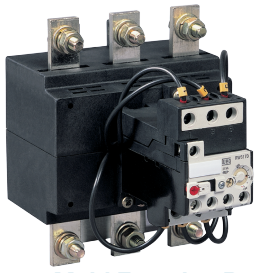
Thermal Overload Relays

Controls - RW Series



Rated for the new industry

RW overload relays are an important part of WEG Controls' range of products. As usual in WEG products, an extended operational service life is one of the main features you can find in RW overload relays.

WEG's RW Class 10 Thermal Overload Relays are designed for use with, and as perfect compliment to, the CWC miniature and CWM standard contactors.

Effectively, RW overload relays can be mounted directly under WEG contactors, assuring electrical and mechanical operation as an open across-the-line starter, from fractional power to 75HP @ 460V. Accessories are also available for separate mounting. RW overload relays are available in compact frame sizes, from 0.28 to 840A.

Modern Architecture

Previous models of open overloads with "heaters" encounter problems in the field, including

- Inaccurate trip point, because of uneven screw tightness when installed on the field, one phase at a time.
- Ambient problems, such as dust and other contaminants, because of their open design,
- Inability to protect in case of single phase failure,
- Nuisance tripping, because no temperature compensation is possible.

WEG overload relays' modern design solves all of these problems. RW overload relays are fitted with fixed bimetallic elements, which eliminate any need for heater elements for field installation or future upgrading to a more efficient motor. All sizes provide complete motor protection by offering

- Ambient temperature compensation (-4°F to +140°F)
- Phase loss sensitivity protection,
- Current unbalance sensitivity.

Dial FLA Setting

The trip-current is set via an infinitely adjustable dial designed with the motor's full load current (FLA) in mind.

Temperature Compensation

Because RW overload relays include a fourth bimetallic strip in addition to the three that are directly heated by the motor current, ambient temperature variations in the range of -4°F to +140°F are no obstacle for accurate protection of your motors even in the toughest conditions.

Phase Failure Sensitivity

WEG overload relays include phase failure sensitivity protection as standard. This feature ensures fast tripping in case of phase loss, protecting your motor and avoiding expensive repairs / corrective maintenances.

Multi Function Button "R"

The programmable RESET button can be selected to operate in a Manual or Automatic mode, with or without TEST capabilities of the isolated "trip" NC and "alarm" NO auxiliary contacts. The "R" multifunction RESET / TEST button can be set in four different positions; H (manual RESET only), HAND (manual RESET/TEST), AUTO (automatic RESET/TEST) and A (automatic RESET only).
In HAND and AUTO positions, when gray R button is pushed, both N.O. 97-98 and N.C. 95-96 contacts change states.

Standards and Approvals

IEC 60947 and VDE 0660.

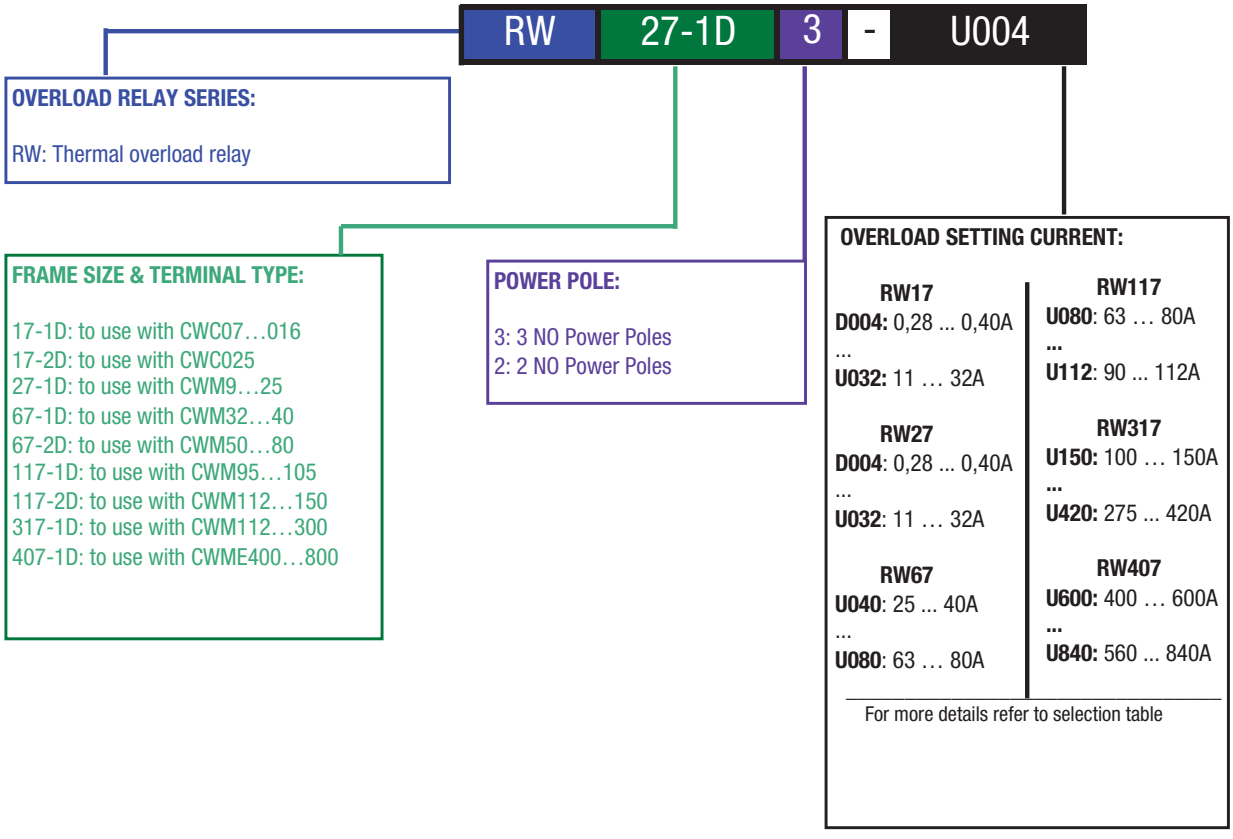
cULus

CE

Marine

Controls
Thermal Overload Relays - RW Series

Catalog part number composition



Certifications

Controls
Thermal Overload Relays - RW Series

Three-pole Thermal Overload Relay Class 10

- Adjustable tripping current
- Phase-loss sensitivity
- Tripping class 10
- Auxiliary contacts 1NO + 1NC
- Temperature compensation from -4°F to +140°F
- Hand/Auto/Reset button

