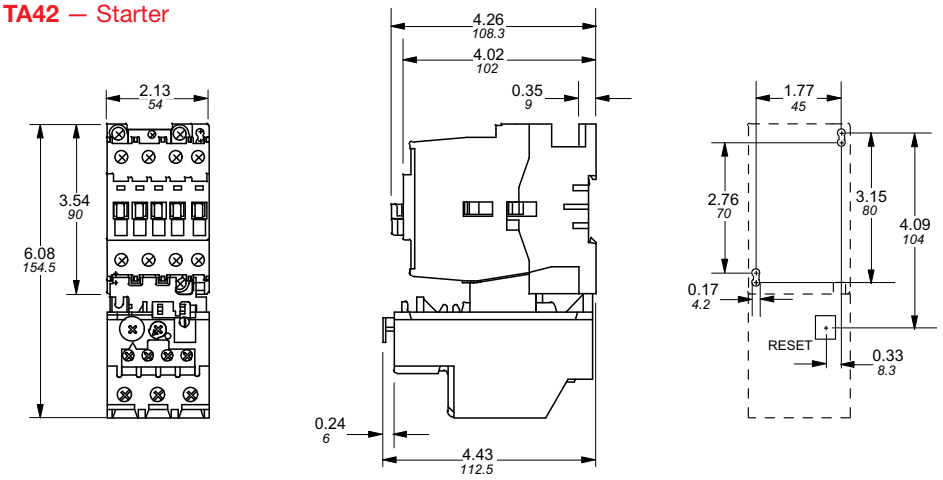


① Starter/contactor size.

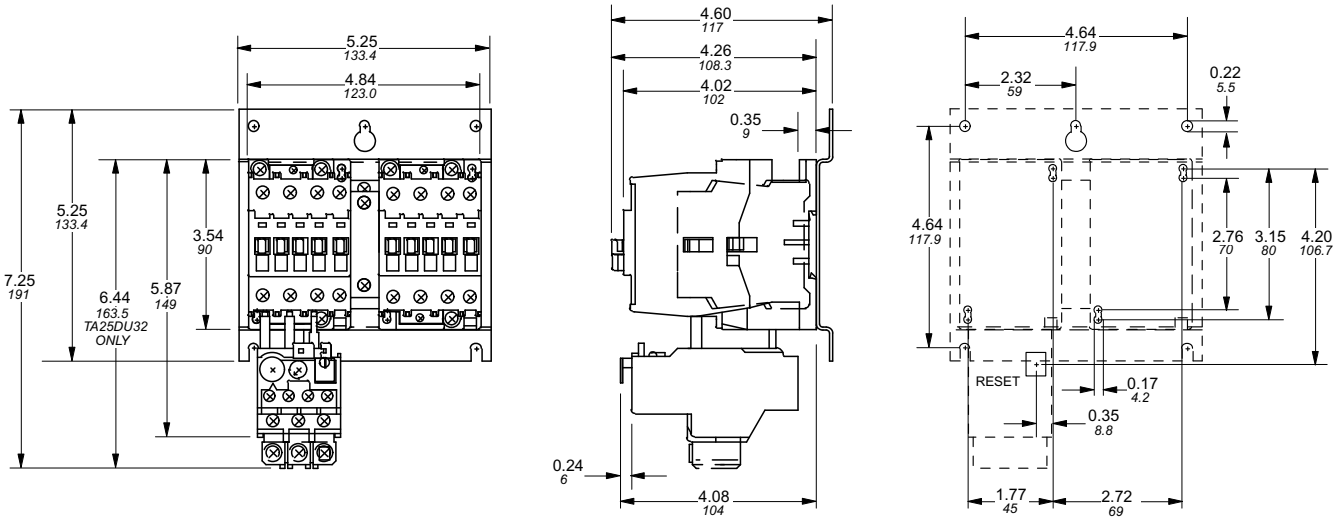
Approximate dimensions
A/AE30 – A/AE40 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

