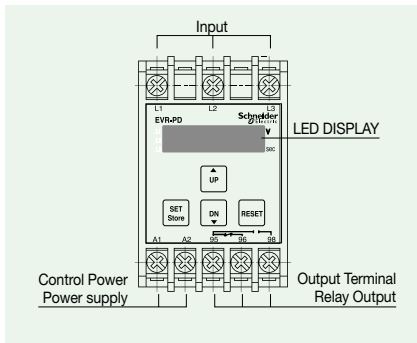


# EVR-PD/FD

## Digital Three Phase Voltage Relay



- Built-in MCU/Panel Mounting Type
- Over voltage/Under voltage/Reverse phase/Phase loss/Voltage unbalance protection
- Display with automatic circulation of three phase line voltages at intervals of 5 seconds
- Enables intensive control of only one phase
- Individual settings for over voltage operation time and under voltage operation time
- Manual reset/Auto reset selectively applicable
- Auto reset time: Selection of 1 - 10 seconds available
- Reverse phase/Unbalance/Phase loss protection: OFF (Disable) available
- Able to check the causes of trip and operating voltage at trip
- Able to remember the last three trip causes
- Self-test function




EVR-PD (Built-in panel)



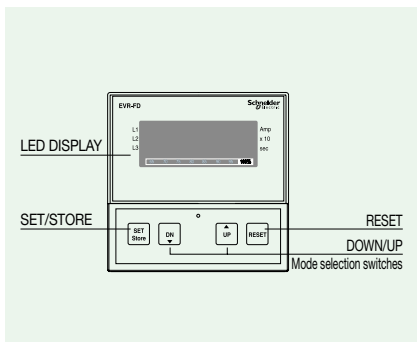
### Protection Function

List	Operation Time
Over Voltage	OVR-TIME
Under Voltage	UVR-TIME
Phase Loss	Within 0.5 seconds
Unbalance	0.5 - 10 seconds
Reverse phase	0.1 seconds

### Protection Function and Display

Function	LED Display	Trip Causes	Remark
Over Voltage	L1 L2 L3 :0460 <sup>A</sup> <sub>SEC</sub>	Operates when over voltage is detected at L1 and L3 Phases	 Trip cause and voltage check You can check the causes of trip and voltage of three phases with the Up/Down buttons.
Under Voltage	L1 L2 L3 :U310 <sup>A</sup> <sub>SEC</sub>	Operates when under voltage is detected at L1 and L2 Phases	
Phase Loss	L1 L2 L3 .-PL- <sup>A</sup> <sub>SEC</sub>	Operates in the event of phase loss at L3 Phase	
Reverse Phase	L1 L2 L3 -RP- <sup>A</sup> <sub>SEC</sub>	Trips upon reverse phase	
Unbalance	L1 L2 L3 :U420 <sup>A</sup> <sub>SEC</sub>	Operates in the event of an unbalance at L2 and L3 Phases	

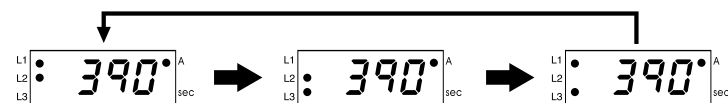
- In the event of an unbalance, the minimum line voltage is displayed. (Similarly to the case of over voltage and under voltage, two operation status display lamps will be illuminated.)



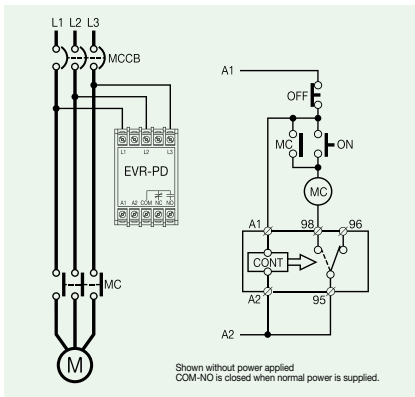
EVR-FD (Built-in panel)

### Display

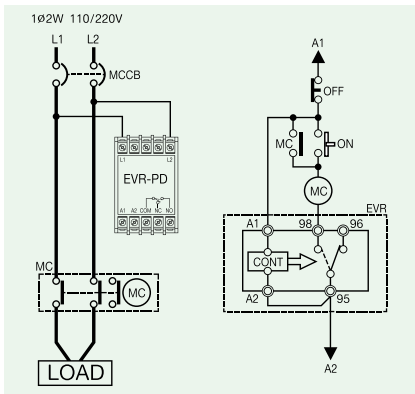
- Three phase line voltages are displayed (Display each line voltage at 5-second intervals during operation.)