Matching Contactor	Setting Range [A] Min.	Setting Range [A] Max.	Max. Fuse [A]	Catalog Number	List Price	Multiplier Symbol
CWC07…CWC016 CWCA0 (Mini-contactor)	0.28	0.40	15	RW17-1D3-D004	$46	Z2
	0.40	0.63	15	RW17-1D3-C063	$46	Z2
	0.56	0.80	15	RW17-1D3-D008	$46	Z2
	0.80	1.20	15	RW17-1D3-D012	$46	Z2
	1.20	1.80	15	RW17-1D3-D018	$46	Z2
	1.80	2.80	15	RW17-1D3-D028	$46	Z2
	2.80	4.00	15	RW17-1D3-U004	$46	Z2
	4.00	6.30	25	RW17-1D3-D063	$46	Z2
	5.60	8.00	30	RW17-1D3-U008	$46	Z2
	7.00	10.0	40	RW17-1D3-U010	$46	Z2
	8.00	12.5	50	RW17-1D3-D125	$46	Z2
	10.0	15.0	60	RW17-1D3-U015	$46	Z2
	11.0	17.0	60	RW17-1D3-U017	$46	Z2
CWC025 (Mini-contactor)	15.0	23.0	90	RW17-2D3-U023	$46	Z2
	22.0	32.0	100	RW17-2D3-U032	$46	Z2
CWM9...CWM40	0.28	0.40	15	RW27-1D3-D004	$50	Z2
	0.40	0.63	15	RW27-1D3-C063	$50	Z2
	0.56	0.80	15	RW27-1D3-D008	$50	Z2
	0.80	1.20	15	RW27-1D3-D012	$50	Z2
	1.20	1.80	15	RW27-1D3-D018	$50	Z2
	1.80	2.80	15	RW27-1D3-D028	$50	Z2
	2.80	4.00	15	RW27-1D3-U004	$50	Z2
	4.00	6.30	25	RW27-1D3-D063	$50	Z2
	5.60	8.00	30	RW27-1D3-U008	$50	Z2
	7.00	10.0	40	RW27-1D3-U010	$50	Z2
	8.00	12.5	50	RW27-1D3-D125	$50	Z2
	10.0	15.0	60	RW27-1D3-U015	$50	Z2
	11.0	17.0	60	RW27-1D3-U017	$50	Z2
	15.0	23.0	90	RW27-1D3-U023	$50	Z2
	22.0	32.0	90	RW27-1D3-U032	$50	Z2
CWM32...CWM40	25.0	40.0	90	RW67-1D3-U040	$73	Z2
	32.0	50.0	125	RW67-1D3-U050	$73	Z2
CWM50...CWM80	25.0	40.0	90	RW67-2D3-U040	$85	Z2
	32.0	50.0	125	RW67-2D3-U050	$85	Z2
	40.0	57.0	150	RW67-2D3-U057	$85	Z2
	50.0	63.0	150	RW67-2D3-U063	$85	Z2
	57.0	70.0	175	RW67-2D3-U070	$85	Z2
	63.0	80.0	175	RW67-2D3-U080	$110	Z2
CWM95...CWM105	63.0	80.0	200	RW117-1D3-U080	$150	Z2
	75.0	97.0	225	RW117-1D3-U097	$192	Z2
	90.0	112	250	RW117-1D3-U112	$192	Z2
CWM112...CWM150	75.0	97	225	RW117-2D3-U097	$232	Z2
	90.0	112	250	RW117-2D3-U112	$232	Z2
CWM112…CWM300	100	150	300	RW317-1D3-U150	$285	Z2
	140	215	350	RW317-1D3-U215	$285	Z2
	200	310	500	RW317-1D3-U310	$320	Z2
CWME400...CWME800	275	420	700	RW317-1D3-U420	$320	Z2
	400	600	1000	RW407-1D3-U600	$690	Z2
	560	840	1250	RW407-1D3-U840	$690	Z2

Note: RW117-2D, RW317-1D and RW407-1D are for separate mounting -
Connector links for contactors CWM112…CWM300 are available as an accessory on page B-59.

Controls
Thermal Overload Relays - RW Series

Two-pole Thermal Overload Relays Class 10[1] (used for single phase applications)

- Adjustable tripping current
- Phase-loss sensitivity
- Tripping class 10
- Auxiliary contacts 1NO + 1NC
- Temperature compensation from -4°F to +140°F
- Hand/Auto/Reset button

Matching Contactor	Setting Range [A] Min.	Setting Range [A] Max.	Max. Fuse [A]	Catalog Number	List Price	Multiplier Symbol
CWC07...CWC016 CWCA0 (Mini-contactor)	0.28	0.40	15	RW17-1D2-D004	$36	Z2
	0.40	0.63	15	RW17-1D2-C063	$36	Z2
	0.56	0.80	15	RW17-1D2-D008	$36	Z2
	0.80	1.20	15	RW17-1D2-D012	$36	Z2
	1.20	1.80	15	RW17-1D2-D018	$36	Z2
	1.80	2.80	15	RW17-1D2-D028	$36	Z2
	2.80	4.00	15	RW17-1D2-U004	$36	Z2
	4.00	6.30	25	RW17-1D2-D063	$36	Z2
	5.60	8.00	30	RW17-1D2-U008	$36	Z2
	7.00	10.0	40	RW17-1D2-U010	$36	Z2
	8.00	12.5	50	RW17-1D2-D125	$36	Z2
	10.0	15.0	60	RW17-1D2-U015	$36	Z2
	11.0	17.0	60	RW17-1D2-U017	$36	Z2
CWC025 (Mini-contactor)	15.0	23.0	90	RW17-2D2-U023	$36	Z2
	22.0	32.0	100	RW17-2D2-U032	$36	Z2
CWM9...CWM40	0.28	0.40	15	RW27-1D2-D004	$40	Z2
	0.40	0.63	15	RW27-1D2-C063	$40	Z2
	0.56	0.80	15	RW27-1D2-D008	$40	Z2
	0.80	1.20	15	RW27-1D2-D012	$40	Z2
	1.20	1.80	15	RW27-1D2-D018	$40	Z2
	1.80	2.80	15	RW27-1D2-D028	$40	Z2
	2.80	4.00	15	RW27-1D2-U004	$40	Z2
	4.00	6.30	25	RW27-1D2-D063	$40	Z2
	5.60	8.00	30	RW27-1D2-U008	$40	Z2
	7.00	10.0	40	RW27-1D2-U010	$40	Z2
	8.00	12.5	50	RW27-1D2-D125	$40	Z2
	10.0	15.0	60	RW27-1D2-U015	$40	Z2
	11.0	17.0	60	RW27-1D2-U017	$40	Z2
	15.0	23.0	90	RW27-1D2-U023	$40	Z2
	22.0	32.0	90	RW27-1D2-U032	$40	Z2
CWM32...CWM40	25.0	40.0	90	RW67-1D2-U040	$65	Z2
	32.0	50.0	125	RW67-1D2-U050	$65	Z2
CWM50...CWM80	25.0	40.0	90	RW67-2D2-U040	$75	Z2
	32.0	50.0	125	RW67-2D2-U050	$75	Z2
	40.0	57.0	150	RW67-2D2-U057	$75	Z2
	50.0	63.0	150	RW67-2D2-U063	$75	Z2
	57.0	70.0	175	RW67-2D2-U070	$75	Z2
	63.0	80.0	175	RW67-2D2-U080	$100	Z2

Note: [1] Availability upon request.

