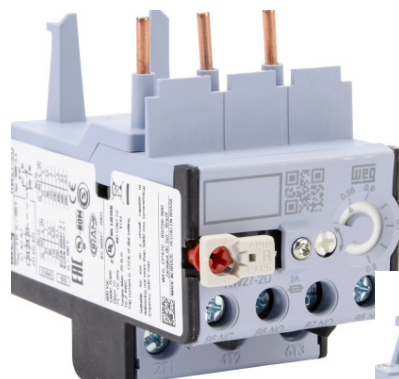




# Thermal Overload Relays

## RW Series – Bi-Metallic



RW27-2D3-D008



RW67-5D3-U080



RW67-5D3-U040

### Overview

An extended operational service life is one of the main features you'll find in RW overload relays. WEG's RW Thermal Overload Relays are designed for use with, and as perfect complement to, WEG contactors. 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.

### Features

- 3-pole version available
- Direct mounting to WEG contactors with no accessory required (accessories also available for separate mounting)
- Phase-loss and current unbalance sensitivity protection
- Class 10 trip characteristics
- Selectable RESET button (auto or manual)
- Isolated 1NO and 1NC auxiliary contacts



UL File No. E189202

### RW Series Contactor Catalog Number Sequence

|                                                                                 |       |                                 |                               |      |
|---------------------------------------------------------------------------------|-------|---------------------------------|-------------------------------|------|
| RW                                                                              | 27-2D | 3                               | -                             | U004 |
| <b>Overload Relay Series</b>                                                    |       | <b>Power Poles</b>              |                               |      |
| RW: Thermal Overload Relay                                                      |       | 3: 3 NO Power Poles             |                               |      |
| <b>Frame Size and Terminal Type</b>                                             |       | <b>Overload Setting Current</b> |                               |      |
| 27-2D: To use with CWB9 through CWB38<br>67-5D: To use with CWB40 through CWB80 |       | RW27                            | D004: 0.28-0.40 A             |      |
|                                                                                 |       | RW67                            | U040: 25-40 A<br>U080:63-80 A |      |

Table intended as reference only and not to create part numbers.  
For complete list of overload setting ranges, refer to selection guide tables.

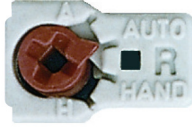


# Thermal Overload Relays RW Series – Bi-Metallic

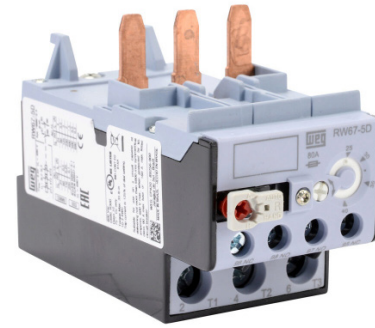
## Multifunction Reset/Test Button

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 the RESET button is pressed, both NO (97-98) and NC (95-96) contacts change states.



**RW67-5D3-U040**

## Operation

In the H (manual RESET only) or A (automatic RESET only) position, the test function is blocked. However, in the HAND (manual RESET/TEST) or AUTO (automatic RESET/TEST) positions 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 or A function settings are selected by rotating without pressing the red button and placing it in the desired position.

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

| Function                                  | H                    | HAND            | AUTO            | A                    |
|-------------------------------------------|----------------------|-----------------|-----------------|----------------------|
| Relay Reset                               | Manual1              | Manual1         | Automatic       | Automatic            |
| Auxiliary Contact Trip<br>Test 95-96 (NC) | Function is disabled | Test is allowed | Test is allowed | Function is disabled |
| Auxiliary Contact Trip<br>Test 97-98 (NO) | Function is disabled | Test is allowed | Test is allowed | Function is disabled |

Note: 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 (the "recovery time") for the bimetal strips to cool down. 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.

## Dial FLA Setting

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

## Temperature compensation

Because RW thermal overload relays include a forth 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 [-20°C to +60°C] are no obstacle for accurate protection of your motors even in the toughest conditions.

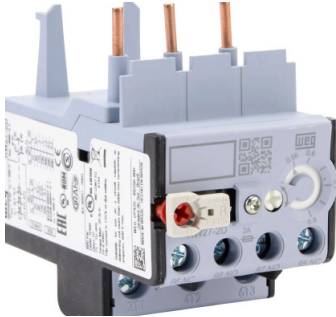
## Phase Failure Sensitivity

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.

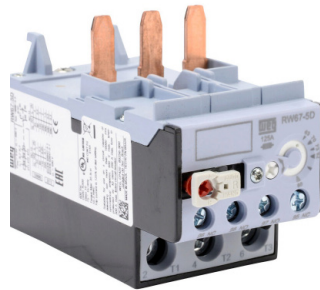


# Thermal Overload Relays RW Series – Bi-Metallic

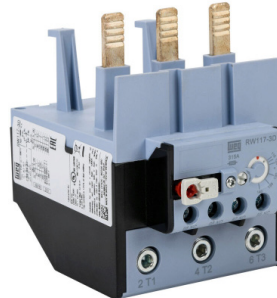
## Three-Pole Thermal Overload Relay Class 10 For Use With CWB Contactors



RW27-2D3-D008



RW67-5D3-U080



RW117-3D3-U140

### Features

- Adjustable trip current
- Phase-loss sensitivity
- Trip Class 10
- Built-in auxiliary contacts: 1 NO and 1 NC
- Ambient temperature compensation (-4°F to +140°F [-20°C to +60°C])
- Multi-function button: Hand/ Auto/Reset