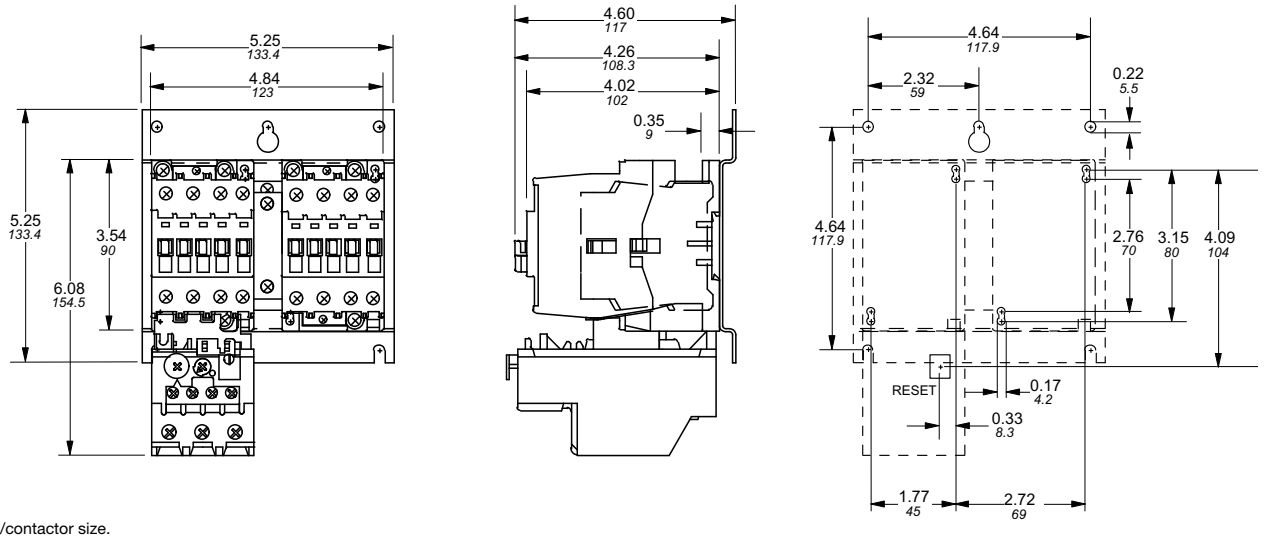
A/AE30 & A/AE40 + TA42 — Starter



A/AE30 & A/AE40 + VM5 or VE5 + TA25 — Reversing starter



A/AE30 & A/AE40 + VM5 or VE5 + TA42 — Reversing starter

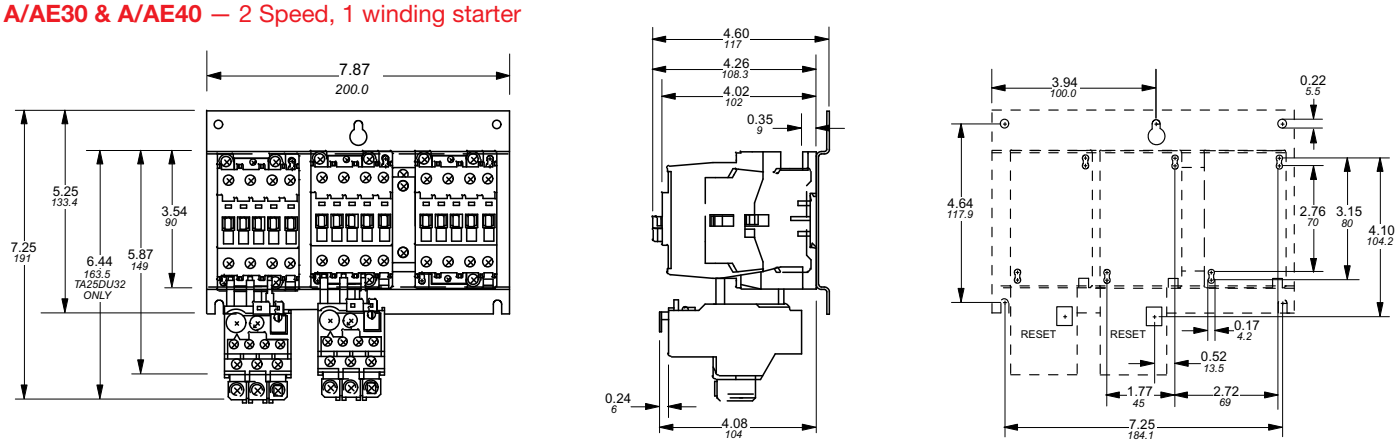


① Starter/contactor size.