Controls
Thermal Overload Relays - RW Series

Separate mounting kit

Description	Mounting on Overload Relays	Catalog Number	List Price	Multiplier Symbol
Enables overload relay to be directly mounted to a back panel via screws or DIN rail	RW27-1D	BF27D	$14	Z2
	RW67-1D and RW67-2D	BF67.1D	$23	Z2
	RW117-1D	BF117D	$26	Z2

Connector links (3 per package)

Description	Assemblies with Contactor	Assemblies with Overload Relay	Catalog Number	List Price	Multiplier Symbol
Link connectors for easier CWM contactors and RW overload relays assembly	CWM112	RW117-2D3	GA117D	$41	Z2
	CWM150	RW317-1D3	GA317-1D	$68	Z2
	CWM180	RW317-1D3	GA317-2D	$70	Z2
	CWM250 / CWM300	RW317-1D3	GA317-3D	$118	Z2
	CWME400	RW317-1D3	GA317-10D	$118	Z2

General Ratings

TYPE		RW17D	RW27D	RW67D	RW117D	RW317D	RW407D
Standards		Devices according to International Standards IEC 60947-1 / 60947-4-1, European Standards EN 60947-1 / 60947-4-1, Underwriters Laboratories - UL 508; CSA C.22.2/14; VDE 0660/102					
Number of Poles		2 or 3					
Tripping Class		10					
Phase Failure Sensitivity		Yes					
Temperature Compensation		Yes					
Rated Insulation Voltage Ui							
Acc. IEC 60947-4-1	[V]	690				1000	
Acc. UL; CSA	[V]	600					
Rated Operation Voltage Ue							
Acc. IEC 60947-4-1	[V]	690				1000	
Acc. UL; CSA	[V]	600					
Rated Impulse Voltage Uimp	[kV]	6					
Current							
Direct		YES				NO	
Alternating	[Hz]	up to 400				50/60	
Degree of Protection		Protection against direct contact acc. VDE 0160 - Part 100 - IP20					
Ambient Temperature							
Storage		-50 to +80ºC (-58 to 176ºF)					
Operating		-20 to +70ºC (-4 to 158ºF)					
Ambient temperature compensation		-20 to +60ºC (-4 to 140ºF)					
Pollution Degree		3					
Mounting		Direct on contactor or separately with accessory				Separate	
Current Heat Loss							
Lower value of setting range	(W)	0.9	0.9	1.5	2.3	1	1
Higher value of setting range	(W)	1.4	1.7	4.7	4.7	1.9	1.9
Weight	[kg]	0.15	0.15	0.31	0.52	2.30	3.12
	[lb]	0.33	0.32	0.68	1.15	5.06	6.88
Shock Resistance							
IEC 60 068 part 2-27	[g/ms]	8/10					
Main Terminals Capacity		Cross / Slotted Combination[1]			Allen Head	Slide Bar	Slide Bar
Fine - Stranded with Sleeve	[mm2]	1.5 - 10	1.5 - 10	6.0 - 35	6.0 - 35	-	-
Coarse - Stranded / Solid	[mm2]	1.5 - 6.0	1.5 - 6.0	6.0 - 35	25 - 35	-	-
Slide Bars	[mm2]	-	-	-	-	2x(25x5)	2x(60x10)
Stranded / Solid (UL / CSA)	[AWG]	14 - 6	14 - 6	18 - 2	8 – 1/0	8 – 1/0	8 – 1/0
Tightening Torque	[N.m]	1.4 - 2.3	1.4 - 2.3	4.0 - 6.0	4.0 - 6.0	14 - 26	23 - 26
	[lb-in]	12.4 - 20.4	12.4 - 20.4	35.4 - 53.1	35.4 - 53.1	123.9 - 230.1	203.6 - 230.1
Short Circuit Rating 600V	[kA]	5	5	5 (40-57A) 10(50-63A)	10	10	200

Controls
Thermal Overload Relays - RW Series

Auxiliary Contacts General Ratings

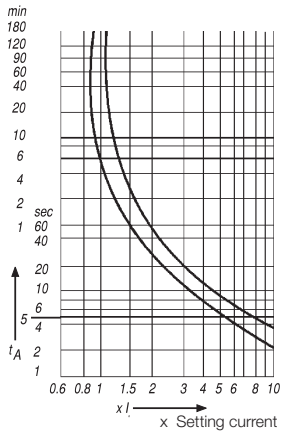
TYPE			RW17D	RW27D	RW67D	RW117D	RW317D	RW407D
Front Auxiliary Contact			1 NO + 1 NC					
Rated Auxiliary Contacts								
AC-14/15	24V	[A]	4.0					
	60V	[A]	3.5					
	125V	[A]	3.0					
	230V	[A]	2.0					
	400V	[A]	1.5					
	500V	[A]	0.5					
	690V	[A]	0.3					
DC-13/14	24V	[A]	1.0					
	60V	[A]	0.5					
	110V	[A]	0.25					
	220V	[A]	0.1					
UL/CSA			C600 ; R300					
Rated Thermal Current		[A]	6					
Short Circuit Protection								
Fuses Type D or NH	gL/gG	[A]	6					
Auxiliar Terminals Capacity								
Fine - Stranded with Sleeve		[mm²]	1.0 - 2.5					
Coarse - Stranded / Solid		[mm²]	1.0 - 2.5					
Stranded / Solid (UL / CSA)		[AWG]	16 - 12					
Tightening Torque		[N.m]	1.0 - 1.5					
		[lb-in]	8.9 - 13.3					

Controls
Thermal Overload Relays - RW Series

RW Tripping Characteristics

These tripping characteristics show the tripping of RW in relation to the current. They show the mean values of the tolerance ranges at on ambient temperature of 68ºF (20ºC), starting from cold stats. The tripping time of the overloa d releases at operational temperature is reduced to approximately 25% of the values shown.

Under normal operational conditions, all three phases of the RWs should be loaded.



Altitude & Temperature Derating

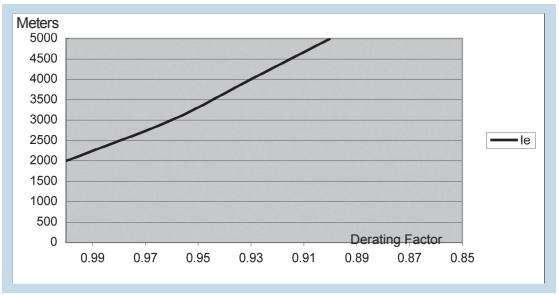
The derating of a RW overload relay has two possible factors:

1) Ambient temperature
   - Temperature compensation considers a factor according to which the rated current must be reduced when ambient temperature is higher than 60ºC (140ºF).

2) Altitude
   - Altitude compensation involves both, rated current and voltage.
   - Current compensation considers a factor according to the rated current must be reduced.
   - For voltage, altitude limits the higher operating voltage the overload relay can be used.

Temperature Compensation	Current Correction
149ºF (65ºC)	0.94
158ºF (70ºC)	0.87
167ºF (75ºC)	0.81
176ºF (80ºC)	0.73

Altitude	Voltage Correction [Ue]
Up to 2,000m (6,667ft.)	690
Up to 3,000m (10,000ft.)	550
Up to 4,000m (13,333ft.)	480
Up to 5,000m (16,667ft.)	420



The derating of the permissible operating current for installation altitudes above 2,000m (6,667 ft) and ambient temperatures over 60ºC (140ºF) is calculated according to:

Total derating = Derating $_{altitude}$ x Derating $_{ambient\ temperature}$

Example;

Altitude: 3,000 m (10,000 ft) K1 = 0.96

Ambient temperature: 70ºC (158ºF) K2 = 0.87

Total current derating = 0.96 x 0.87 = 0.84 x Ie

In this case, the maximum rated voltage we can connect to our RW overload relay is 550V.