### RW Series Bi-Metallic Thermal Overload Relays Selection Guide

| Part Number                    | Price    | Matching Contactor                                | Setting Range (A) |         | Max. Fuse (A) | Drawing             |
|--------------------------------|----------|---------------------------------------------------|-------------------|---------|---------------|---------------------|
|                                |          |                                                   | Minimum           | Maximum |               |                     |
| <a href="#">RW27-2D3-D008</a>  | \$28.50  | CWB9<br>CWB12<br>CWB18<br>CWB25<br>CWB32<br>CWB38 | 0.56              | 0.80    | 15            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-D012</a>  | \$28.50  |                                                   | 0.8               | 1.20    | 15            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-D018</a>  | \$28.50  |                                                   | 1.2               | 1.80    | 15            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-D028</a>  | \$28.50  |                                                   | 1.8               | 2.80    | 15            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U004</a>  | \$28.50  |                                                   | 2.8               | 4       | 15            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-D063</a>  | \$28.50  |                                                   | 4                 | 6.30    | 25            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U008</a>  | \$28.50  |                                                   | 5.6               | 8       | 30            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U010</a>  | \$28.50  |                                                   | 7                 | 10      | 40            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-D125</a>  | \$28.50  |                                                   | 8                 | 12.5    | 50            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U017</a>  | \$28.50  |                                                   | 11                | 17      | 60            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U023</a>  | \$28.50  |                                                   | 15                | 23      | 90            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U032</a>  | \$28.50  |                                                   | 22                | 32      | 90            | <a href="#">PDF</a> |
| <a href="#">RW27-2D3-U040</a>  | \$31.50  |                                                   | 32                | 40      | 90            | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U040</a>  | \$54.00  | CWB40<br>CWB50<br>CWB65<br>CWB80                  | 25                | 40      | 90            | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U050</a>  | \$54.00  |                                                   | 32                | 50      | 125           | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U057</a>  | \$54.00  |                                                   | 40                | 57      | 150           | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U063</a>  | \$54.00  |                                                   | 50                | 63      | 150           | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U070</a>  | \$63.00  |                                                   | 57                | 70      | 175           | <a href="#">PDF</a> |
| <a href="#">RW67-5D3-U080</a>  | \$63.00  |                                                   | 63                | 80      | 200           | <a href="#">PDF</a> |
| <a href="#">RW117-3D3-U080</a> | \$110.00 | CWB95-CWB125                                      | 63                | 80      | 200           | <a href="#">PDF</a> |
| <a href="#">RW117-3D3-U097</a> | \$124.00 |                                                   | 75                | 97      | 225           | <a href="#">PDF</a> |
| <a href="#">RW117-3D3-U112</a> | \$130.00 |                                                   | 90                | 112     | 250           | <a href="#">PDF</a> |
| <a href="#">RW117-3D3-U140</a> | \$148.00 |                                                   | 110               | 140     | 315           | <a href="#">PDF</a> |



# Thermal Overload Relays

## RW Series – Bi-Metallic

### Separate Mounting Bracket



**BF27-2D**

| RW Series Bi-Metallic Thermal Overload Relays<br>Mounting Bracket Selection Guide |         |                                                                                          |                                               |                     |
|-----------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------|
| Part Number                                                                       | Price   | Description                                                                              | Mounting on Overload Relays<br>(2- or 3-Pole) | Drawing             |
| <b><u>BF27-2D</u></b>                                                             | \$8.50  | Enables overload relay to be directly mounted to a back panel via screws or DIN rail     | RW27-2D                                       | <a href="#">PDF</a> |
| <b><u>BF67-5D</u></b>                                                             | \$15.00 | Enables overload relay to be directly mounted to a back panel via screws or DIN rail     | RW67-5D                                       | <a href="#">PDF</a> |
| <b><u>BF117-3D</u></b>                                                            | \$17.50 | 35mm DIN rail/panel mount adapter, for use with RW117-3D series thermal overload relays. | RW117-3D                                      | <a href="#">PDF</a> |



# Thermal Overload Relays

## RW Series – Bi-Metallic

### RW Series Bi-Metallic Thermal Overload Relays Specifications – General Data and Main Contacts

|                                                                                                         |                       |    | RW27                             | RW67  |
|---------------------------------------------------------------------------------------------------------|-----------------------|----|----------------------------------|-------|
| Standards                                                                                               |                       |    | IEC 60947 / UL 508               |       |
| Setting Current                                                                                         |                       | A  | 0.28-40                          | 25-80 |
| Tripping Class                                                                                          |                       |    | 10                               |       |
| Temperature Compensation                                                                                |                       |    | Continuous                       |       |
| Rated Insulation Voltage $U_i$<br>(Pollution Degree 3)                                                  | IEC 60947             | V  | 690                              |       |
|                                                                                                         | UL/CSA                | V  | 600                              |       |
| Rated Impulse Withstand Voltage $U_{imp}$                                                               |                       | kV | 6                                |       |
| Rated Operational Frequency                                                                             |                       | Hz | 0-400                            |       |
| Degree of protection                                                                                    |                       |    | IP20                             |       |
| Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536) |                       |    | Finger and back-of-hand proof    |       |
| Ambient Temperature                                                                                     | Operating temperature |    | -25°C to +60°C [-13°F to +140°F] |       |
|                                                                                                         | Storage temperature   |    | -40°C to +70°C [-40°F to +158°F] |       |
| Environmental Testing (IEC 60 068-2-3, IEC 60 068-2-30)                                                 |                       |    | Damp heat. Constant              |       |
| Current Heat Loss                                                                                       |                       |    |                                  |       |
| Lower Value of Setting Range                                                                            |                       | W  | 0.9                              | 1.5   |
| Higher Value of Setting Range                                                                           |                       | W  | 1.7                              | 4.7   |

### RW Series Bi-Metallic Thermal Overload Relays Specifications – Auxiliary Contacts

|                                                                     |        |   | RW27                  | RW67 |
|---------------------------------------------------------------------|--------|---|-----------------------|------|
| Standards                                                           |        |   | IEC 60947-4-1, UL 508 |      |
| Rated Insulation Voltage $U_i$<br>(Pollution Degree 3)              | IEC    | V | 690                   |      |
|                                                                     | UL/CSA | V | 600                   |      |
| Rated Operational Voltage $U_e$                                     | IEC    | V | 690                   |      |
|                                                                     | UL/CSA | V | 600                   |      |
| Rated Thermal Current $I_{th}$ ( $\theta \leq 55^{\circ}\text{C}$ ) |        | A | 6                     |      |
| Rated Operational Current $I_e$                                     |        |   |                       |      |
| AC-14 / AC-15 (IEC 60947-5-1)                                       | 24V    | A | 4                     |      |
|                                                                     | 60V    | A | 3.5                   |      |
|                                                                     | 125V   | A | 3                     |      |
|                                                                     | 230V   | A | 2                     |      |
|                                                                     | 400V   | A | 1.5                   |      |
|                                                                     | 500V   | A | 0.5                   |      |
|                                                                     | 690V   | A | 0.3                   |      |
| UL, CSA                                                             |        |   | C600                  |      |
| DC-13 / DC-14 (IEC 60947-5-1)                                       | 24V    | A | 1                     |      |
|                                                                     | 60V    | A | 0.5                   |      |
|                                                                     | 110V   | A | 0.25                  |      |
|                                                                     | 220V   | A | 0.1                   |      |
| UL, CSA                                                             |        |   | R300                  |      |
| Short-Circuit Protection With Fuse (RK5)                            |        | A | 6                     |      |
| Minimum Voltage / Admissible Current (IEC 60947-5-4)                |        |   | 17V / 5ma             |      |



