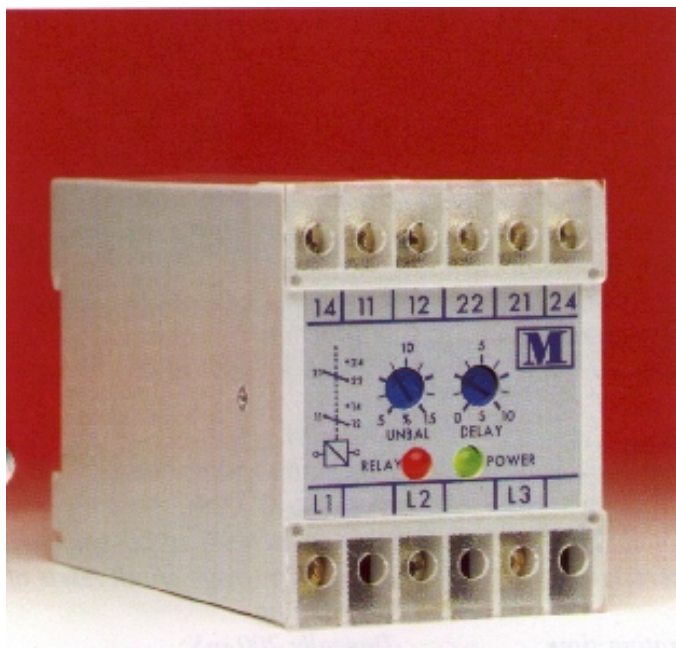




PHASE BALANCE



SELECTION GUIDE

- M200-PB1 Detects phase loss & phase unbalance
- M200-PB2 Detects phase loss, phase unbalance & symmetrical under-voltage

TYPICAL APPLICATIONS

The M200-PB1 can detect the following conditions in phase 3 or 4 wire systems. Phase Unbalance, Phase Loss, Phase Reversal and Phase Sequence.

The phase balance relays are used to detect phase loss and unbalance in systems using motors, generators, heater elements, transformers etc. A Phase unbalance as small as 10% in a 3 phase motor can cause the temperature in the motor winding to increase by more than 120%, correct setting of the PB1/PB2 will ensure this does not occur. Protection against open phase regenerated voltage, created if a single phase should fail is also provided.

Customer adjustment of unbalanced voltage between 5 to 15% is provided along with time delay adjustment of 200ms to 10 seconds.

If the system being monitored is healthy, the relay is energised, and the red LED will be illuminated. If a phase unbalance greater than the pre-set level or phase loss / reversal occurs, the relay de-energises after the time delay period. The M200-PB2 provides all the protection features of the PB1 with the additional benefit of having symmetrical under voltage protection. This means that if all the phase voltages remain balanced but drop below a pre-set value, the relay will de-energise. The under voltage is internally set. For standard units it is set at 85% below the nominal voltage, but this value can optionally be between 70% and 90%

TECHNICAL SPECIFICATION

INPUT

- Rated value U_n 57.8<500V± 25%
- Frequency 50/60/400 Hz
- Burden <2VA
- Overload 1.5x U_n
2x U_n

SETPOINT

- Range Adjustment 5 to 15% unbalanced voltage
- Repeatability Better than 0.5% of full span
- Under-voltage PB2 only, pre-set 85% of nominal voltage (optional 90% to 70%)

- Time delay Adjustable 200 ms to 10 sec

AUXILIARY

Self powered

WEIGHT & CASE SIZE Approx. 0.4kg, 55mm case

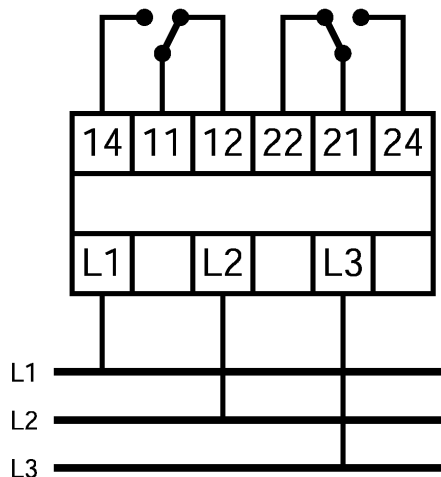
ORDERING INFORMATION

- Product Code U_n Input Freq. Option
- M200-PB2 415 v 50Hz Under Volts at 70%

OPTIONS

1. Adjustable time delay max 30 seconds
2. Internal under voltage set between 90% to 70%
3. Calibration at nominal Hz 35...450Hz
4. Calibration at temperature other than 23° C

