



Features

- Three phase, 3 or 4 wire
- Adjustable setpoint
- Adjustable time delay
- Internal differential
- LED trip indication
- Double pole relay contacts
- Automatic reset

Benefits

- Current and power factor measurement
- Protects generators against 'motoring'
- Detects reverse power under fault conditions
- Customized options
- Nuisance tripping avoidance

Applications

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

Approvals

UL, CSA, BV and ABS

Reverse Power (Current)

The 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 synchronizing.

Operation

Reverse power protectors provide continuous surveillance of AC 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 predetermined 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.

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 affect 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.

Setting Up

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.

Options

250 series protector relays offer various customized options to suit individual requirements. Please consult 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 customized to de-energize on trip.

Product Codes

Relay	Protection	ANSI No.	Catalog No.
Single phase or 3 phase 4 wire	Reverse power 2 – 20%	32	256-PAS
Single phase or 3 phase 4 wire push to test	Reverse power 2 – 20%	32	256-PAQ
3 phase 3 wire push to test	Reverse power 2 – 20%	32	256-PAR
3 phase 3 wire	Reverse power 2 – 20%	32	256-PAT

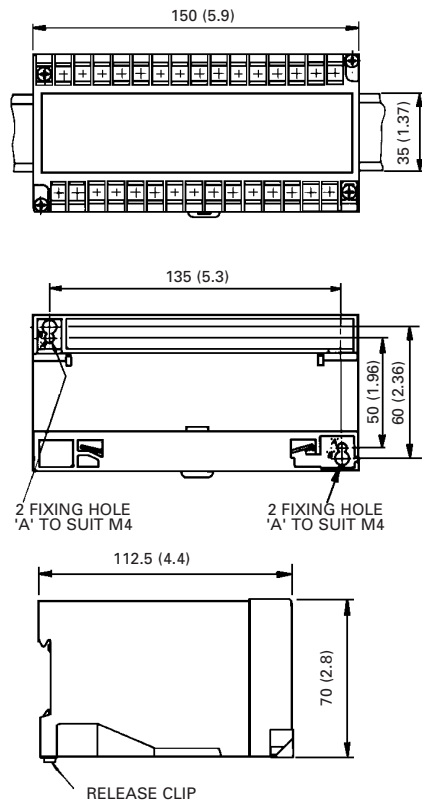
Specify system voltage, frequency and required options at time of ordering.

250 Series DIN Rail and Wall Mounted Relays



Dimensions

Model 256

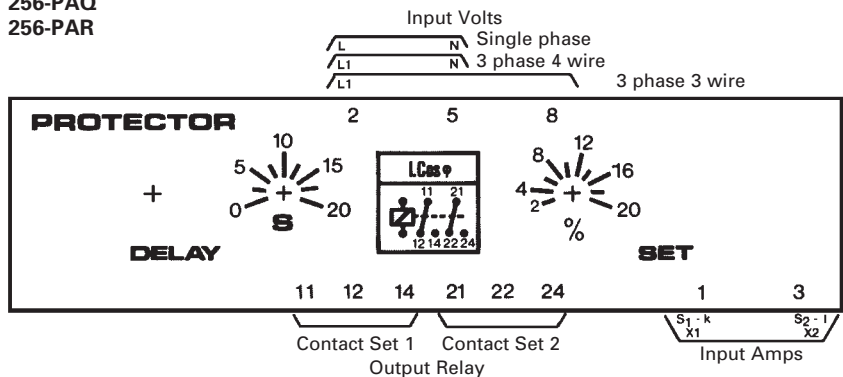


Specification – Reverse Power (Current)

Nominal Voltage	100V, 110V, 120V, 220V, 230V, 240V, 277V, 380V, 400V, 415V, 440V or 480V
Nominal Current	5A or 2, 3, 4, 6, 8 and 10A
System Frequency	50, 60 or 400Hz
Burden	Voltage: 3VA maximum Current: 2VA maximum
Current Overload	2 x rating continuously, 10 x rating for 3 seconds
Voltage Overload	1.2 x rating continuously, 1.5 x rating for 10 seconds
Monitoring Range	Power Factor: 0.5 inductive/unity/0.2 capacitive Current: 20 to 100% of nominal input
Set Point Repeatability	>0.5% of full span
Differential (Hysteresis)	Preset at 1%
Trip Level Adjustment	2 to 20%. Customized adjustment available.
Time Delay Adjustable	0 to 20 seconds
AC Auxiliary Supply Voltage	100V, 110V, 120V, 208V, 220V, 240V, 480V, ±20%
Auxiliary Voltage Burden	4VA (max)
Output Relay	Double pole change over
Relay Contact Rating	AC: 240V 5A, non inductive 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
Compliant With	EMC, LVD, Safety Standard IEC 414 UL File No: E113067 recognized up to 600V CSA File No: LR52592 up to 300V BV File No: 2650H-07427-AO PRSO BV ABS File No; 93-LD 17806-X
Dimensions	150mm (5.9") wide x 70mm (2.8") high x 112mm (4.4") deep
Weight	1.0kg approx.

Connections

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



Note: Only one CT connection is required, from the same phase as the voltage connection to terminal 2.