

Overloads

RW Series - Bi-Metallic

Thermal Overload Relays

An extended operational service life is one of the main features you can find in RW overload relays. WEG's RW Thermal Overload Relays are designed for use with, and as perfect complement to, WEG contactors. Effectively, RW overload relays can be mounted directly under WEG contactors, assuring electrical and mechanical operation as an open across-the-line starter. Accessories are also available for separate mounting.

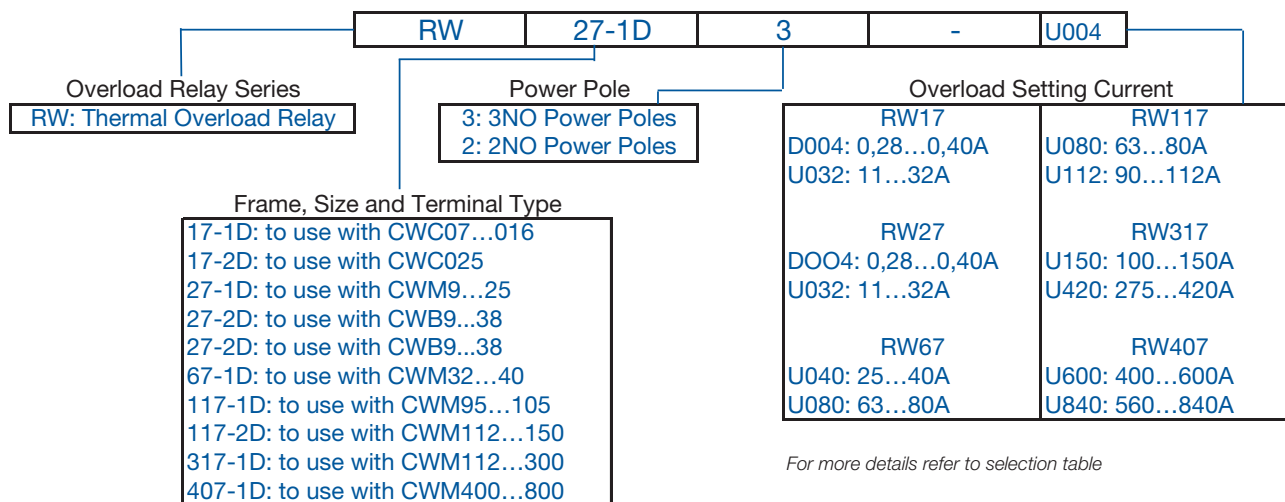


UL File No. E189202

Standard Features:

- 2 and 3 pole versions available
- Direct mounting to WEG contactors with no accessory.
(Accessories also available for separate mounting)
- Phase loss & current unbalance sensitivity protection
- Class 10 Trip characteristics
- Selectable RESET button (auto or manual)
- Isolated 1NO & 1NC auxiliary contacts

RW Series Catalog Number Sequence



For more details refer to selection table

Chart intended for reference only and not to create part numbers.



Multifunction Reset / Test Button

The thermal overload relay has a multifunction **RESET / TEST** button that can be set in four different positions:

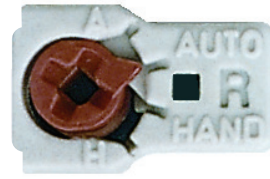
A - Automatic **RESET** only;

AUTO - Automatic **RESET / TEST**;

HAND - Manual **RESET / TEST**;

H - Manual **RESET** only.

In **HAND** and **AUTO** positions, when **RESET** button is pressed, both NO (97-98) and NC (95-96) contacts change states.



Operation description:

In H (manual RESET only) or A (automatic RESET only) position, the test function is blocked. However in the positions HAND (manual RESET / TEST) or AUTO (automatic RESET / TEST) it is possible to simulate the test and the trip functions by pressing the RESET button.

When set in the H or HAND position the RESET button must be pressed manually to reset the overload relay after a tripping event. On the other hand, when set in A or AUTO position, the overload relay will reset automatically after a tripping event.

The H, HAND, AUTO and A function setting is carried out by rotating without pressing the red button and placing it on the desired position of the RESET button.

When changing from HAND to AUTO, the RESET button must be slightly pressed while the red button is rotated.

Functions	H	HAND	AUTO	A
Relay reset	Manual1)	Manual1)	Automatic	Automatic
Auxiliary contact trip test 95-96 (NC)	Function is disabled	Test is allowed	Test is allowed	Function is disabled
Auxiliary contact trip test 97-98 (NO)	Function is disabled	Test is allowed	Test is allowed	Function is disabled

Note: 1) A recovery time of a few minutes is necessary before resetting the thermal overload relay.

Recovery Time

The RW thermal overload relays have thermal memory.

After tripping due to an overload, the relay requires a certain period of time for the bimetal strips to cool down. This period of time is so-called recovery time. The relay can only be reset once it has cooled down. The recovery time depends on the characteristic tripping curves and the level of the tripping current. After tripping due to overload, the recovery time allows the load to cool down.

Operation in the Output Side of Frequency Inverters

The RW27-2D thermal overload relays are designed for operation on 50/60 Hz up to 400 Hz and the tripping values are related to the heating by currents within this frequency range. Depending on the design of the frequency inverter, the switching frequency can reach several kHz and generate harmonic currents at the output that result in additional temperature rise in the bimetal strips. In such applications, the temperature rise not only depends on the rms value of the current, but on the induction effects of the higher frequency currents in the metal parts of the device (skin effect caused by eddy currents).

Due to these effects, the current settings on the overload relay should be higher than the motor rated current.

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 a standard. This feature ensures fast tripping in case of phase loss, protecting your motor and avoiding expensive repairs/corrective maintenance.

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For use with CWC and CWM Contactors

Three-pole Thermal Overload Relay Class 10

- Adjustable tripping current
- Phase-loss sensitivity
- Tripping class 10
- Auxiliary contacts 1NO + 1NC
- Temperature compensation from -40F to +140F
- Hand/Auto/Reset button

Matching Contactor	Setting Range [A]		Max. Fuse [A]	Catalog Number	List Price	Multiplier
	Min.	Max.				
CWC07...CWC016 CWCA0 (Mini-contactor)	0.28	0.40	15	RW17-1D3-D004	\$46	Z2
	0.40	0.63	15	RW17-1D3-C063	\$46	
	0.56	0.80	15	RW17-1D3-D008	\$46	
	0.80	1.20	15	RW17-1D3-D012	\$46	
	1.20	1.80	15	RW17-1D3-D018	\$46	
	1.80	2.80	15	RW17-1D3-D028	\$46	
	2.80	4.00	15	RW17-1D3-U004	\$46	
	4.00	6.30	25	RW17-1D3-D063	\$46	
	5.60	8.00	30	RW17-1D3-U008	\$46	
	7.00	10.0	40	RW17-1D3-U010	\$46	
	8.00	12.5	50	RW17-1D3-D125	\$46	
10.0	15.0	60	RW17-1D3-U015	\$46		
CWC025 (Mini-contactor)	11.0	17.0	60	RW17-1D3-U017	\$46	
	15.0	23.0	90	RW17-2D3-U023	\$46	
CWM9...CWM40 CWM9N...CWM32N	22.0	32.0	100	RW17-2D3-U032	\$46	
	0.28	0.40	15	RW27-1D3-D004	\$50	
	0.40	0.63	15	RW27-1D3-C063	\$50	
	0.56	0.80	15	RW27-1D3-D008	\$50	
	0.80	1.20	15	RW27-1D3-D012	\$50	
	1.20	1.80	15	RW27-1D3-D018	\$50	
	1.80	2.80	15	RW27-1D3-D028	\$50	
	2.80	4.00	15	RW27-1D3-U004	\$50	
	4.00	6.30	25	RW27-1D3-D063	\$50	
	5.60	8.00	30	RW27-1D3-U008	\$50	
	7.00	10.0	40	RW27-1D3-U010	\$50	
8.00	12.5	50	RW27-1D3-D125	\$50		
10.0	15.0	60	RW27-1D3-U015	\$50		
CWM32...CWM40 CWM32N	11.0	17.0	60	RW27-1D3-U017	\$50	
	15.0	23.0	90	RW27-1D3-U023	\$50	
	22.0	32.0	90	RW27-1D3-U032	\$50	
	25.0	40.0	90	RW67-1D3-U040	\$87	
	32.0	50.0	125	RW67-1D3-U050	\$94	
	CWM50...CWM80 CWM50N	25.0	40.0	90	RW67-2D3-U040	\$95
		32.0	50.0	125	RW67-2D3-U050	\$95
		40.0	57.0	150	RW67-2D3-U057	\$95
		50.0	63.0	150	RW67-2D3-U063	\$95
		57.0	70.0	175	RW67-2D3-U070	\$112
	CWM95...CWM105 CWM95N	63.0	80.0	175	RW67-2D3-U080	\$112
63.0		80.0	200	RW117-1D3-U080	\$150	
75.0		97.0	225	RW117-1D3-U097	\$192	
CWM112...CWM150 CWM150N	90.0	112	250	RW117-1D3-U112	\$192	
	75.0	97	225	RW117-2D3-U097	\$232	
	90.0	112	250	RW117-2D3-U112	\$232	
CWM112...CWM300 CWM300N	100	150	300	RW317-1D3-U150	\$285	
	140	215	350	RW317-1D3-U215	\$285	
	200	310	500	RW317-1D3-U310	\$320	
CWM400...CWM800	275	420	700	RW317-1D3-U420	\$320	
	400	600	1000	RW407-1D3-U600	\$690	
	560	840	1250	RW407-1D3-U840	\$690	

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 212.