CONNECTION DIAGRAM



M200PB1 M200PB2

GENERAL SPECIFICATIONS

ENVIRONMENTAL

Working temperature	0 to +60 deg C
Functional temperature	-25 to + 70 deg C
Storage temperature	-40 to +85 deg C
Temperature Coefficient	0.03% per deg C (300ppm/ ^o C)
Relative humidity	95% non condensing
Class of climate	HSE complying with DIN 40040 -3 complying with VDE/VDJ 3540

INSULATION

Test voltage	4kV RMS 50Hz 1min between Input / Case /Auxiliary
Impulse test	EMC 5kV transient complying with IEC 801 / EN55020
HF interference test	EHF 2.5kv 1MHz complying with IEC 255-4
Protection class	II complying with IEC 348

APPLIED STANDARDS

General	IEC 144/ BS 5420/ VDE/ VDI 0435/ IEC 947/ EN60947
Safety	BS EN 61010 DIN 57411 / VDE 0411 ANSI C37
Surge withstand	IEC 801 / EN 55020 ANSI C37-90a
Radio screening	RFI degree N complies with VDE087S
EMC	Emissions EN50081-2 Immunity EN50082-1

RELAY OUTPUT

Relay type	dual pole change over
Material	Silver / Cadmium
Contact resistance	200mOhm max Typically <50m Ohm
Rating AC	250V 5A non resistive 1200VA
Rating DC	125V 1A resistive 120 watts
Electrical life	1 x 10 ⁶ at above load
Mechanical life	5 x 10 ⁶
Operating time approx.	7ms (20ms max)
Dielectric strength	Between coil and contacts 5kV RMS 1min Between open contacts 1kV RMS 1min Between adjacent contacts 1kV RMS 1min
Insulation resistance	1000M Ohm at 500V DC
Operating temperature	-30 to + 75 deg C
Approval	UL and CSA recognised

ENCLOSURE

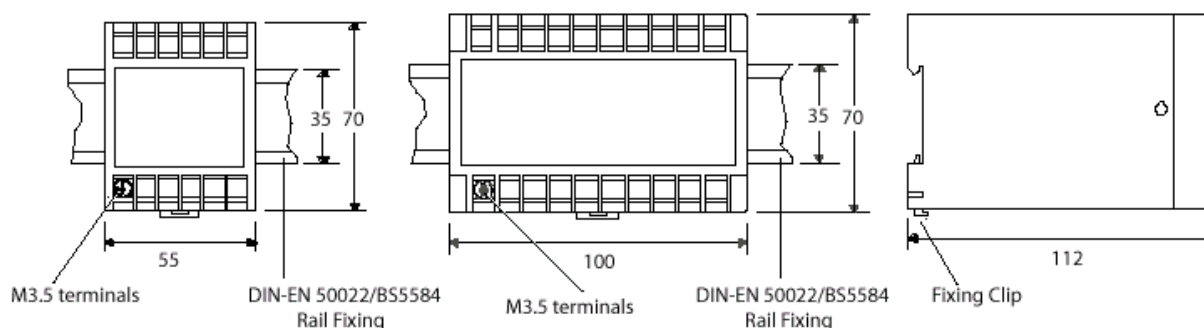
Fixing	Snap on to DIN rail 35 x7.5 mm complies with DIN-EN 50022 BS 5584
Mounting	Any position
Enclosure Code	Case IP 50/ terminals IP 30 Complies with IEC 529 BS 5490 DIN 40050
Material	Complying with UL 94 VO

APPROVALS

U.L. Approval File No E157034

CASE DIMENSIONS

All Dimensions in mm



Panel Components & Systems