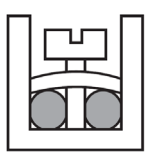
# Thermal Overload Relays

## RW Series – Bi-Metallic

### RW Series Bi-Metallic Thermal Overload Relays Specifications Terminal Capacity and Tightening Torque – Main Contacts

|                                                |                 |                        | <b>RW27</b>  | <b>RW67</b>  |
|------------------------------------------------|-----------------|------------------------|--------------|--------------|
| <b>Current Setting</b>                         | <b>A</b>        |                        | 0.28-40      | 25-80        |
| <b>Cable Size (75°C [167°F]) / Cu Cable</b>    |                 |                        |              |              |
| <b>Flexible Cable</b>                          | <b>1 cable</b>  | <b>mm<sup>2</sup></b>  | 1.5-10       | 6.0-35       |
|                                                | <b>2 cables</b> | <b>mm<sup>2</sup></b>  | 1.5-10       | –            |
| <b>Cable With Terminal or Rigid Cable</b>      | <b>1 cable</b>  | <b>mm<sup>2</sup></b>  | 1.5-6        | 6.0-35       |
|                                                | <b>2 cables</b> | <b>mm<sup>2</sup></b>  | 1.5-6        | –            |
| <b>Busbar</b>                                  |                 | <b>mm<sup>2</sup></b>  | –            | –            |
| <b>Tightening Torque</b>                       |                 | <b>N•m<br/>[lb•ft]</b> | 2.3 [1.69]   | 4.0 [2.95]   |
| <b>UL Cable Size (75°C [167°F]) / Cu Cable</b> |                 | <b>AWG</b>             | 16 to 8      | 10 to 3      |
| <b>Tightening Torque (UL)</b>                  |                 | <b>N•m<br/>[lb•in]</b> | 2.26<br>[20] | 3.95<br>[35] |

### RW Series Bi-Metallic Thermal Overload Relays Specifications Terminal Capacity and Tightening Torque – Auxiliary Contacts

|                                             |                        |                                                                                     | <b>RW27</b>     | <b>RW67</b>     |
|---------------------------------------------|------------------------|-------------------------------------------------------------------------------------|-----------------|-----------------|
| <b>Type of Screws</b>                       |                        |                                                                                     | M3.5x10 Philips | M3.5x10 Philips |
| <b>Cable Size (75°C [167°F]) / Cu Cable</b> |                        |                                                                                     |                 |                 |
| <b>Cable With or Without Terminal</b>       | <b>mm<sup>2</sup></b>  |  | 2 x 1-2.5       | 2 x 1-2.5       |
| <b>Wire</b>                                 | <b>AWG</b>             |                                                                                     | 16-12           | 16-12           |
| <b>Tightening Torque</b>                    | <b>N•m<br/>[lb•in]</b> |                                                                                     | 1.5<br>[13]     | 1.5<br>[13]     |



# Thermal Overload Relays

## RW Series – Bi-Metallic

### RW Series Bi-Metallic Thermal Overload Relays Specifications – General Technical Data

|                                                                           |                                 |               | <i><b>RW27</b></i>               |
|---------------------------------------------------------------------------|---------------------------------|---------------|----------------------------------|
| <b>Standards</b>                                                          |                                 |               | IEC 60947-1, UL 508              |
| <b>Rated insulation voltage <math>U_i</math><br/>(Pollution Degree 3)</b> | <b>IEC/EN 60947-4-1</b>         | <b>V</b>      | 690                              |
|                                                                           | <b>UL, CSA</b>                  | <b>V</b>      | 600                              |
| <b>Rated impulse withstand voltage <math>U_{imp}</math> (IEC 60947-1)</b> |                                 | <b>kV</b>     | 6                                |
| <b>Rated operational frequency</b>                                        |                                 | <b>Hz</b>     | 25-400                           |
| <b>Use with direct current?</b>                                           |                                 |               | Yes                              |
| <b>Maximum operation per hour</b>                                         |                                 | <b>ops/h</b>  | 15                               |
| <b>Protection degree (IEC 60529)</b>                                      | <b>Main contacts</b>            |               | IP10                             |
|                                                                           | <b>Auxiliary contacts</b>       |               | IP20                             |
|                                                                           | <b>Frontal</b>                  |               | IP20                             |
| <b>Mounting</b>                                                           |                                 |               | Direct on the contactor          |
| <b>Resistance to Impact (IEC 60068-2-27 - 1/2 sinusoid)</b>               |                                 | <b>g/ms</b>   | 10/11                            |
| <b>Ambient Temperature</b>                                                | <b>Transport and storage</b>    |               | -50°C to +80°C [-58°F to +176°F] |
|                                                                           | <b>Operating</b>                |               | -20°C to +70°C [-4°F to +158°F]  |
|                                                                           | <b>Temperature compensation</b> |               | -20°C to +60°C [-4°F to +140°F]  |
| <b>Altitude</b>                                                           |                                 | <b>m [ft]</b> | 2000 [6562]                      |

### RW Series Bi-Metallic Thermal Overload Relays Specifications – Main Contacts

|                                                   |                      |          | <b>RW27</b>  |
|---------------------------------------------------|----------------------|----------|--------------|
| <b>Rated Operational Voltage <math>U_e</math></b> | <b>IEC 60947-4-1</b> | <b>V</b> | 690          |
|                                                   | <b>UL, CSA</b>       | <b>V</b> | 600          |
| <b>Setting Current / Max Fuse (Class RK5)</b>     |                      | <b>A</b> | 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   |
| <b>Average Power Dissipation Per Pole</b>         |                      | <b>W</b> | ≤3           |



# Thermal Overload Relays RW Series – Bi-Metallic

## 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 and Temperature Derating

Derating of an RW overload relay is based on two possible factors.