For use with CWB Contactors

Three-pole Thermal Overload Relay Class 10

- Adjustable Trip Current
- Phase Loss Sensitivity
- Trip Class 10
- Built-In Auxiliary Contacts: 1NO + 1NC
- Ambient Temperature Compensation: -4°F to +140°F
- Multi-Function Button: Hand/Auto/Reset

Matching Contactor	Setting Range [A]		Max. Fuse [A]	Catalog Number	List Price	Multiplier
	Min.	Max.				
CWB9 - CWB38	0.28	0.40	15	RW27-2D3-D004	\$50	Z2
	0.40	0.63	15	RW27-2D3-C063	\$50	
	0.56	0.80	15	RW27-2D3-D008	\$50	
	0.80	1.20	15	RW27-2D3-D012	\$50	
	1.20	1.80	15	RW27-2D3-D018	\$50	
	1.80	2.80	15	RW27-2D3-D028	\$50	
	2.80	4.00	15	RW27-2D3-U004	\$50	
	4.00	6.30	25	RW27-2D3-D063	\$50	
	5.60	8.00	30	RW27-2D3-U008	\$50	
	7.00	10.0	40	RW27-2D3-U010	\$50	
	8.00	12.5	50	RW27-2D3-D125	\$50	
	10.0	15.0	60	RW27-2D3-U015	\$50	
	11.0	17.0	60	RW27-2D3-U017	\$50	
	15.0	23.0	90	RW27-2D3-U023	\$50	
CWB40-CWB80	25.0	40.0	90	RW67-5D3-U040	\$95	Z2
	32.0	50.0	125	RW67-5D3-U050	\$95	
	40.0	57.0	150	RW67-5D3-U057	\$95	
	50.0	63.0	150	RW67-5D3-U063	\$95	
	57.0	70.0	175	RW67-5D3-U070	\$112	
	63.0	80.0	200	RW67-5D3-U080	\$112	

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Overloads

RW Series - Bi-Metallic

For use with CWC and CWM Contactors
Two-pole Thermal Overload Relays Class 10
(used for single phase applications)

- Adjustable tripping current
- Phase-loss sensitivity
- Tripping class 10
- Auxiliary contacts 1NO + 1NC
- Temperature compensation from -40°F to +140°F
- Hand/Auto/Reset button

Matching Contactor	Setting Range [A]		Max. Fuse [A]	Catalog Number	List Price	Multiplier
	Min.	Max.				
CWM9...CWM40	0.28	0.40	15	RW27-1D2-D004	\$40	Z2
	0.40	0.63	15	RW27-1D2-C063	\$40	
	0.56	0.80	15	RW27-1D2-D008	\$40	
	0.80	1.20	15	RW27-1D2-D012	\$40	
	1.20	1.80	15	RW27-1D2-D018	\$40	
	1.80	2.80	15	RW27-1D2-D028	\$40	
	2.80	4.00	15	RW27-1D2-U004	\$40	
	4.00	6.30	25	RW27-1D2-D063	\$40	
	5.60	8.00	30	RW27-1D2-U008	\$50	
	7.00	10.0	40	RW27-1D2-U010	\$50	
	8.00	12.5	50	RW27-1D2-D125	\$50	
	10.0	15.0	60	RW27-1D2-U015	\$50	
	11.0	17.0	60	RW27-1D2-U017	\$50	
	15.0	23.0	90	RW27-1D2-U023	\$50	
CWM32...CWM40	25.0	40.0	90	RW67-1D2-U040	\$81	
	32.0	50.0	125	RW67-1D2-U050	\$88	
CWM50...CWM80	25.0	40.0	90	RW67-2D2-U040	\$95	
	32.0	50.0	125	RW67-2D2-U050	\$95	
	40.0	57.0	150	RW67-2D2-U057	\$95	
	50.0	63.0	150	RW67-2D2-U063	\$95	
	57.0	70.0	175	RW67-2D2-U070	\$105	
	63.0	80.0	175	RW67-2D2-U080	\$105	

Note: 1 Availability upon request.

For use with CWB Contactors

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

- Adjustable tripping current
- Phase-loss sensitivity
- Tripping class 10
- Auxiliary contacts 1NO + 1NC
- Temperature compensation from -40F to +1400F
- Hand/Auto/Reset button

2 POLE THERMAL OVERLOAD RELAYS - CLASS 10


Matching Contactor	Setting Range [A]		Max. Fuse [A]	Catalog Number	List Price	Multiplier
	Min.	Max.				
CWB9 - CWB38	0.28	0.40	15	RW27-2D2-D004	\$50	Z2
	0.40	0.63	15	RW27-2D2-C063	\$50	
	0.56	0.80	15	RW27-2D2-D008	\$50	
	0.80	1.20	15	RW27-2D2-D012	\$50	
	1.20	1.80	15	RW27-2D2-D018	\$50	
	1.80	2.80	15	RW27-2D2-D028	\$50	
	2.80	4	15	RW27-2D2-U004	\$50	
	4	6.30	25	RW27-2D2-D063	\$50	
	5.60	8.00	30	RW27-2D2-U008	\$50	
	7.00	10.0	40	RW27-2D2-U010	\$50	
	8.00	12.5	50	RW27-2D2-D125	\$50	
	10.0	15.0	60	RW27-2D2-U015	\$50	
	11.0	17.0	60	RW27-2D2-U017	\$50	
	15.0	23.0	90	RW27-2D2-U023	\$50	
22.0	32.0	90	RW27-2D2-U032	\$50		
32.0	40.0	90	RW27-2D2-U040	\$50		
CWB40-CWB80	25.0	40.0	90	RW67-1D2-U040	\$81	Z2
	32.0	50.0	125	RW67-1D2-U050	\$88	
	25.0	40.0	90	RW67-2D2-U040	\$95	
	32.0	50.0	125	RW67-2D2-U050	\$95	
	40.0	57.0	150	RW67-2D2-U057	\$95	
	50.0	63.0	150	RW67-2D2-U063	\$95	
	57.0	70.0	175	RW67-2D2-U070	\$105	
	63.0	80.0	200	RW67-2D2-U080	\$105	

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Overloads

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Separate Mounting Bracket

Description	Mounting on Overload Relays (2 or 3 pole)		Catalog Number	List Price	Multiplier
	 Enables overload relay to be directly mounted to a back panel via screws or DIN rail	RW27-1D		BF27D	\$14
RW27-2D			BF27-2D	\$14	
RW67-1D and RW67-2D			BF67.1D	\$23	
RW117-1D			BF117D	\$30	


External Reset Button

Description	Mounting in Cover of Control Panel	Catalog Number	List Price	Multiplier
 Enables overload relay to be Reset from control panel, without opening the cover	22 MM Flush Reset PB Blue 'R'	CSW-RSBF4R	\$20	Z5
	30 MM Flush Reset PB Black 'Reset'	CSW30-RSBW	\$22	

Connector links (3 per package)

Description	Contactor	Overload Relay	Catalog Number	List Price	Multiplier
 Link connectors for easier CWM contactors and RW overload relays assembly	CWM112	RW117-2D3	GA117D	\$41	Z2
	CWM150	RW317-1D3	GA317-1D	\$68	
	CWM180	RW317-1D3	GA317-2D	\$70	
	CWM250 / CWM300	RW317-1D3	GA317-3D	\$118	
	CWM400	RW317-1D3	GA317-10D	\$118	

Lugs for RW Series (Overload Relay) (3 units per package)

Description / Wire Range	Mounting on Overloads	Catalog Number	List Price	Multiplier
 (2) 600 MCM...2AWG 600 MCM...4AWG 300 MCM...6AWG	RW407-2D (400A-840A)	LW1-2S600-B	\$230	Z2
	RW317-1D (200A-420A)	LW2-S600	\$75	
	RW317-1D (100A-215A)	LW3-S300	\$35	

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General Data and Main Contacts

Catalog Number		RW17	RW27	RW67	RW117	RW317	RW407
Standards	Units	IEC 60947 / UL 508					
Setting current	(A)	0.28...17	0.28...32	25...80	75...112	100...420	400...840
Tripping class		10					
Temperature compensation		Continuous					
Rated insulation voltage Ui (pollution degree 3)	IEC 60947 (V) UL/CSA (V)	690			600		1,000
Rated impulse withstand voltage Uimp	(kV)	6					8
Rated operational frequency	(Hz)	0...400					
Degree of protection Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)		IP 20 Finger and back-of-hand proof					
Ambient temperature Operating temperature Storage temperature		-25 oC to +60 oC -40 oC to +70 oC					
Climating proof IEC 60 068-2-3 IEC 60 068-2-30		Damp heat. constant Damp heat. constant					
Current heat loss Lower value of setting range Higher value of setting range	(W) (W)	0.9 1.4	0.9 1.7	1.5 4.7	2.3 4.7	1 1.9	

Auxiliary Contacts

Models		RW17	RW27	RW67	RW117	RW317	RW407
Standards		IEC 60 947-4-1 and UL 508					
Rated insulation voltage Ui (pollution degree 3)	IEC (V) UL, CSA (V)	690			600		
Rated operational voltage Ue	IEC (V) UL, CSA (V)	690			600		
Rated thermal current Ith ($\theta \leq 55^\circ\text{C}$)	(A)	6					
AC-14 / AC-15 (IEC 60947-5-1)	24 V (A)				4		
	60 V (A)				3.5		
	125 V (A)				3		
	230 V (A)				2		
	400 V (A)				1.5		
	500 V (A)				0.5		
UL, CSA	690 V (A)				0.3		
					C600		
	24 V (A)				1		
DC-13 / DC-14 (IEC 60947-5-1)	60 V (A)				0.5		
	110 V (A)				0.25		
	220 V (A)				0.1		
UL, CSA					R300		
Short-circuit protection with fuse (gL/gG)	(A)				6		
Minimum voltage / admissible current (IEC 60947-5-4)		17 V / 5 mA					

Terminal Capacity and Tightening Torque - Main Contacts

Reference		RW17	RW27	RW67	RW117	RW317	RW407
Current setting	(A)	0.28...17	0.28...32	25...80	75...112	100...215 / 200...420	400...840
Cable size (75 °C / Cu cable)							
Flexible cable	1 cable (mm ²)	1,5...10		6,0...35	25...35	35...120	95...150
	2 cables (mm ²)			-	-		
Cable with terminal or rigid cable	1 cable (mm ²)	1,5...6,0		6,0...35	25...35	35...120	95...150
	2 cables (mm ²)			-	-		
Busbar	(mm ²)					Max 2x (25x5)	Max 2x (60x10)
Tightening torque	(N.m)	2,3		4,0	6,0	16,0	26,0
UL cable size (75 °C - Cu cable)	AWG	16...8		10...3	6...1/0	3-300 kc- mil	3/0 - 600 kcmil
Tightening torque (UL)	(lb.in)	20		35	53	141	230