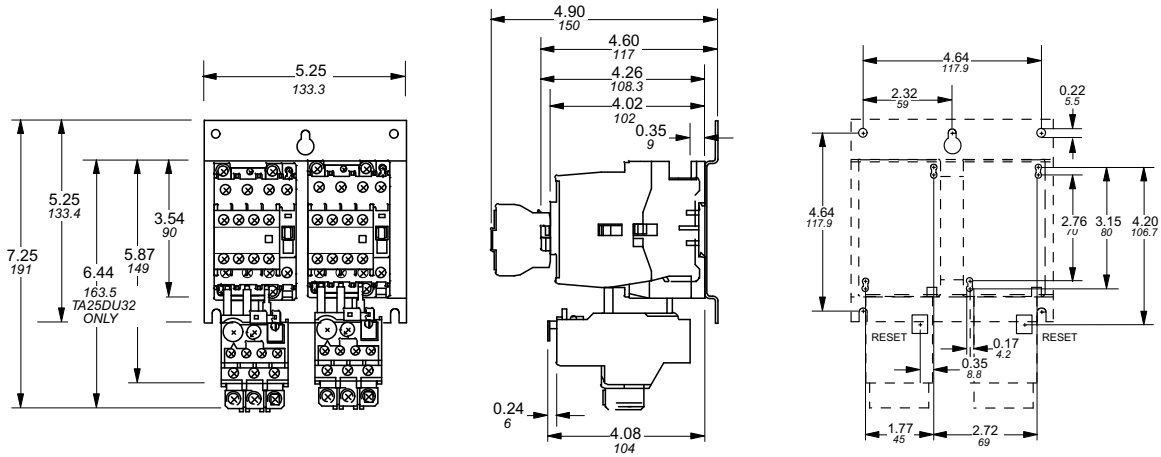
Approximate dimensions
A/AE30 – A/AE75 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

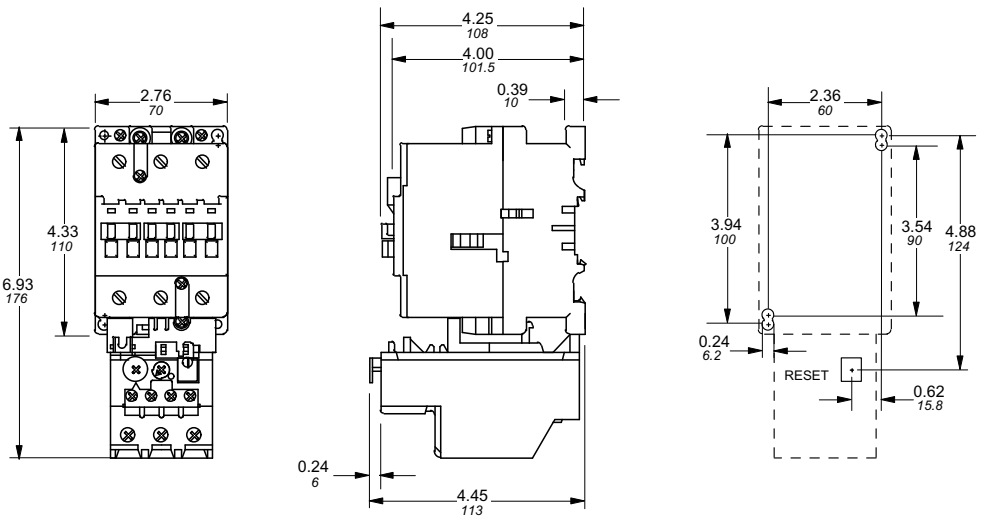
A/AE30 & A/AE40 — 2 Speed, 1 winding starter



