Electronic Relays

Monitoring Relays RPW
Timing Relays RTW
Level Relays RNW





Electronic Relays



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WEG Electronic Relays

- High precision electronic circuit with noise immunity
- Compact, with a 22.5 mm width frame, direct mounting on DIN rail 35 mm or fixed with screws
- Equipped with reliability LED for status indications



Standards

IEC / EN 1812-1
IEC / EN 60947-1
IEC / EN 60947-5-1
UL 508 CAN/CSA C22.2

Certifications

- RTW Timing Relays with 2 timing ranges (adjustable from 0.1 sec up to 150 hours) and 9 functions
- Compact, only 22.5 mm wide, can be assembled on DIN rail 35 mm or with screws
- Provided with high precision electronic circuit and line noise immunity
- LED for status indication
- High reliability contacts



Timing Relay RTW

Ideal for applications such as industrial processes, automation and motor starters, RTW timing relays switch an output signal based on a selected time and function.

With a 22.5 mm width frame the RTW is supplied as a competitive solution including the following features:

- Direct mounting on DIN rail 35 mm or fixed with screws
- 1 or 2 output contacts (NOC)
- RE - On-Delay
- RD - Off-Delay
- RDI - Off-Delay without Control Voltage
- PE - Impulse On
- CI - Asymmetric Flasher Start ON
- CIR - Asymmetric Flasher Start OFF
- CIL - Symmetric Flasher - Start ON
- CID - Symmetric Flasher - Start OFF
- ET - Star - Delta



Monitoring Relays RPW

RPW monitoring relays are a competitive choice for monitoring voltage to protect against the most common types of electrical failures. Monitoring voltages in electric installations are important for several reasons. Overvoltage, or phase loss, can cause machinery and motors overheat, thus, reducing their lifetime. Phase sequence inversion can cause machinery to run in the wrong way, destroying the entire system, and undervoltage may occur causing machinery to run in an undefined range, which could cause some parts of a system to run properly while others cease operating.
With five different functions, the RPW series is ideal to be used in electric motor control panel applications.



- RPW SF - Phase Sequence Relay
- RPW FF - Phase Loss Relay
- RPW FSF - Phase Sequence and Phase Loss Relay
- RPW SS - Under and Overvoltage Relay
- RPW PTC - Thermistor Relay



Level Relay RNW

These electronic control devices enable the monitoring and automatic level adjustment of the electrical current liquid conductor. Widely used in reservoir automation and can be used in several applications.

The RNW Level Relay line with 22.5 mm wide housing offers the following functions:

- RNW EN - Filling
- RNW ES - Draining

Timing Relays RTW

Ideal for applications such as industrial processes, automation and motor starters, RTW timing relays switch an output signal based on a selected time and function.
With a 22.5 mm width frame the RTW is a competitive solution with:

- Direct mounting on DIN rail 35 mm or fixed with screws using the PLMP accessory
- 1 or 2 output contacts (NO/NC)
- Wide Supply voltage: 24-240 V ac 50/60 Hz / V dc
- 2 timing ranges, adjustable from 0.1 seconds to 150 hours, with 9 different functions

Offered in the following timing functions:

- RTW- RE → On-Delay
- RTW- RD → Off-Delay
- RTW- RDI → Off-Delay without Control Voltage
- RTW- PE → Impulse On
- RTW- CI → Asymmetric Flasher Start ON
- RTW- CIR → Asymmetric Flasher Start OFF
- RTW- CIL → Symmetric Flasher - Start ON
- RTW-CID → Symmetric Flasher - Start OFF
- RTW- ET → Star - Delta[1)]



Standards

IEC / EN 1812-1
IEC / EN 60947-1
IEC / EN 60947-5-1

Certifications

Selection

RTW - __ 01 - U030S E05

Timing relay

Type
RE - On-Delay
PE - Impulse On
CI - Asymmetric Flasher Start ON
CIR - Asymmetric Flasher Start OFF
CIL - Symmetric Flasher - Start ON
CID - Symmetric Flasher - Start OFF
RD - Off-Delay
RDI - Off-Delay without Control Voltage
ET - Star - Delta[1)]

Number of output contacts
01 - 1 Output contact
02 - 2 Output contacts

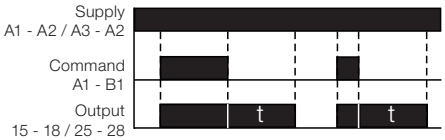
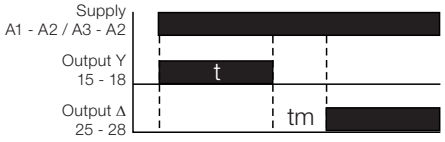
Timing range
MAT - 0.1 second to 10 minutes[2)]
MBT - 0.2 second to 150 hours[2)]
U001S - 0.1 to 1 second[3)]
U003S - 0.3 to 3 seconds[3)]
U010S - 1 to 10 seconds[3)]
U030S - 3 to 30 seconds[3)]
U060S - 6 to 60 seconds[3)]
U100S - 10 to 100 seconds[2)]
U300S - 30 to 300 seconds[3)]

Voltage supply:
According to following table

Code	Voltage	RTW-RE	RTW-PE	RTW-CI	RTW-CIR	RTW-CIL	RTW-CID	RTW-RD	RTW-RDI	RTW-ET
E05	24-240 V ac 50/60 Hz / V dc	X	X	X	X	X	X	X	X	X
E26	24 V ac 50/60 Hz / 24 V dc			X	X					
E33	48 V ac 50/60 Hz / 24 V dc			X	X					
E37	110-130 V ac 50/60 Hz / 24 V dc			X	X					
E40	220-240 V ac 50/60 Hz / 24 V dc			X	X					

Notes: 1) Star-Delta function requiers 2 output contacts and MAT timing range;
2) Timing ranges not avaliable for RTW-CI/CIR/RDI;
3) Timing ranges avaliable for RTW-CI/CIR/RDI.

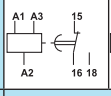
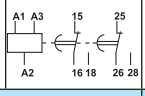
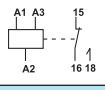
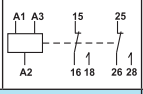
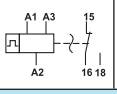
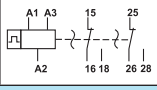
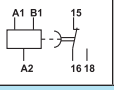
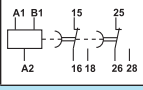
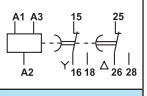
Functions

Operating mode	Timing diagram
RTW RE (ON - Delay) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the selected time delay begins and the green LED switches on. After the end of the delay time the output relay picks up (red LED turns on) and remains energized until the supply voltage is removed. This can be repeated as often as required. Reset: Removing supply voltage resets the time delay and the output.	
RTW PE (Impulse On) - Connecting a supply voltage on terminals A1-A2 / A3-A2 (green LED turns on) the output relay picks up without delay (red LED turns on) and remains energized until the selected pulse time elapse (red LED turns OFF). This can be repeated as often as required. Reset: Removing supply voltage resets the time delay and the output.	
RTW RD (OFF Delay) - This function requires continuous supply voltage on terminals A1-A2 (green LED turns on) and timing is controlled by a command contact at terminals A2-B1. If the command contact is energized, the output relay picks up (red LED turns on) and after the command contact is removed the selected time delay begins. When the selected time elapses the output relay is de-energized (red LED turns OFF). This can be repeated as often as required. Reset: Removing supply voltage resets the time delay and the output.	
RTW RDI (OFF Delay with no control) - Connecting a supply voltage on terminals A1-A2 / A3-A2, the green LED turns on and the output relay picks up without delay (red LED turns on). If the supply voltage is de-energized, the selected time delay begins and when this time elapses, the output relay is de-energized (red LED turns OFF). This can be repeated as often as required. Reset: Removing supply voltage resets the time delay and the output.	
RTW CI (Asymmetric Flasher Start ON) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the green LED turns on and the timer starts to pulse with adjustable ON/OFF cycles. The upper dial presets the ON time (red LED turns ON and output relay picks up) and the lower selects the OFF time when the output relay is de-energized. Reset: Removing supply voltage resets the time delay and the output.	
RTW CIR (Asymmetric Flasher Start OFF) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the green LED turns on and the timer starts to pulse with adjustable OFF/ON cycles. The upper dial presets the ON time (red LED turns ON and output relay picks up) and the lower select the OFF time when the output relay is de-energized. Reset: Removing supply voltage resets the time delay and the output.	
RTW CIL (Symmetric Flasher -Start ON) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the green LED turns on and the timer starts to pulse with symmetric ON/OFF cycles. The dial presets a fixed ON time (red LED turns ON and output relay picks up) and OFF time. Reset: Removing supply voltage resets the time delay and the output.	
RTW CID (Symmetric Flasher - Start OFF) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the green LED turns on and the timer starts to pulse with symmetric OFF/ON cycles. The dial presets a fixed ON time (red LED turns ON and output relay picks up) and OFF time. Reset: Removing supply voltage resets the time delay and the output.	
RTW ET (Star-Delta) - Connecting a supply voltage on terminals A1-A2 / A3-A2 the output relay for the wye-connection picks up and the adjusted time starts (red LED turns ON). When the start-up time elapses, a fixed star-delta changeover time of 100ms starts and after this star-delta changeover time elapses the output relay for the delta-connection picks up and stays energized until the supply is disconnected. Reset: Removing supply voltage resets the time delay and the output.	