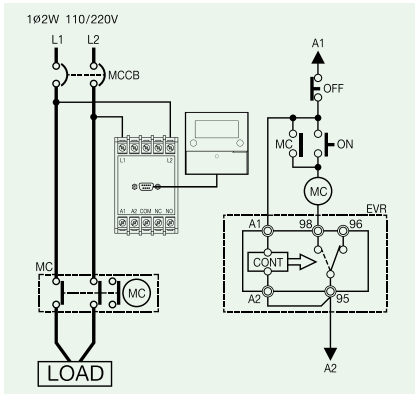
# EVR-PD/FD



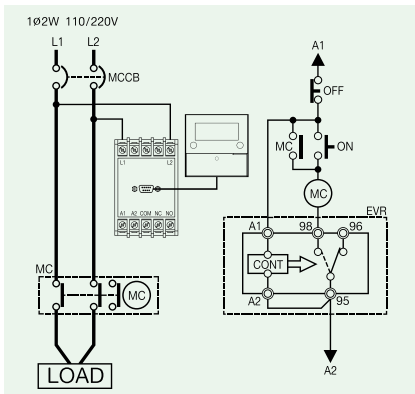
EVR-PD



EVR-PD (for 1 Ø 220V)



EVR-FD



EVR-FD (for 1 Ø 220V)

## Specifications

<b>Voltage Settings</b>	Type	1Ø, 3Ø 110	1Ø, 3Ø 220	3Ø 440
	Over Voltage	110V - 150V	220V - 300V	380V - 500V
	Under Voltage	80V - 120V	160V - 240V	300V - 440V
<b>Operation Time</b>	OVR	0.2 - 10 seconds		
	UVR	0.2 - 10 seconds		
<b>Unbalance</b>	Ub--(OFF), 5 - 30%			
<b>Unbalance Operation Time</b>	0.5 - 10 seconds			
<b>Phase Loss</b>	Operates within 0.5 seconds, PL--(OFF), line voltage difference of 45% or above between the maximum phase and minimum phase			
<b>Reverse Phase</b>	0.1 seconds, RP--(OFF)			
<b>Reset</b>	Manual (instant) Reset/Electrical reset			
	Auto reset	1 - 10 seconds		
<b>Tolerance</b>	Voltage	±5V		
	Time (Definite time)	t ≤ 3s: ±0.2s, t > 3s: ±5		
<b>Environment</b>	Temperature	Operation	-20°C - 60°C	
		Storage	-30°C - 80°C	
		Humidity	30 - 85% RH at non-condensing state	
<b>Control Voltage</b>	220V	AC/DC85V - 250V, 50Hz or 60Hz		
<b>Output Contact</b>	1C, AC250V/3A Resistive load			
<b>Insulation Resistance</b>	Between case and circuit	10MΩ or above at 500VDC		
<b>Insulation Voltage</b>	Between case and circuit	2.0KV, 60Hz for 1 minute		
	Between contacts	1.0KV, 60Hz for 1 minute		
	Between circuits	2.0KV, 60Hz for 1 minute		
<b>Installation</b>	PD	Integral	35mm DIN-Rail/Panel	
	FD	Control/Display part	Panel mounted (Flush Mounting)	
		Power/Output part	35mm DIN-Rail/Panel	

※ Common: 440Type does not recognize voltage of 250V or lower (220Type: 110V or lower, 110Type: 70V or lower).

## How to Set

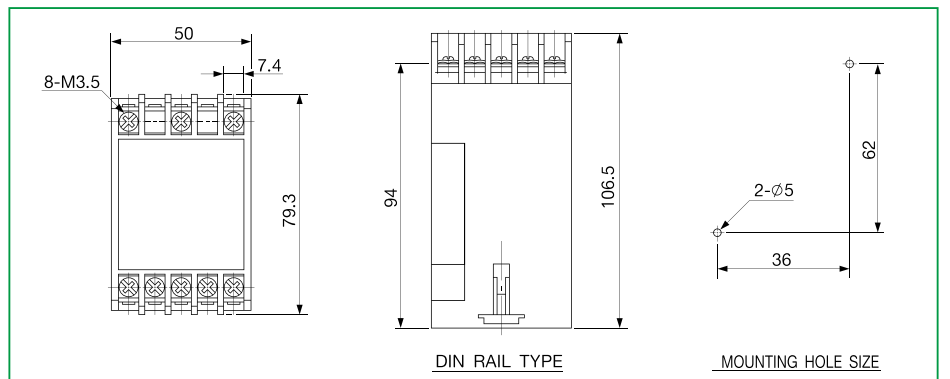
1.Mode	<input type="button" value="DN"/> <input type="button" value="UP"/>	Find a mode to set using the Up/Down buttons.
2.Set	<input type="button" value="SET Store"/>	If you press the Set/Store button once, the selected mode and value will blink. Finish the setup while they are blinking.
3.Adjust	<input type="button" value="DN"/> <input type="button" value="UP"/>	Select the value or character you want with the Up/Down buttons.
4.Store	<input type="button" value="SET Store"/>	If you press the Set/Store again, the selected value or character will be saved and blinking will stop.
5.Reset	<input type="button" value="RESET"/>	To complete the setting, press the Reset button or leave it for 30 seconds.

