

# 250 Series DIN-rail and Wall Mounted Relays



## AC Voltage with Adjustable Differential

The ac voltage protectors provide continuous surveillance of the monitored circuit. When the measured voltage moves outside the set point limit for longer than the time delay, the relay will operate giving an alarm or initiation signal.

The protector can be used for under and over-voltage detection, start standby generators, operation of mains failure units and switching standby supplies. An illuminated LED indicates when the relay is energised. The three-phase, three or four-wire models, protect each phase independently.

## Description

AC voltage protectors offer user adjustable trip point (set point) and differential (hysteresis) settings. The set point adjustment range is 25%, operating between 75% and 100% of the nominal supply for under-voltage units and between 100% and 125% for the over-voltage units. The differential setting adjustment range is 1% to 15% and it can be used to reduce nuisance tripping if the measured signal is noisy or unstable. When the measured voltage moves outside the set point limit, the relay will operate, giving an alarm or initiation signal.

As soon as the monitored signal moves outside of the set point limit, a trip will occur. A fixed time delay is available as a factory option, preventing the relay from tripping for a predetermined period to prevent nuisance tripping. The units draw their operating power from the measuring inputs, although a separate auxiliary supply input option is available on some models. Three-phase products monitor the voltage level for each phase and are not phase sequence sensitive. Combined units offer under and over-voltage trips in one compact unit. Single function units are also available.

## Over-Voltage Models

When the monitored voltage exceeds the set point, the relay will energise and the red LED will illuminate to indicate the trip condition. The relay will automatically reset once the monitored voltage falls below the set point minus the differential. When reset, the LED will extinguish and the relay de-energises.

## Under-Voltage Models

When the monitored voltage falls below the set point, the relay will de-energise and the red LED will extinguish to indicate the trip condition. The relay will automatically reset once the monitored voltage rises above the set point plus the differential. When reset, the LED will illuminate and the relay energises.

## Options

250 series protector relays offer various customised options to suit individual requirements. Please consult factory.

- Time delay – internal fixed time delay before a trip occurs.
- Separate auxiliary supply – sometimes required to maintain a time delay or energised relay when the monitored signal fails.
- Adjustment ranges – different adjustment ranges are possible for the set point and differential controls.
- Relay operation – standard models are fail safe, but the relays can be customised to energise or de-energise on trip.

## Product Codes

## SEE ATTACHED FOR PART NUMBERS

| Relay          | Protection             | ANSI no. | Cat. no. |
|----------------|------------------------|----------|----------|
| 1-phase        | Under-voltage 75-100%  | 27       | 252-PVU  |
| 1-phase        | Over-voltage 100-125%  | 59       | 252-PVO  |
| 1-phase        | Under and over-voltage | 27/59    | 253-PVB  |
| 3-phase 3-wire | Under-voltage 75-100%  | 27       | 252-PVK  |
| 3-phase 3-wire | Over-voltage 100-125%  | 59       | 252-PVA  |
| 3-phase 3-wire | Under and over-voltage | 27/59    | 253-PVM  |
| 3-phase 4-wire | Under-voltage 75-100%  | 27       | 252-PVV  |
| 3-phase 4-wire | Over-voltage 100-125%  | 59       | 252-PVP  |
| 3-phase 4-wire | Under and over-voltage | 27/59    | 253-PVE  |

Please specify system voltage, frequency and required options at time of ordering.

see 2nd page for selection

## Features

- Single and three-phase models
- Adjustable set point
- Adjustable differential
- Internal time delay
- LED trip indication
- Double-pole relay contacts
- Automatic reset

## Benefits

- Over and under-voltage monitoring
- Start standby generators
- Operation of mains failure units
- Switching standby supplies
- Monitors genset AVR and excitation systems
- Nuisance tripping avoidance
- Customised options

## Applications

- Marine panels
- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Process control
- Motor protection
- Transformers
- Overload protection

## Approvals

CSA File Number 052592 for monitoring voltage 300v max single phase and three phase

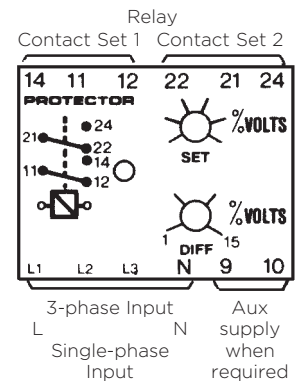
### Specification - AC Voltage with Adjustable Differential