A/AE30 & A/AE40 — 2 Speed, 2 winding starter



A/AE50 – A/AE75 + TA75 — Starter

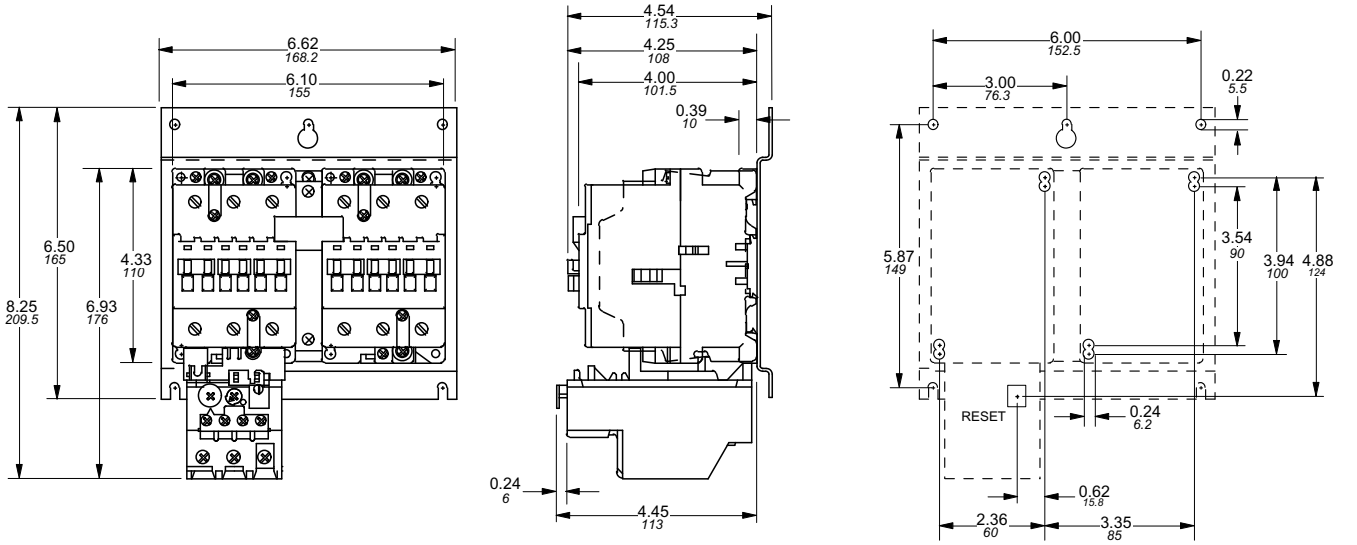


① Starter/contactor size.