Note: where: t, t_{ON}, t_{OFF} adjusted time, t_M Dead time.

Characteristics

Connection Diagrams

		RTW-RE		RTW-PE		RTW-CI/CIL/CID/CIR		RTW - RD / RDI		RTW - ET
		1E	2E	1E	2E	1E	2E	1E	2E	2E
Terminal positions										
		RTW-RE01	RTW-RE02	RTW-PE01	RTW-PE02	RTW-C..01	RTW-C..02	RTW-R..01	RTW-R..02	
Diagram										
Circuit	A1 - A2 supply voltage	24-240 V ac/ V dc (50/60 Hz)		24-240 V ac/ V dc (50/60 Hz)		220-240 V, 24-240 V ac/ V dc (50/60 Hz)		24-240 V ac/ V dc (50/60 Hz)		24-240 V ac/ V dc (50/60 Hz)
	A2 - A3 supply voltage	Voltage 24 V dc		Voltage 24 V dc		Voltage 24 V dc		X		Voltage 24 V dc
	A2 - B1 control voltage	X		X		X		Voltages 24-240 V ac/ V dc (50/60 Hz)		X
	15 - 16 - 18	Output 1		Output 1		Output 1		Output 1		Output 1
	25 - 26 - 28	Output 2		Output 2		Output 2		Output 2		Output 2

Timing Relay Adjustment

The desired timing must be adjusted through its front adjustment DIAL, the scale of which is presented in seconds for all timing, except for the 3 to 30 minute scale.

RTW-CI / CIR / RDI	RTW-RE / PE / CIL / CID / RD	RTW-ET
0.1 sec to 1 sec	0.1 sec to 10 min 0.2 sec to 150 h	0.1 sec to 10 min
0.3 sec to 3 sec		
1 sec to 10 sec		
3 sec to 30 sec		
6 sec to 60 sec		
30 sec to 300 sec		
3 min to 30 min		

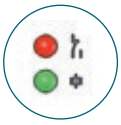




Light Indications on Relay

The RTW Timing Relay has status indicator LEDs, as shown below:

RTW - RE	RTW-PE RTW-CI/CIR/CIL/CID RTW-RD/RDI
Red LED	Energized output
Green LED	Energized relay



	RTW - ET
Red LED	Star output
Green LED	Delta output



The RTW relays can be individually mounted on DIN 35 mm rail or with screws using the PLMP accessory.

Reference Table

On-Delay

Function	Contacts	Supply terminals		Control terminals	Timing	Reference code
		A1-A2	A2-A3	A2-B1		
		Voltage (V)				
	1NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-RE 01 - MAT RTW-RE 01 - MBT
	2NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-RE 02 - MAT RTW-RE 02 - MBT

Off-Delay

Function	Contacts	Supply terminals		Control terminals	Timing	Reference code
		A1-A2	A2-A3	A2-B1		
		Voltage (V)				
	1NOC	24-240 V ac/ V dc (50/60 Hz)	-	24-240 V ac/ V dc (50/60 Hz)	0.1 sec to 10 min 0.2 sec to 150 h	RTW-RD 01 - MAT RTW-RD 01 - MBT
		24-240 V ac/ V dc (50/60 Hz)				
	2NOC	24-240 V ac/ V dc (50/60 Hz)	-	24-240 V ac/ V dc (50/60 Hz)	0.1 sec to 10 min 0.2 sec to 150 h	RTW-RD 02 - MAT RTW-RD 02 - MBT
		24-240 V ac/ V dc (50/60 Hz)				

Off-Delay Without Control Voltage

Function	Contacts	Voltage (V) - Terminals	Timing	Reference code
		A1-A2		
	1NOC	24-240 V ac/ V dc (50/60 Hz)	0.1 to 1 sec 0.3 to 3 sec 1 to 10 sec 3 to 30 sec 6 to 60 sec 10 to 100 sec 30 to 300 sec 1 to 10 min	RTW RDI 01 - U001S RTW RDI 01 - U003S RTW RDI 01 - U010S RTW RDI 01 - U030S RTW RDI 01 - U060S RTW RDI 01 - U100S RTW RDI 01 - U300S RTW RDI 01 - U010M
	2NOC	24-240 V ac/ V dc (50/60 Hz)	0.1 to 1 sec 0.3 to 3 sec 1 to 10 sec 3 to 30 sec 6 to 60 sec 10 to 100 sec 30 to 300 sec 1 to 10 min	RTW RDI 02 - U001S RTW RDI 02 - U003S RTW RDI 02 - U010S RTW RDI 02 - U030S RTW RDI 02 - U060S RTW RDI 02 - U100S RTW RDI 02 - U300S RTW RDI 02 - U010M

Reference Table

Impulse - ON

Function	Contacts	Supply terminals		Control terminals	Timing	Reference code
		A1-A2	A2-A3	A2-B1		
		Voltage (V)				
	1NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-PE 01 - MAT RTW-PE 01 - MBT
	2NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-PE 02 - MAT RTW-PE 02 - MBT

Asymmetric Flasher

Function	Contacts	Supply terminals		Control terminals	Timing	Reference code
		A1-A2	A2-A3	A2-B1		
		Voltage (V)				
	1NOC	24 V. 48 V. 110-130 V. 220-240 V 24-240 V ac/ V dc (50/60 Hz)	24 V dc	-	0.1 to 1 sec 0.3 to 3 sec 1 to 10 sec 3 to 30 sec 6 to 60 sec 10 to 100 sec 30 to 300 sec 3 to 30 min	RTW-CI/CIR 02 - U002S RTW-CI/CIR 02 - U003S RTW-CI/CIR 02 - U020S RTW-CI/CIR 02 - U030S RTW-CI/CIR 02 - U060S RTW-CI/CIR 02 - U100S RTW-CI/CIR 02 - U300S RTW-CI/CIR 02 - U030M
	2NOC	24 V. 48 V. 110-130 V. 220-240 V 24-240 V ac/ V dc (50/60 Hz)	24 V dc	-	0.1 to 1 sec 0.3 to 3 sec 1to 10 sec 3 to 30 sec 6 to 60 sec 10 to 100 sec 30 to 300 sec 3 to 30 min	RTW-CI/CIR 02 - U002S RTW-CI/CIR 02 - U003S RTW-CI/CIR 02 - U020S RTW-CI/CIR 02 - U030S RTW-CI/CIR 02 - U060S RTW-CI/CIR 02 - U100S RTW-CI/CIR 02 - U300S RTW-CI/CIR 02 - U030M

Symmetric Flasher

Function	Contacts	Supply terminals		Control terminals	Timing	Reference code
		A1-A2	A2-A3	A2-B1		
		Voltage (V)				
	1NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-CIL/CID 01 - MAT RTW-CIL/CID 01 - MBT
	2NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min 0.2 sec to 150 h	RTW-CIL/CID 02 - MAT RTW-CIL/CID 02 - MBT

Y / Δ

Contacts	Supply terminals		Control terminals	Timing	Reference code
	A1-A2	A2-A3	A2-B1		
	Voltage (V)				
2NOC	24-240 V ac/ V dc (50/60 Hz)	24-240 V ac/ V dc (50/60 Hz)	-	0.1 sec to 10 min	RTW ET 02 - MAT

Monitoring Relays RPW

WEG RPW Relays are electronic devices that protect three-phase systems against phase loss or selectable neutral loss (RPW FF), phase sequence inversion (RPW SF) or both of the functions integrated into the same product (RPW FSF). Whenever there is failure in the three-phase system the relay will work to interrupt the motor of process operation to be protected.
Designed in accordance with international standards, the RPW Monitoring Relays offer a compact and competitive solution, with 22.5 mm wide housing for assembly on DIN 35 mm rail.

