Ziegler

Redefine Innovative Metering

Speed Sensing Trip Relay

Protector Trip Relay Series

ANSI No. 12/14

Model available

	
Function / System	Product Type
Speed Sensing Relay	253-PH3

Applications

The Speed Sensing Relay provides three user adjustable trip levels with LED relay state indicator and a speed indicator output signal.

The trip functions provided are :

SP1 - Disengages the crank starter

SP2 - Energises protection or under-speed alarm.

SP3 - Alarm or trips on over speed

Engine monitoring

- Generator set protection
- Gas turbine monitoring
- Monitor the engine governer

Features

The unit also incorporates the following protection features :-

- Open circuit sensor detection - a break in the sensor lead will de - energise the over - speed relay
- Zero reset cranking - The crank relay will only reset when the input frequency falls below 20% of the crank set point.
- Under speed alarm or load shedding
- Over speed alarm or load shedding
- Fail Safe Operation

Specifications

Input

Pulse	: 5V-75V peak to peak
Frequency	: 0-1kHz min. range/ 0-10kHz max. Range (Speed of rotation = r.p.m x number of teeth /60)
Open circuit Protection	: Over speed relay de-energises
Overload	: 1.2 x rating continuously

Setpoint

Setpoint SP1(crank)	: 10% - 50%
Setpoint SP2(under)	: 50% - 100%
Setpoint SP3(over)	: 100% - 130%
Repeatability	: > 0.5% of span
Hysteresis	: SP1 resets at 20% of setting SP2, SP3 at 2% of setting

Output Relays

Type	: SP changeover
Rating A.C.	: 240V, 5A non -inductive
D.C.	: 24V 5A resistive
Reset	: Automatic
Operations	: 0.2 million at the above loads

Auxiliary Supply

D.C. Voltage	: 12V or 24V (±20%)
Burden	: 3 VA
Weight	: 0.6Kg

Output

Calibration Signal	: 0-1mA into 0-1,000 Ω
Calibration Value	: 0.75 mA = 100%* 1mA=133% of nominal speed

Other Specifications

Operating temperature	: 0^0C to +60^0C
Storage temperature	: -20^0C to +70^0C
Temp. co-efficient	: 0.05% per^{0}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	: IP 50
Model 253 dimensions	: 75mm(2.9")wide x 70mm(2.8")H x 112mm (4.4") deep

* Note : This must be adjusted to 0.75mA to ensure the trip levels are set yo the calibrated values

**There is no need to fit a meter to terminals 15 & 16

Δ The sensing pick-up must be an unpowered inductive coil (not a powered proximity switch).

Principle of Operation

An inductive pick - up, situated close to the engine flywheel, produces a high frequency pulse train directly proportional to the number of teeth passing it. The frequency of these pulses is converted to an analogue current (0 to 1 mA) which is used to provide both engine speed indication and the signal to the trip circuitry.

Relay Operation with rising frequency

SP1 - crank relay energises at set point

Sp2 - under speed relay energises at set point

SP3 - over speed relay de-energises at set point

Product Functions

The protector continuously monitors the rotations speed, and updates the analog output signal. An output of 0.75mA indicates normal speed (100%) while 1mA indicates 133% of nominal speed. The calibration point can easily be user adjusted.

Three setpoint control adjustments allow setting of the desired speed limits for cracking. Under speed and over speed.

Cranking Relay :

Will detect if the engine is running or stopped. This relay can be used to ensure the cranking Motor is disconnected, once the engine has started running. Set the cranking setpoint just above the cranking motor speed. A red LED illuminates when the relay is energised, indicating a trip condition.

Under speed Relay :

Will detect when the normal running speed has been achieved. This can be used to enable the generator's electrical protection. It can also be used to trigger load shedding. A red LED illuminates when an under speed condition exists.

Over speed Relay :

Will detect when a stuck throttle or over shoot, and can be used to shut down the engine. A red LED indicates over speed trip.

Fail safe operation :

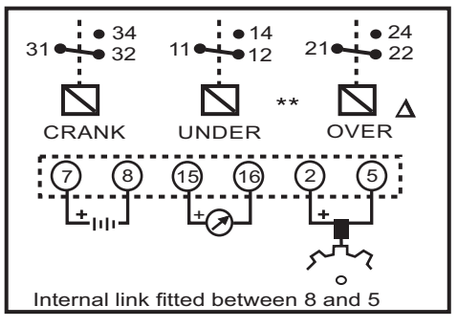
The relay Will detect an open circuit speed sensor, and de - energise the over - speed relay.

Information Required :

When ordering please supply the following information.

- The number of pulse per revolution e.g. Flywheel teeth = 30
- The nominal running speed e.g. 3600RPM
- The DC battery supply e.g. 24V DC.

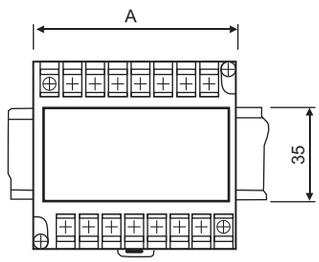
Connection Diagrams

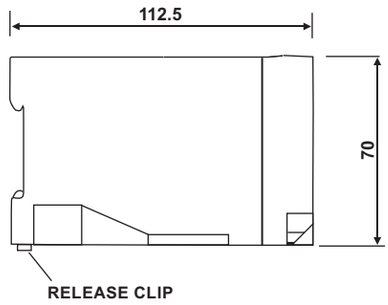


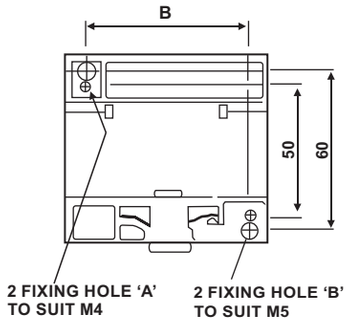
253-PH3

Dimensions

Model 253







Model	A	B
253	75	60

Ordering Information

Please quote :

1. Product Type.
2. Function i.e. Under or Over.
3. Relays normally de - energise on under trip and energise on over trip.
4. Please specify standard or non standard trip. An energised relay is indicated by a "Lit" red LED. Setpoint can be factory adjusted to your requirements.
5. System Voltage and/or Current where applicable.
6. System Frequency.
7. Auxiliary Voltage where required.

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