Terminal Capacity and Tightening Torque - Auxiliary Contacts

Models		RW17	RW27	RW67	RW117	RW317	RW407
Type of screws		M3.5 x 10 Philips					
Cable size (75 °C / Cu cable)							
Cable with or without terminal	(mm ²)			2 x 1...2.5			
AWG-wire				16...12			
Tightening torque	(N.m / lb.in)			1.5 / 13			

Overloads

RW Series - Bi-Metallic

Technical Data

Main Data

Models	RW27	
Standards	IEC 60947-1 and UL 508	
Rated insulation voltage U_i (pollution degree 3)	IEC 60947-4-1 (V)	690
	UL, CSA (V)	600
Rated impulse withstand voltage U_{imp} (IEC 60947-1)	(kV)	6
Rated operational frequency	(Hz)	25...400
Use with direct current		Yes
Maximum operation per hour	(ops./h)	15
Protection degree (IEC 60529)	Main contacts	IP10
	Auxiliary contacts	IP20
	Frontal	IP20
Mounting	Direct on the contactor	
Resistance to impact (IEC 60068-2-27 - 1/2 sinusoid)	(g/ms)	10/11
Ambient temperature	Transport and storage	-50 °C...+80 °C
	Operating	-20 °C...+70 °C
	Temperature compensation	-20 °C...+60 °C
Altitude	(m)	2000

Main Contacts

Models	RW27	
Rated operational voltage U_e	IEC 60947-4-1 (V)	690
	UL, CSA (V)	600
Setting current / max fuse (gL/gG)1 (A)		0.28...0.4 / 2
		0.43...0.63 / 2
		0.56...0.8 / 2
		0.8...1.2 / 4
		1.2...1.8 / 6
		1.8...2.8 / 6
		2.8...4 / 10
		4...6.3 / 16
		5.6... 8 / 20
		7...10 / 25
		8...12.5 / 25
		10...15 / 35
		11...17 / 40
		15...23 / 50
	22...32 / 63	
	32...40 / 90	
Average power dissipation per pole	(W)	≤3

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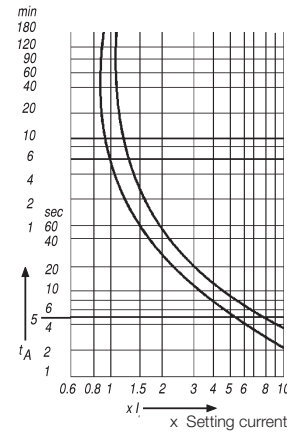
Power Factor Correction

Appendix A

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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 an ambient temperature of 68°F (20°C), starting from cold stats. The tripping time of the overload 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 60°C (140°F).

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 ffactor
149°F	(65°C)	0.94
158°F	(70°C)	0.87
167°F	(75°C)	0.81
176°F	(80°C)	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 60°C (140°F) 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: 70°C (158°F)

K2 = 0.87

Total current derating = $0.96 \times 0.87 = 0.84 \times I_e$

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

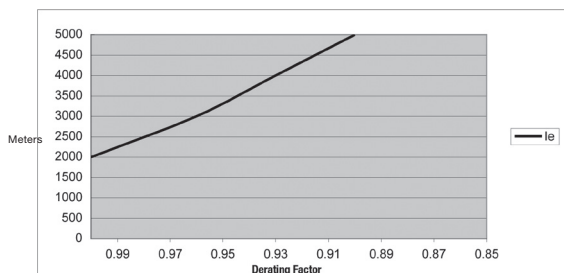
In order to select the proper overload relay, you have to choose a device with a current range that accommodates:

Overload Setting Point = $FLA \text{ motor} / (K1 \times K2)$

As in the example above, $K1 \times K2 = 0.84$

For a motor with FLA = 20Amps

Overload Setting Point = $20 / 0.84 = 23.8\text{Amps}$



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- Appendix B

Overloads

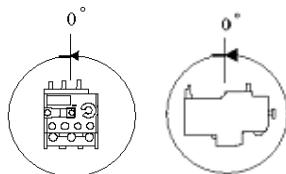
RW Series - Bi-Metallic

Operating Positions¹

RW17D, RW27D, RW67D, RW117D, RW317D, RW407D

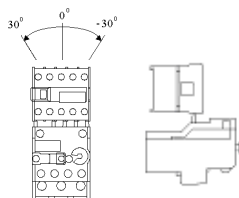
Mounting without contactor

The overload relays can be mounted at any position.



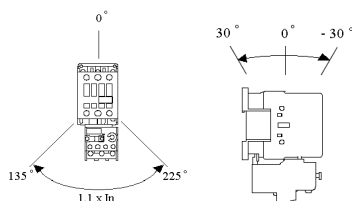
RW17D with CWC Series

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



RW27D, RW67D, RW117D, RW317D, RW407

The mounting position showed at the left figure below is equivalent to 0° degrees - not requiring a correction factor on the dial of the relay. The assembly can work with mounting variations of 0° to 135° for each side, however the mounting with the relay above the contactor, position between 135° and 225° , 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 $\pm 30^\circ$ for a perfect functioning of the contactor. [D with CWM/CWM Series](#)



Note: 1)Please consult WEG for different mounting positions.

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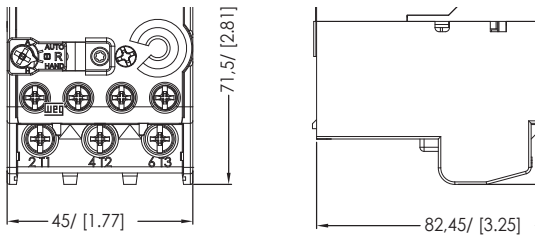
Terminal Blocks

Power Factor Correction

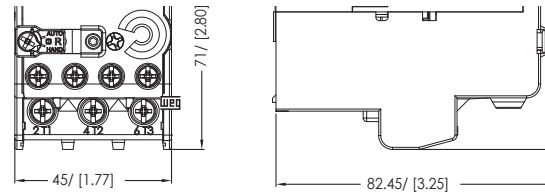
Appendix A

Appendix B

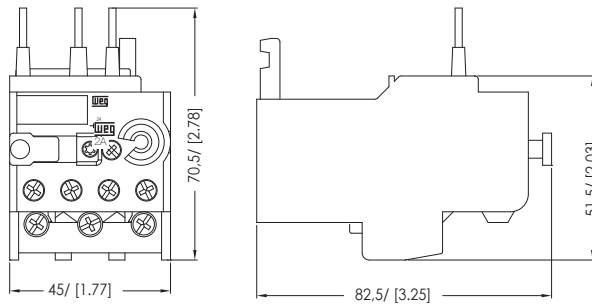
RW17-1D



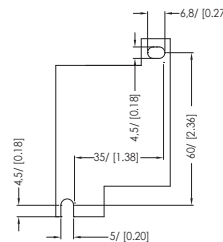
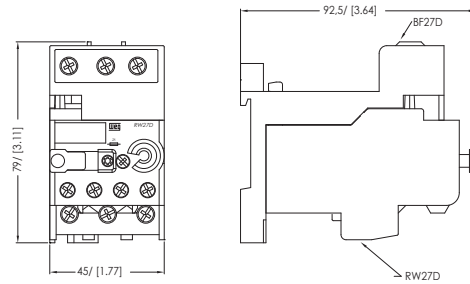
RW17-2D



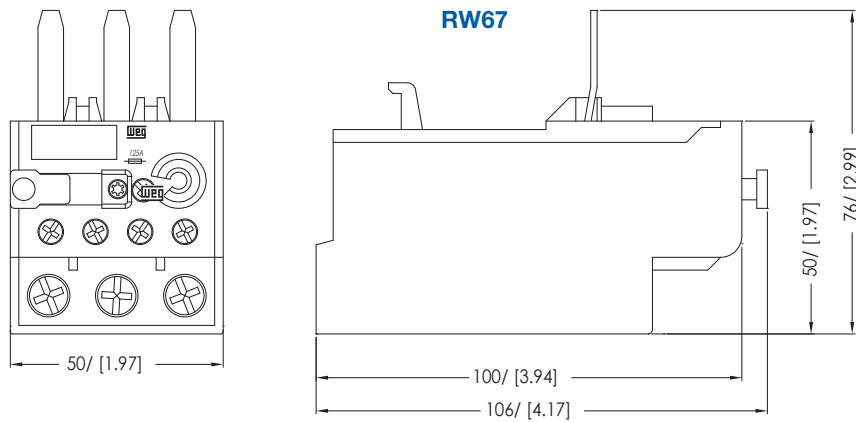
RW27



RW27 + BF27



RW67



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RW Series - Bi-Metallic

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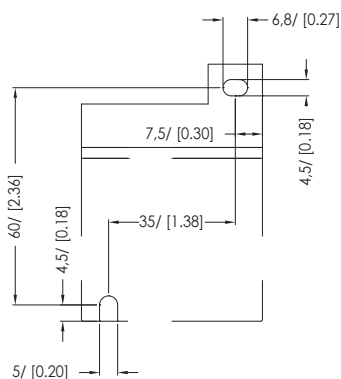
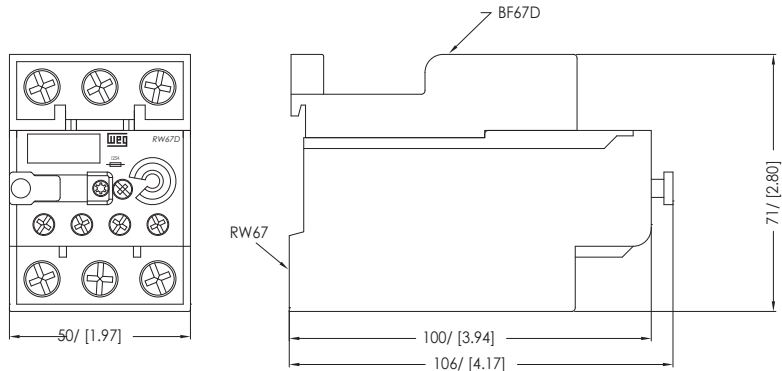
Terminal Blocks