|                             |   |
|-----------------------------|---|
| Nominal voltage             | 100V, 110V, 120V, 208V, 220V, 270V, 280V, 400V, 415V or 440V                    |
| System frequency            | 45/65Hz or 360/440Hz  |
| Voltage burden              | 0.3VA approx.   |
| Overload                    | 1.2 x rating continuously,<br>1.5 x rating for 10 x seconds                     |
| Set point repeatability     | >0.5% of full span  |
| Differential (hysteresis)   | Adjustable range 1 to 15%   |
| Trip level adjustment       | Under-voltage: 75 to 100%<br>Over-voltage: 100 to 125% of nominal input voltage |
| Time delay                  | Factory pre-set up to 30 seconds  |
| AC auxiliary supply voltage | 100V, 110V, 120V, 208V, 220V, 240V, 480V, ±20%                                  |
| DC auxiliary supply voltage | 12V, 24V, 48V, 110V or 125V, ±20%. Including ripple                             |
| Auxiliary voltage burden    | 4VA (max)   |
| Output relay                | 2-pole change over  |
| Relay contact rating        | AC: 240V 5A, non inductive<br>DC: 24V 5A resistive                              |
| Relay mechanical life       | 0.2 million operations at rated loads   |
| Relay reset                 | Automatic   |
| Operating temperature       | 0°C to +60°C (0°C to +40°C for UL models)                                       |
| Storage temperature         | -20°C to +70°C  |
| Temperature co-efficient    | 0.05% per °C  |
| Interference immunity       | Electrical stress surge withstand and non-function to ANSI/IEEE C37 90a         |
| Enclosure style             | DIN-rail with wall mounting facility  |
| Material                    | Flame retardant polycarbonate/ABS   |
| Enclosure integrity         | IP50  |
| Model 252 dimensions        | 55mm (2.2") wide x 70mm (2.8") high x 112mm (4.4") deep                         |
| Model 253 dimensions        | 75mm (2.9") wide x 70mm (2.8") high x 112mm (4.4") deep                         |
| Weight                      | Model 252: 0.4Kg approx.<br>Model 253: 0.6Kg approx.                            |

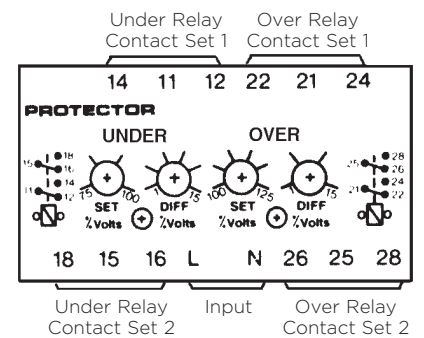


### Connections

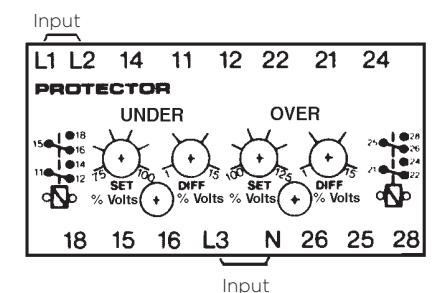
- 252-PVU
- 252-PVO
- 252-PVV
- 252-PVP
- 252-PVK
- 252-PVA



### 253-PVB



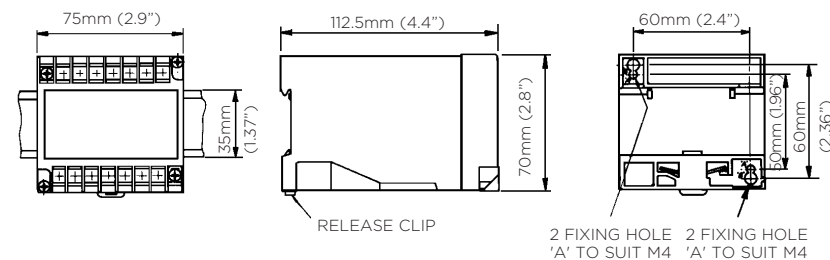
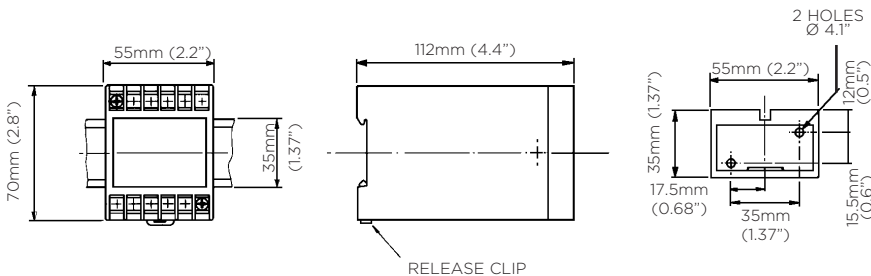
### 253-PVE 253-PVM



