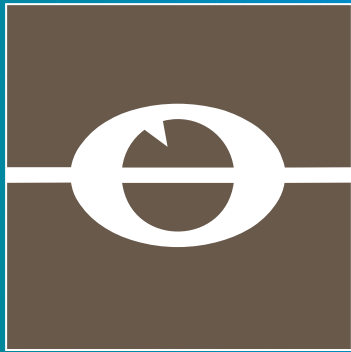


Y2K  
Compliant



# Motion Sensors

## For Reliable, Non-Contacting Equipment Protection



 **MILLTRONICS**  
Mass Dynamics Division



# Motion Sensing In The Toughest Conditions

Milltronics' non-contacting motion sensing systems provide maximum protection for your equipment at minimal cost, even in the harshest operating conditions. They guarantee reliable alarm indication for monitoring loss of motion in any conveying, reciprocating or rotating machinery.

Typical applications include tail pulley shafts, driven pulleys, motor shaft sensing and screw conveyor flights.

## Maximum Protection Where Other Systems Fail

The systems comprise powerful, extremely responsive yet rugged probes used in conjunction with innovative electronics. The rugged probes are virtually impervious to dust, dirt, build-up and moisture, ideal for operation in such primary industries as mining, aggregate and cement plants.

Operating where other systems are prone to failure, their non-contacting design also eliminates the need for lubricating, cleaning and part replacement.

## Easy, Low Cost Installation

Milltronics motion sensors are easily installed. The gap between the sensed ferrous object being monitored and the probe can be as great as 100 millimetres (4 inches). Wiring costs are minimal as the probes can use the same conduit or armoured cable as the drive motor and its control circuits.

## Downtime and Clean Up Expenses Reduced

These systems greatly reduce the downtime and clean-up expenses associated with conveying equipment failure. They alarm to provide protection such as:

- Minimizing spillage, as pre-feeding equipment is immediately shut down
- Preventing extensive damage and even fire, due to heat build-up caused by belt slippage at the head pulley or a broken belt on a multiple V belt drive.
- Warning against conveyor malfunction. This will often pay back initial cost on first alarm.

## Experience Pays Dividends

Milltronics has over thirty-five years experience developing and refining motion sensing technology. Our special insight into the problems associated with continuous conveying equipment ensures that when you need reliable alarm indication, you can rely on Milltronics' systems to fulfil their promise.

Today, we have over 200,000 motion sensing systems operating world-wide in some of the toughest working environments imaginable.

Our systems work where others fail.

## Solutions for Different Environments

Milltronics supplies a range of motion sensors designed to cope with a variety of environments. High temperature, hazardous area and stainless steel high temperature options are available for both motion and speed detection.

For applications with limited mounting access, the Mini-probe MSP-1 provides the answer.

Minimum velocity of the moving ferrous target must be 1cm/s (2 ft./m).



## How They Work

To sense motion, a probe is mounted in proximity to a ferrous target on the equipment monitored. The Motion Sensors series provide the contacts to shut down machinery whenever under-speed, over-speed or plant equipment failure occurs. On belt, drag and screw conveyors, or on bucket elevators, fans and pumps, the speed alarm warns instantly of equipment malfunction (optional). Probes may be linked to a programmable logic controller to monitor equipment. A single setpoint system is ideal for the majority of industrial applications, operating reliably where nothing else can.



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# MOTION FAILURE ALARM-4\*

## PROBE



## RELAY



\* Model P

- CALIBRATION (refer to FL-250)**
1. Operate equipment at normal speed.
  2. Check Probe LED for pulses.
  3. Set "Start Delay" Pot CCW to 0.
- UNDERSPEED**
4. "Pulse per Minute" Jumper to X100.
  5. "Pulse per Minute" Pot CW to 30.
  6. Turn "PPM" Pot CCW until Relay LED goes on. If no response, repeat step 6 with jumper at X10 and X1.
  7. Adjust "Start Delay" so equipment can attain normal speed in the time set.
- OVERSPEED**
4. "Pulse per Minute" jumper to X1.
  5. "Pulse per Minute" Pot CCW to 0.
  6. Turn "PPM" Pot CW until Relay LED goes on. If no response, repeat step 6 with jumper at X10 and X100.
  7. "Start Delay" is not applicable.