RPW SF



Standards
IEC / EN 60947-1
IEC / EN 60947-5-1

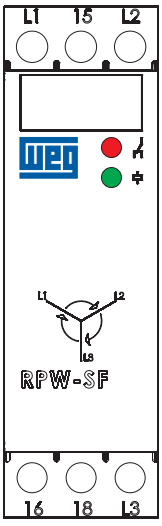
Certifications

The Phase Sequence Relay is designed to protect three-phase systems against phase sequence inversion (L1-L2-L3).
Functioning: on connecting the relay to the supply with the phase sequences correctly connected, the output relay switches the contacts to operation position (closing terminals 15-18) and the red LED turns on. When a phase sequence inversion occurs the output contacts will become de-energized (opening 15-18) and the red LED will turn OFF.

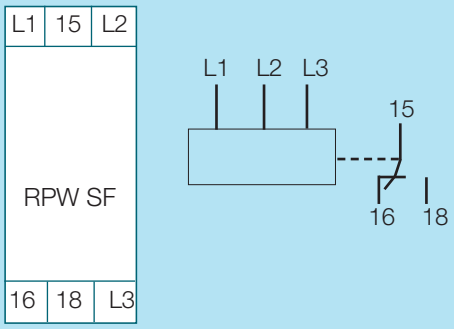
Selection

RPW - SF - D66

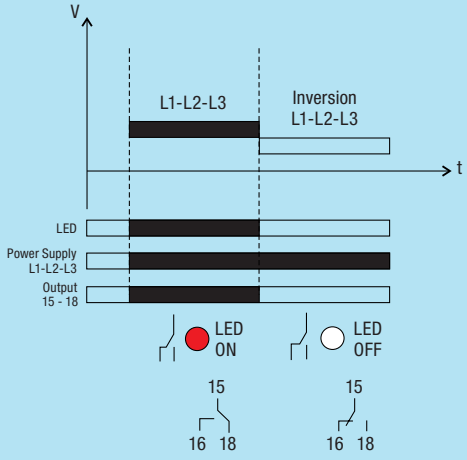
- RPW: WEG monitoring relay
- SF: Phase sequence
- D66: Supply voltage selection. According to following table:
  Available voltages:
  D66 = 220-240 V ac 50/60 Hz
  D70 = 380-415 V ac 50/60 Hz
  D74 = 440-480 V ac 50/60 Hz



Connection Diagrams

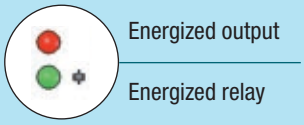


Functional Diagram



Light Indicators on Relay

The RPW monitoring relay is equipped with status indicator LEDs, as shown on the right:



Assembly

The RPW relays can be individually mounted on DIN 35mm rail or with screws using the PLMP accessory.

RPW FF



RPW FF (Neutral Not Selected)

The Phase Loss Relay is designed to protect three-phase systems against phase loss with feedback.
Functioning: Directly connected to the supply to be monitored, feeding the 3-phases with phase amplitude within the selected limits, the output relay switches the contacts to operation position (closing terminals 15-18) and the red LED switches on. When loss occurs in one of the phases in relation to the others to a value below the percentage limit selected through the sensitivity adjustment DIAL (monitoring against motor ghost phase) the output contact (opening 15-18) will become de-energized and the red LED indicating system running will switch OFF.

RPW FF (Neutral Selected)

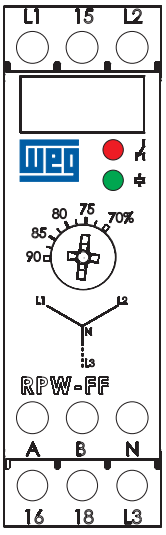
Designed to protect three-phase systems with neutral.
Functioning: In the same product, a bridge must be provided between terminals A and B for neutral monitoring. The relay will perform the same monitoring for phase loss and will also monitor the voltage in neutral, which must be connected. When this value exceeds 20 V, there will be output de-energization (opening 15-18). A value considered unbalanced loads.

Notes: - When we monitor a motor, the current of the remaining phases increases generated by a phase loss, which will cause motor overheating;
- Winding with armature voltage works as a voltage generator, called "ghost phase". The RPW FF will protect the motor in the situation.

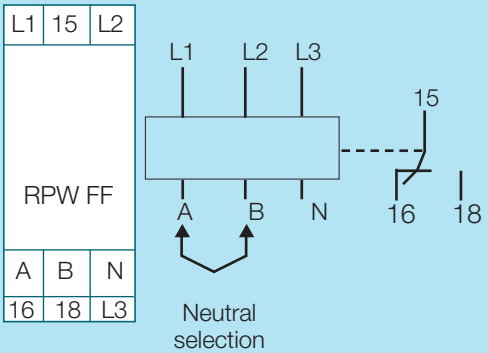
Selection

RPW - FF - D66

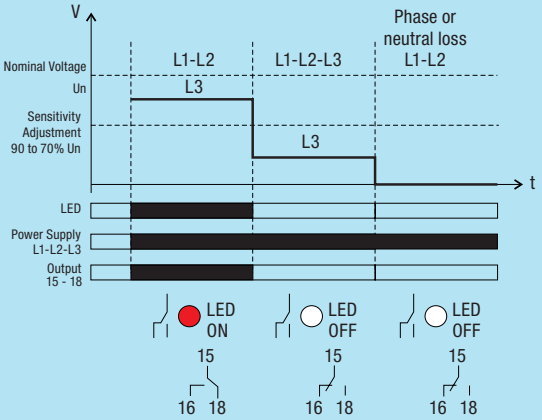
- RPW: WEG monitoring relay
- FF: Phase loss
- D66: Supply voltage selection. According to below table:
  Available voltages:
  D66 = 220-240 V ac 50/60 Hz
  D70 = 380-415 V ac 50/60 Hz
  D74 = 440-480 V ac 50/60 Hz



Connection Diagrams

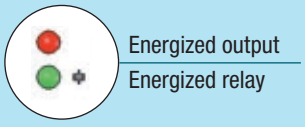


Functional Diagram



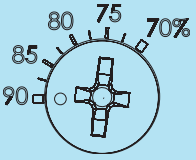
Relay Light Indications

Monitoring relay RPW has status indicating LEDs, as shown on the right:



Sensitivity Adjustment

Relay sensitivity adjustment must be performed through the adjustment Dial located on the front. Adjust the desired percentage from 70 to 90%, which will define the loss percentage of a phase in relation to the others.



Assembly

The RPW relays can be individually mounted on DIN 35 mm rail or with screws using the PLMP accessory.

RPW FSF



RPW FSF (Neutral Not Selected)

The Phase Loss and Sequence Relay is designed to protect three-phase systems against phase loss and reversions. Functioning: directly connected to the supply to be monitored, supplying the 3-phases and the phase amplitude to be within the selected limits and in the correct sequence, the output relay switches the contacts to the work position (closing terminals 15-18) and the red LED will switch on. When phase loss or reversion occurs the output contacts (opening 15-18) become de-energized and the red LED indicating system running switch OFF.

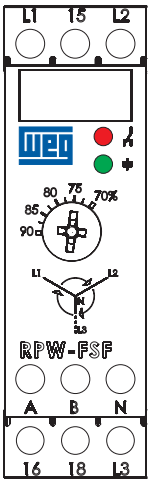
RPW FSF (Neutral Selected)

In the same product, a “jumper” must be made between terminals A and B for neutral monitoring, the relay will perform the same monitoring for phase loss and balancing and will also monitor the voltage in neutral, which must be connected. When the voltage at neutral exceeds 20 V, value that considers unbalanced loads, there will be output de-energization (opens 15-18).