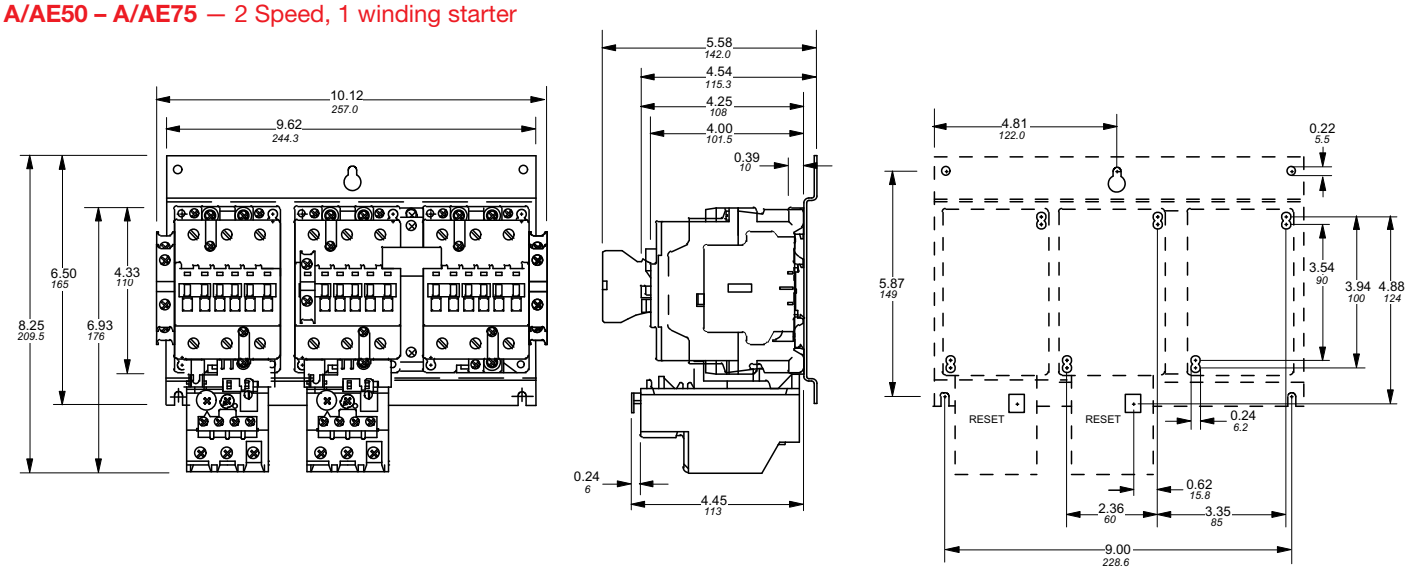
Approximate dimensions
A/AE50 – A/AE75 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

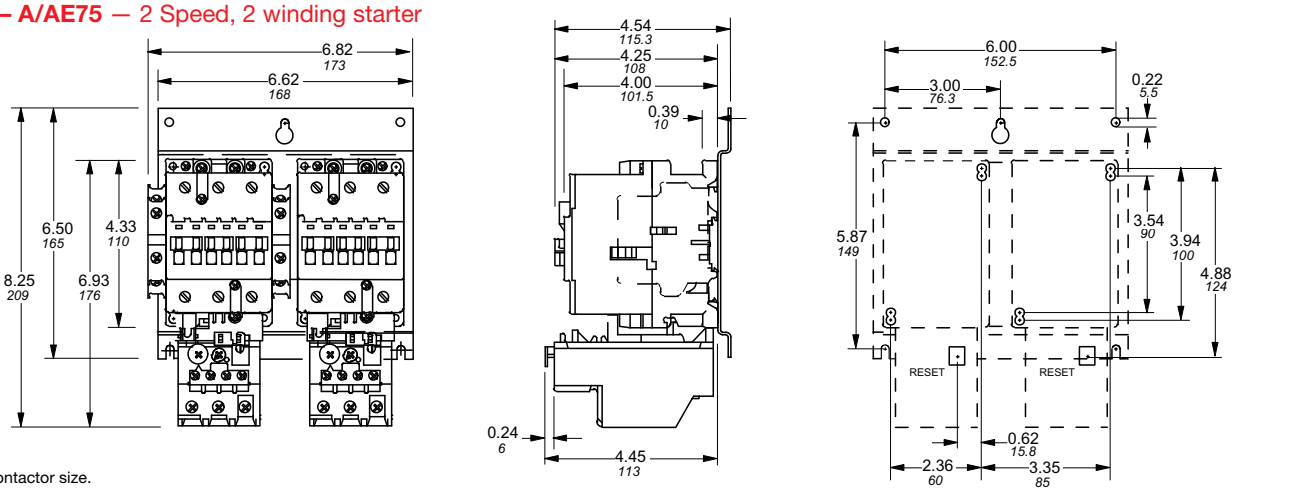
A/AE50 – A/AE75 + VM5 or VE5 + TA75 — Reversing starter