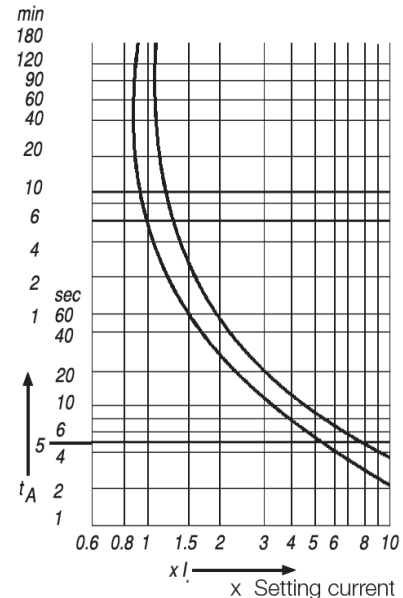
### Ambient temperature:

Temperature compensation considers a factor according to which the rated current must be reduced when ambient temperature is higher than 60°C [140°F].

### Altitude:

Altitude compensation involves both rated current and voltage.

- Current compensation considers a factor according to which the rated current must be reduced.
- For voltage, altitude limits the higher operating voltage the overload relay can be used.



## Derating Calculation

The derating of the permissible operating current for installation altitudes above 2000m (6667 ft) and ambient temperatures over 60°C (140°F) is calculated according to the following formula:

Total derating = Derating altitude x Derating ambient temperature

## Derating Example

Here is an example of how derating is calculated.

- Altitude: 3000m (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 that can be connected to the RW overload relay is 550V.

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

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

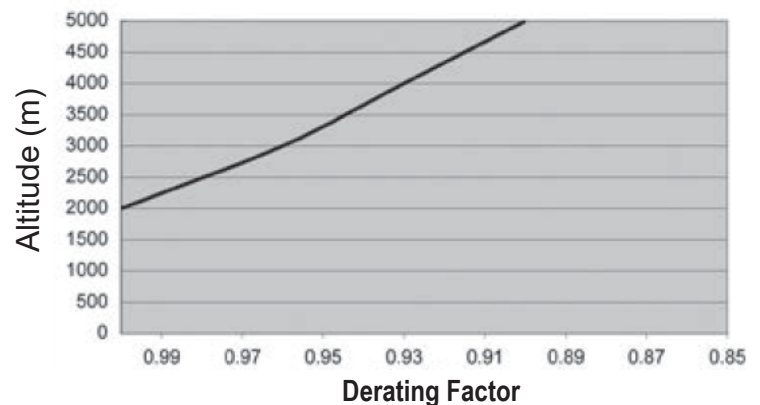
As in the example above,  $K1 \times K2 = 0.84$

For a motor with FLA = 20A:

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

| Temperature Compensation (F [C]) | Current Correction Factor |
|----------------------------------|---------------------------|
| 149 [65]                         | 0.94                      |
| 158 [70]                         | 0.87                      |
| 167 [75]                         | 0.81                      |
| 176 [80]                         | 0.73                      |

| Altitude                | Voltage Correction (U <sub>e</sub> ) |
|-------------------------|--------------------------------------|
| Up to 2000m (6667ft)    | 690                                  |
| Up to 3000m (10,000 ft) | 550                                  |
| Up to 4000m (13,333 ft) | 480                                  |
| Up to 5000m (16,667ft)  | 420                                  |





# Thermal Overload Relays

## RW Series – Bi-Metallic

### RW117 Technical Specifications

|                                                                            |                                 |                                                                                       |
|----------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|
| <b>Compliance With Standards</b>                                           |                                 | IEC 60947-1 and UL 508                                                                |
| <b>Frequency Limits</b>                                                    |                                 | 25 - 400 Hz                                                                           |
| <b>Use in Direct Current</b>                                               |                                 | Yes                                                                                   |
| <b>Maximum Frequency of Operation Cycles</b>                               |                                 | 15 operations per hour                                                                |
| <b>Protection Rating (IEC 60529)</b>                                       | <b>Main terminals</b>           | IP10                                                                                  |
|                                                                            | <b>Auxiliary contacts</b>       | IP10                                                                                  |
|                                                                            | <b>Other regions</b>            | IP20                                                                                  |
| <b>Mounting</b>                                                            |                                 | Directly to contactors or with screws and DIN rail 35mm (EN 50022) using an accessory |
| <b>Resistance to Mechanical Shocks (IEC 60068-2-27, 1/2 sine wave)</b>     |                                 | 10 / 11 g/ms                                                                          |
| <b>Ambient Temperature</b>                                                 | <b>Transport and storage</b>    | -50°C to 80°C [-58°F to 176°F]                                                        |
|                                                                            | <b>Operation</b>                | -20°C to 70°C [-4°F to 158°F]                                                         |
| <b>Maximum operation altitude without modification in the rated values</b> | <b>Temperature compensation</b> | -20°C to 60°C [-4°F to 140°F]                                                         |
| <b>Maximum Operation Altitude Without Modification of the Rated Values</b> |                                 | 2000m                                                                                 |

### RW117 Main Contacts Specifications

|                                                                         |                      |                   |
|-------------------------------------------------------------------------|----------------------|-------------------|
| <b>Rated Insulation Voltage <math>U_i</math><br/>Pollution Degree 3</b> | <b>IEC 60947-4-1</b> | 690V              |
|                                                                         | <b>UL, CSA</b>       | 600V              |
| <b>Rated Impulse Withstand Voltage <math>U_{imp}</math></b>             |                      | 6kV               |
| <b>Current Settings / Maximum Fuse (gL/gG)</b>                          |                      | 63-80 / 200 A     |
|                                                                         |                      | 75 - 97 / 225 A   |
|                                                                         |                      | 90 - 112 / 250 A  |
|                                                                         |                      | 110 - 140 / 315 A |
| <b>Average Power Dissipation Per Pole</b>                               |                      | ≤5.5 W            |