In order to select the proper overload relay, you have to choose a device with a current range that accommodates:

Overload Setting Point = FLA_{motor} / (K1 x K2)

As in the example above, K1 x K2 = 0.84

For a motor with FLA = 20Amps

Overload Setting Point = 20 / 0.84 = 23.8Amps

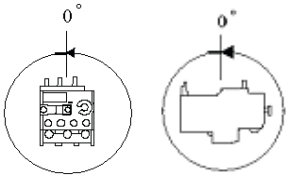
Controls
Thermal Overload Relays - RW Series

Operating Positions[1]

RW17D, RW27D, RW67D, RW117D, RW317D, RW407D

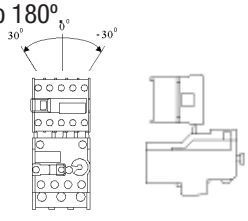
Mounting without contactor

The overload relays can be mounted at any position.



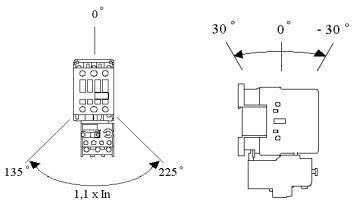
RW17D with CWC Series

As showed at the left figure below, the inclination can not exceed ± 30º degrees for a perfectly functioning of the contactor. Laterally, as showed at the right figure below, the mounting position is equivalent to 0º degrees - not requiring a correction factor on the dial of the relay. The assembly can work with mounting variations of 0º to 180º.



RW27D, RW67D, RW117D, RW317D, RW407D with CWM/CWME Series

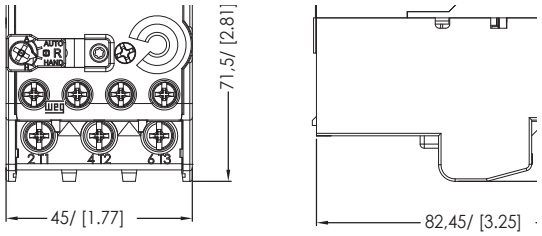
The mounting position showed at the left figure below is equivalent to 0º degrees - not requiring a correction factor on the dial of the relay. The assembly can work with mounting variations of 0º to 135º for each side, however the mounting with the relay above the contactor, position between 135º and 225º, is required a correction factor of +10% on the dial of the relay. Laterally, as showed at the right figure below, the inclination can not exceed ± 30º for a perfect functioning of the contactor.



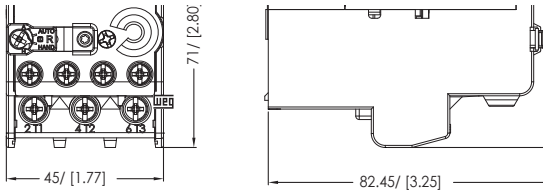
Note: [1]Please consult WEG for different mounting positions.

Controls
Thermal Overload Relays - Dimensions mm (in)

