250 Series DIN-rail and Wall Mounted Relays

Phase Balance

The 250 series phase balance protector module provides continuous surveillance of a three-phase, three- or four-wire system and monitors the correct phase rotation or sequence of three-phase supply systems. The module protects against phase loss, reversal or sequence, phase unbalance and system under-voltage.

Operation

Rotating machines are particularly vulnerable to incorrect phase sequence. Three-phase motors can rotate in the wrong direction, potentially leading to physical damage or the risk of injury to personnel, yet voltage and current readings may appear normal. If one phase is lost because of a blown fuse, electric motors can continue to operate (single-phasing) which can result in severe electrical or mechanical damage. This relay has the added advantage that it will detect the phantom or regenerated phase that can be caused by a single-phase failure on some equipment or when running motors at low load levels.

An unbalanced supply voltage can lead to temperature rises in motors. An unbalanced voltage as little as 10% can increase operating temperature to 150% of normal. For permanent installations, this relay should be used to monitor the incoming supply, protecting all equipment against incorrect connection at initial installation or after maintenance work. Rotating machines that cannot tolerate reverse rotation or pose significant risk to personnel under this condition should be individually protected with this relay. The possibility of incorrect supply connection is much more likely in portable equipment or marine applications.

The protector continuously monitors the three-phase supply. With the correct phase sequence applied and all three voltages balanced within the required limits, the front panel LED will illuminate and the output relay will be energised. An incorrect sequence, missing phase, out of balance or under-voltage condition will de-energise the relay and the LED will be extinguished.

The set point control allows adjustment of the voltage matching between 5% and 15%. The time delay function operates only for the voltage unbalance condition. The delay can be used to prevent nuisance tripping due to short term unbalance situations. Incorrect phase rotation, a missing phase or an under-voltage condition trip the relay immediately.

Features

Three-phase, three or four-wire
Adjustable set point
Adjustable time delay
Internal differential
LED trip indication
Double-pole relay contacts
Automatic reset

Benefits

Monitoring of correct phase rotation
Protects against phantom or regenerated phase voltage
Protection against phase loss, reversal or sequence
Under-voltage and unbalanced voltage monitoring
Prevents reverse rotation of motor driven equipment
Ensures correct engine rotation
Protects portable electrical equipment
Nuisance tripping avoidance

Applications

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

Approvals

CSA File Number 052592 (monitoring voltage 480v ac max)

Product Codes

Relay	Protection	ANSI no.	Cat. no.
3-phase 3- or 4-wire	Phase loss and unbalance 5-15%	47	252-PSF
3-phase 3- or 4-wire	Phase loss, unbalance and under-voltage 5-15%	47/27	252-PSG

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

(See 2nd Page for selection)

SEE ATTACHED FOR PART NUMBERS

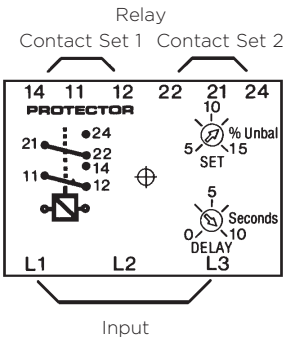
Crompton Technology Inc,7538 Bath Rd,Mississauga,ON,L4T 1L2,T:905-671-2304,F:905-671-3661,info@cromptoncanada.com, www.cromptoncanada.com

Specification – Phase Balance

Nominal voltage	110V, 120V, 208V, 220V, 230V, 240V, 277V, 380V, 400V, 415V, 440V or 480V
System frequency	50 or 60Hz
Voltage burden	3VA approx.
Overload	1.2 x rating continuously, 1.5 x rating for 10 x seconds
Set point repeatability	>0.5% of full span
Under-voltage set point	Pre-set at 15% of nominal voltage. Other values 10 to 30% to order (model 252-PSG only)
Trip level adjustment	Phase unbalance adjustable 5 to 15%
Time delay	10 seconds as standard. Up to 30 seconds available
Auxiliary voltage burden	4VA (max)
Output relay	2-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
Model 252 dimensions	55mm (2.2") wide x 70mm (2.8") high x 112mm (4.4") deep
Weight	0.4Kg approx.

Connections

252-PSF
252-PSG

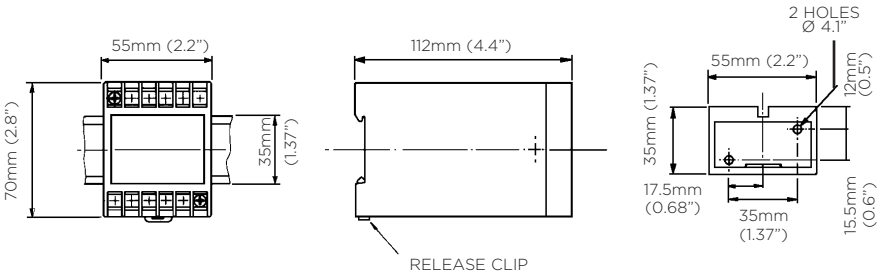


Note: Neutral connection not required.

SEE ATTACHED FOR PART NUMBERS

Dimensions

Model 252



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Phase Balance

RELAY	PROTECTION	INPUT	FREQ	PART NUMBER
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	120 V AC	50 HZ	252-PSFU-PQBX-C5
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	120 V AC	60 HZ	252-PSFU-PQBX-C6
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	208 V AC	60 HZ	252-PSFU-RMBX-C6
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	230 V AC	60 HZ	252-PSFU-RQBX-C6
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	240 V AC	60 HZ	252-PSFU-RRBX-C6
3-phase 3- or 4-wire	Phase Loss and Unbalance 5-15%	480 V AC	60 HZ	252-PSFU-SEBX-C6
3-phase 3- or 4-wire	Phase Loss,Unbalance,and Under V 5-15%	120 V AC	60 HZ	252-PSGU-PQBX-C6-T1-IA
3-phase 3- or 4-wire	Phase Loss,Unbalance,and Under V 5-15%	208 V AC	60 HZ	252-PSGU-RMBX-C6-T1-IA
3-phase 3- or 4-wire	Phase Loss,Unbalance,and Under V 5-15%	415 V AC	60 HZ	252-PSGU-SBBX-C6-T1-IA
3-phase 3- or 4-wire	Phase Loss,Unbalance,and Under V 5-15%	440 V AC	60 HZ	252-PSGU-SHBX-C6-T1-IA
3-phase 3- or 4-wire	Phase Loss,Unbalance,and Under V 5-15%	480 V AC	60 HZ	252-PSGU-SEBX-C6-T1-IA