**Note:** The neutral connection is always used on four-wire systems.

### Dimensions SEE ATTACHED FOR PART NUMBERS

#### Model 252



**250 Series DIN-rail and Wall  
Mounted Relays  
AC Voltage with Adjustable Differential**

| RELAY          | PROTECTION             | INPUT    | FREQ  | PART NUMBER         |
|----------------|------------------------|----------|-------|---------------------|
| 1-phase        | Under-voltage 75-100%  | 120 V AC | 60 HZ | 252-PVUU-PQBX-C6-EB |
| 1-phase        | Under-voltage 75-100%  | 208 V AC | 60 HZ | 252-PVUU-RMBX-C6-EB |
| 1-phase        | Under-voltage 75-100%  | 220 V AC | 60 HZ | 252-PVUU-R4BX-C6-EB |
| 1-phase        | Under-voltage 75-100%  | 240 V AC | 60 HZ | 252-PVUU-RRBX-C6-EB |
| 1-phase        | Under-voltage 75-100%  | 277 V AC | 60 HZ | 252-PVUU-R6BX-C6-EB |
|                |                        |          |       |                     |
| 1-phase        | Over-voltage 100-125%  | 120 V AC | 60 HZ | 252-PVOU-PQBX-C6-EA |
| 1-phase        | Over-voltage 100-125%  | 208 V AC | 60 HZ | 252-PVOU-RMBX-C6-EA |
| 1-phase        | Over-voltage 100-125%  | 220 V AC | 60 HZ | 252-PVOU-R4BX-C6-EA |
| 1-phase        | Over-voltage 100-125%  | 240 V AC | 60 HZ | 252-PVOU-RRBX-C6-EA |
|                |                        |          |       |                     |
| 1-phase        | Under and over-voltage | 120 V AC | 60 HZ | 253-PVBU-PQBX-C6-EC |
| 1-phase        | Under and over-voltage | 208 V AC | 60 HZ | 253-PVBU-RMBX-C6-EC |
| 1-phase        | Under and over-voltage | 240 V AC | 60 HZ | 253-PVBU-RRBX-C6-EC |
|                |                        |          |       |                     |
| 3-phase 3-wire | Under-voltage 75-100%  | 120 V AC | 60 HZ | 252-PVKU-PQBX-C6-EB |
| 3-phase 3-wire | Under-voltage 75-100%  | 208 V AC | 60 HZ | 252-PVKU-RMBX-C6-EB |
| 3-phase 3-wire | Under-voltage 75-100%  | 220 V AC | 60 HZ | 252-PVKU-R4BX-C6-EB |
| 3-phase 3-wire | Under-voltage 75-100%  | 240 V AC | 60 HZ | 252-PVKU-RRBX-C6-EB |
| 3-phase 3-wire | Under-voltage 75-100%  | 480 V AC | 60 HZ | 252-PVKU-SEBX-C6-EB |
|                |                        |          |       |                     |
| 3-phase 3-wire | Over-voltage 100-125%  | 120 V AC | 60 HZ | 252-PVAU-PQBX-C6-EA |
| 3-phase 3-wire | Over-voltage 100-125%  | 208 V AC | 60 HZ | 252-PVAU-RMBX-C6-EA |
|                |                        |          |       |                     |
| 3-phase 3-wire | Under and over-voltage | 120 V AC | 60 HZ | 253-PVMU-PQBX-C6-EC |
|                |                        |          |       |                     |
| 3-phase 4-wire | Under-voltage 75-100%  | 120 V AC | 60 HZ | 252-PVVU-PQBX-C6-EB |
| 3-phase 4-wire | Under-voltage 75-100%  | 208 V AC | 60 HZ | 252-PVVU-RMBX-C6-EB |
| 3-phase 4-wire | Under-voltage 75-100%  | 240 V AC | 60 HZ | 252-PVVU-RRBX-C6-EB |
| 3-phase 4-wire | Under-voltage 75-100%  | 277 V AC | 60 HZ | 252-PVVU-R6BX-C6-EB |
|                |                        |          |       |                     |
| 3-phase 4-wire | Over-voltage 100-125%  | 120 V AC | 60 HZ | 252-PVPU-PQBX-C6-EA |
| 3-phase 4-wire | Over-voltage 100-125%  | 220 V AC | 60 HZ | 252-PVPU-R4BX-C6-EA |
| 3-phase 4-wire | Over-voltage 100-125%  | 277 V AC | 60 HZ | 252-PVPU-R6BX-C6-EA |
|                |                        |          |       |                     |

|                |                        |          |       |                     |
|----------------|------------------------|----------|-------|---------------------|
| 3-phase 4-wire | Under and over-voltage | 120 V AC | 60 HZ | 253-PVEU-PQBX-C6-EC |
| 3-phase 4-wire | Under and over-voltage | 208 V AC | 60 HZ | 253-PVEU-RMBX-C6-EC |
| 3-phase 4-wire | Under and over-voltage | 220 V AC | 60 HZ | 253-PVEU-R4BX-C6-EC |
| 3-phase 4-wire | Under and over-voltage | 240 V AC | 60 HZ | 253-PVEU-RRBX-C6-EC |
|                |                        |          |       |                     |
|                |                        |          |       |                     |