Power Factor Correction

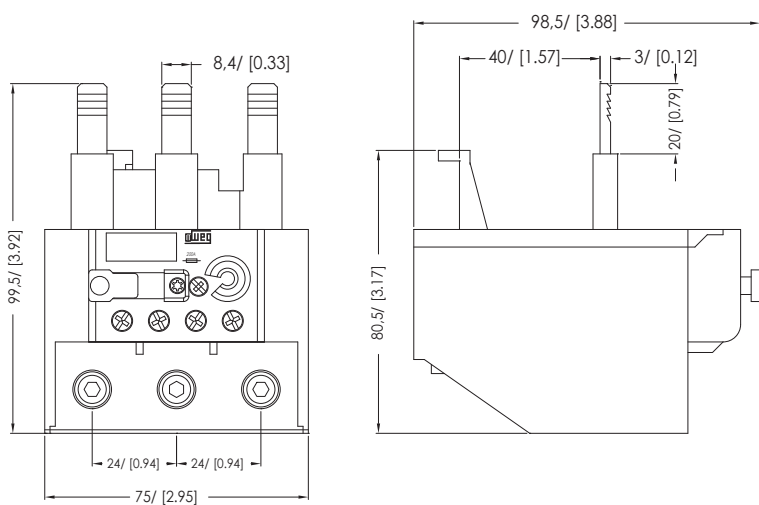
Appendix A

Appendix B

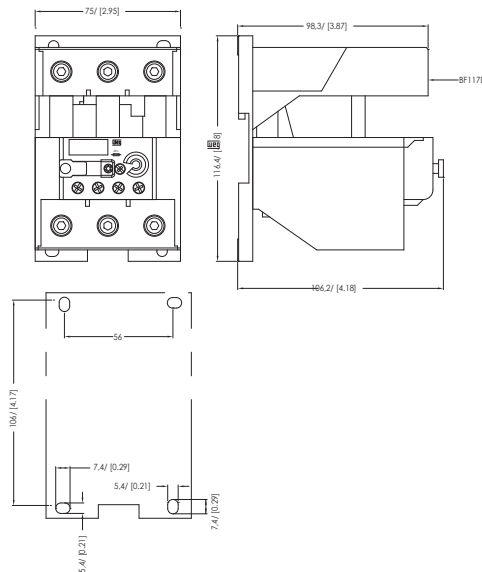
RW67 + BF67



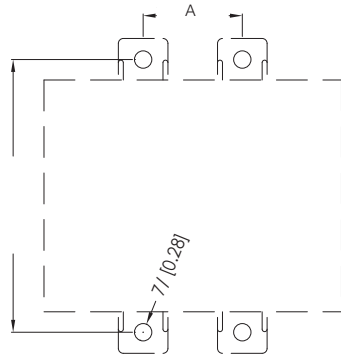
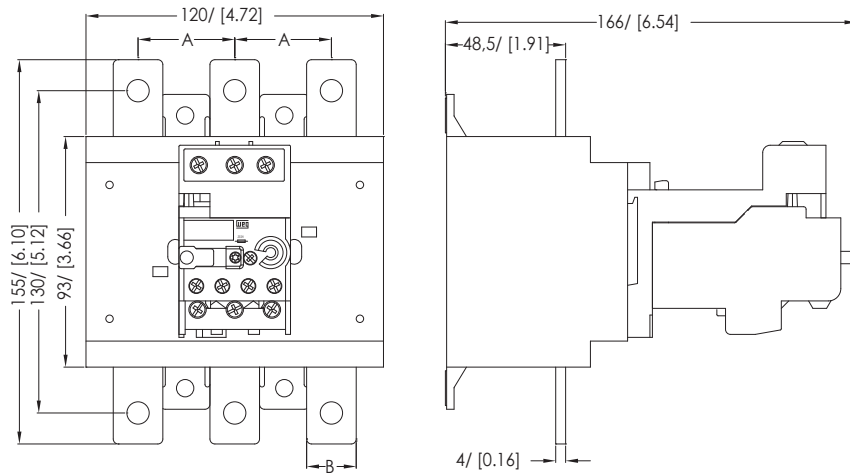
RW117-1D



RW117-2D

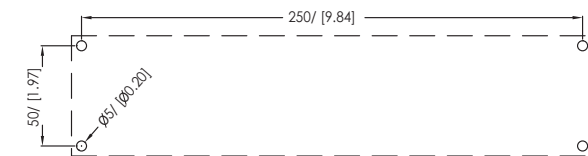
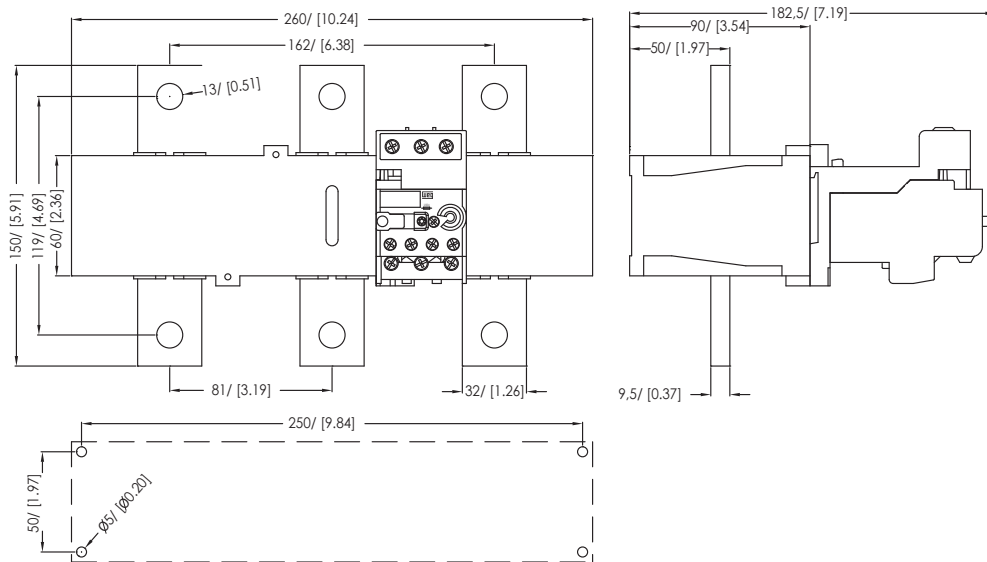


RW317



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



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Overloads

Solid-State Overload Relays

RW-E

The new RW_E Solid State Overload relays are developed with cutting edge technology according to the most demanding standards worldwide. With its wide current/AMP setting; the RW_E OL Relay can be used for protection of electric motors of different power ratings. The benefit is versatility and flexibility for manufacturers due to the possibility of standardization of control panels. This Solid State Overload Relay can be directly mounted on WEG Contactors (CWM and CWB lines) providing very reliable and flexible motor starter units. The RW_E counts on two independent and highly reliable built in auxiliary contacts that assure the motor is switched off when a failure occurs.



UL File No. E189202

Standard Features:

- 3-pole solid state overload relays with adjustable trip class: 10, 20 and 30
- Self-powered
- Wide adjustment range (5:1)
- Thermal memory
- Phase loss protection (less than 5 seconds)
- Phase unbalance protection (>40% between phases)
- Temperature compensated (-20 °C up to +60 °C)
- Manual or automatic reset modes
- Direct mounting on CWB9...38 and CWM9...105 contactors
- Separate mounting is possible with accessories 1NO + 1NC built in auxiliary contacts

Solid-State Overload Relay Catalog Number Sequence

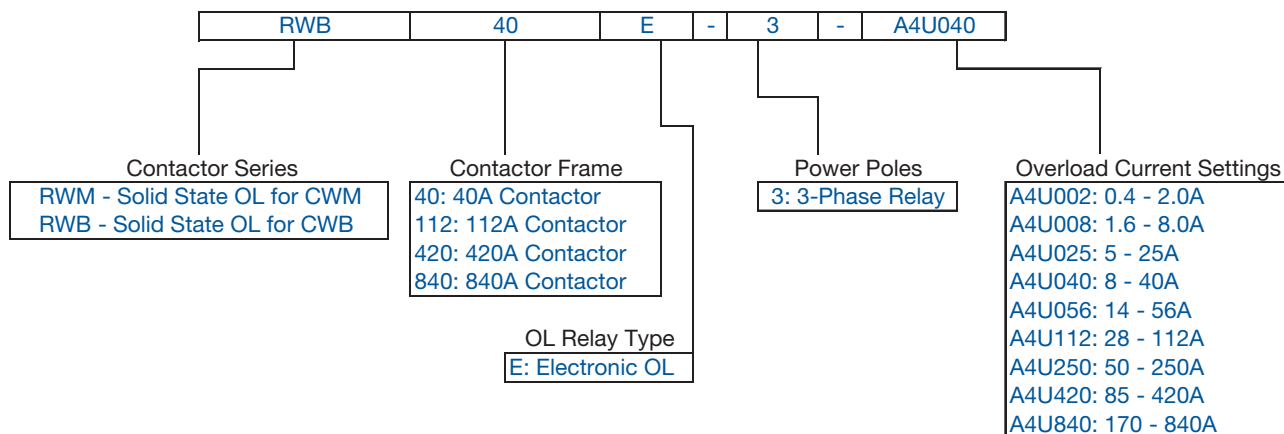


Chart intended as reference only and not to create part numbers.