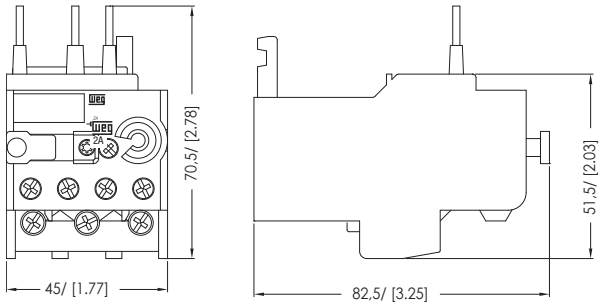
RW17-1D



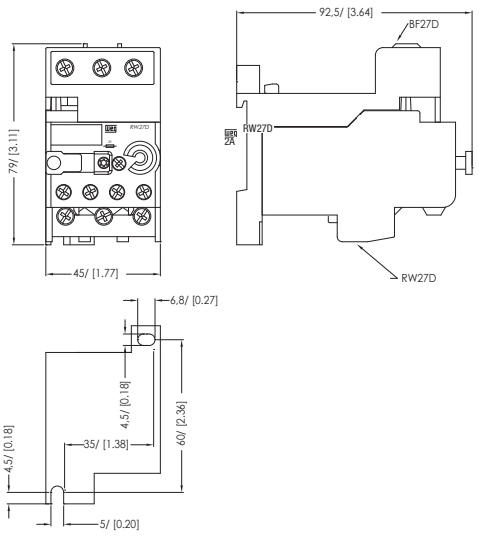
RW17-2D



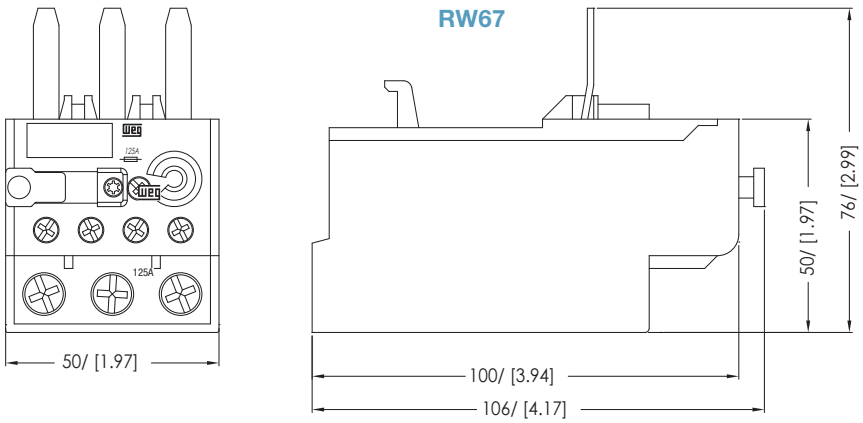
RW27



RW27 + BF27

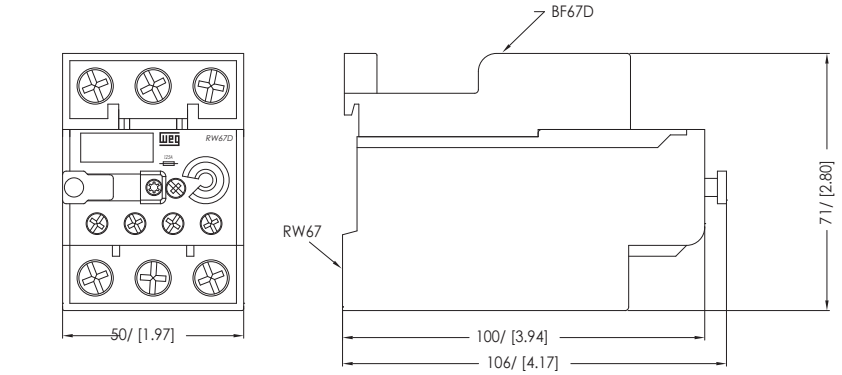


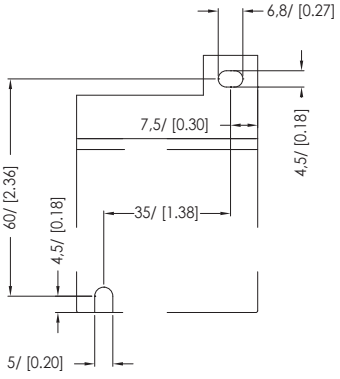
RW67



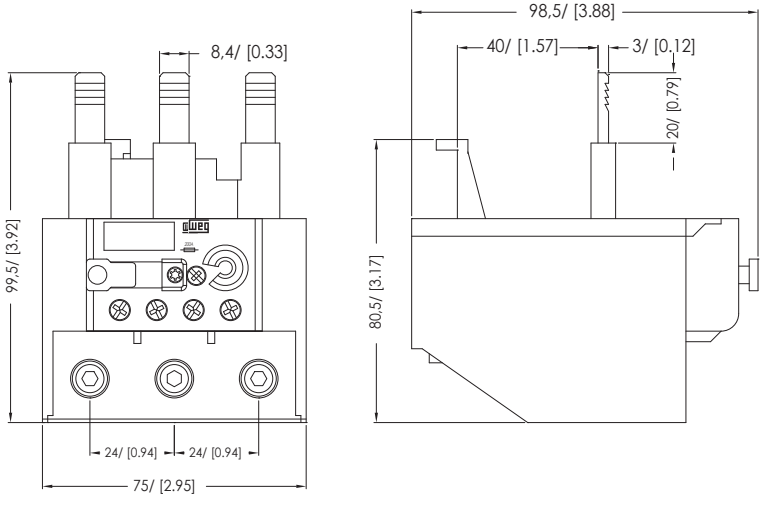
Controls
Thermal Overload Relays - Dimensions mm (in)

RW67 + BF67

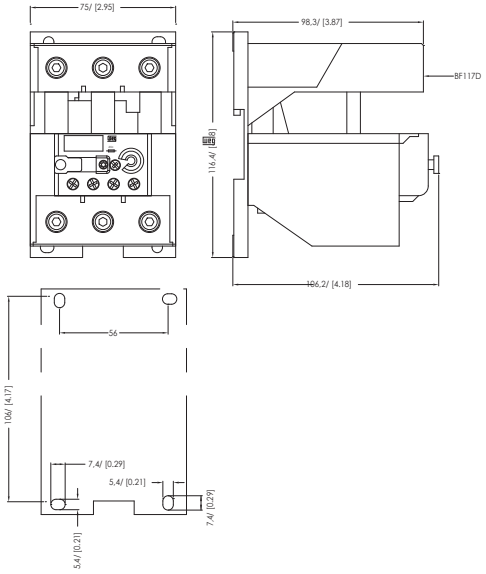




RW117-1D

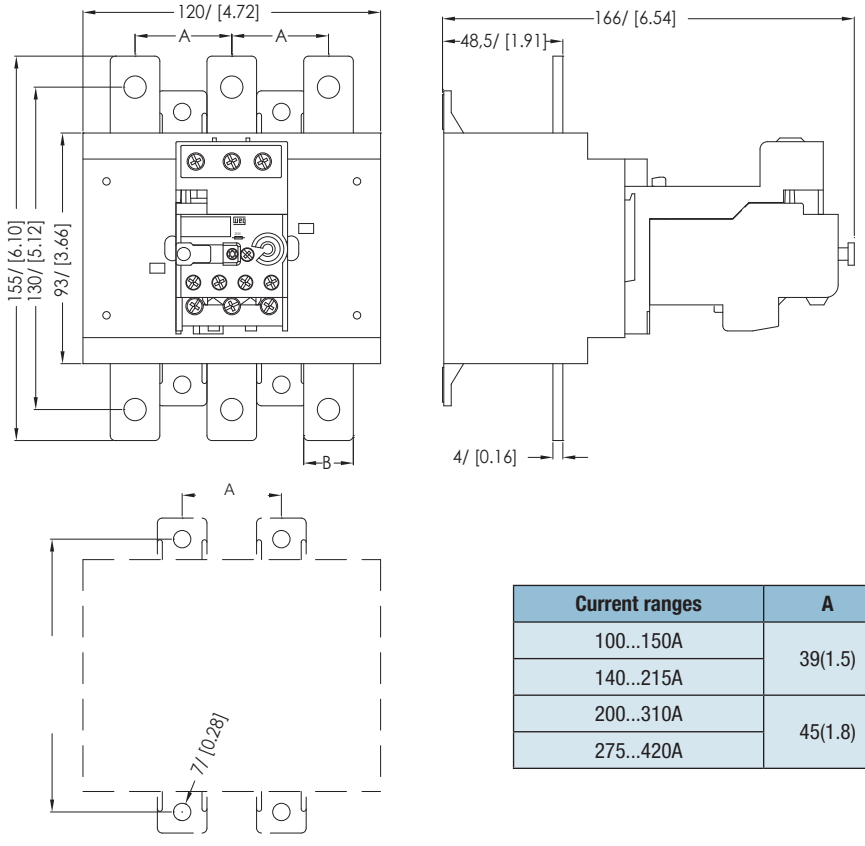


RW117-2D



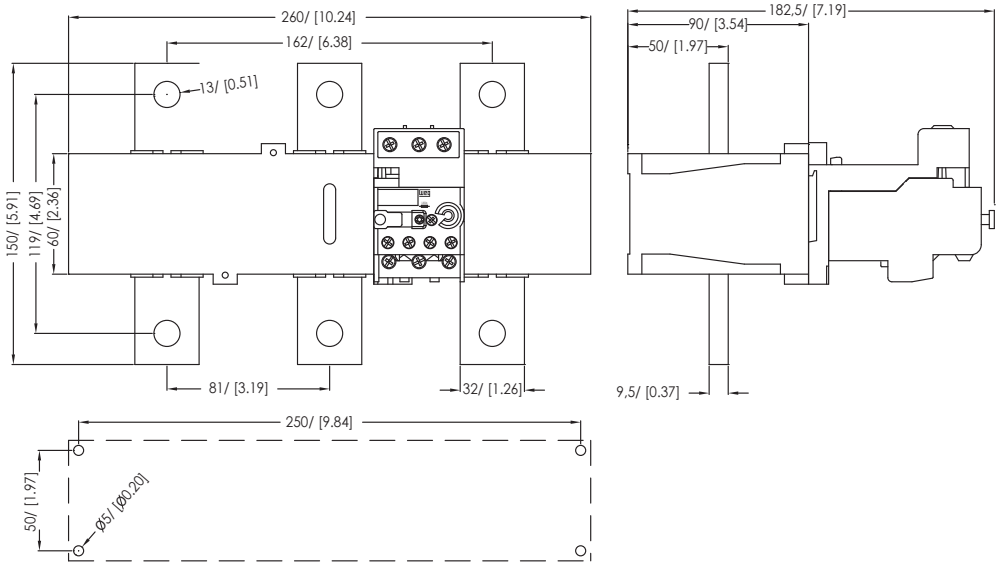
Controls
Thermal Overload Relays - Dimensions mm (in)