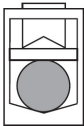
### RW117 Auxiliary Circuit Technical Specifications

|                                                                                                     |                |                        |
|-----------------------------------------------------------------------------------------------------|----------------|------------------------|
| <b>Compliance With Standards</b>                                                                    |                | IEC 60947-1 and UL 508 |
| <b>Rated Insulation Voltage <math>U_i</math><br/>Pollution Degree 3</b>                             | <b>IEC</b>     | 690V                   |
|                                                                                                     | <b>UL, CSA</b> | 600V                   |
| <b>Rated Operational Voltage <math>U_i</math></b>                                                   | <b>IEC</b>     | 690V                   |
|                                                                                                     | <b>UL, CSA</b> | 600V                   |
| <b>Conventional Thermal Current <math>I_{th}</math> (<math>\theta \leq 55^\circ\text{C}</math>)</b> |                | 6A                     |
| <b>Rated Operational Current</b>                                                                    |                |                        |
| <b>AC-14/AC-15 (IEC 60947-5-1)</b>                                                                  | <b>24V</b>     | 4A                     |
|                                                                                                     | <b>60V</b>     | 3.5 A                  |
|                                                                                                     | <b>125V</b>    | 3A                     |
|                                                                                                     | <b>230V</b>    | 2A                     |
|                                                                                                     | <b>400V</b>    | 1.5 A                  |
|                                                                                                     | <b>500V</b>    | 0.5A                   |
|                                                                                                     | <b>690V</b>    | 0.3A                   |
| <b>UL, CSA</b>                                                                                      |                | C600                   |
| <b>DC-13/DC-14 (IEC 60947-5-1)</b>                                                                  | <b>24V</b>     | 1A                     |
|                                                                                                     | <b>60V</b>     | 0.5A                   |
|                                                                                                     | <b>110V</b>    | 0.25A                  |
|                                                                                                     | <b>220V</b>    | 0.1A                   |
| <b>UL, CSA</b>                                                                                      |                | R300                   |
| <b>Short Circuit Protection With Fuse (gL/gG)</b>                                                   |                | 6A                     |
| <b>Minimum Voltage/Permissible Current (IEC 60947-5-4)</b>                                          |                | 17V / 5mA              |

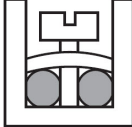
# Thermal Overload Relays

## RW Series – Bi-Metallic

### RW117 Terminal Capacity and Tightening Torque (Power Circuit) Specifications

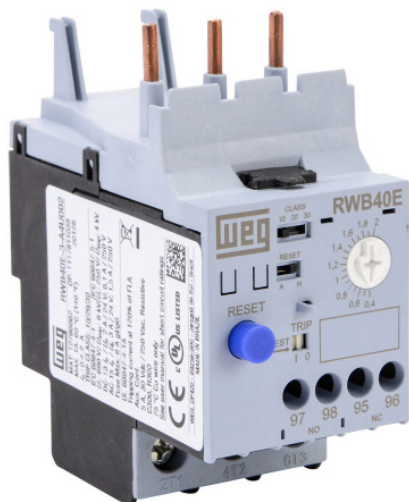
|                                    |                                                                                   |                              |
|------------------------------------|-----------------------------------------------------------------------------------|------------------------------|
| Mounting System Screw Type         |                                                                                   | M10<br>Allen                 |
| Conductor Connection at the Bottom |                                                                                   |                              |
| Flexible Conductor                 |  | 25 - 36 mm <sup>2</sup>      |
| Conductor With Terminal/Ferrules   |                                                                                   | 25 - 36 mm <sup>2</sup>      |
| Flexible Conductor                 |                                                                                   | 25 - 36 mm <sup>2</sup>      |
| Wire / Cable AWG                   |                                                                                   | 8 - 1/0 AWG                  |
| Torque                             |                                                                                   | 6 N•m                        |
| Mounting System Screw Type         |                                                                                   |                              |
| Screw Type                         |  | M12<br>Hexagonal             |
| Cable With Terminal/Ferrules       |                                                                                   | –                            |
| Busbars (mm) - Maximum Size        |                                                                                   | 2 x (60x10 mm <sup>2</sup> ) |
| Torque                             |                                                                                   | 26 N•m                       |

### RW117 Terminal Capacity and Tightening Torque (Auxiliary Contacts) Specifications

|                                                               |                                                                                    |                              |
|---------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------|
| <b>Mounting System Screw Type</b>                             |                                                                                    | M3.5x10<br>Philips           |
| <b>Conductor Cross-Section</b>                                |                                                                                    |                              |
| <b>Wire / Conductor<br/>With or Without Terminal/Ferrules</b> |  | 2 x (1-2.5 mm <sup>2</sup> ) |
| <b>Torque</b>                                                 |                                                                                    | 1.5 N•m                      |



# RW-E Series Solid State Overload Relays



**RWB40E-3-A4U002**

## Overview

RW-E Series Solid State Overload relays are developed with cutting-edge technology to meet the most demanding standards worldwide. With their wide current/AMP setting range, RW-E Series OL Relays 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 (CWB line) providing very reliable and flexible motor starter units. The RW-E Series counts on two independent and highly reliable built in auxiliary contacts that assure the motor is switched off when a failure occurs.

## Features

- 3-pole solid state overload relays with adjustable trip class: 10, 20 and 30
- Self-powered
- Wide 5:1 adjustment range
- Thermal memory
- Phase-loss protection (less than 5s)
- Phase unbalance protection (>40% between phases)
- Temperature compensated (-20°C [-4°F] up to +60°C [+140°F])
- Manual or automatic reset modes
- Direct mounting on CWB9-38 contactor
- Separate mounting is possible with accessories
- 1NO + 1NC built in auxiliary contacts