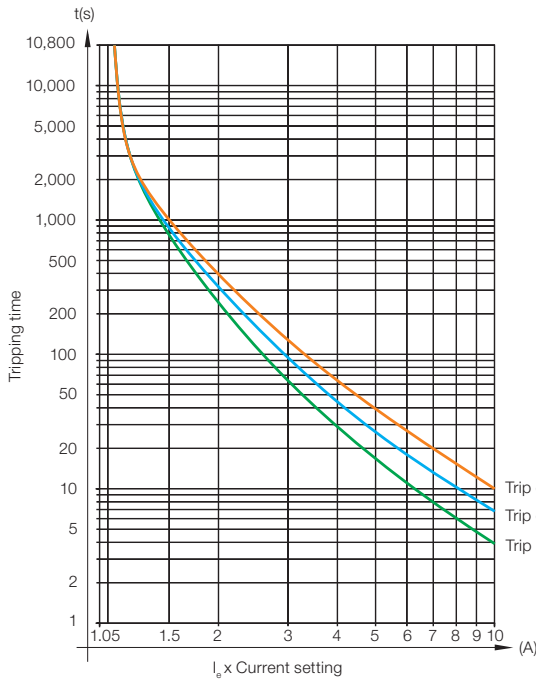


Suitable for Great Variety of Applications

The solid-state overload relays RW_E are suitable to protect motors in a wide range of industrial applications including those where long starting time is required. This way, motors on low, medium or heavy duty applications can be properly protected just by selecting the proper trip class (10, 20 or 30 according to IEC 60947-4-1) in the DIP-switches.

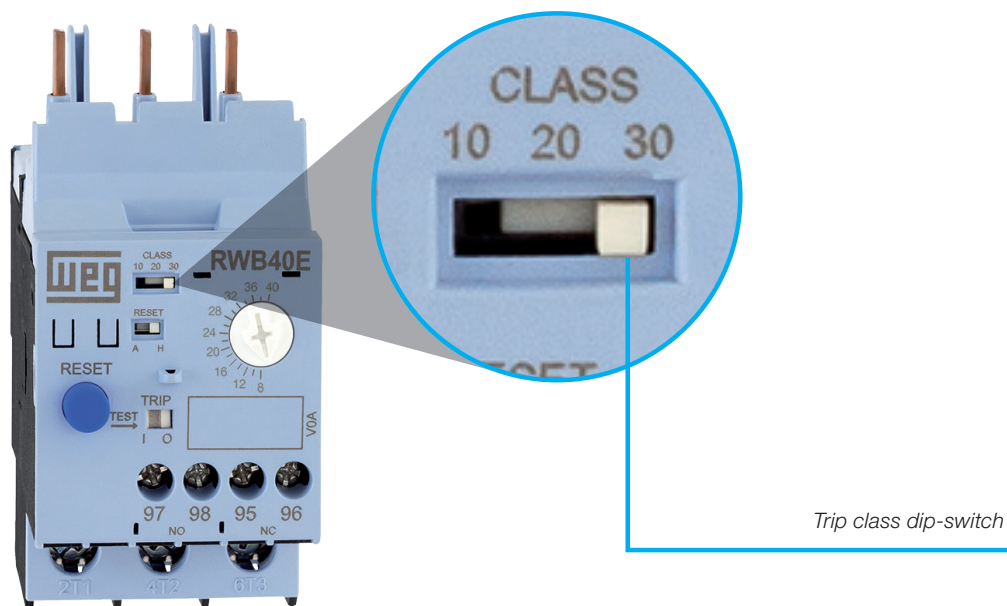
Additionally, the microprocessed electronic circuits of RW_E are temperature compensated according to IEC 60947-4-1, which means that throughout the temperature range of -20 °C up to +60 °C, the tripping point is not affected and it performs consistently without undesirable tripping.

The RW_E also features thermal memory which assures that the heating and cooling effects of motors are modeled and proper protection is guaranteed even after downtime periods.



Trip class	Multiples of current setting			
	1.05 x I _r	1.2 x I _r	1.5 x I _r	7.2 x I _r
10	-	Tp <2h	Tp <4min	4 <Tp ≤10s
20	-	Tp <2h	Tp <8min	6 <Tp ≤20s
30	-	Tp <2h	Tp <12min	9 <Tp ≤30s

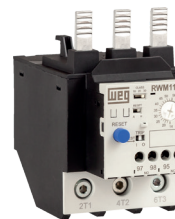
IEC 60947-4-1



Trip class dip-switch

Solid-State Overload Relays

RW_E Solid-State Overload Relays from 0.4 up to 840 A



For direct mounting on contactors	Current range A	Diagram	Max fuse (gL/gG) A	Catalog Number	Weight kg	List Price	Multiplier
CWB9...38	0.4...2		16	RWB40E-3-A4U002	0.250	\$92	Z2
CWB9...38	1.6...8		32	RWB40E-3-A4U008			
CWB9...38	5...25		63	RWB40E-3-A4U025			
CWB9...38	8...40		125	RWB40E-3-A4U040	0.250	\$145	
CWM9...40	0.4...2		16	RWM40E-3-A4U002	0.250	\$92	
CWM9...40	1.6...8		32	RWM40E-3-A4U008			
CWM9...40	5...25		63	RWM40E-3-A4U025			
CWM9...40	8...40		125	RWM40E-3-A4U040	0.918	\$145	
CWM50...105	14...56		160	RWM112E-3-A4U056	0.918	\$225	
CWM50...105	28...112		250	RWM112E-3-A4U112	0.918	\$240	

Note: Not to be used in single-phase applications.



For separate mounting or by connector links ¹⁾	Current range A	Diagram	Max fuse (gL/gG) A	Catalog Number	Weight kg	List Price	Multiplier
CWM112...500	50...250		500	RWM420E-3-A4U250	2,520	\$490	Z2
	85...420		710	RWM420E-3-A4U420		\$580	
CWM150...800	170...840		1,250	RWM840E-3-A4U840	4,150	\$1,300	

Note: Not to be used in single-phase applications.

Note: 1) RWM840E model allows two different types of connection to contactor:

a) By connecting the contactor cables to relay busbars;

b) By removing the relay busbars and using the Ø32 mm window for the passage of the contactor cables.

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Accessories

Mounting Kit

Image	For use with relays	Description	Catalog Number	Weight kg	List Price	Multiplier
	RWM40E	Enables the overload relay to be mounted directly to a panel via screws or 35 mm DIN rail	BF27D	0.050	\$14	Z2
	RWB40E		BF27D-2D			
	RWM112E		BF112	0.230	\$35	

Connector Links for Direct Mounting of Overload Relay on Contactor

Image	For use with relays	For use with contactors	Catalog Number	Weight kg	List Price	Multiplier
	RWM112E	CWM112/150	GA117D	0.135	\$41	Z2
	RWM420E	CWM150	GA317-1D	0.250	\$68	
		CWM180	GA317-2D	0.270	\$70	
		CWM250/300	GA317-3D	0.630	\$118	
		CWM400	GA317-10D	0.500	\$118	

Phase Barriers

Image	For use with relays	Description	Catalog Number	Weight kg	List Price	Multiplier
	RWM420E	Contains 1 set of plastic insulators (top / bottom) and fixing screws to be used where the overload relay power terminals external dimension exceed the busbar external dimension	IBRW317	0.044	\$4	Z2

Reset Pushbutton with Shaft

Image	For use with relays	Description	Catalog Number	Weight kg	List Price	Multiplier
	RW_E	Blue Flush pushbutton - Engraved Reset - with shaft. Length: max. 250 mm and min. 22.5 mm	CSW-BHF437	0.032	\$12	Z2

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Product model			RWM40E / RWB40E	RWM112E	RWM420E	RWM840E
Standards			IEC 60947-4-1, IEC 60947-5-1, IEC 60947-1, UL 60947-1, UL 60947-4-1A and UL 508			
Rated insulation voltage U_i (pollution degree 3)	IEC 60947-4-1	(V)	690		100	
	UL, CSA	(V)	600			
Rated impulse withstand voltage U_{imp} (IEC 60947-1)		(kV)	6		8	
Rated operational frequency (sinusoidal networks)		(Hz)	50/60			
Suitable for use	Three phase loads		Yes			
	Single phase / two phase loads		No			
	DC current loads		No			
Trip class (IEC 60947-4-1)			10, 20 or 30 - selectable			
Additional featured protections	Phase loss		Yes / less than <5s			
	Phase unbalance		Yes / >40%			
Reset	Manual / minimum downtime for reset		Yes / instantaneous			
	Automatic / minimum downtime for reset		Yes / $\geq 90s$			
Maximum operation per hour		(ops./h)	30			
Protection degree (IEC 60529)	Main contacts		IP10		IP00	
	Auxiliary contacts		IP20			
Mounting			1)		2)	
Mechanical shock resistance - 1/2 sinusoid			15 g / 11ms			
Vibration resistance (IEC 60068-2-6)			6 g / 30...300 Hz			
Ambient temperature	Transport and storage		-50 °C...+80 °C			
	Operating		-20 °C...+60 °C			
	Temperature compensation		-20 °C...+60 °C			
Altitude			2,000 m			

Notes: 1) Direct mounting on contactor or directly on the panel via screws or 35 mm DIN rail when using the mounting kit accessory (BF27D and BF112)

2) Direct mounting on contactor when using the Connector Link GA117 / GA317 accessory or directly on the panel via screws.

Main Contacts

Product model			RWM40E / RWB40E	RWM112E	RWM420E	RWM840E
Rated operational voltage U_e	IEC 60947-4-1	(V)	690		100	
	UL, CSA	(V)	600			
Current setting / max fuse (gL/gG)	(A)	0.4...2 / 16	14...56 / 160	28...112 / 250	50...250 / 500	85...420 / 710
		1.6...8 / 32				
		5...25 / 63				
Setting current / average power dissipation per pole	(W)	8...40 / 125	14...56 / 2	28...112 / 2.6	50...250 / 12	85...420 / 12
		0.4...2 / 0.07				
		1.6...8 / 0.06				
		5...25 / 0.38				
		8...40 / 1.5				

Notes: 1) Direct mounting on contactor or directly on the panel via screws or 35 mm DIN rail when using the mounting kit accessory (BF27D and BF112);

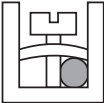
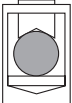
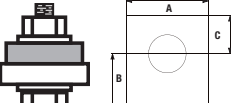
2) Direct mounting on contactor when using the Connector Link GA117 / GA317 accessory or directly on the panel via screws.

