PROGRAMMABLE MONITOR WITH MICROPROCESSOR

Type : **WE/M/DWT-P**

The precision microcontroller based speed monitoring unit is field-set to match different motor speeds raging between 0.06-5940 RPM. Setting of the trip speed is through thumbwheel switches located on the top of the unit. Inbuilt softaware timer isincorporated for override/bypass, to allow the motor to come to full speed, before under speed sensing mode is actuated.

FEATURES :

* Unit has BCD switches which set the trip point between the ranges of 0.06 r.p.m. to 5940 r.p.m.
* Manufactured according to European standard EN 50014 and EN 50020.

INSTALLATION :

The unit can be clipped on to 35 mm rail to DIN 46277.

METHOD OF ACTUATION

* N-type Proximity Switches.
* Mechanical contact closure or push buttons or limit switches.
* Passive switched transistor.
* PNP 3 wire DC proximity switch.

APPLICATION :

The unit is used to monitor overspeed, underspeed and zero speed in hazardous or non-hazardous areas on shafts, agitators, conveyors etc.

OPERATION :

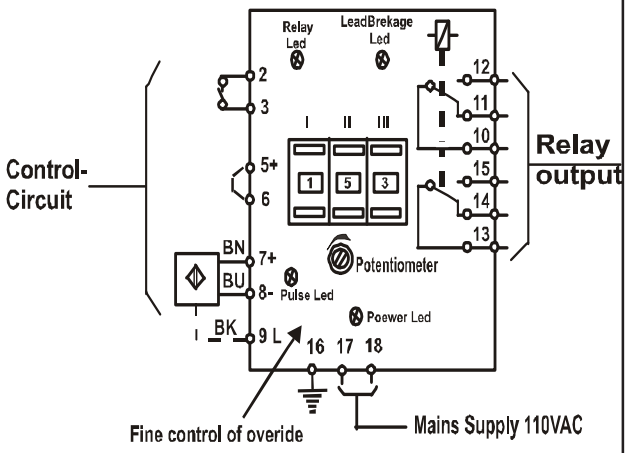
When jumper in between terminals 5 & 6 is connected the output relay energises when the input speed increases beyond preset speed & de-energises when input speed falls below preset speed. By removing the jumper from terminals 5 & 6 the condition reverses.

Settings : Out of three thumbwheel switches the first two are for setting the preset frequency while the third one is an exponent multiplier of first two digit and override timer range selector.

START UP OVERRIDE

Timer is iniated by linking terminals 2 & 3. It may be acutated by an external switch and the circuit is designed to be intrinsically safe.

Approximated setting of timer follow from the setting of exponent of the frequency. Potentiometer is used for fine settings - clockwise rotation increases the time.



2 & 3 Terminals Relay OK Led
7 & 8 Terminals Pulse Led
17 & 18 Terminals Power ON Led
12,11 & 10 Terminals Lead Breakage Led

Design of Toothed Wheel

Technical Details — WE/M-DWT-P

ART. NO. **WAD014 A-110V AC**
WAD014 B-220V AC

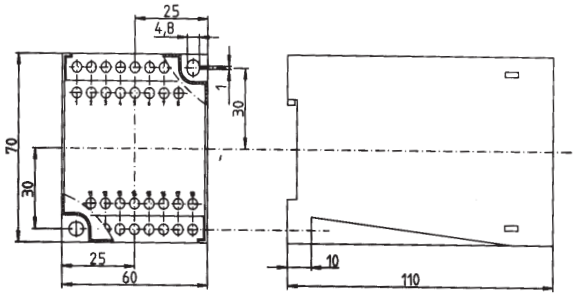
Power Supply

Supply Voltage	110/220,-10% +15%, 45-65Hz (Select anyone at the time of Order)
Current Consumption	approx. 4VA
Field Area Section	7(+), 8(-), 9 (L)
Input	Through PNP Proximity switch (E2 or E3)
Operating Voltage	10-30V DC
Switching Hysteresis	<5%
Output Voltage (max.)	15 V DC
Output Current (max.)	15mA

Control Area Section

Output	Relay output
Contact rating of relay (AC rating)	250 V / 4 A Cos $\phi \geq 0.7$
Contact rating of relay (DC rating)	110V / 0.2A, 60V / 0.6A, 24V / 4.0A
Response Time	Energize approx. 10ms De-energized approx. 20ms
Weight	**420 gm**
Ambient Temperature	**Max. 55°C**
Housing Material	**NORYL SE O (Self Extinguishing)**

Housing Dimensions in mm



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 ≥ 0.5ms
Tooth and gap widths must be large enough to determine pulse times (damped or not damped) ≥ 0.5ms

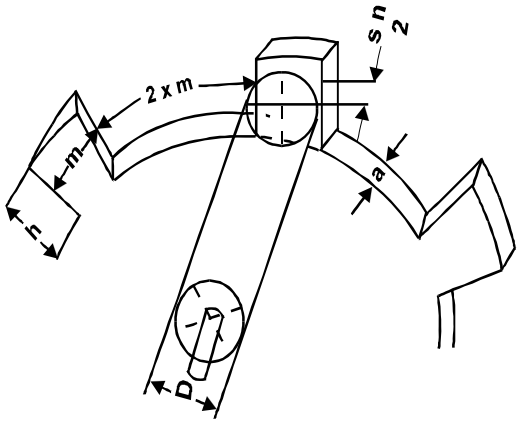
Specification Recommendation - to reach maximum switching frequency when inductive proximity sensor is used, tooth to gap ratio should be 1:2

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

TARGET DESIGN AND INSTALLATION

1. Radial sensor installation :

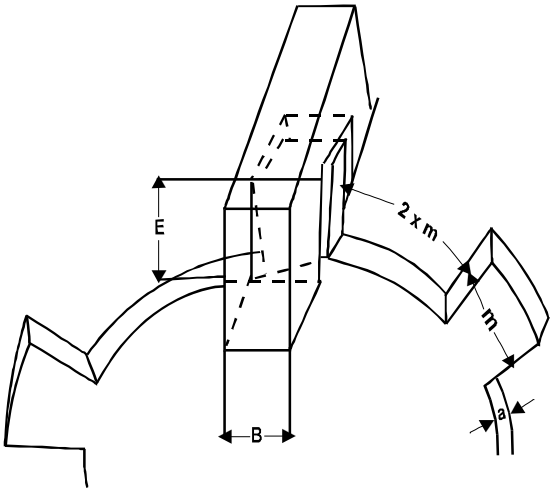
D = diameter of the proximity sensor
m = width of tooth
h = depth of tooth
sn = nominal sensing range of the proximity sensor
Characteristic Data : M = D h = 2 x sn



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
a = thickness of the disc
Characteristic Data : B = m = E