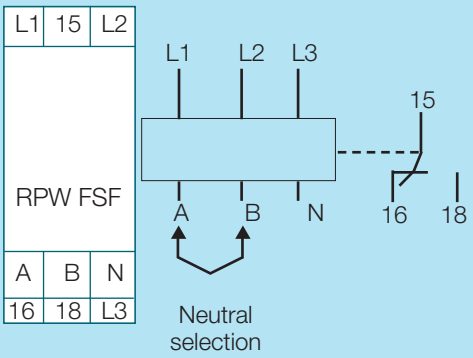
Selection

RPW - FSF - D66

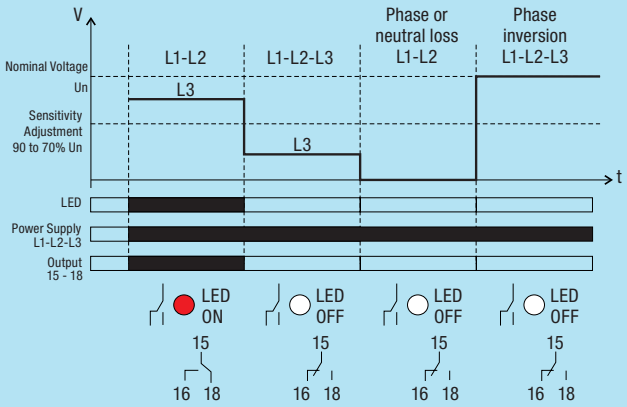
- RPW: WEG monitoring relay
- FSF: Phase loss and sequence
- D66: Supply voltage selection. According to below table:
  Available voltages:
  D66 = 220-240 V ac 50/60 Hz
  D70 = 380-415 V ac 50/60 Hz
  D74 = 440-480 V ac 50/60 Hz



Connection Diagrams

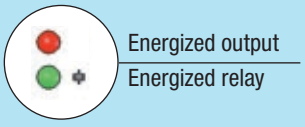


Functional Diagram



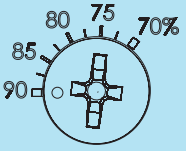
Relay Light Indications

Monitoring relay RPW has status indicating LEDs, as shown on the right:



Sensitivity Adjustment

Relay sensitivity adjustment must be performed through the adjustment Dial located on the front, adjust the desired percentage from 70 to 90%, which will define the loss percentage of a phase in relation to the others.



Assembly

The RPW relays can be individually mounted on DIN 35mm rail or with screws using the PLMP accessory.

RPW SS



The WEG RPW SS Relay is designed to protect three-phase systems against under or over voltage and phase loss.
Functioning: directly connected to the 3-phases to be monitored (L1, L2 and L3) and being the phases amplitude within the sensitivity limits adjusted on the front scales, the relay switches the contacts to the operation position, (closing terminals 15 - 18) and the red LED will switch on. When any failure occurs in the system causing under or over voltage or even phase loss relay de-energization will occur (opening terminals 15 - 18) protecting the monitored equipment and the red LED turns OFF.

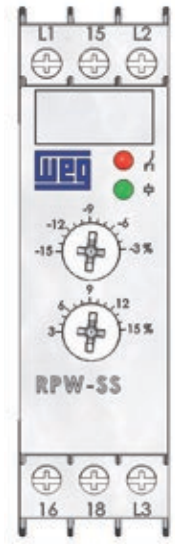
Selection

RPW - SS - D77

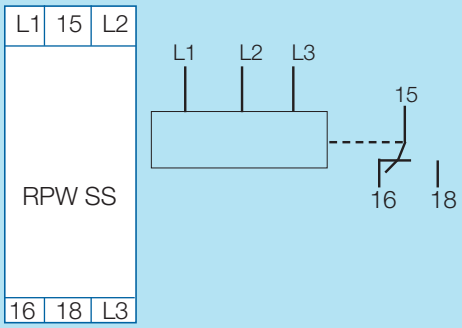
- RPW: WEG monitoring relay
- SS: Under and over voltage
- D77: Voltage selection according to the below table:

Available voltages:

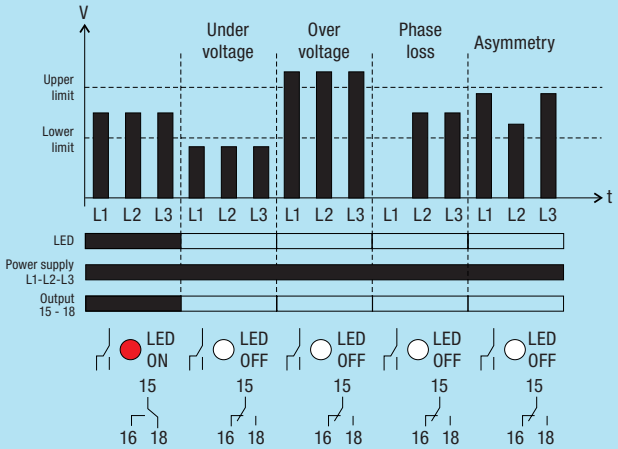
D77 = 208 V ac 50/60 Hz	D34 = 400 V ac 50/60 Hz
D23 = 220 V ac 50/60 Hz	D35 = 415 V ac 50/60 Hz
D24 = 230 V ac 50/60 Hz	D36 = 440 V ac 50/60 Hz
D25 = 240 V ac 50/60 Hz	D38 = 460 V ac 50/60 Hz
D33 = 380 V ac 50/60 Hz	D39 = 480 V ac 50/60 Hz



Connection Diagrams



Functional Diagram



Relay Light Indications

	On	Normal Operation Under, Overvoltage and Phase loss
	Off	
	On	Energized
	Off	Energized

Sensitivity Adjustment

The sensitivity adjustment is performed by 2 dials located on the front of the Relay. Selection is from -15% to -3% (for under voltage) and +3% to +15% (for over voltage).



Assembly

The RPW relays can be individually mounted on DIN 35 mm rail or with screws using the PLMP accessory.

RPW PTC



The WEG RPW PTC Relay is an electronic monitoring device enabling monitoring against temperatures in excess of the given limit by PTC selection in machines (motors, generators, etc...) equipped with a PTC temperature detector.
Designed in accordance with international standards, the RPW PTC offers a safe and compact solution, with standardized 22.5 mm boxes for insertion in DIN rail 35 mm.
Functioning: The RPW-PTC relay has status indication through the LEDs located on the front of the product. The green LED is ON when the relay is energized. If the monitored temperature by the PTC is below the defined value of 3.5 kΩ, the red LED will be ON indicating normal operation. Therefore, if the resistance exceeds the limit of 3.5 kΩ, the relay will instantaneously switch the outputcontacts and the red LED will be OFF indicating an over temperature condition of the motor. The relay will only switch on the 15 and 18 contacts again once the temperature goes down to normal values.
Additionally, the WEG PTC relay provides sensor testing feature.In case of failure of the PTC sensors, the green LED will be FLASHING. This feature indicates that the PTC sensors are either open or in shortcircuit (20 Ω or less).

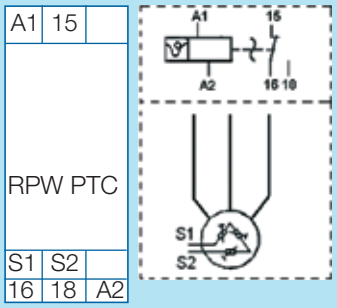
Selection

RPW - PTC - E 16

- RPW: WEG monitoring relay
- PTC: PTC detector
- E 16: Available voltage range: E05= 24-240 V ac/dc



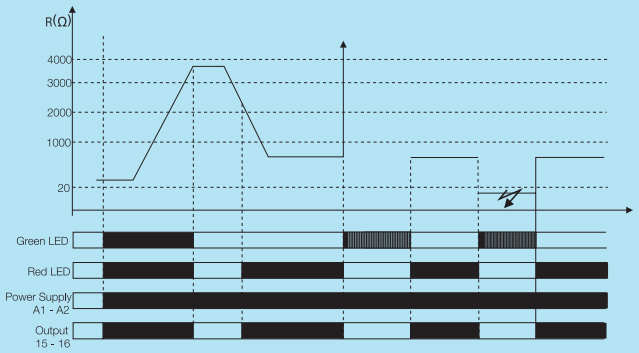
Connection Diagrams



Terminals

A1 - A2	Voltage supply 24...240 V ac / V dc
S1 - S2	PTC sensor input
15 - 16 - 18	Output

Functional Diagram



Relay Light Indications

	On	Normal operation
	Off	Elevated temperature
	On	Energized
	Off	Not energized
	Flashing	PTC sensor failure

Assembly

The RPW relays can be individually mounted on DIN 35 mm rail or with screws using the PLMP accessory.