RW317



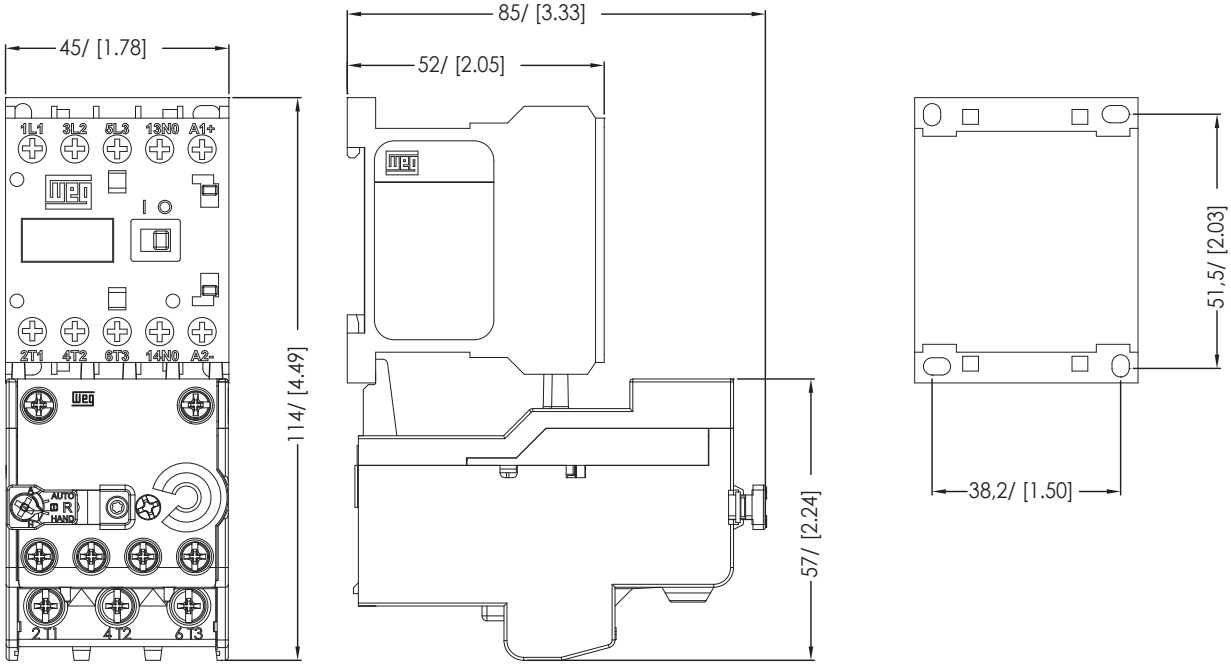
Current ranges	A	B
100...150A	39(1.5)	20(0.8)
140...215A		
200...310A	45(1.8)	25(1.0)
275...420A		

RW407

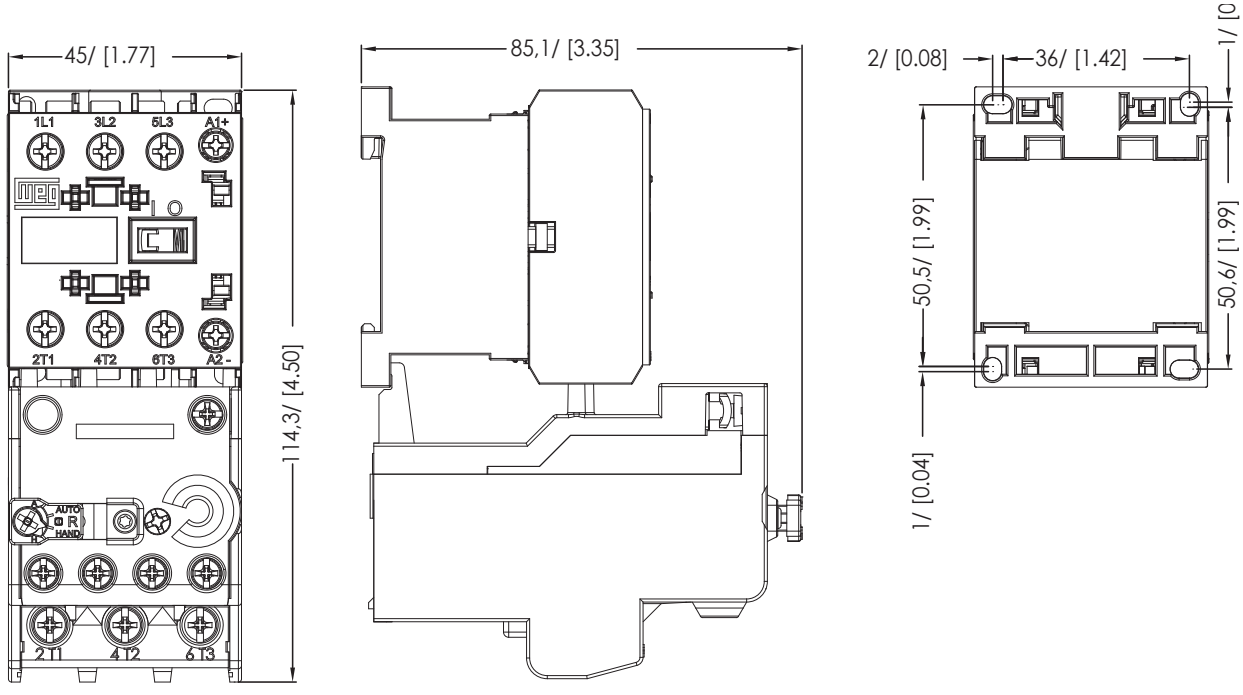


Controls
Thermal Overload Relays - Dimensions mm (in)