# Motion Sensors from Milltronics Encompass a Broad Spectrum of Applications



## Standard MSP-12

- Best selling probe withstands most environmental abuse
- Long lasting phenolic body with internal pre-amp
- Convenient mounting flange and lock nut for fast installation and set-up
- Temperature rating: -40° to 60°C (-40° to 140°F)

## Class I & II XPP-4

- CSA approved for hazardous locations Class I, groups A, B, C, D; Class II, groups E, F, G; Class III
- Phenolic probe with internal pre-amp has mounting flange and lock nut
- 1.5 m (5 ft.) or 9 m (30 ft.) of cable
- Temperature rating: -40° to 60°C (-40° to 140°F)



## High Temperature MSP-3

- Special probe assembly to withstand operating temperatures to 260°C (500°F)
- Cast aluminum probe with mounting flange
- 1.5 m (5 ft.) of high temperature cable provided Up to 30 m (100 ft.) may be used
- Pre-amp remote mounted in cast aluminum NEMA 4 enclosure 14 x 14 x 10 cm (5.5 x 5.5 x 4 in.)
- Pre-amp temperature rating -40° to 60°C (-40° to 140°F)

## Stainless High Temperature MSP-9 Probe

- 304 stainless steel probe construction
- Special construction allows operation of probe in environment to 260°C (500°F)
- 1.5 m (5 ft.) special high temperature teflon cable provided - up to 30 m (100 ft.) may be used
- Pre-amp remote mounted in enamel painted steel (optional stainless steel) enclosure 15 x 15 x 10 cm (6 x 6 x 4 in.)



## Mini-Probe MSP-1

- For installations with limited mounting space
- CPVC probe body complete with locknuts
- 1.8 m (6 ft.) cable provided - up to 30 m (100 ft.) may be used
- Pre-amp remote mounted in cast aluminum NEMA 4 enclosure 14 x 14 x 10 cm (5.5 x 5.5 x 4 in.)
- Due to smaller size, probe sensitivity is reduced, gap max.: 1.25 cm (0.5 in.)
- Temperature rating: -50° to 80°C (-60° to 180°F);

## Zero Speed Switch ZSS

- One form "C" relay contact (SPDT) 115/250 VAC, 3A, 150W
- 115/230 VAC ±10%, 2 VA, selectable
- Built in selectable start delays
- Gap Distance 25 mm (1 in.) nominal, 38 mm (1.5 in.) maximum
- Phenolic body with convenient mounting flange and lock nut
- -40° to 60°C (-40° to 140°F)



## Millpulse 600

- PLC compatible-2 wire connection
- 600 pulses per minute (max)
- Underspeed/overspeed/differential speed and speed indication functions by PLC
- Phenolic body with convenient mounting flange and lock nut
- 18-48 V AC/DC or 60-135 V AC/DC jumper selectable
- -45° to 60°C (-45° to 140°F)



## Motion Failure Alarm MFA-4

The versatile, general purpose MFA-4 monitors motion and provides the contacts to shutdown machinery whenever a slowdown or failure of plant equipment occurs. On belt, drag and screw conveyors; on bucket elevators, fans and pumps, the MFA-4 underspeed alarm warns instantly of equipment malfunction. The single setpoint system is ideal for use in the majority of industrial applications, operating reliably where nothing else can.