A/AE50 – A/AE75 — 2 Speed, 1 winding starter



A/AE50 – A/AE75 — 2 Speed, 2 winding starter

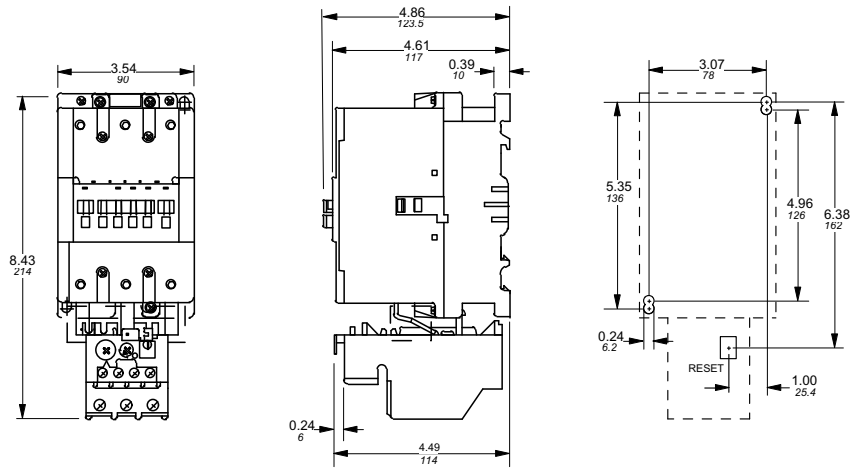


① Starter/contactor size.

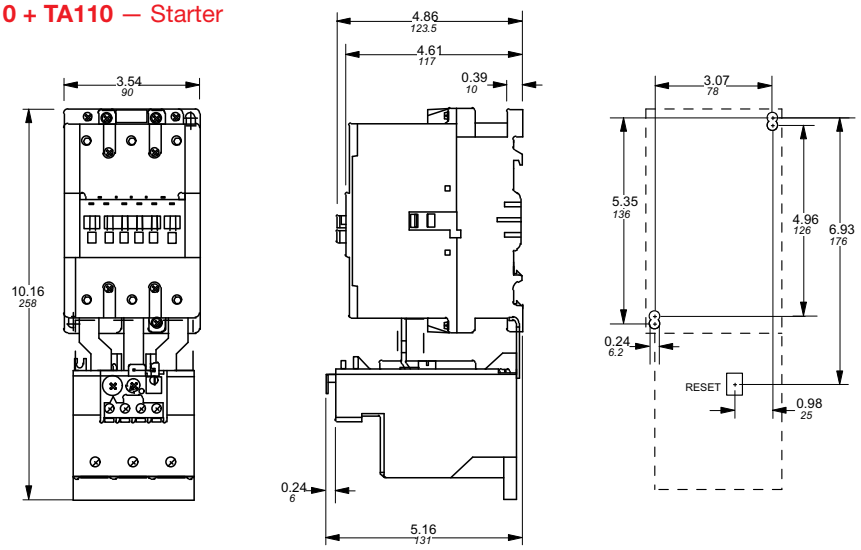
Approximate dimensions
A/AE/AF95 & A/AE/AF110 ①
AC/DC operated, 3 pole

00.00 / 00.00 Inches [Millimeters]