Level Relays RNW

The WEG Level Relays are electronic control devices that enable the monitoring and automatic adjustment of the level in electric current liquid conductors. Widely used in reservoir automation in general, the RNW relays can be used in several applications such as the prevention of dry pump operation, monitoring against filling tank overflow, activation of solenoids or alarms / lighting.
The operating principle is based on the measuring of the electrical resistance of the reservoir liquid through an assembly of electrodes that work as liquid presence / absence sensors. To optimize their performance, the relay has a sensitivity DIAL enabling the electronic circuit to be adjusted to the liquid resistance.
Available in 2 distinct functions, RNW EN filling and RNW ES draining, the relay offers digital electronics that provide high precision, repeatability and noise resistance. The supply system is isolated from the electronic circuit therefore ensuring greater user safety. Designed in accordance with international standards, the RNW offers a safe and compact solution, in 22.5 mm wide housing for assembly on DIN rail 35 mm, with 1 output with NO/NC reversable contact and an ample voltage supply range of 100-240 V ac/ V dc.

Available in the following functions:

- RNW EN → Filling
- RNW ES → Draining



Standards

IEC / EN 60947-1
IEC / EN 60947-5-1

Certifications

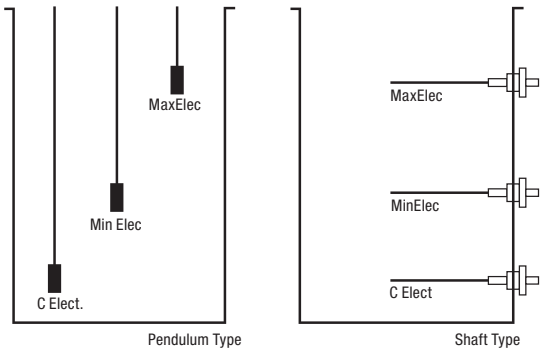
Selection

RNW - _ _ - E 09

- RNW: WEG level relay
- _ _: Type: EN - Filling; ES - Draining
- E 09: Available voltage range E09 = 100-240 V ac/ V dc

Functioning

The electrodes are fixed in the reservoir according to desired levels for control, minimum or maximum, and the reference electrode (C) must be positioned in the lower part, below the other electrodes, maximum level electrode (Max) and minimum level etectrode (Min). When the system is energized an alternating current (the AC current minimizes the electrolysis and increases the life span of the electrode) is applied to the reference electrode, once the liquid comes into contact with the level electrodes a path is established for the circulation of electrical current between the electrodes. An electronic current compares the current and according to the chosen model (RNW ES or RNW EN) a logic will occur that switches the relay output contacts. The electrodes are available in 2 models, shaft (EHW) or pendulum (EPW), the difference between them is the way of fixing. In order to adapt the several applications the RNW is available in two distinct functions, draining and filling.



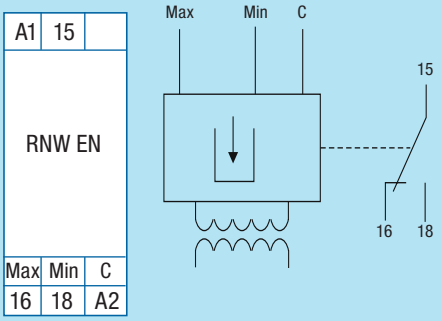
Note: the EHW can be fixed both horizontally and vertically.

RNW EN (Filling)

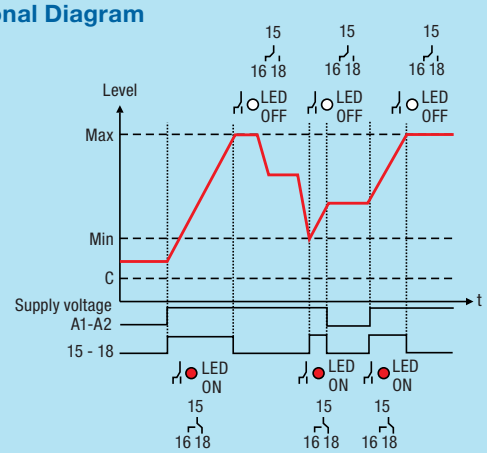


Controls 2 levels using the 3 electrodes, the reference electrode (C), the maximum level electrode (Max) and the minimum level electrode (Min). Once supplied the RNW EN monitors the liquid level in the reservoir, with the electrode being uncovered at minimum level Min, the output relay will become energized (terminals 15-18 closed) causing the liquid level to rise. When the reservoir liquid covers the Max level electrode, the relay goes into a state of rest (terminals 15-18 open) and thus remains until the Min level electrode is discovered again. If there is a relay supply failure when resupplying the RNW EN monitors the liquid level and restart its initial logic.

Connection Diagram



Functional Diagram

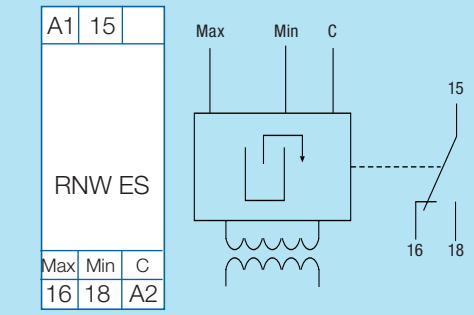


RNW ES (Draining)

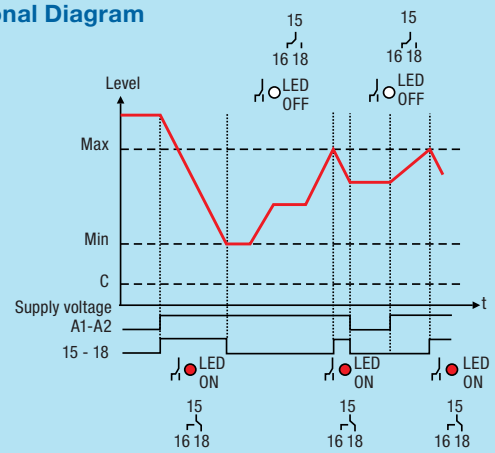


Controls 2 levels using the 3 electrodes, the reference electrode (C), the maximum level electrode (Max) and the minimum level electrode (Min). Once supplied the RNW ES checks the liquid level in the reservoir, with this being in contact with the Max level electrode, the relay will become energized (terminals 15-18 closed), causing the reservoir liquid level begin to drop. Once the Min level electrode is uncovered by the liquid the relay will switch to rest status (terminals 15-18 open) and will thus remain until the liquid enters into contact again with the Max level electrode, restarting the process. If there is a relay supply failure when resupplying the RNW ES verifies the liquid level and restarts its initial logic.