### Features

- Setpoint Adjustment 2 to 3000 PPM
- Adjustable start-up time delay
- Visual indication of probe operation and relay status

**Dynamic Range**  
0-7200 PPM

**Output**  
2 Form "C" relay contacts (DPDT)  
Rated 10A @ 115/230 VAC resistive

### Characteristics

**Repeatability** ±1 %

**Dead Band** ±1/4 %

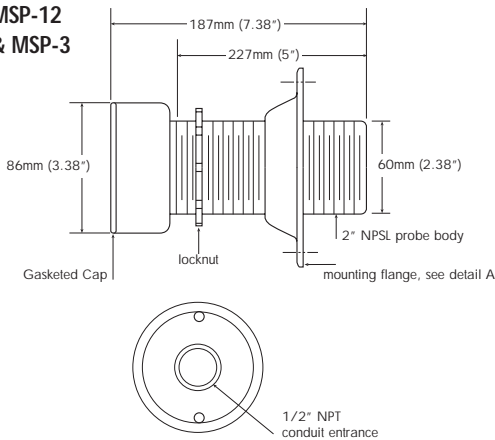
**Ambient Temperature Range**  
-40° to 60°C (-40° to 140°F)

**Power**  
115 or 230 VAC, 50/60 Hz, 5VA

**Enclosure dimensions**  
Nema 4, polycarbonate  
160 x 240 x 82 mm (6.3 x 9.5 x 3.2 in.)

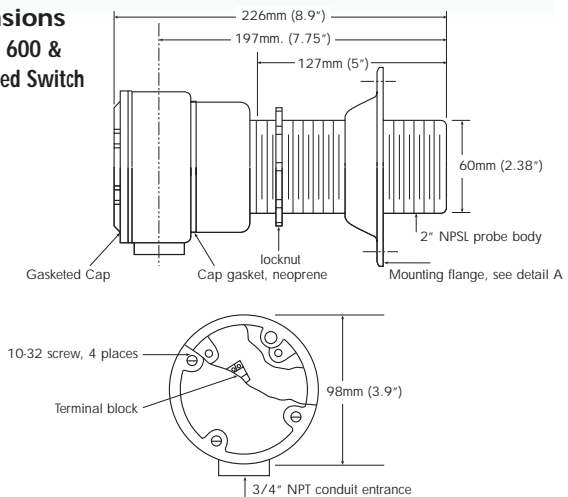
### Dimensions

**MSP-12  
& MSP-3**



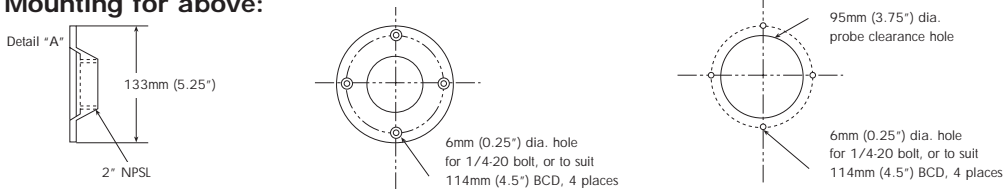
### Dimensions

**Millpulse 600 &  
Zero Speed Switch**



**Note:** Consult with Milltronics or their representative for dimensions on other devices.

### Common Mounting for above:



Our continuous program to improve our products may result in changes to design and specifications without notice.

Y2K Compliant - Year 2000 Compliant

Mass Dynamics is dedicated to the sales and development of continuous weighing, feeding and motion sensing instrumentation. Launched in 1997 as a new business division of Milltronics Ltd., Mass Dynamics offers a range of belt scales, solids flowmeters, weigh feeders, acoustic sensors and motion sensing equipment. Designed to withstand the sustained rigours of heavy primary industries, these products have proven their reliability in a wide range of harsh applications including the mining, mineral processing and cement industries. They are also used extensively in wet and dry food processing and petrochemicals.



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**A joint venture in Singapore, a sales office in Brazil and distributors in 56 countries.**  
Internet: <http://www.milltronics.com> Printed in Canada



Representative

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