

## 250 Series DIN Rail and Wall Mounted - Reverse Power (Current)

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### Application:

- » **Generator Set protection - for detecting loss of the prime mover (engine) and preventing motoring**
- » **Feeder protection - to detect reverse power under fault conditions**



*The Crompton Reverse Power Protector provides continuous surveillance for A.C. generators operating in parallel or for boosting mains supplies.*

*On site adjustment of the trip point and time delay ensures accurate protection against 'motoring' in the event of engine failure and prevents tripping from surges during synchronising.*

### Introduction

The Crompton reverse power Protectors provides continuous surveillance of a.c. generators against motoring.

Reverse power relays are used to detect the failure of the prime mover (engine) when active energy (Watts) flows into the generator causing rotation - the set will operate like an electric motor, which can cause significant mechanical damage. This relay offers an adjustable reverse power setpoint between 2% and 20% of nominal power, and time delay adjustment range of 0 to 20 seconds.

As soon as the reverse power level increases above the setpoint limit, the time delay is activated, after which a trip will occur. The time delay prevents the relay from tripping for a pre-determined period to prevent nuisance tripping.

The products also feature an internal differential (hysteresis) setting of 1% to reduce nuisance tripping if the measured signal is noisy or unstable.

These units are powered from the measuring supply.

### Product Function

The protector relay approximates the power level in the system by measuring current and power factor, but does not actually measure the system voltage. When the reverse power level exceeds the setpoint, the time delay is started. When the time has elapsed, the relay will energize and the red LED will illuminate to indicate the trip condition. The relay will automatically reset once the power level falls below the setpoint minus the differential, the LED will extinguish and the relay de-energizes. The time delay is not active when resetting.

The reverse power level will trip as expected at the calibrated point for unity power factor, however, the system power factor does effect the trip point calibration. The relay becomes more sensitive at lagging power factors, as almost all systems exhibit inductance. At leading power factors, this relay is less sensitive.

### Product customisation options

Please contact the factory.

- **Adjustment ranges** - different adjustment ranges are possible for the setpoint and time delay controls
- **Relay operation** - standard models are fail safe, but the relays can be customised to de-energise on trip

**Crompton**  
INSTRUMENTS

Protector Relays

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### Setting up Instructions

The "% set" potentiometer trimmer on the front label is calibrated as a percentage of the input current rating e.g. of 5A, and not of the forward kW.

Adjust the "% set" trimmer to the required tripping value, 7.5% to 10% is normal. Setting accuracy can be checked by reversing the

current lead connections and, with forward power, measuring the trip point value on a suitable ammeter (reconnect leads on completion).

Adjust the 'Delay' to the required time delay. 10 seconds is normally adequate.

### Specification

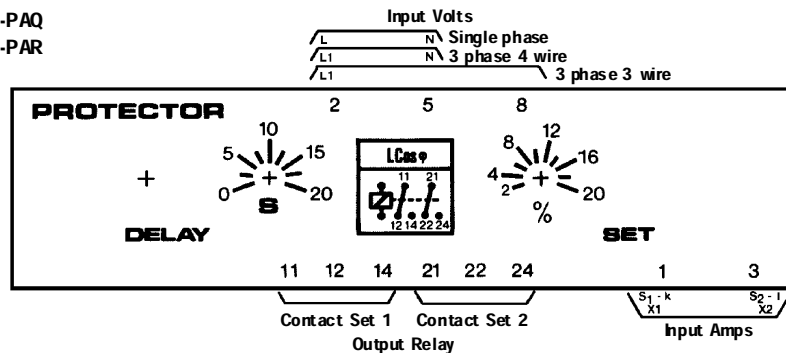
<b>Approvals:</b>	U.L. recognized up to 300V. CSA approved up to 240V.	<b>Burden:</b>	2VA maximum
<b>Nominal Voltage:</b>	100, 110, 120, 220, 230, 240, 277, 380, 400, 415, 440 or 480V	<b>Frequency:</b>	50 or 60 or 400Hz on request
<b>Overload:</b>	1.2 x continuously 1.5 x for 10 x 10 seconds	<b>Setpoint Adjustments:</b>	Reverse power 2-20%
<b>Burden:</b>	3VA maximum	<b>Delay adjustment:</b>	Time delay: 0/20 seconds
<b>Nominal Current:</b>	5A or 2, 3, 4, 6, 8 & 10A	<b>Repeatability:</b>	0.5%
<b>Overload:</b>	2 x continuously 10 x for 3 seconds	<b>Hysteresis:</b>	1%
		<b>Monitoring Range:</b>	Power Factor: 0.5 inductive/unity/ 0.2 capacitive
		<b>Current:</b>	20% - 100% of nominal input

### Product Code Examples

Relay	Input	Protection	ANSI No.	Catalogue No.
Single Phase or 3ph 4W	5A, 120V, 60 Hz	Reverse Power 2:20%	32	256-PAS-ULS-BX-PQ-C6-EA
3 Phase 3 Wire	5A, 120V, 60 Hz	Reverse Power 2:20%	32	256-PATU-LSB-X-PQ-C6-EA
Single Phase or 3Ph 4W Push to Test	5A, 120V, 60 Hz	Reverse Power 2:20%	32	256-PAQU-LSB-X-PQ-C6-EA
3 Phase 3 Wire Push to Test	5A, 120V, 60 Hz	Reverse Power 2:20%	32	256-PAR-ULS-BX-PQ-C6-EA

### Connection Diagram

256-PAS  
256-PAT  
256-PAQ  
256-PAR



**Note:** Only one CT connection is required.



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