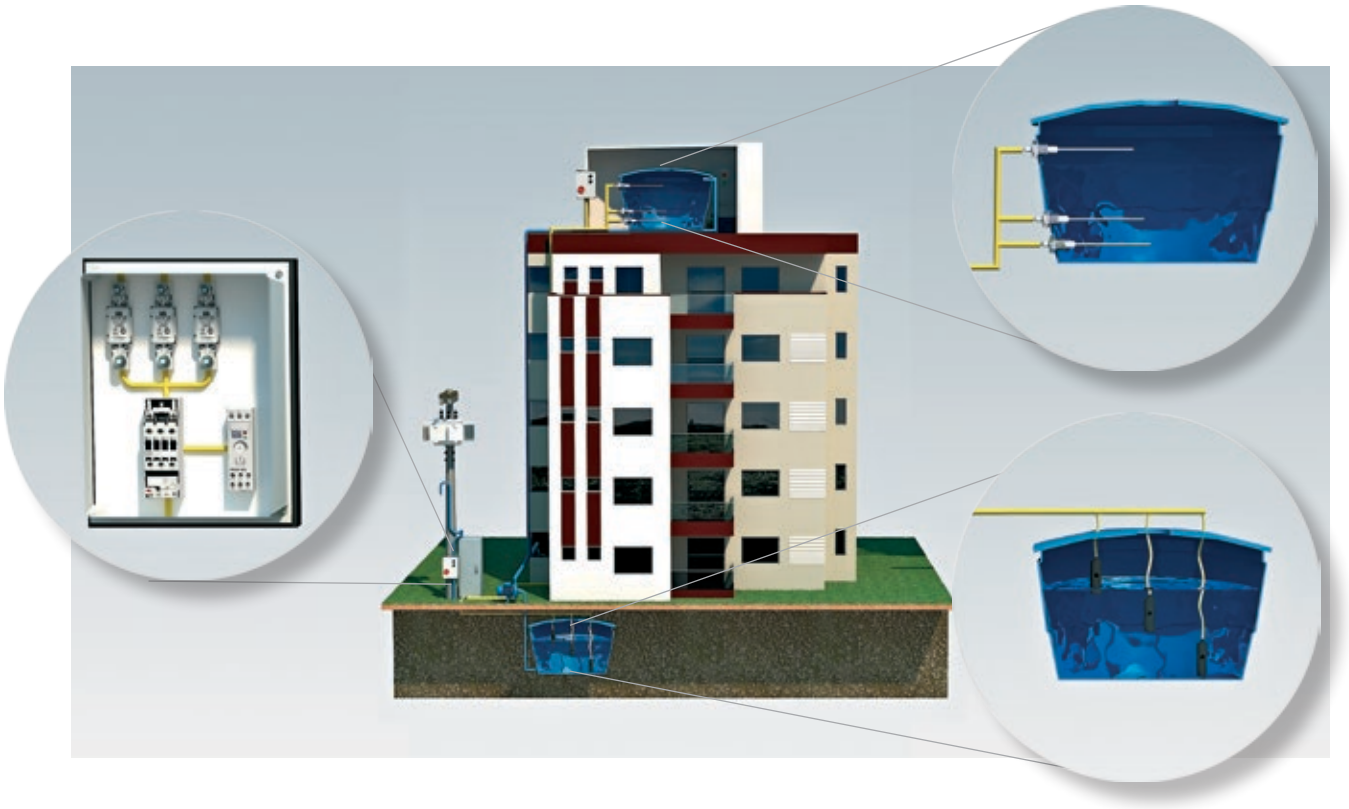
Connection Diagram



Functional Diagram



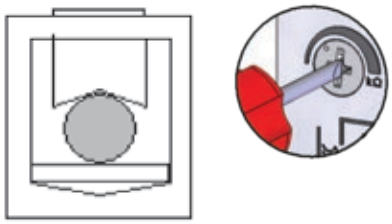
Applications



Characteristics

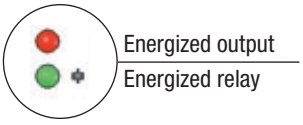
Sensitivity Adjustment

Liquid resistance can vary according to the resistance of the liquid in question and the position of the electrodes. To adapt the relay electronic circuit to the liquid used, sensitivity must be adjusted through the DIAL, located in the front part of the RNW, which has a graded scale without values.
To perform the sensitivity adjustment, all electrodes must be submersed in the reservoir liquid and the DIAL positioned at its limit anti-clockwise (less resistance). With the relay energized the DIAL must be turned clockwise (greater resistance) until the relay output switches its contacts (the red LED must change status). To confirm the adjustment, the reference electrode C must be disconnected and then quickly reconnected, the relay must return to its previous status of de-energization. If this does not happen, a new adjustment must be performed. By doing this the RNW will be adjusted to the ideal sensitivity point.



Relay Light Indications

The RNW level relay is equipped with indicator LEDs as shown on the picture:

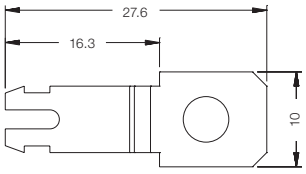


Electronic Relays - Accessories

Adaptor for Screw Fixing - PLMP

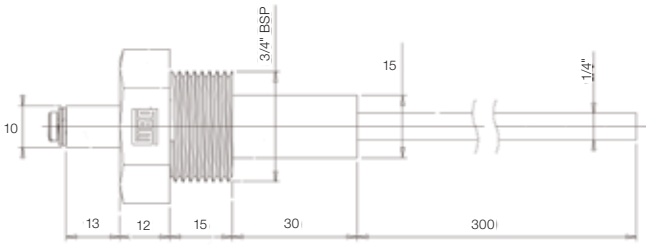
For fixing relays on mounting boards using screws.





Shaft Electrode - EHW



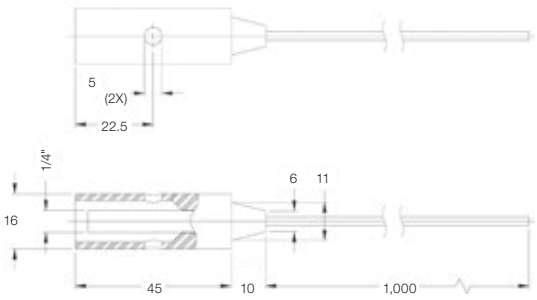


- Teflon coated stainless steel shaft 11/4” chrome hex screw
- Length: 300 mm

Note: other lengths on request.

Pendulum Electrode - EPW





- Body in natural black polypropylene
- Stainless steel sensor shaft 1x10 mm^2 gauge flexible connection cable
- Cable length: 1,000 mm

Dimensions in mm.

RTW Technical Data

	Reference code		RTW
Inputs	Rated insulation voltage	V	300
	Supply voltage (U_e) A1-A2	V ac	24-240 V ac/ V dc (50/60 Hz) 220-240 V. 24-240 V ac/ V dc (50/60 Hz) 24 V dc. 24-240 V ac/ V dc (50/60 Hz) 380-440 V. 24-240 V ac/ V dc (50/60 Hz)
	A2-A3	V dc	24 V dc
	Control (U_c) (only RTW RD) A2-B1	V ac	24-240 V ac/ V dc (50/60 Hz)
	Voltage limits		0.85...1.1 x Uc for V ac 0.8...1.25 x Uc for V ac
	Consumption	mA	35 for U_e = 24 V dc 65 for U_e = 110 V ac 75 for U_e = 130 V ac 55 for U_e = 220 V ac 60 for U_e = 240 V ac
Time adjust	Minimun time for reset	ms	100
	Minimun ON time (for RTW RD)	ms	50
	Setting accuracy (as % of the full scale value)	%	+/- 5
	Repeat accuracy	%	+/- 1
	Changeover time Y - Δ	ms	100
Outputs	Output contacts capacity (I_e) AC-15 in 230 V ac DC-13 in 24 V dc DC-13 in 48 V dc DC-13 in 60 V dc DC-13 in 125 V dc DC-13 in 250 V dc A300: AC-15 R300: DC-13	A	 3 1 0.45 0.35 0.2 0.1
	Rated thermal current (I_{th})	A	10 (for AC) 2.5 (for DC)
	Fuse (class gL/gG)	A	4
	Mechanical lifespan	operating cycles	30 x 10^6
Characteristics	Ambient temperature		
	- Operation	°C	-5 to +60
	- Storage	°C	-40 to +85
	Degree of protection		IP20
	Connection section (min. to max) - Cable without end sleeve - Cable with end sleeve - AWG-Wire	mm^2 mm^2A AWG	1 x (0.5 to 2.5) 2 x (0.5 to 2.5) 1 x (0.5 to 2.5) 2 x (0.5 to 2.5) 2 x (20 to 16)
	Tightening torque	N.m lb.in.	0.8 to 1.2 7 to 10.6
	Terminal screw		M3
	Assembly position		Any
	Shock resistance	g/ms	15/11
	Resistance vibration	Hz/mm	10 to 500/10
	Weight	kg	0.08 (1E) 0.095 (2E)