Technical Data

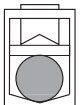
Auxiliary Contacts

Product model			RWM40...840E / RWB40E
Rated insulation voltage Ui (pollution degree 3)	IEC 60947-4-1	(V)	250
	UL, CSA	(V)	600
Rated impulse withstand voltage Uimp (IEC 60947-1)		(kV)	4
Rated operational voltage Ue	IEC 60947-4-1	(V)	250
	UL, CSA	(V)	600
Rated thermal current Ith ≤ 60 °C)		(A)	5
Rated operational current Ie			
AC-14/AC-15 (IEC 60947-5-1)	24 V	(A)	3
	120 V	(A)	3
	250 V	(A)	1.5
DC-13 (IEC 60947-5-1)	24 V	(A)	2
	60 V	(A)	0.4
	110 V	(A)	0.22
	125 V	(A)	0.22
	250 V	(A)	0.1
NEMA control circuit ratings	UL, CSA		C300 / R300
Short-circuit protection with fuse		(A)	6
Minimum voltage / admissible current (IEC 60947-5-4)			12 V / 10 mA

Terminal Capacity and Tightening Torque - Main Contacts

Product model		BF27D	RWM40E / RWB40E	RW112E	BF112
Type of screw		M4 Flat / Phillips #2	M3.5 Flat / Phillips #2	M10 Allen #4	M10 Allen #4
Cable size					
Flexible cable	(mm ²)		1.5...10	-	-
Cable with terminal / rigid cable	(mm ²)		1.5...6	-	-
AWG wire			16...10	-	-
Tightening torque	(Nm)		2.3	-	-
Flexible cable	(mm ²)		-	1...10	2.5...35
Cable with terminal / rigid cable	(mm ²)		-	1...10	2.5...35
AWG wire			-	16...8	14...2
Tightening torque	(Nm)		-	1.7	6
Product model			RWM420E	RWM840E	
Type of screw			M10 Hexagon Head		M12 Hexagon Head
Cable with terminal	(mm ²)		2 x (25...150)		2 x (60 x 10)
Busbar (A x B x C)	(mm)		25 x 18.5 x 12.5		31.7 x 28.3 x 15
Tightening torque	(Nm)		26		26

Terminal Capacity and Tightening Torque - Auxiliary Contacts

Product model		RWM40...840E / RWB40E	
Type of screw		Flat / Phillips #1	
Cable size			
Cable with or without terminal	(mm ²)		
AWG wire			1 x 1...2.5
Tightening torque	(Nm)		16...12
		0.8	

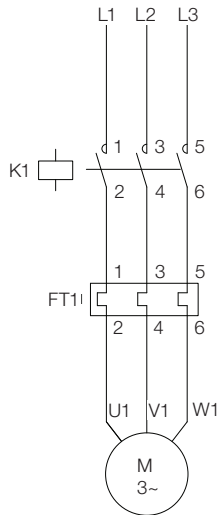
Overloads

Solid-State Overload Relays

Technical Data

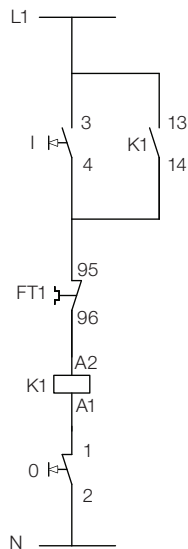
Motor Protection - Alternating Current

3-pole

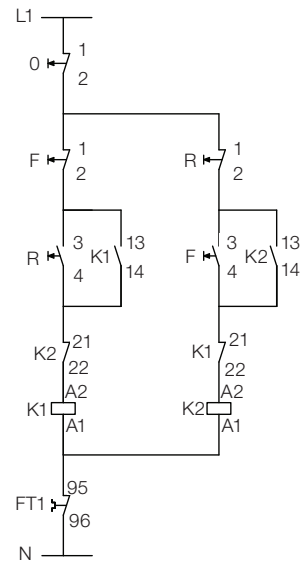


Typical Connection - Contactor + Overload Relay

Direct On Line Starter (1 Direction of Rotation)



Direct On Line Starter (2 Directions of Rotation)



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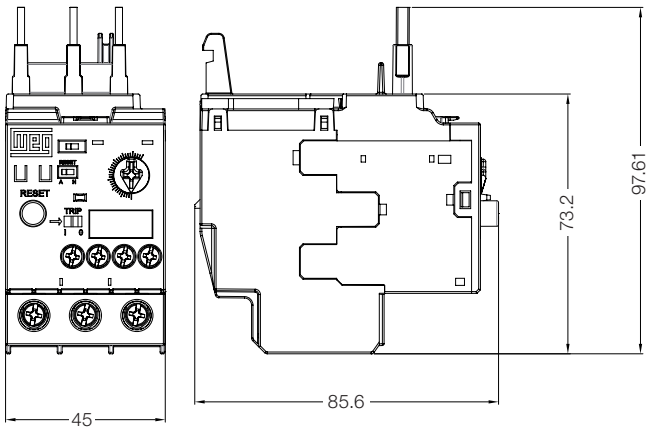
Power Factor Correction

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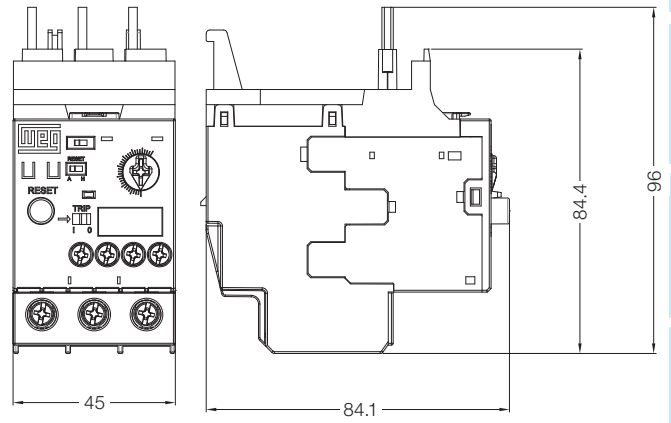
Appendix B

Dimensions (mm)

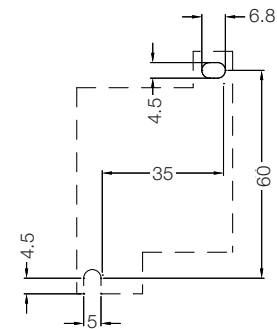
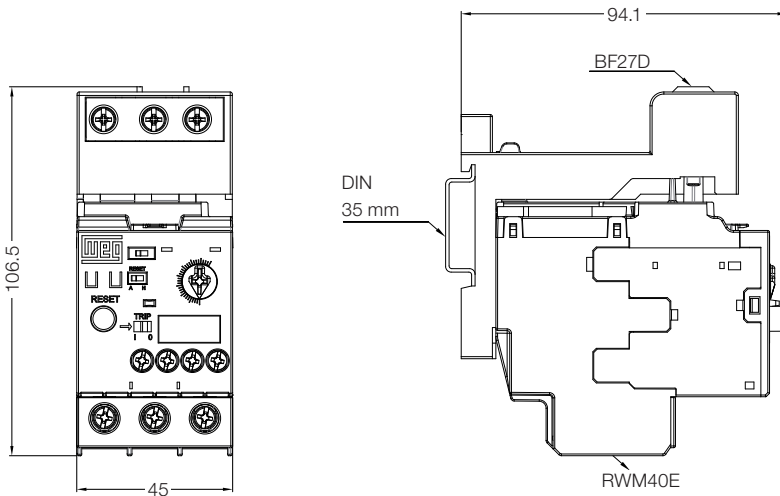
RWM40E



RWB40E



RWM40E + BF27



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Solid-State Overload Relays

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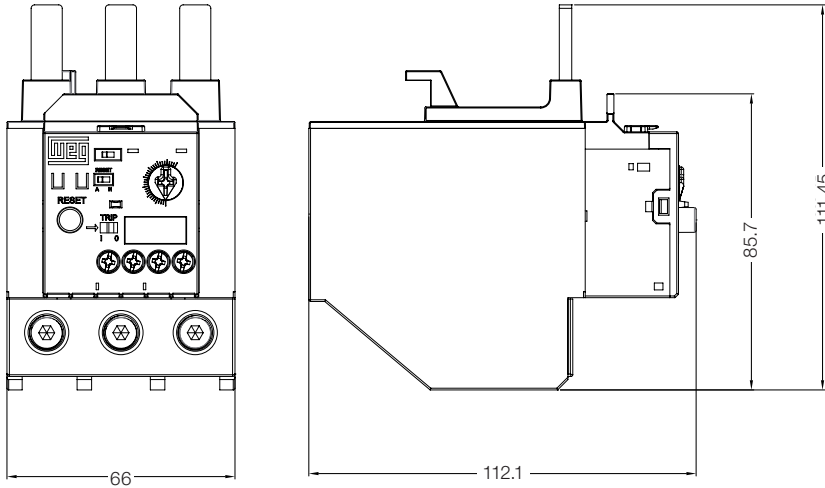
Disconnect Switches

