Speed Monitor — PC DWT FSU-2D

A speed monitoring μ P based unit is set to match different motor speeds ranging between 0.06-9999 RPM. The speed value is shown in display and 4-20 mA.

BHEL Application

Motor normal speed 5-1000 RPM.

Contract actuation speed range 100-1000RPM.

APPLICATION : The unit is used to monitor overspeed, underspeed and zero speed as bell as analog feedback input to PLC / DRIVE for speed in non-hazardous areas on shafts, agitators, conveyors, etc.

PULSE INPUT TYPE :

* Sensor probe (2/3 WIRE INPUT).

OPERATION (UNDER SPEED/OVER SPEED):

The output relay energises when the input frequency (pulses/ Minute)becomes lower than the set switch point.If the input frequency becomes higher again, the relay switches back at the switch point.

The output relay is de-enerzied during the start of delay and as long as the input frequency is higher than the set switch point.

For monitoring under speed it is recommended to have a relay energized at healthy speed (fail safe logic) and de-energized in case of speed drops.However reverse operational logic can also be provided.(Please specify while ordering the product)

Formula for calculating pulse interval time (f)

t = 60 / n x z

t = pulse interval time in seconds
n = speed in RPM
z = number of targets per revolution

The response time of the unit can be increased using as many targets per revolution as possible.

INITIAL TIME DELAY (ITD)

To allow the equipment to pick-up its speed initially an external bypass timer pot has to be used.With this circuit the output relay energises with supply ON and remains ON for the pre set time, if the equipment speed reaches upto or above the set speed value within this time then the relay continues to remain ON. The relay drops out (de- energizes) if speed is not reached upto or above the set speed within this time.The standard time delay range provided is 1-60sec.

NUISANCE TIME DELAY (NTD)

During normal running, an equipment may lose its speed momentarily due to various reasons.To avoide triping due to this a time delay is provided.the standard time range is 1-60 sec.

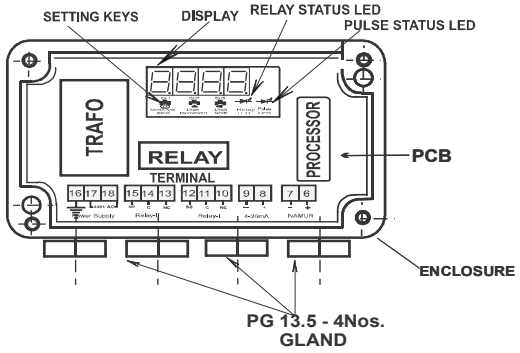
Technical Details of Electronic Speed Switch
Art No. : VB011

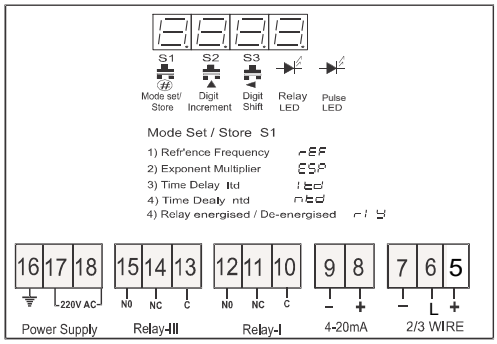
Power Supply

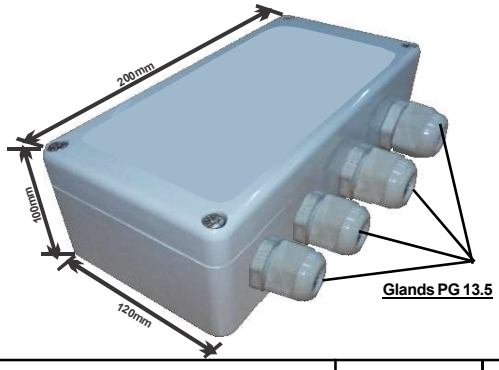
Supply Voltage	110 / 220V AC ± 15%
Current Consumption	approx. 5VA
Inputs	Through Sensor probe (PNP & NPN) Cable Lenght -10Mtr (Amb. Temp.70°C
Open circuit voltage	15V DC (max.)
Output	2Change over contacts.
Optional Features (Select any one)	*4-20mA / output for remote signal. Load 600 Ohm.
Contact rating or relay (AC rating)	4 Amp. 240V AC
Response Time	Energize approx. 10mS. De-energized approx. 20mS.
Type of Protection	IP 65
Ambient Temperature	Max. 55°C
Housing Material of Enclosure	Polycarbonate
Housing Material of Sensor Probe	Stainless Steel
Linearty Assured for -	
4-20mA signal . Signal	± 0.20%
Tripping Linearty	± 1%
Protection for Sensor Probe	IP 67
Initial time delay(ITD)	1 to 60 sec.
Nuisance time delay(NTD)	1 to 60 sec.