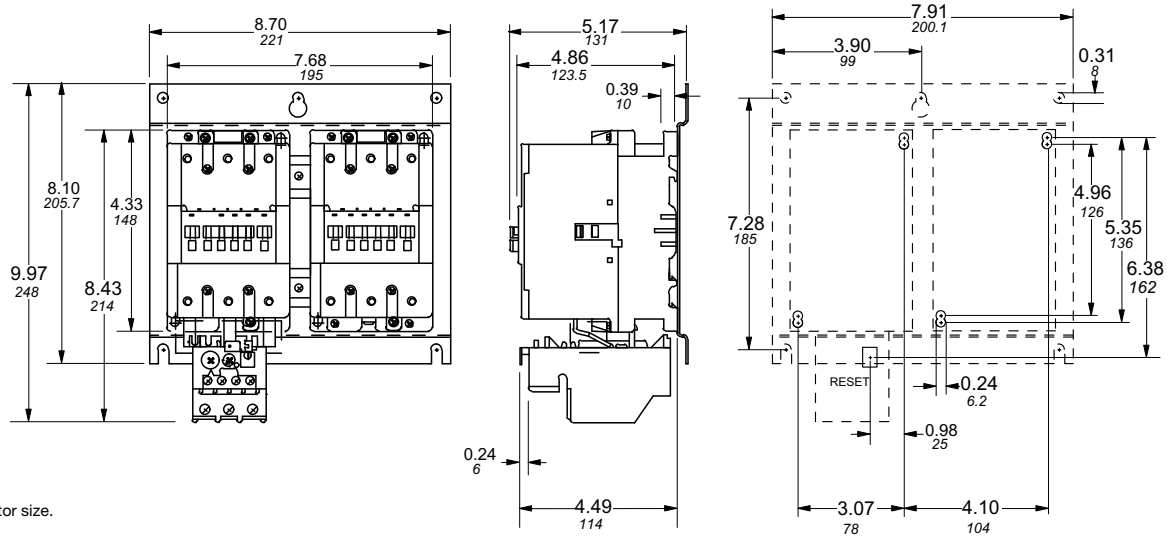
A/AE/AF95 & A/AE/AF110 + TA80 — Starter



A/AE/AF95 & A/AE/AF110 + TA110 — Starter



A/AE/AF95 & A/AE/AF110 + VE5 + TA80 — Reversing starter

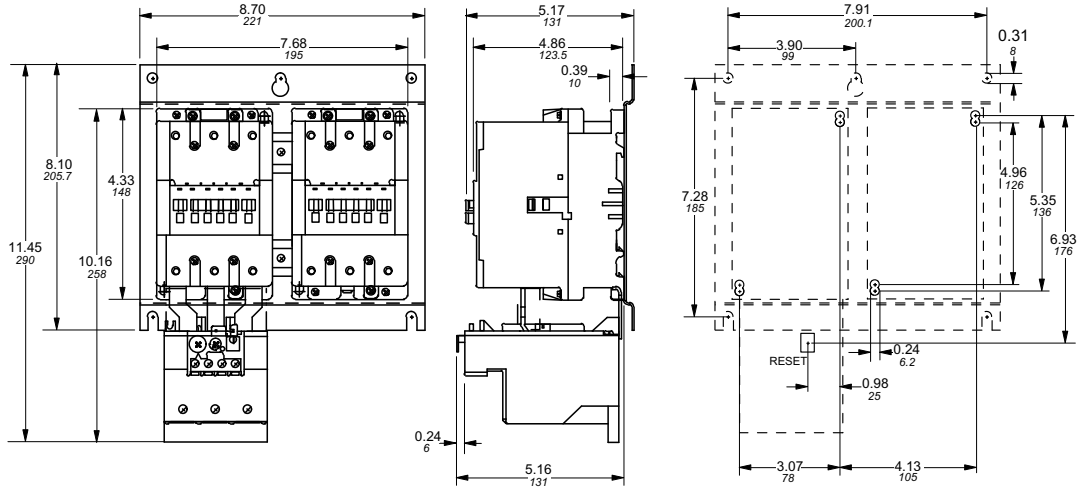


① Starter/contactor size.