RPW Technical Data

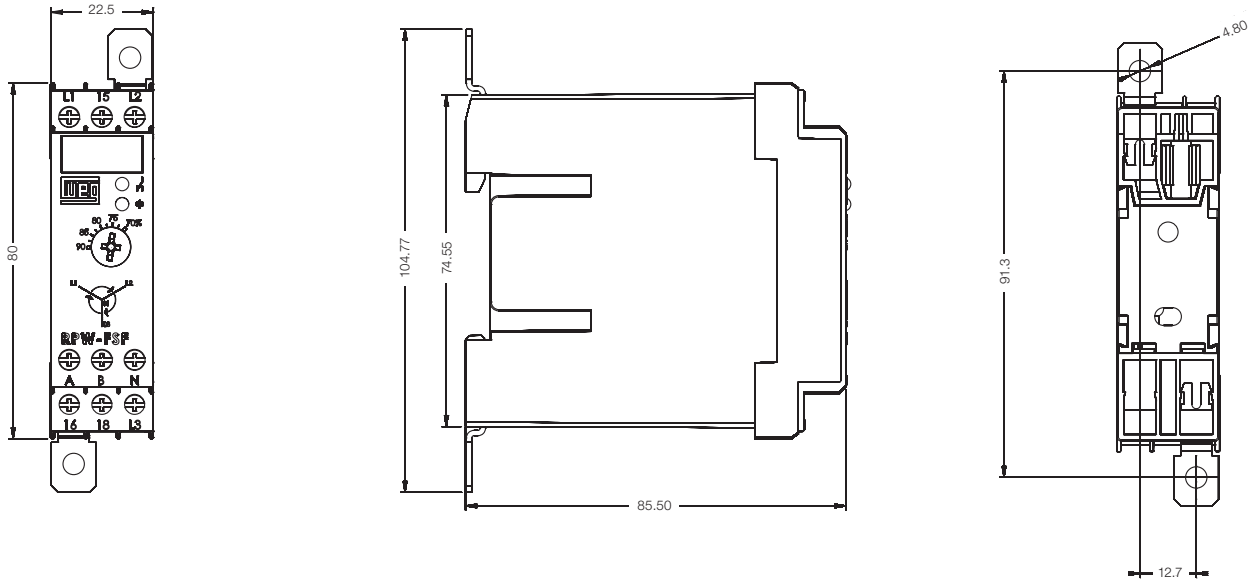
	Reference code			RPW FF	RPW SF	RPW FSF	RPW SS	RPW PTC
Inputs	Supply (Us) L1 - L2 - L3		V ac	Voltage ranges (220 up to 480 (select))				24...240 V ac/ V dc
	Frequency		Hz	50/60				
	Sensitivity adjustment		%	70 to 90	-	70 to 90	+/-3 to 15%	-
	Operation limits		Us	0.85 to 1.1 x Us for V ac				
	Maximum consumption		mA	80				
	Maximum voltage allowed in neutral		V	20	-	20	-	-
	Scale precision (scale base)		%	+ / - 20			-	-
Outputs	Repeatibility precision		%	+ / - 1			-	-
	Maximum capacity of Output contacts (Ie)	Resistive load		5				
		AC-15 (A)		3				
	Fuse (class gL/gG)		A	4				
	Mechanical lifespan operations			30 x 10^6				
Characteristics	Electrical lifespan operations			10 x 10^5				
	Ambient temperature allowed			-				
	- Operation		°C	-5 to +60				
	- Storage		°C	-40 to +85				
	Degree of protection			IP 20				
	Terminal capacity							
	- Wire		mm^2	1 x (0.5 to 2.5)				
				2 x (0.5 to 1.5)				
	- Cable with terminal		mm^2	1 x (0.5 to 1.5)				
				2 x (0.5 to 1.5)				
	- AWG solid conductor		AWG	2 x (20 to 14)				
	Tightening torque		N.m	0.8 to 1.2				
			lb.in	7 to 10.6				
	Terminal screw			M3				
	Assembly position			Any				
	Shock resistance		g/ms	15/11				
	Resistance vibration		Hz/g	10 to 500/10				
	Weight		kg	0.1				
	Pollution			2				
	Overvoltage category			III				

RNW Technical Data

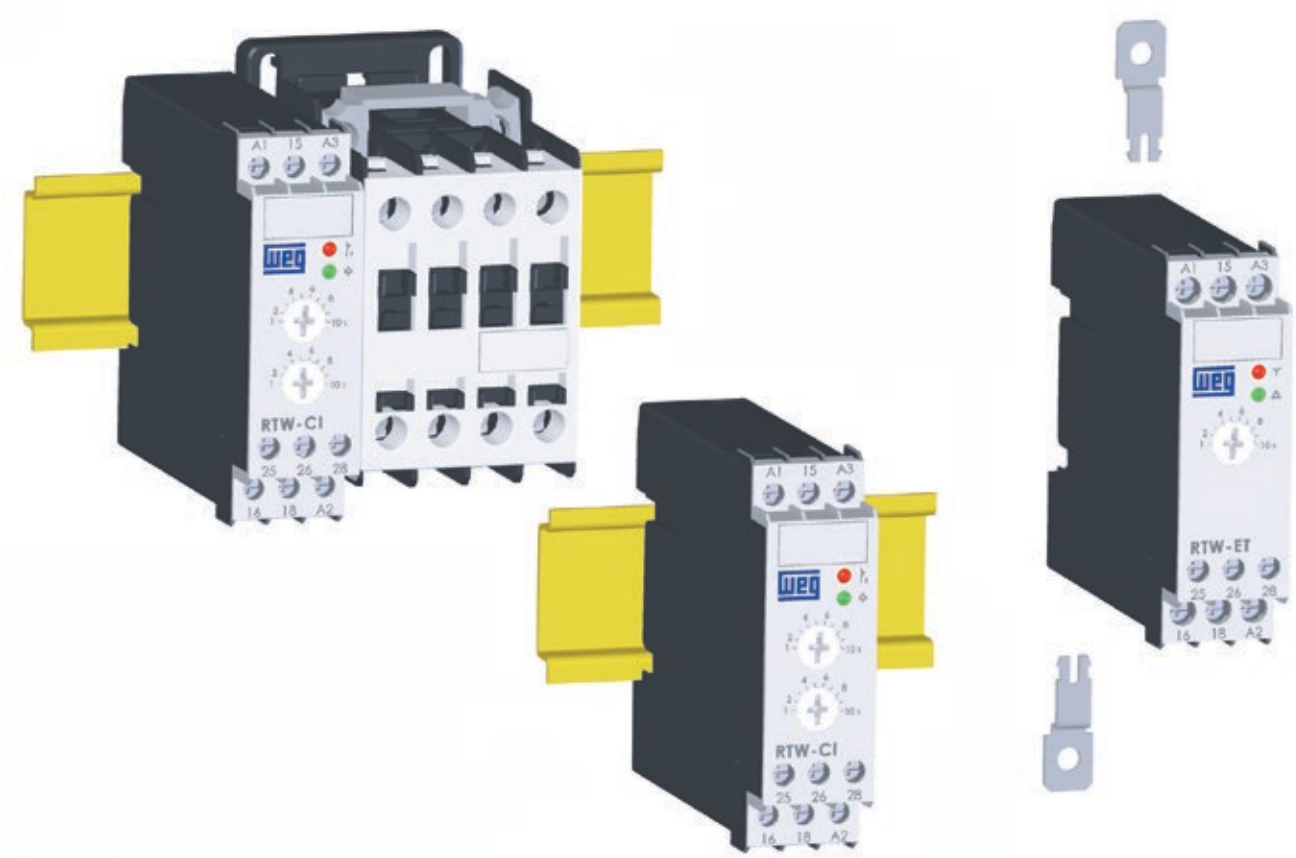
	Reference code			RNW ES / RNW EN
Inputs	Supply (Un)	A1	V ac	100-240 50 /60 Hz
		A2	V dc	100-240
	Isolated rated voltage (Ui)		V	300
	Operating limits			0.85 to 1.1 x U_e
	Maximum consumption		VA / W	2 / 1
Outputs	Contacts 15 - 16 / 18			1 SPDT
	Output contact capacity (Ie)		A	5 (resistive load)
	AC-15 in 230 V ac			3
	DC-13 in 24 V dc			1
	DC-13 in 48 V dc			0.45
	DC-13 in 60 V dc			0.35
	DC-13 in 125 V dc			0.2
	DC-13 in 250 V dc			0.1
	A300 : AC-15			
	R300 : DC-13			
	Rated thermal current (Ith)		A	10 (for AC)
				2.5 (for DC)
	Fuse (class gL / gG)		A	4
	Mechanical lifespan		Operations	30 x 10^6
Characteristics	Temperature	Operation	°C	-5 to +60
		Storage		-40 to +85
	Degree of protection			IP20
	Terminal capacity	Rigid or fexible cable	mm^2	1 x (0.5 to 2.5)
				2 x (0.5 to 1.5)
	Cable with terminal	Rigid or fexible cable/terminal	mm^2	1 x (0.5 to 2.5)
				2 x (0.5 to 1.5)
		AWG solid conductor	AWG	2 x (30 to 14)
	Tightening torque		N.m	0.8 to 1.2
			lb.in	7 to 10.6
	Terminal screws			M3
	Assembly position			Any
	Resistance to impacts		g / ms	15 / 11
	Resistance to vibration		Hz / mm	10 to 500 / 10
	Weight		kg	0.08
	Pollution			2
	Over voltage category			II
	Sensitivity adjustment		kΩ	0 to 100
	Electrode voltage		V ac	7
Detectors	Electrode current		mA	0.05
	Maximum length of sensor cable		m	100 (Maximum cable capacitance 2.2nF)
	Detector operating temperature - Shaft		°C	0 to + 260
	- Pendulum			0 to + 60
	Allowable detector pressure - Shaft		kgf / cm^2	3
	- Pendulum			-
	Detector weight - Shaft		kg	0.230
	- Pendulum			0.012