UL File No. E189202

## RW-E Solid-State Overload Relay Catalog Number Sequence

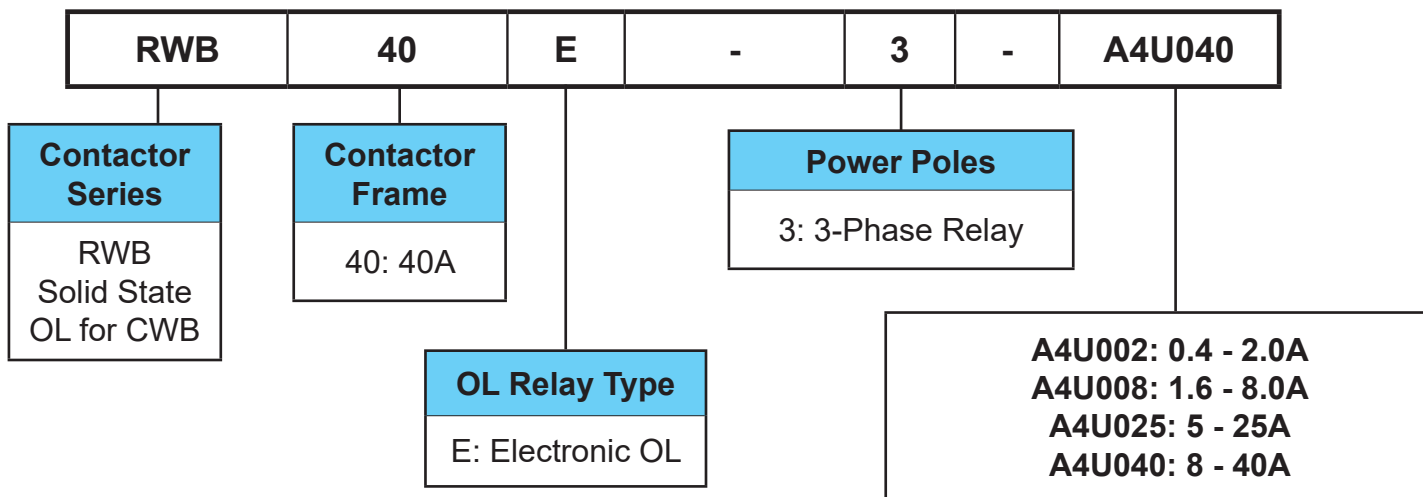


Table intended as reference only and not to create part numbers.



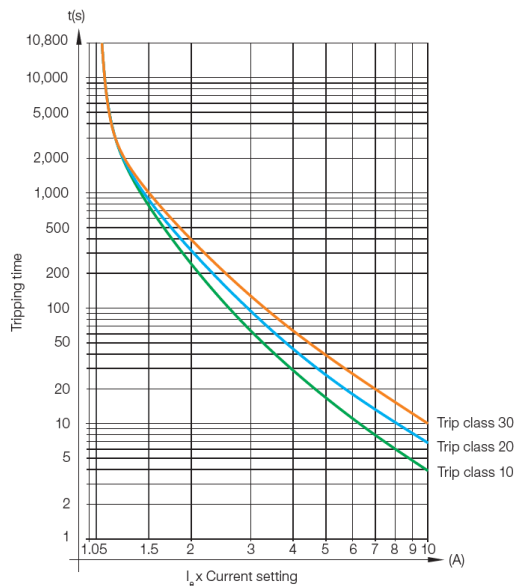
# RW-E Series Solid State Overload Relays

## Suitable for a Wide Range of Applications

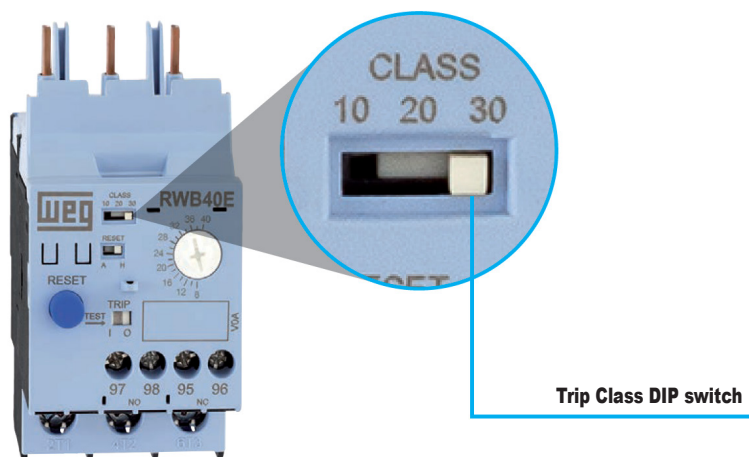
RW-E Series solid-state overload relays are suitable for protecting motors in a wide range of industrial applications including those where long starting time is required. Motors used in low, medium or heavy duty applications can be properly protected just by selecting the proper trip class (10, 20 or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

Additionally, the microprocessor electronic circuits of RW Series solid-state overload relays are temperature compensated according to IEC 60947-4-1, which means that throughout the temperature range of -20°C [-4°F] up to +60°C [140°F], the tripping point is not affected and performs consistently without undesirable tripping.

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

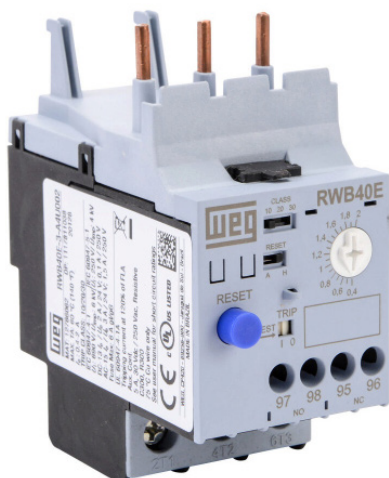
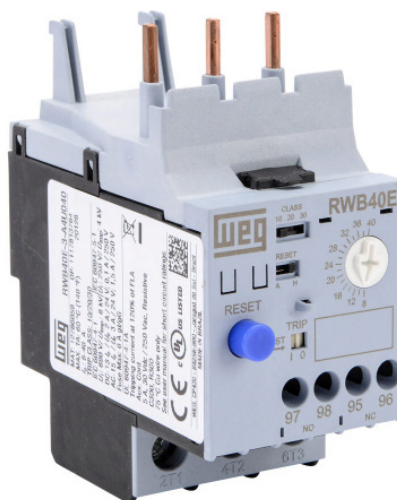


| Trip Class | Multiples of Current Setting |                  |                  |                    |
|------------|------------------------------|------------------|------------------|--------------------|
|            | $1.05 \times I_r$            | $1.2 \times I_r$ | $1.5 \times I_r$ | $7.2 \times I_r$   |
| 10         | –                            | $T_p < 2h$       | $T_p < 4min$     | $4 < T_p \leq 10s$ |
| 20         | –                            | $T_p < 2h$       | $T_p < 8min$     | $6 < T_p \leq 20s$ |
| 30         | –                            | $T_p < 2h$       | $T_p < 12min$    | $9 < T_p \leq 30s$ |





