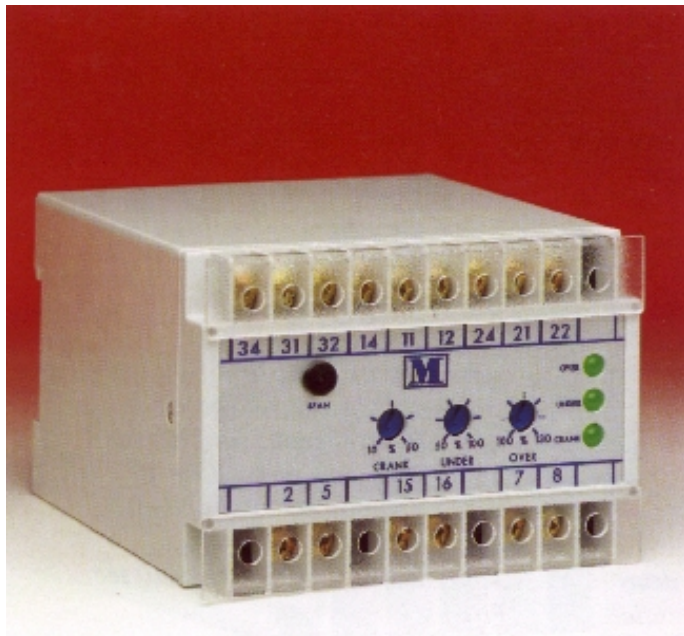




SPEED SENSING



TYPICAL APPLICATIONS

The M200-ST3 is most commonly used to detect the speed of engines used in generating sets. The pick-up, situated close to the flywheel, produces a high frequency pulse train directly proportional to the number of teeth passing it. The frequency is converted by the ST3 into a mA signal directly proportional to the rotational speed of the flywheel.

The relay provides the user with the following adjustments, which allows the control of start up and normal running and protects against over and under speeds of the generator.

- Adjustment of crank speed 10 to 50%
- Adjustment of under speed 50 to 100%
- Adjustment of over speed 100 to 133 %

A mA output signal proportional to input frequency.

Typical start-up as follows -

When the speed of the motor reaches the crank's set-point, the crank relay energises, disengaging the crank starter. When the under speed set-point is reached, the under speed relay is energised and the motor is now in the normal running condition with all relays energised. Should an under or over speed condition occur the appropriate relay is de-energised. Two other safety features are incorporated; if the pick-up sensor input lead breaks the over speed relay will de-energise also the crank relay will only de-energise when the input frequency goes below 20% of the set-point. The mA output signal can be fed to digital or analogue meters scaled in speed, or to provide a control signal to a PLC etc.

TECHNICAL SPECIFICATION

INPUT

Pulses 5V-75V peak to peak
 Frequency 1000-10000 Hz (speed of rotation RPM x number of teeth / 60)

Open circuit protection Over-speed relay de-energised

OUTPUT

Rated value 0-1mA = 133% of nominal speed
 Load resistance < 10k Ohm
 Calibration Value 0.75mA = 100% of nominal speed
 SETPOINT Range Crank 10 to 50%
 Under 50 to 100%
 Over 100 to 130%

Repeatability Better than 0.5% of full span
 Hysteresis 2% (under, over) crank resets at 20% setting

Operating time Typically 200 ms

AUXILIARY

DC Voltage 24 VDC ±20%
 WEIGHT & CASE SIZE Approx. 0.5kg. 100mm case

NOTE: The 3 relays in this product are single pole changeover. The remainder of this specification is as per general specification on page 3.

SELECTION GUIDE

M200-ST3 Speed sensing relay

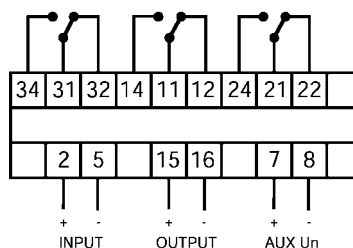
ORDERING INFORMATION

Product Code M200-ST3
 Normal running speed 1800 rpm
 Number of teeth on flywheel 50
 Magnetic pick up output voltage 10 volt pk-pk

OPTIONS

1. Calibration at temperature other than 23° C
2. Set-points are factory set. Specify frequency of crank; under speed and over speed settings required.

CONNECTION DIAGRAM



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/°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

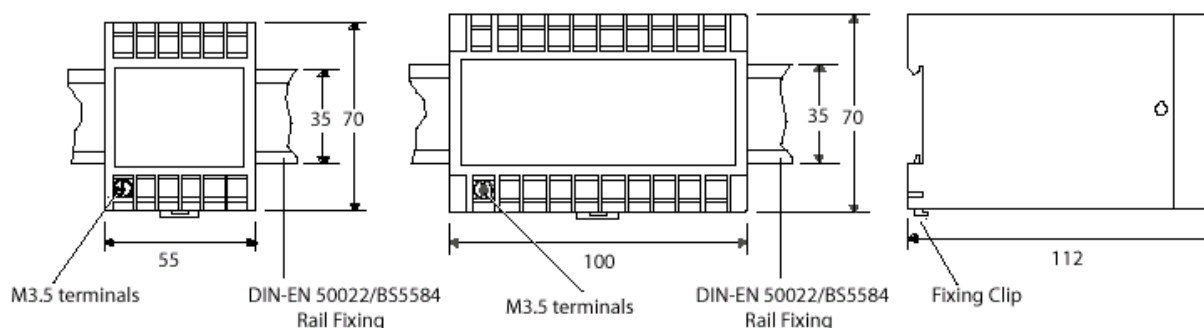
| | |
|----------------|---|
| Fixing | Snap on to DIN rail 35 x7.5 mm complies with DIN-EN 50022 BS 5584 |
| Mounting | Any position |
| Enclosure Code | Case IP 50/ terminals IP 30 Complies with IEC 529 BS 5490 DIN 40050 |
| Material | Complying with UL 94 VO |

APPROVALS

U.L. Approval File No E157034

CASE DIMENSIONS

All Dimensions in mm



Panel Components & Systems