Electronic Relay Technical Data

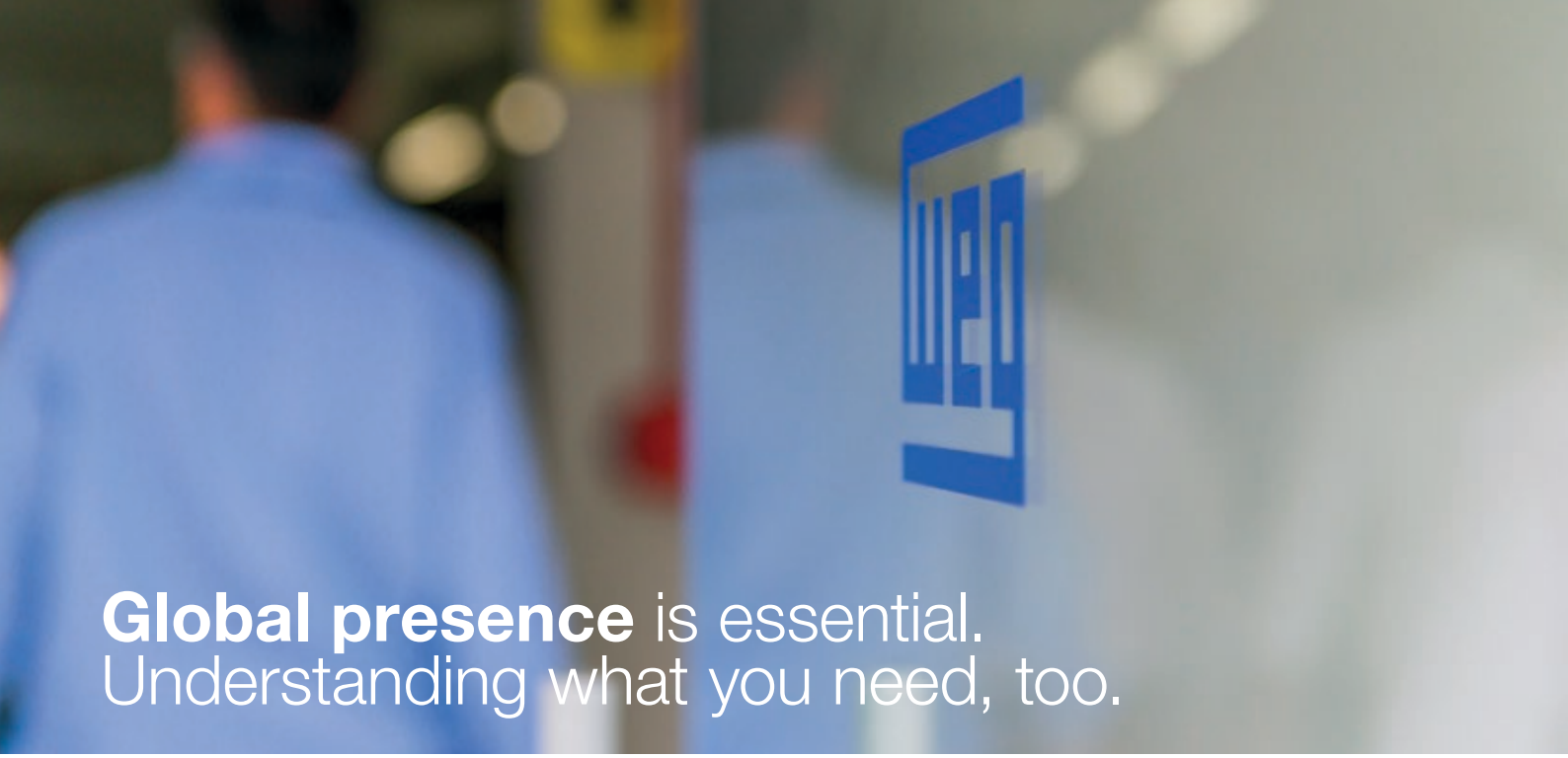
Dimensions (mm)



Relay Assembly



Notes



Global presence is essential. Understanding what you need, too.

Global Presence

With more than 30,000 employees worldwide, we are one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our ***electronic relays*** are the right choices for your application and business, assuring safety, efficiency and reliability.

Availability is to have a global support network

Partnership is to create solutions that suits your needs

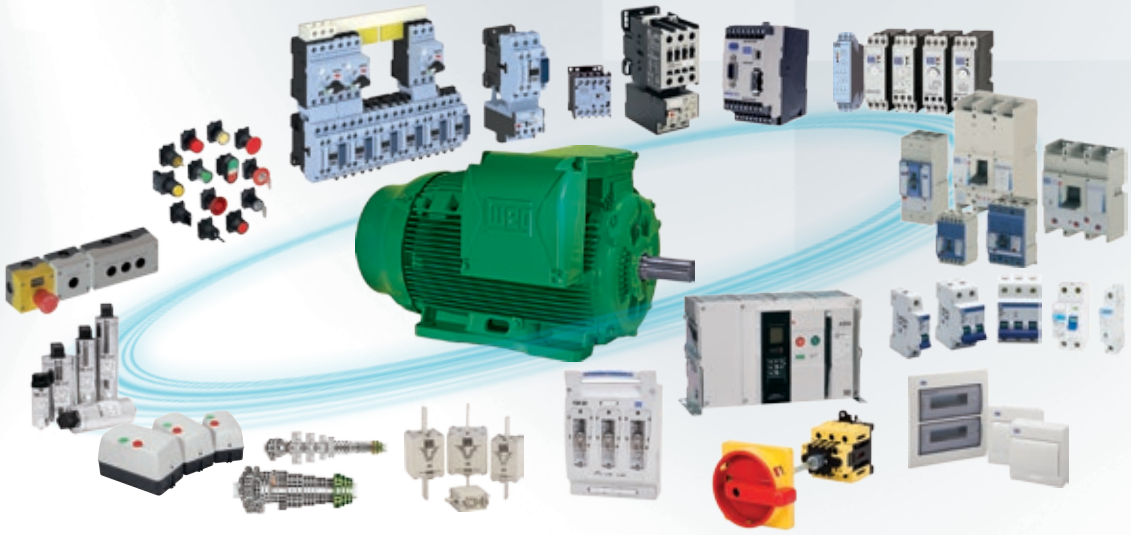
Competitive edge is to unite tecnology and inovation





Know

High performance and reliable products to improve your production process.



Excelence is to provide a whole solution in industrial automation products that improve our customers productivity.

Motor Protection and Starters
- Modular contactors up to 800 A (AC-3)
- Compact contactors up to 22 A (AC-3)
- Control relays
- Motor protective circuit breakers up to 100 A
- Enclosed starters (plastic or metallic enclosures)
- Customized starters for OEM applications
- Overload relays

Electrical Circuit Protection
- Miniature circuit breakers up to 100 A
- Molded case circuit breakers up to 1,600 A (3P and 4P)
- Air circuit breakers up to 6,300 A
- D and NH gL-gG fuses
- NH aR fuses (for semiconductor protection)
- Switch-disconnectors for door or base mounting

Capacitors
- Power factor compensation
- Lighting
- Motor-run

Electrical Connections
- Terminal blocks with screw type connection
- Terminal block with spring type connection
- Terminal blocks for fuses
- Busbar and busbar connectors
- Identifiers for terminals and cables
- Printing system

Pushbuttons and Pilot Lights
- IP66 pushbuttons and pilot lights
- Flush, guarded, extended or mushroom illuminated or non illuminated pushbuttons
- Selector switches lever or knob illuminated or non illuminated or with key
- Emergency pushbuttons (according EN 418)
- Contact blocks with “positive Break” system
- Double pushbutton
- Pilot lights with LED technology
- Customized descriptions
- Decentralized control stations - PBW

Electronic Relays
- Timing, monitoring, protection and level relays 22.5 mm width frame
- LED for status indication
- Multifunction three-phase monitoring relays and timer relays

Smart Relay
- Low voltage electric motor management system
- Compact and modular concept
- Full motor protection and monitoring through current and voltage measurements
- Multiple operating modes including PLC functions
- Easy network module change via exclusive drawer system (Modbus, DeviceNet, Profibus modules)
- USB communication
- Free WLP programming software

Visit: www.weg.net

youtube.com/wegvideos

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The values shown are subject to change without prior notice.