# RW-E Series Solid State Overload Relays

**RWB40E-3-A4U002****RWB40E-3-A4U040**

## RW-E Series Solid-State Overload Relays Selection Guide

| Part Number                            | Price   | For Direct Mounting on Contactors | Current Range A | Max. Fuse (gL/gG) A | Diagram | Weight (kg [lb]) | Dimensional Drawing        |
|----------------------------------------|---------|-----------------------------------|-----------------|---------------------|---------|------------------|----------------------------|
| <a href="#"><u>RWB40E-3-A4U002</u></a> | \$53.00 | CWB9 through CWB38                | 0.4-2           | 16                  |         | 0.25 [0.55]      | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>RWB40E-3-A4U008</u></a> | \$53.00 |                                   | 1.6-8           | 32                  |         |                  | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>RWB40E-3-A4U025</u></a> | \$53.00 |                                   | 5-25            | 63                  |         |                  | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>RWB40E-3-A4U040</u></a> | \$83.00 |                                   | 8-40            | 125                 |         |                  | <a href="#"><u>PDF</u></a> |

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



# RWB-E Series Solid State Overload Relays

## Mounting Kit



**BF27-2D**

### RW-E Series Solid-State Overload Relays Mounting Kit Selection Guide

| <i>Part Number</i>    | <i>Price</i> | <i>Description</i>                                                                       | <i>For Use With</i> | <i>Weight (kg [lb])</i> | <i>Dimensional Drawing</i> |
|-----------------------|--------------|------------------------------------------------------------------------------------------|---------------------|-------------------------|----------------------------|
| <b><u>BF27-2D</u></b> | \$8.50       | Enables the overload relay to be mounted directly to a panel via screws or 35mm DIN rail | RWB40E              | 0.05 [0.11]             | <a href="#">PDF</a>        |



# RW-E Series Solid State Overload Relays

## RW-E Series Series Solid State Overload Relays Specifications – General Data

|                                                        |                                      |    | RWB40E                                                                                                                            |
|--------------------------------------------------------|--------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------|
| 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 $U_i$<br>(Pollution Degree 3) | IEC 60947-4-1                        | V  | 690                                                                                                                               |
|                                                        | UL/CSA                               | V  | 600                                                                                                                               |
| Rated impulse withstand voltage $U_{imp}$              |                                      | kV | 6                                                                                                                                 |
| 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, <5s                                                                                                                          |
|                                                        | Phase unbalance                      |    | Yes, >40%                                                                                                                         |
| Reset                                                  | Manual/minimum downtime for reset    |    | Yes / instantaneous                                                                                                               |
|                                                        | Automatic/minimum downtime for reset |    | Yes / ≥90s                                                                                                                        |
| Maximum Operations Per Hour                            |                                      |    | 30                                                                                                                                |
| Protection degree (IEC 60529)                          | Main contacts                        |    | IP10                                                                                                                              |
|                                                        | Auxiliary contacts                   |    | IP20                                                                                                                              |
| Mounting                                               |                                      |    | Direct mounting on contactor or directly on the panel via screws or 35mm DIN rail when using the mounting kit accessory (BF27-2D) |
| Mechanical shock resistance 1/2 sinusoid               |                                      |    | 15g / 11ms                                                                                                                        |
| Vibration resistance (IEC 60068-2-6)                   |                                      |    | 6g / 30-300 Hz                                                                                                                    |
| Ambient Temperature                                    | Transport and storage                |    | -50°C to +80°C [-58°F to +176°F]                                                                                                  |
|                                                        | Operating                            |    | -20°C to +60°C [-4°F to +140°F]                                                                                                   |
|                                                        | Temperature compensation             |    | -20°C to +60°C [-4°F to +140°F]                                                                                                   |
| Altitude                                               |                                      |    | 2000m [6562ft]                                                                                                                    |

## RW Series Series Solid State Overload Relays Specifications – Main Contacts

|                                                                           |                      |          | <b>RWB40E</b>                                             |
|---------------------------------------------------------------------------|----------------------|----------|-----------------------------------------------------------|
| <b>Rated Operational Voltage <math>U_e</math></b><br>(Pollution Degree 3) | <b>IEC 60947-4-1</b> | <b>V</b> | 690                                                       |
|                                                                           | <b>UL/CSA</b>        | <b>V</b> | 600                                                       |
| <b>Current Setting / Max Fuse (RK5)</b>                                   |                      | <b>A</b> | 0.4-2 / 16<br>1.6-8 / 32<br>5-25 / 63<br>8-40 / 125       |
| <b>Setting Current / Average Power Dissipation Per Pole</b>               |                      | <b>W</b> | 0.4-2 / 0.07<br>1.6-8 / 0.06<br>5-25 / 0.38<br>8-40 / 1.5 |

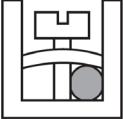
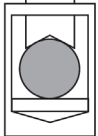


# RW-E Series Solid State Overload Relays

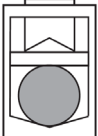
## RW-E Series Series Solid State Overload Relays Specifications – Auxiliary Contacts

|                                                                              |                      |           | <b>RWB40E</b> |
|------------------------------------------------------------------------------|----------------------|-----------|---------------|
| <b>Rated Insulation Voltage <math>U_i</math></b><br>(Pollution Degree 3)     | <b>IEC 60947-4-1</b> | <b>V</b>  | 250           |
|                                                                              | <b>UL/CSA</b>        | <b>V</b>  | 600           |
| <b>Rated Impulse Withstand Voltage <math>U_{imp}</math></b><br>(IEC 60947-1) |                      | <b>kV</b> | 4             |
| <b>Rated Operational Voltage <math>U_e</math></b>                            | <b>IEC 60947-4-1</b> | <b>V</b>  | 250           |
|                                                                              | <b>UL/CSA</b>        | <b>V</b>  | 600           |
| <b>Rated Thermal Current <math>I_{th} \leq 60^\circ\text{C}</math></b>       |                      | <b>A</b>  | 5             |
| <b>Rated Operational Current <math>I_e</math></b>                            |                      |           |               |
| <b>AC-14/AC-15 (IEC 60947-5-1)</b>                                           | <b>24V</b>           | <b>A</b>  | 3             |
|                                                                              | <b>120V</b>          | <b>A</b>  | 3             |
|                                                                              | <b>250V</b>          | <b>A</b>  | 1.5           |
| <b>DC-13 (IEC 60947-5-1)</b>                                                 | <b>24V</b>           | <b>A</b>  | 2             |
|                                                                              | <b>60V</b>           | <b>A</b>  | 0.4           |
|                                                                              | <b>110V</b>          | <b>A</b>  | 0.22          |
|                                                                              | <b>125V</b>          | <b>A</b>  | 0.22          |
|                                                                              | <b>250V</b>          | <b>A</b>  | 0.1           |
| <b>NEMA Control Circuit Ratings</b>                                          | <b>UL, CSA</b>       |           | C300 / R300   |
| <b>Short-Circuit Protection With Fuse</b>                                    |                      | <b>A</b>  | 6             |
| <b>Minimum Voltage / Admissible Current (IEC 60947-5-4)</b>                  |                      |           | 12V / 10mA    |