※ Trip Cause Check

Press the Up/Down buttons to select the "Trip" mode, and press the Set/Store button to check the last trip cause. In this state, whenever you press the Up/Down buttons, each line voltage at the time of the trip is displayed, and the second trip cause will be shown. You can also check the failure causes and current during the trip in the same way that you check the last trip cause.

※ Display through Manual Circulation

You can switch to L1-L2, L2-L3, and L3-L1 phases by pressing the Set (Store) button. (i.e., you are now entering Manual Display Mode.) You can switch back to Auto Display Mode by pressing the Reset button. You can switch to each of the settings modes by pressing the Up/Down buttons in Manual Display Mode.

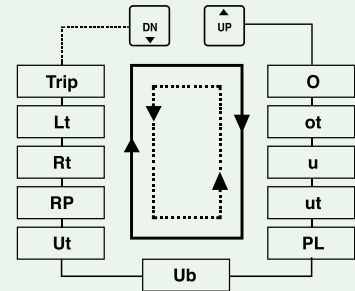
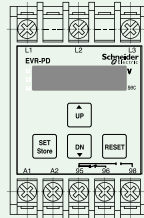


EVR-PD

## The Sequence of Mode Settings and Description

\* The sequence of function settings

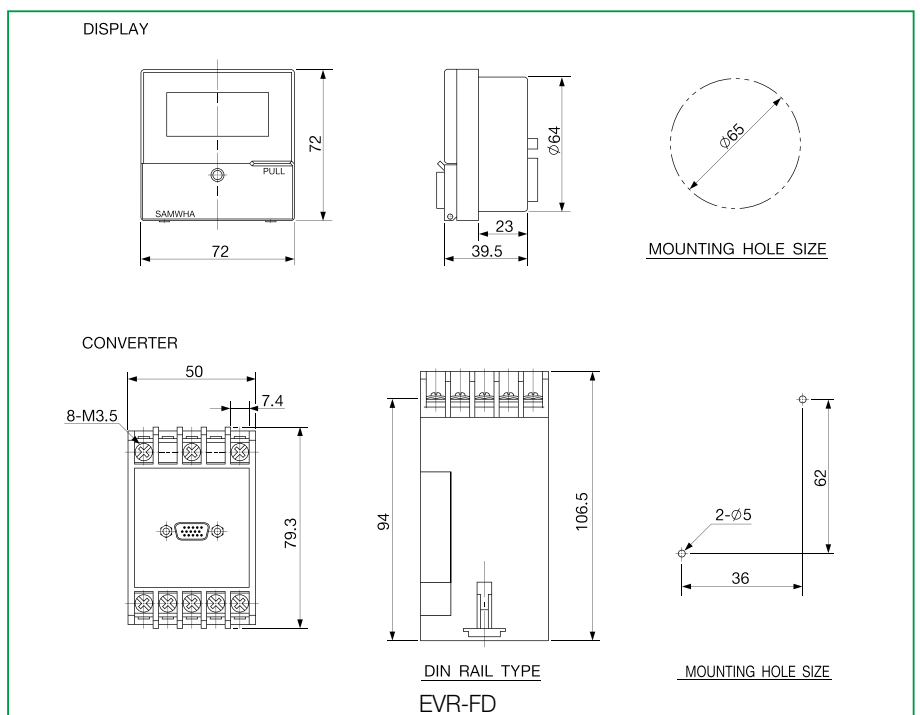
- Find the desired mode using the Up/Down buttons.
- To find "ot" in the picture to the right, press the UP SW button 3 times (moving through the mode settings in a clockwise direction).



■ Set each mode function as shown below according to the function setting sequence.