Motor Protectors

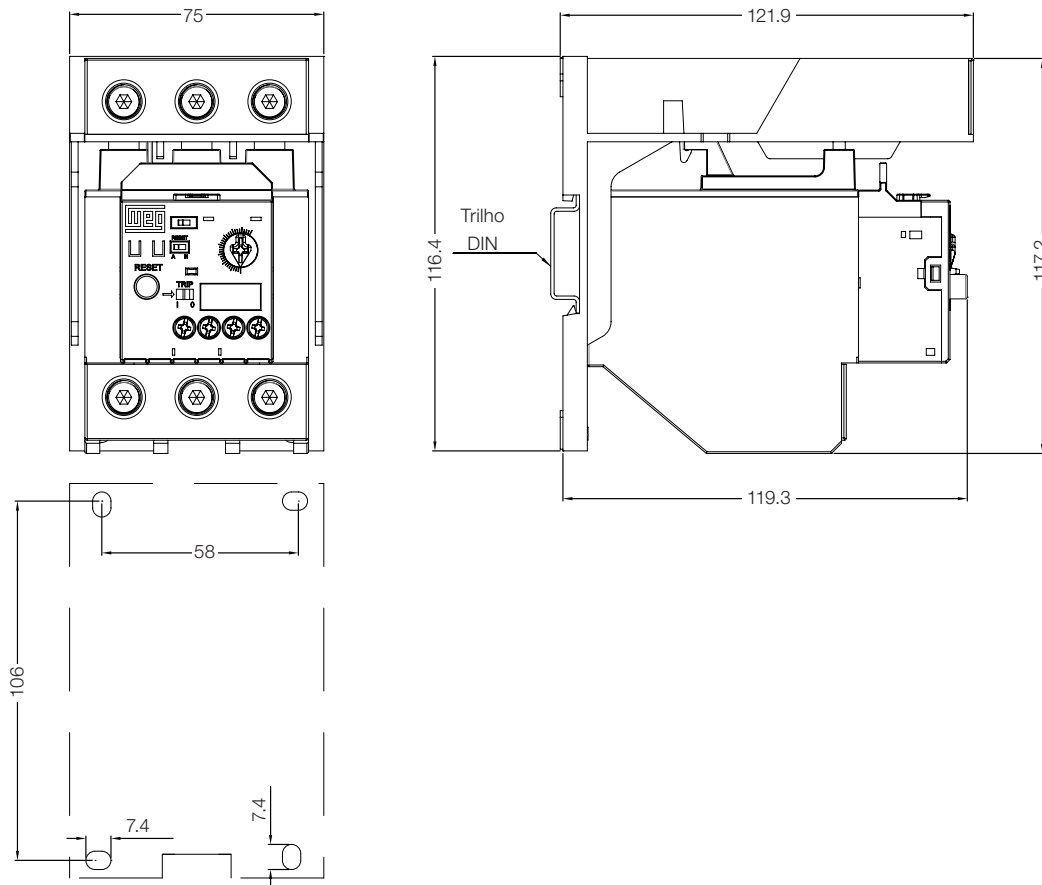
Contactors

Dimensions (mm)

RWM112E



RWM112E + BF112



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Terminal Blocks

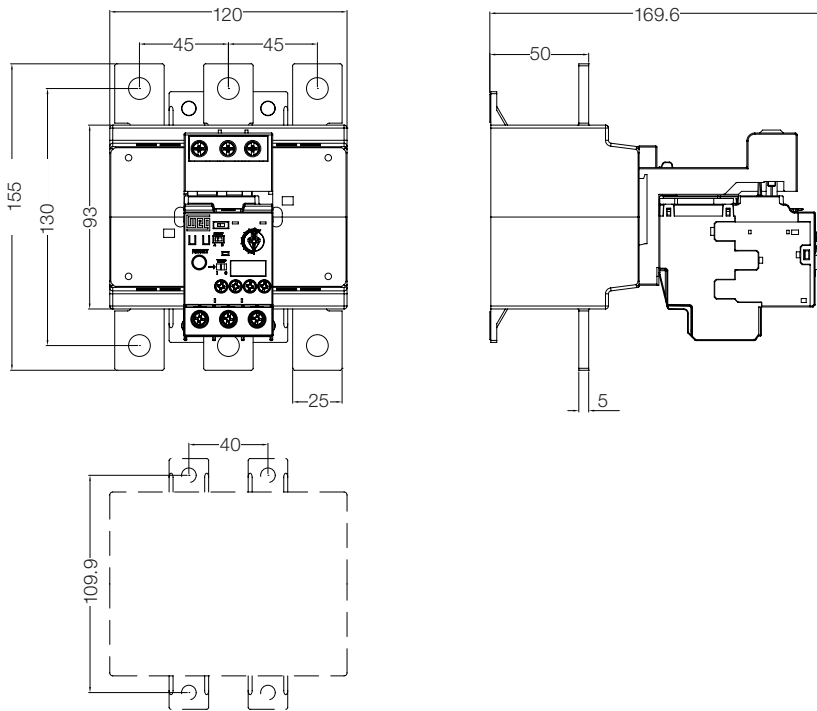
Power Factor Correction

Appendix A

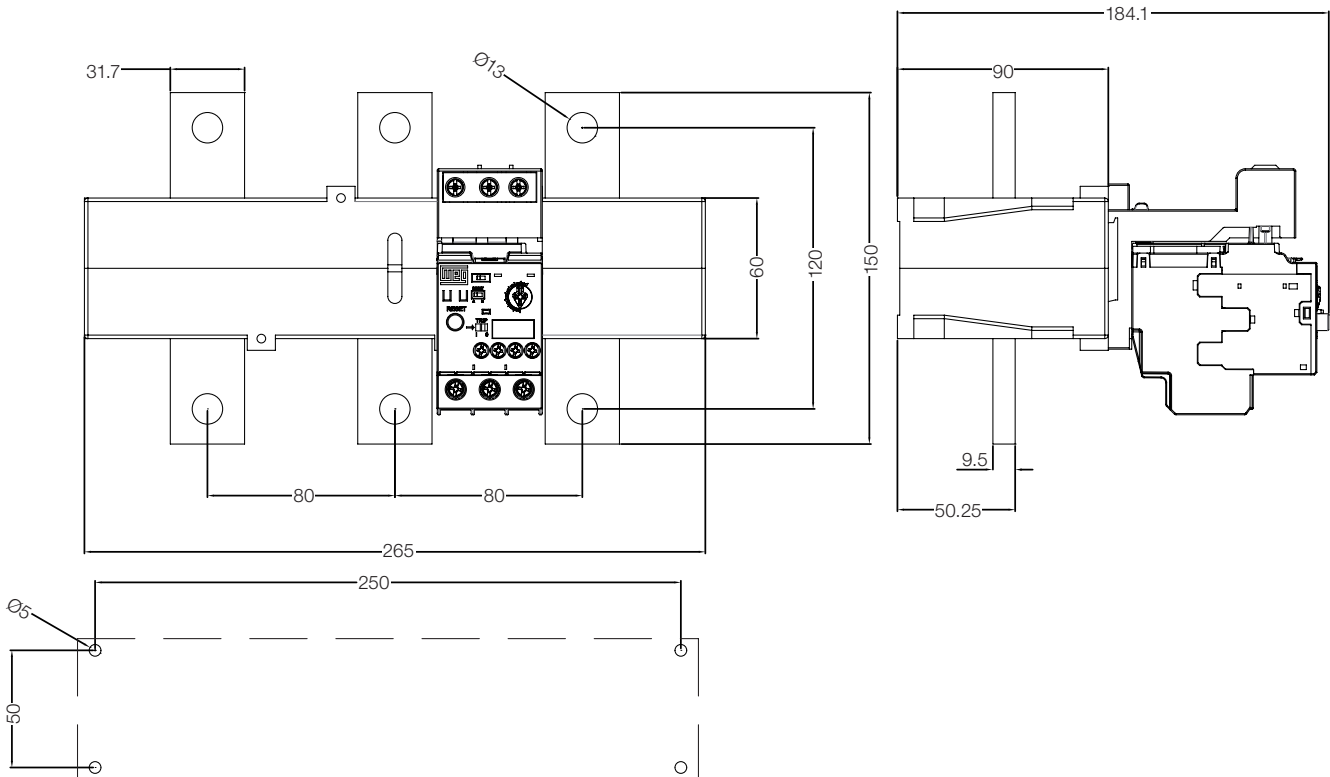
Appendix B

Dimensions (mm)

RWM420E



RWM840E



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Circuit Protection

Disconnect Switches

Motor Protectors

Contactors

Overloads

Enclosed Starters

Relays

Pushbuttons and Pilot Lights

Terminal Blocks

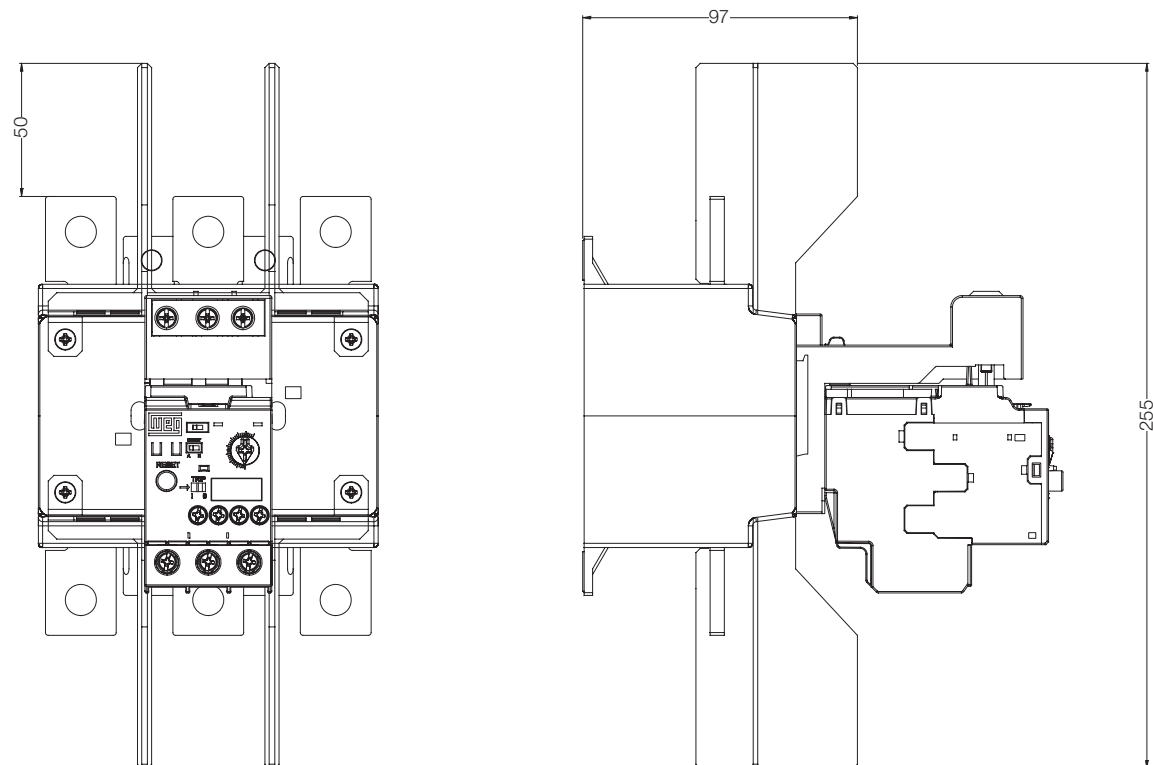
Power Factor Correction

Appendix A

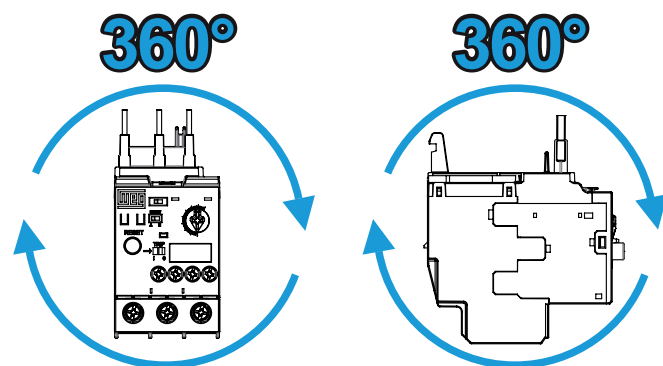
Appendix B

Dimensions (mm)