Note:

1:- NTD & ITD are effective only in monitoring
2:- 4-20mA signal and monitoring are field setable for various selector positions
3: Digital Display Frequency Indicator







Osna Electronics Pvt. Ltd. No. 4 & 5, Phase IV, Okhla Industrial Estate, New Delhi, INDIA.
TEL. : 091-011-41023750-752, FAX : 091-011-26837323, 26923638. Email : osna@osnaelctronics.net

Design of Toothed Wheel

Formula for calculating pulse interval time (f)

t = 60 / n x z

t = pulse interval time in seconds
n = speed in RPM
z = number of targets per revolution

The response time of the unit can be increased using as many targets per revolution as possible.

TARGET SPECIFICATIONS

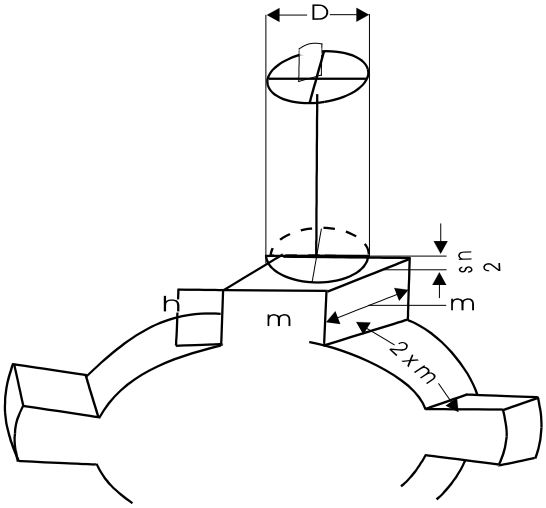
Minimum dimensions show; tooth and gap may be larger.

Pulse duration $\geq$ 0.5ms
Tooth and gap widths must be large enough to determine pulse times (damped or not damped) $\geq$ 0.5ms

Specification Recommendation - to reach maximum switching frequency when inductive proximity sensor is used, tooth to gap ratio should be 1:2

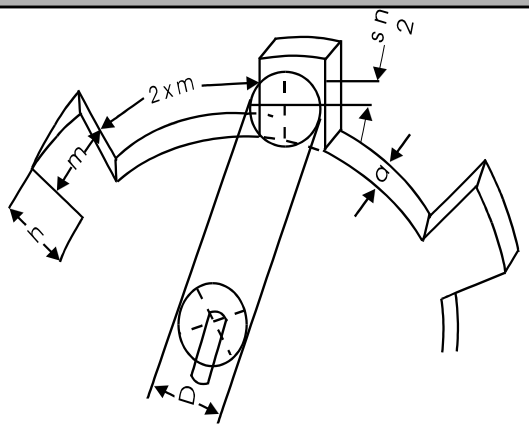
Large size inductive proximity sensors may limit high frequency response of unit.

TARGET DESIGN AND INSTALLATION



1. Radial sensor installation :

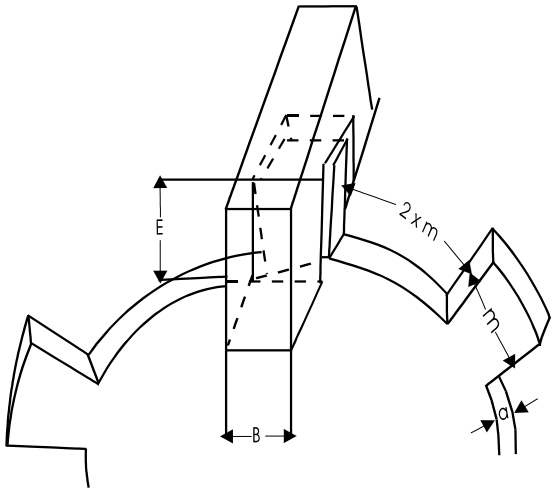
D = diameter of the proximity sensor
m = width of tooth
h = depth of tooth
sn = nominal sensing range of the proximity sensor
Characteristic Data : M = D h = 2 x sn



2. Axial sensor installation :

D = diameter of the proximity sensor
m = width of tooth
h = nominal sensing range of the proximity sensor
a = thickness of the disc
Characteristic Data : m = d = h

The width of the disc "a" is only mechanically important. Electrically it has no significance.



3. Slot sensor Installation :

B = width of the proximity sensor
m = width of the tooth
E = depth of Insertion