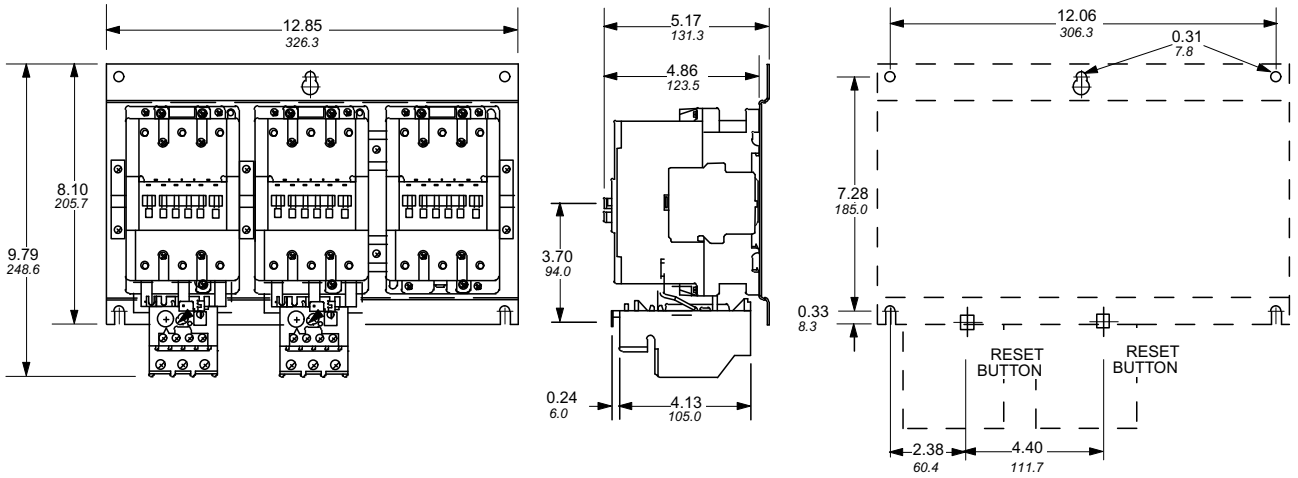
Approximate dimensions
AC/DC operated, 3 pole
A/AE/AF95 & A/AE/AF110 ①

00.00 / 00.00 Inches [Millimeters]

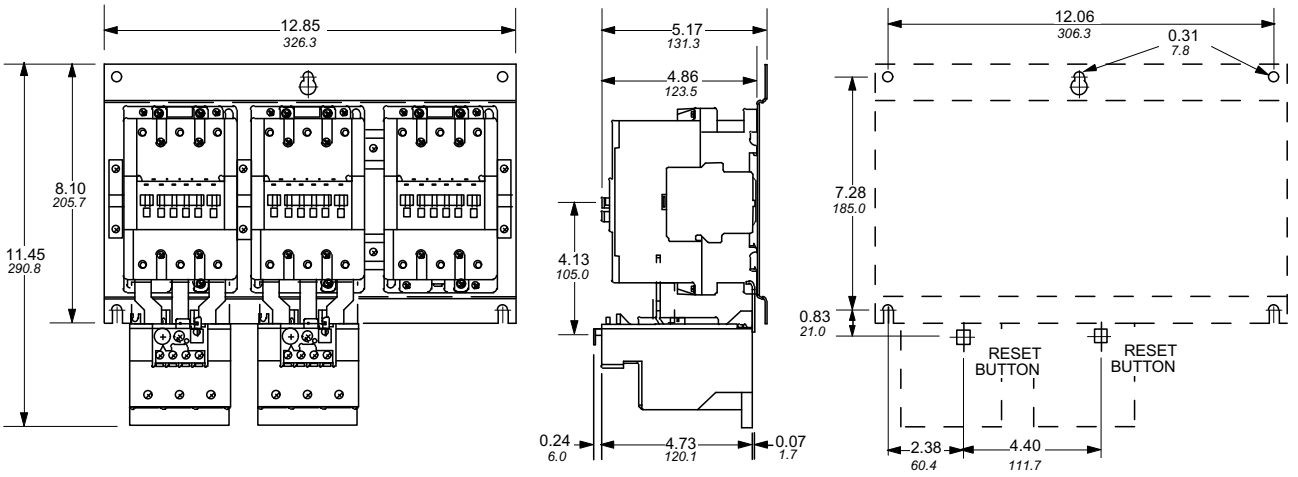
A/AE/AF95 & A/AE/AF110 + VE5 + TA110 — Reversing starter



A/AE/AF95 & A/AE/AF110 + TA80 — 2 Speed, 1 winding starter



A/AE/AF95 & A/AE/AF110 + TA110 — 2 Speed, 1 winding starter



① Starter/contactor size.