CWC07...16 + RW17-1D

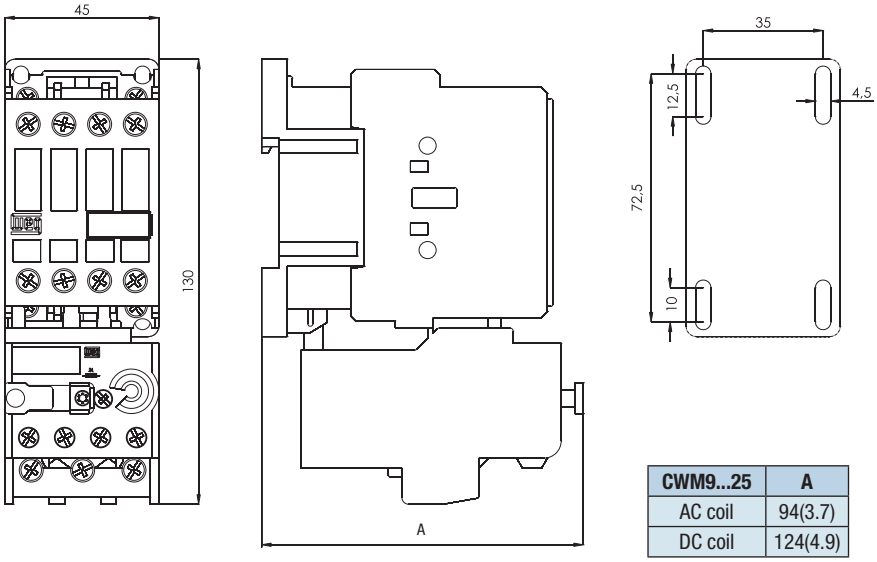


CWC025 + RW17-2D



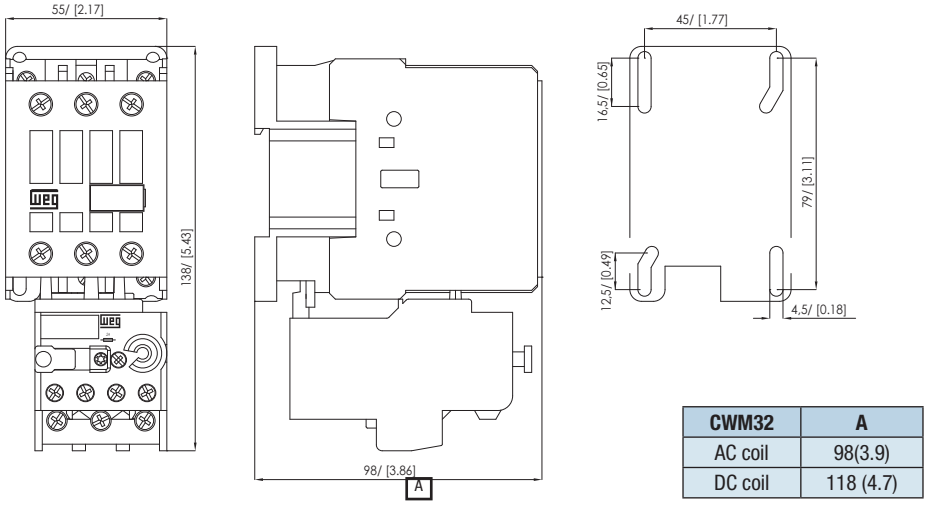
Controls
Thermal Overload Relays - Dimensions mm (in)

CWM9...25 + RW27



CWM9...25	A
AC coil	94(3.7)
DC coil	124(4.9)

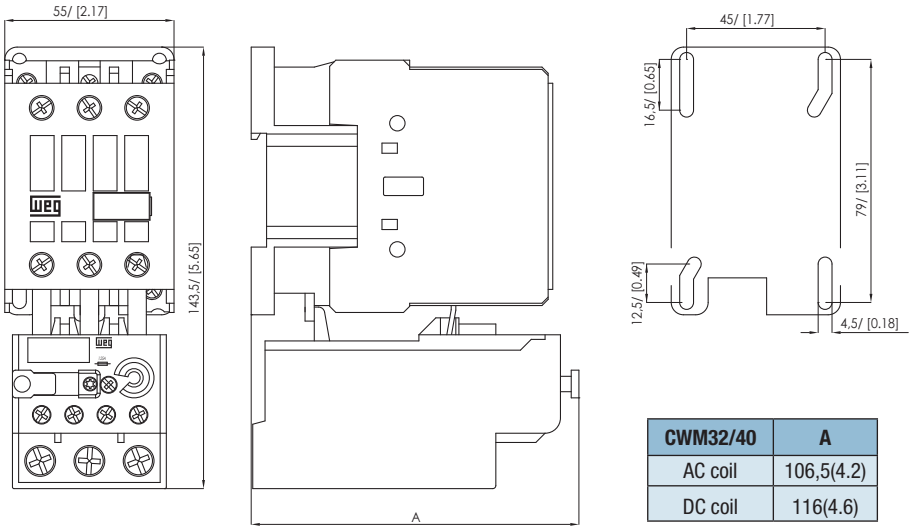
CWM32 + RW27



CWM32	A
AC coil	98(3.9)
DC coil	118 (4.7)

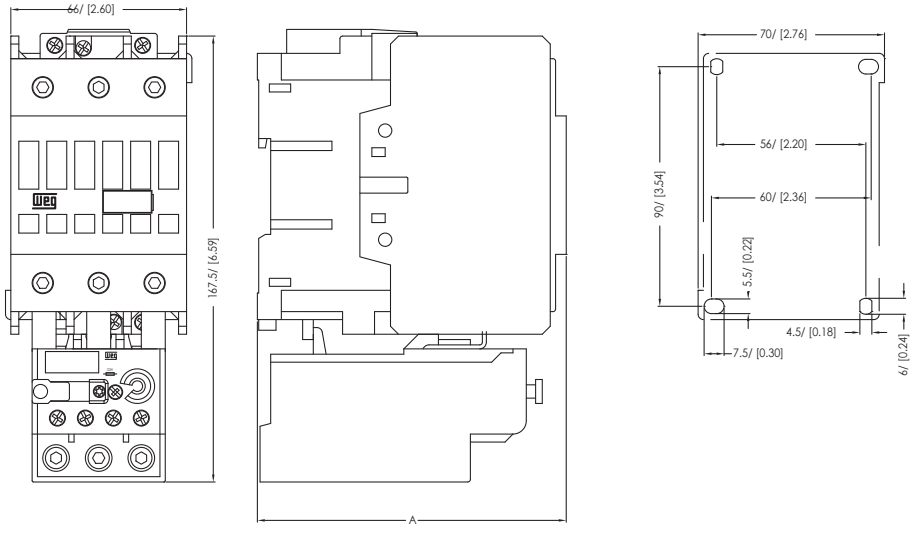
Controls
Thermal Overload Relays - Dimensions mm (in)

CWM32/40 + RW67-1D



CWM32/40	A
AC coil	106,5(4.2)
DC coil	116(4.6)

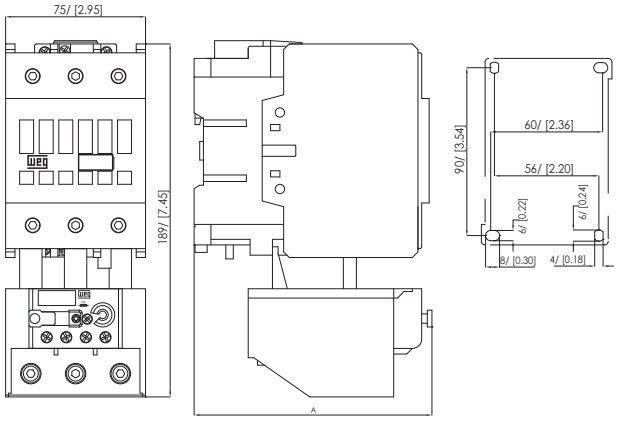
CWM50...80 + RW67-2D



CWM50...80	A
AC coil	116(4.6)
DC coil	116(4.6)