RWM420E + IBRW317



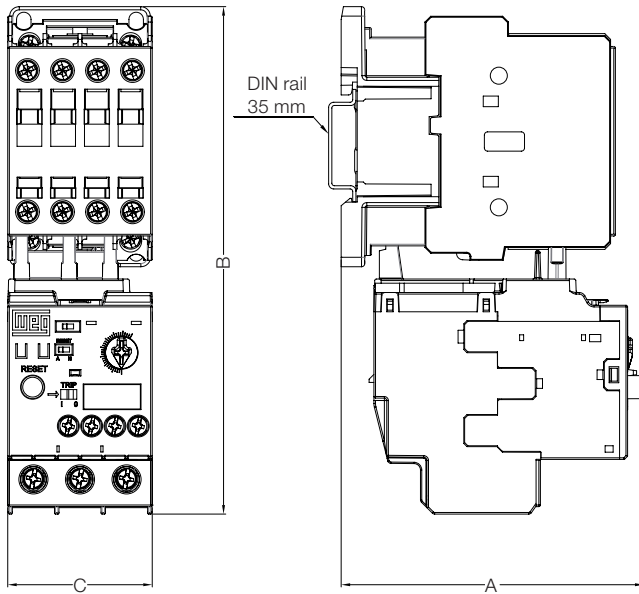
RWM40...840E / RWB40E



Mounting Position

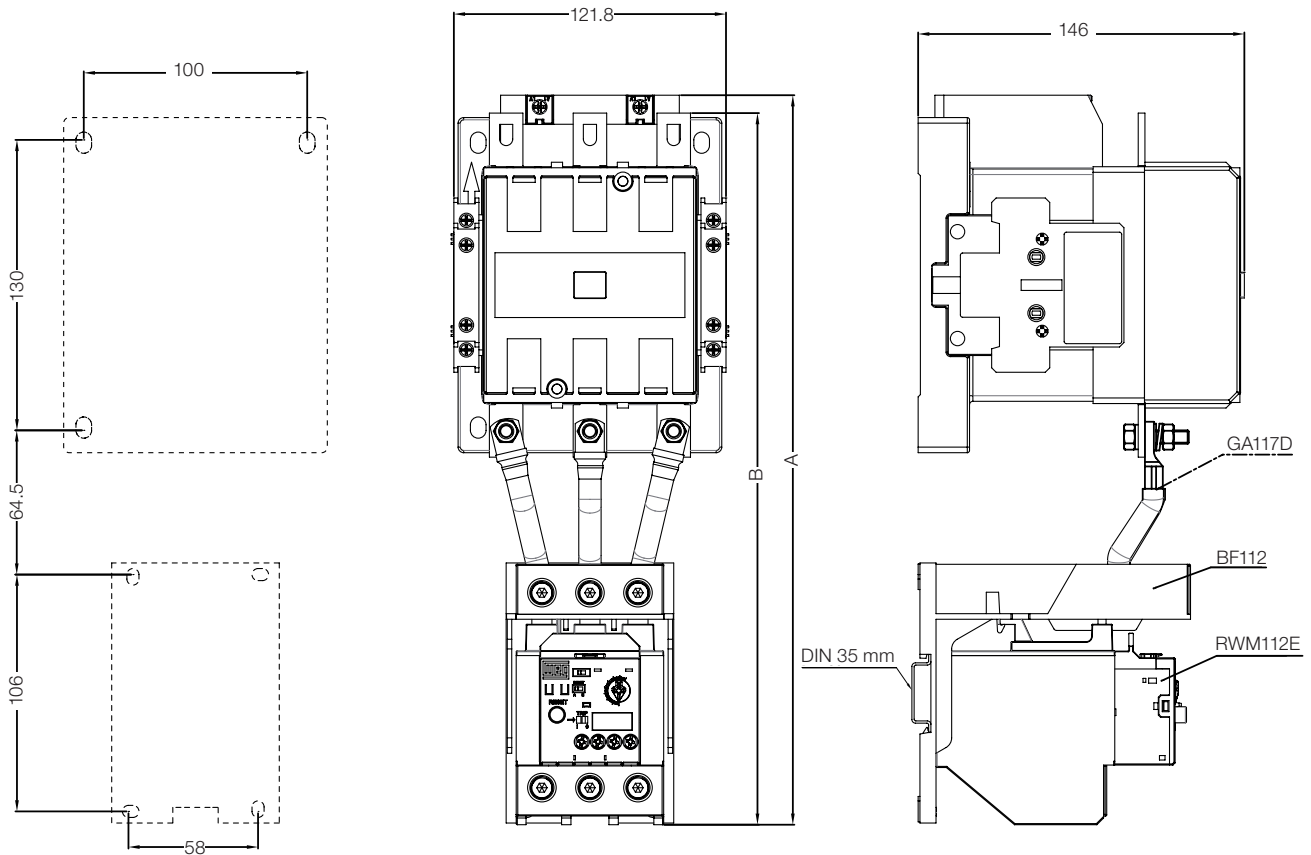
Dimensions (mm)

CWM9...105 + RWM40...112E and CWB9...38 + RWB40E



Contactor	Type of contactor coil	A	B	C
CWM9...18	CA	94.3	158	45
	CC	125.1		
CWM25	CA	94.9	159.3	45
	CC	124.8		
CWM32/40	CA	98.6	166.5	55
	CC	118.6		
CWM50...80	CA	122.6	202.7	66
	CC	122.6		
CWM95/105	CA	126	201.1	75.4
	CC	126		
CWB9...18	CA	89.5	163.1	45
	CC	98.7		
CWB25...38	CA	93	166.5	45
	CC	102.2		

CWM112 + RWM112E + BF112



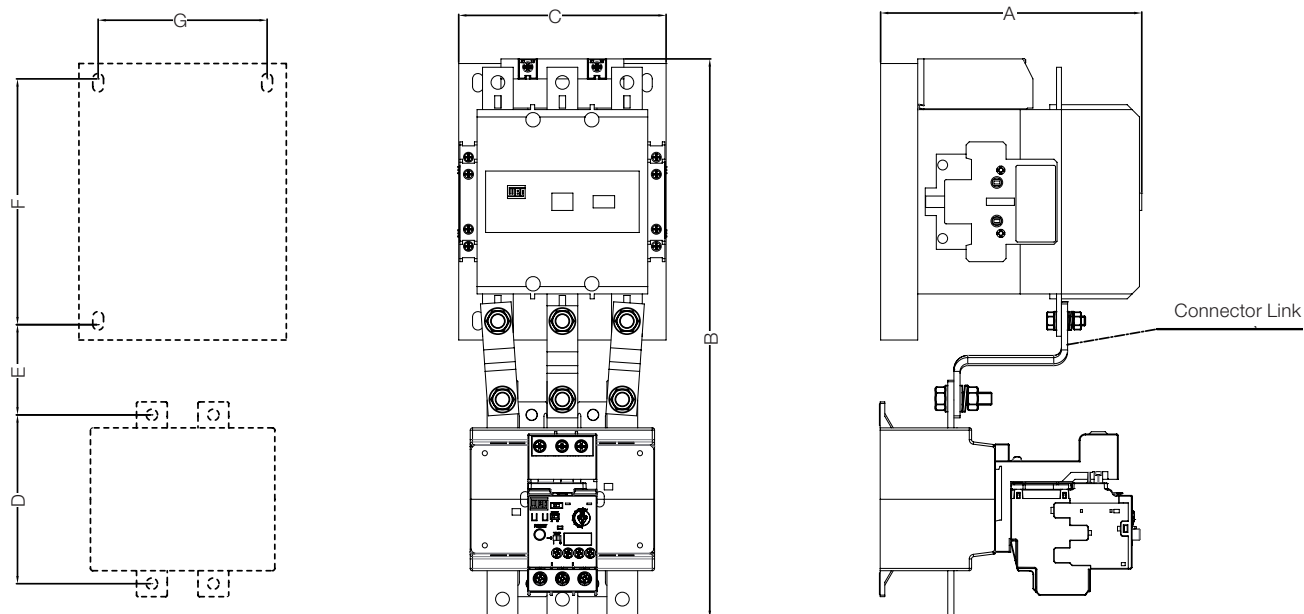
CWM112	A	B
AC conventional coil	-	318.5
Electronic coil	326.5	318.5

Overloads

Solid-State Overload Relays

Dimensions (mm)

CWM112...300 + RWM112/420E



Contactor	Connector links	Overload relay	A	B	C	D	E	F	G
CWM112/150	GA117D	RWM112E	147	325	121.5	106	64	130	100
CWM112/150	GA317-1D	RW420E	166	343		110	60.5		
CWM180	GA317-2D	RW420E	172	358	139	110	52.5	160	110
CWM250/300	GA317-3D	RW420E	181	380	148.4		55	180	120

CWM400 + RWM420E