## RW-E Series Series Solid State Overload Relays Specifications Terminal Capacity and Tightening Torque – Main Contacts

|                                          |                       |                                                                                     | <b>RWB40E</b>      |
|------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|--------------------|
| <b>Type of Screw</b>                     |                       |                                                                                     | M3.5               |
|                                          |                       |                                                                                     | Flat / Phillips #2 |
| <b>Cable Size</b>                        |                       |                                                                                     |                    |
| <b>Flexible Cable</b>                    | <b>mm<sup>2</sup></b> |  | –                  |
| <b>Cable With Terminal / Rigid Cable</b> | <b>mm<sup>2</sup></b> |                                                                                     | –                  |
| <b>AWG Wire</b>                          |                       |                                                                                     | –                  |
| <b>Tightening Torque</b>                 | <b>N•m [lb•ft]</b>    |                                                                                     | –                  |
| <b>Flexible Cable</b>                    | <b>mm<sup>2</sup></b> |  | 1-10               |
| <b>Cable With Terminal / Rigid Cable</b> | <b>mm<sup>2</sup></b> |                                                                                     | 1-10               |
| <b>Wire</b>                              | <b>AWG</b>            |                                                                                     | 16-8               |
| <b>Tightening Torque</b>                 | <b>N•m [lb•ft]</b>    |                                                                                     | 1.7                |

## RW-E Series Series Solid State Overload Relays Specifications Terminal Capacity and Tightening Torque – Auxiliary Contacts

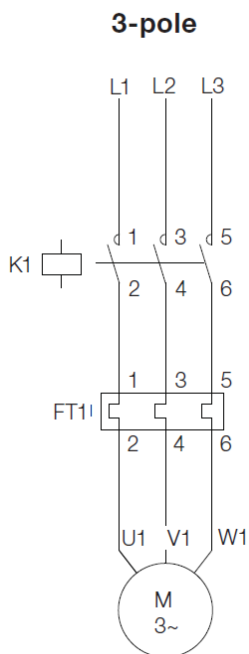
|                                       |                       |                                                                                     | <b>RWB40E</b>      |
|---------------------------------------|-----------------------|-------------------------------------------------------------------------------------|--------------------|
| <b>Type of Screw</b>                  |                       |                                                                                     | Flat / Phillips #1 |
| <b>Cable Size</b>                     |                       |                                                                                     |                    |
| <b>Cable With or Without Terminal</b> | <b>mm<sup>2</sup></b> |  | 1 x 1-2.5          |
| <b>Wire</b>                           | <b>AWG</b>            |                                                                                     | 16-12              |
| <b>Tightening Torque</b>              | <b>N•m [lb•ft]</b>    |                                                                                     | 0.8 [0.59]         |



# RW-E Series Solid State Overload Relays

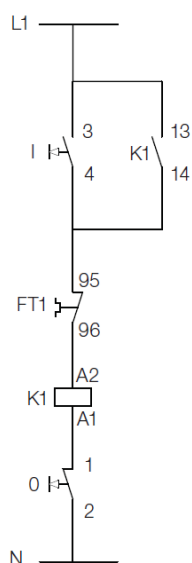
## Technical Data

### Motor Protection – Alternating Current

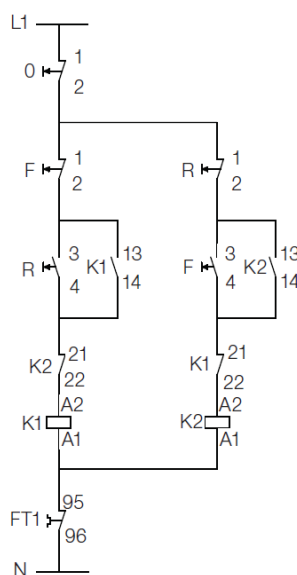


### Typical Connection – Contactor + Overload Relay

#### Direct On Line Starter (1 Direction of Rotation)



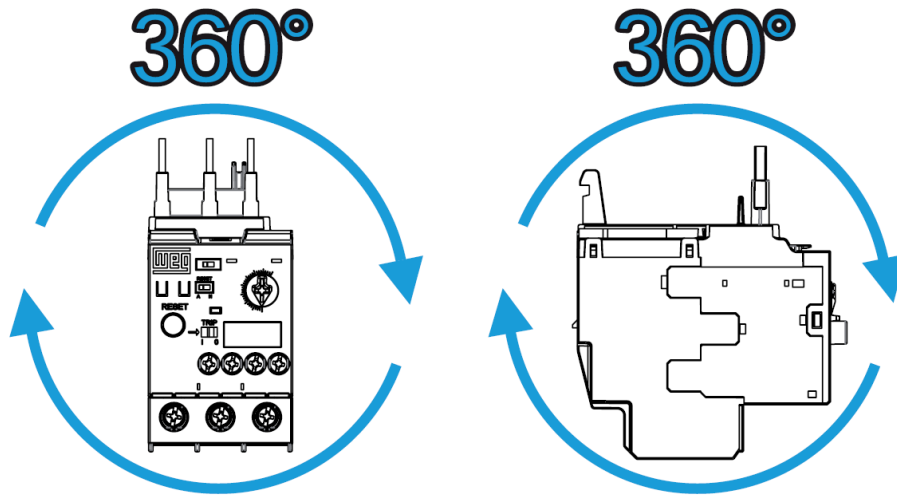
#### Direct On Line Starter (2 Directions of Rotation)





# RW-E Series Solid State Overload Relays

## RWB40E Mounting Position



*Mounting Position*