No.	List	Setting range (Display)	FND Display	Remark
1	Over Voltage	110: 100V - 150V 220: 220V - 300V 440: 380V - 500V	o456.	Over voltage is set at 456V. Cannot set voltage at the set under voltage value or less
2	Over Voltage Operation Time Setting	0.2 - 10 seconds	ot 5.	Trips at definite time
3	Under Voltage Setting	110: 80V - 120V 220: 160V - 240V 440: 300V - 440V	u340.	Under voltage is set at 340V. Cannot set voltage at the set over voltage value or higher
4	Under Voltage Operation Time Setting	0.2 - 10 seconds	ut 5.	Trips at definite time
5	Phase Loss	ON (PLon), OFF (PL--)	PLon	Trips when the line voltage difference between the maximum phase and minimum phase is 45% or more
6	Unbalance Trip Selection	5% - 30% OFF (Ub--)	Ub 5	Trips when the line voltage difference between the maximum phase and minimum phase is the set % or more
7	Unbalance Operation Time Setting	0.5 - 10 seconds	Ut 4.	Trips at definite time
8	RPR (Reverse phase) Function	ON (Rpon), OFF (RP--)	RPon	Trips for 0.1 seconds
9	Auto Reset Time Setting	Auto reset: 1 - 10 seconds, OFF (-)	rt 10.	Auto resets at 98% of the over voltage set value or less and 102% of the under voltage set value or more
10	Three Phase Voltage Power Outage Time Setting	0.5 - 10 seconds, Instant protection (-)	Lt 3.	Time for trip to be triggered by power outage when no three-phase voltages are available
11	Trip Cause Display	From the 1st to the 3rd cause	tr IP	The latest trip cause is displayed first. Trip causes and voltage of each phase can be checked.

※ The lamp display on the FND Display Window should be exactly the same as the display shown on page 63.



### Description of trip

- When control power (the voltages entering into A1 and A2) and normal three-phase voltages are entered, 95 and 98 will close.
- Normal three-phase voltages refer to three-phase voltages that lie between the under voltage and over voltage set values.
- If the voltage is out of the set value range, or if phase loss or reverse phase is entered, 95 and 98 will not close.

# EVR-PD/FD

## How to Order

Reference	Contact Output	Input Voltage [V]	Control Power		Installation	
			Voltage [V]	Frequency [Hz]		
EVRPD	-220NZ6M	N	AC220V	AC/DC85V - 250V	60	Panel/DIN Rail
	-440NZ6M	N	AC440V	AC/DC85V - 250V	60	Panel/DIN Rail
	-110NZ6SM	N	AC110V	AC/DC85V - 250V	60	Single-phase
	-220NZ6SM	N	AC220V	AC/DC85V - 250V	60	Single-phase
	-220NZ5M	N	AC220V	AC/DC85V - 250V	50	Panel/DIN Rail
EVRFD	-440NZ5M	N	AC440V	AC/DC85V - 250V	50	Panel/DIN Rail
	-220NZ6M	N	AC220V	AC/DC85V - 250V	60	Panel/DIN Rail
	-440NZ6M	N	AC440V	AC/DC85V - 250V	60	Panel/DIN Rail
	-110NZ6SM	N	AC110V	AC/DC85V - 250V	60	Single-phase
	-220NZ6SM	N	AC220V	AC/DC85V - 250V	60	Single-phase
	-220NZ5M	N	AC220V	AC/DC85V - 250V	50	Panel/DIN Rail
	-440NZ5M	N	AC440V	AC/DC85V - 250V	50	Panel/DIN Rail

### • Accessory

Accessory1			
Model	Reference	PIN Type	Length (M)
Cable	CABLE-15-00H	15PIN	0.5
	CABLE-15-001	15PIN	1
	CABLE-15-01H	15PIN	1.5
	CABLE-15-002	15PIN	2
	CABLE-15-003	15PIN	3
	⋮	⋮	⋮
	CABLE-15-010	15PIN	10

## Ordering Example

To order an EVR-PD:

**E V R P D - 2 2 0 N Z 6 M**

①      ②      ③      ④

①	Input Voltage	OVR	110	3P, AC110V - 150V
			220	3P, AC220V - 300V
			440	3P, AC380V - 500V
		UVR	110	3P, AC80V - 120V
			220	3P, AC160V - 240V
			440	3P, AC300V - 440V
②	Output Contact Condition	N	Normally Energized	
③	Control Power/Frequency	Z6	AC/DC85V - 250V, 60Hz	
		Z5	AC/DC85V - 250V, 50Hz	
④	Mode	M	Mode Type	

To order a cable:

**C A B L E - 1 5 - 0 0 H**

①      ②

①	Cable Connection	15PIN	
②	Cable Length	00H	0.5M
		1	1M
		01H	1.5M
		2	2M
		...	...
		10	10M

To order an EVR-FD:

**E V R F D - 2 2 0 N Z 6 M**

①      ②      ③      ④

①	Input Voltage	OVR	110	3P, AC110V - 150V
			220	3P, AC220V - 300V
			440	3P, AC380V - 500V
		UVR	110	3P, AC80V - 120V
			220	3P, AC160V - 240V
			440	3P, AC300V - 440V
②	Output Contact Condition	N	Normally Energized	
③	Control Power/Frequency	Z6	AC/DC85V - 250V, 60Hz	
		Z5	AC/DC85V - 250V, 50Hz	
④	Mode	M	Mode Type	

\*Please write the appropriate cable code for the length required.