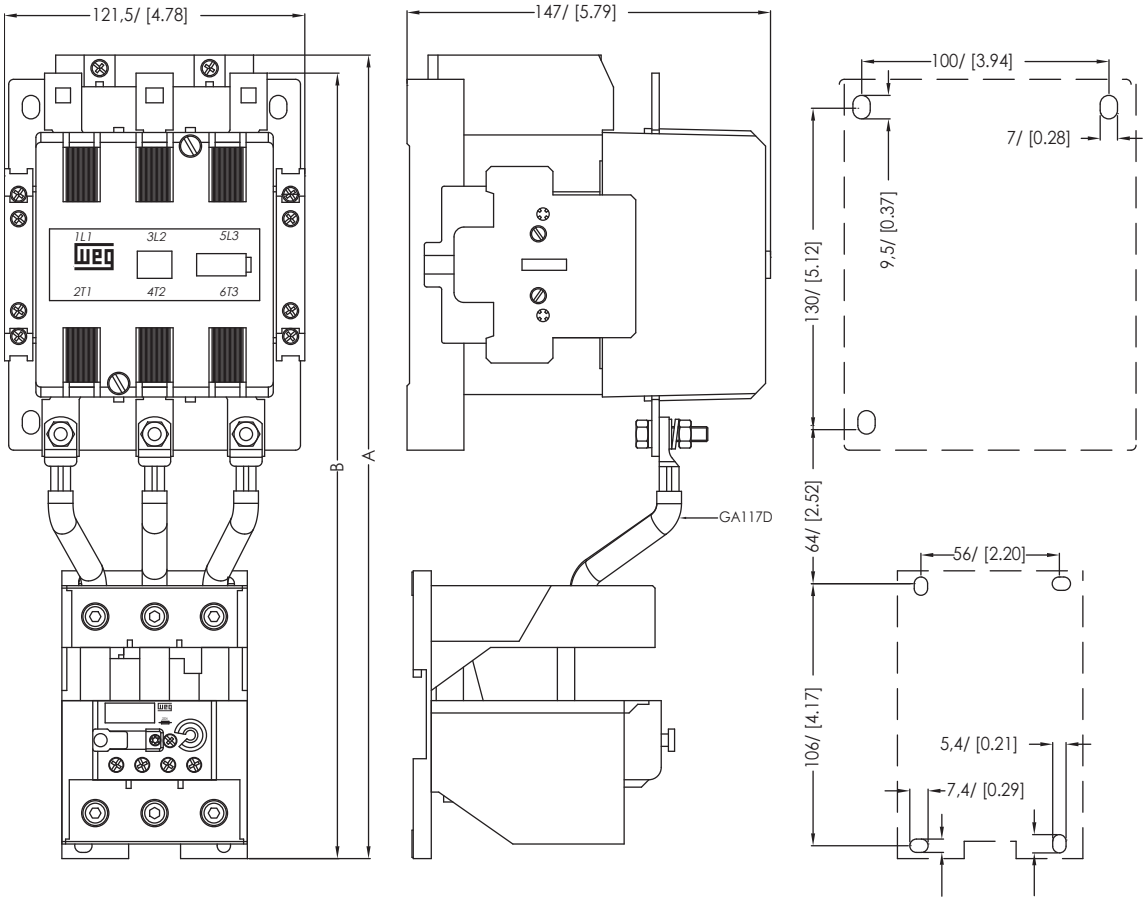
Controls
Thermal Overload Relays - Dimensions mm (in)

CWM95/105 + RW117-1D



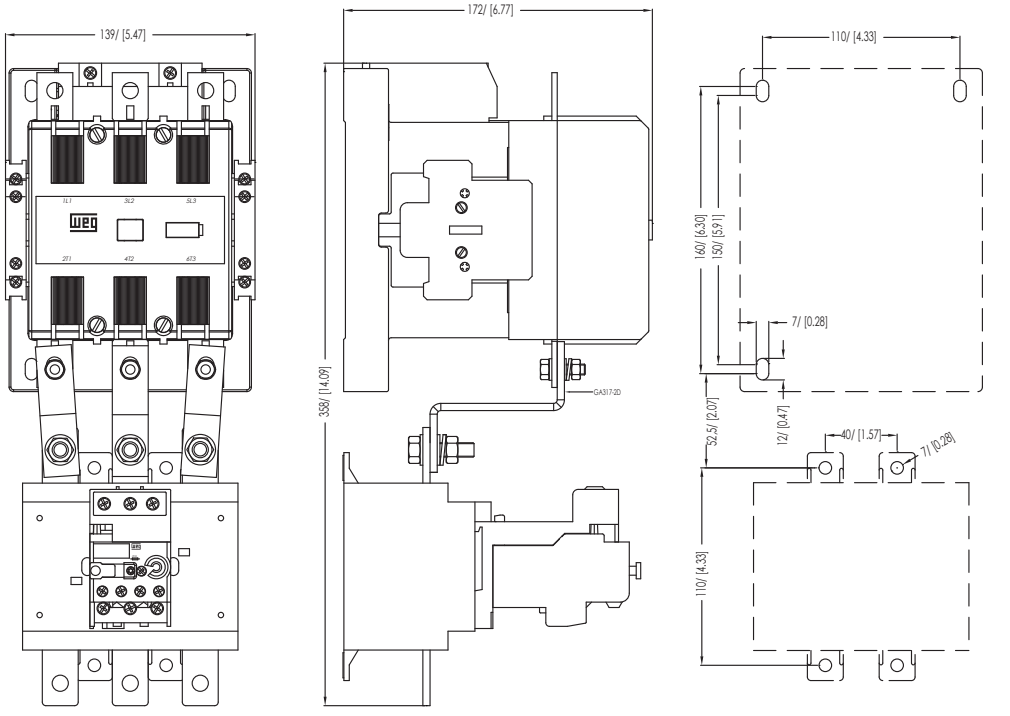
CWM95/105	A
AC coil	127,5(5.0)
DC coil	127,5(5.0)

CWM112 + RW117-2D

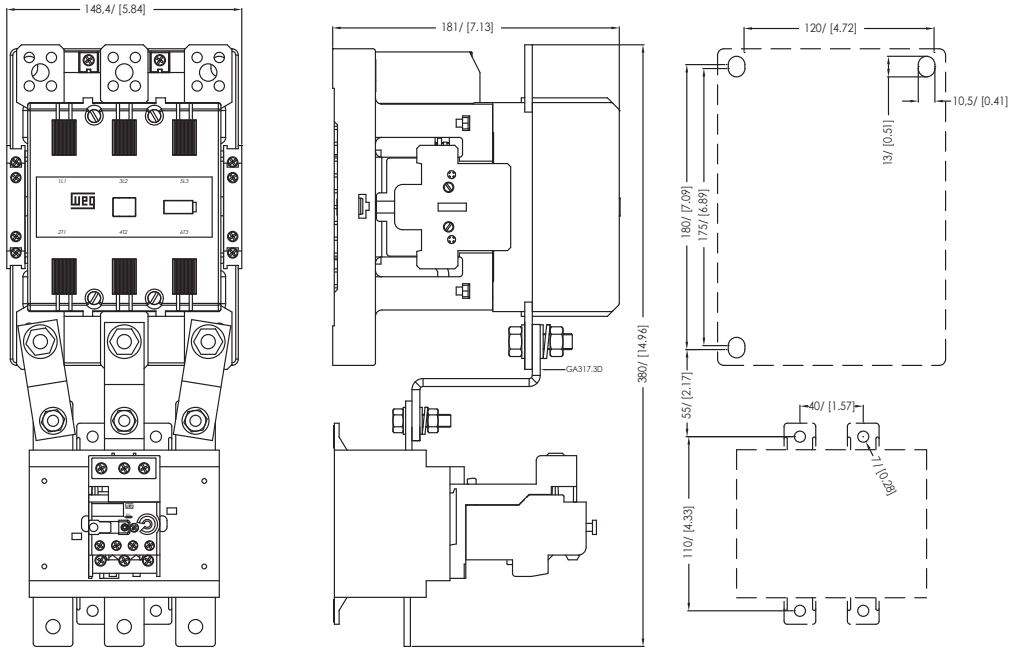


Controls
Thermal Overload Relays - Dimensions mm (in)

CWM180 + RW317



CWM250/300 + RW317



Controls
Thermal Overload Relays - Dimensions mm (in)

CWME400 + RW317