Process Protection
Motion sensors

Milltronics MFA 4p Motion failure alarm controller

Overview

MFA 4p motion failure alarm controller is a highly sensitive single setpoint motion sensor system, used with Milltronics MSP probes.

Benefits

- Up to 100 mm (4 inch) gap between target and probe
- Switch selectable overspeed or underspeed detection
- Setpoint adjustment 0.15 to 3 000 PPM (pulses/minute)
- Adjustable start-up time delay
- Visual indication of probe operation and relay status
- General purpose, suitable for majority of industrial applications; rugged probe designs provide unmatched reliability

Application

The MFA 4p detects changes in the motion and speed of rotating, reciprocating or conveying equipment. It warns of equipment malfunction and signals through contacts to shut down machinery in case of a slowdown or failure. Its reliability makes it a cost-effective way to protect valuable process equipment.

The single setpoint system suits most industrial applications. This versatile unit can be used on tail pulley shafts, driven pulleys, motor shaft sensing, belt or drag conveyors, screw conveyor flights, bucket elevators, fans and pumps.

A special feature is the adjustable 0 to 60 second time delay, allowing the monitored device to accelerate to normal running speed before monitoring begins. A wide range of probes are available to suit specific needs, including high temperatures and corrosive installations. The CE approval allows the MFA 4p to consistently meet the needs of the mining aggregate, cement and other primary and secondary industries.

- Key Applications: tail pulleys, motor shaft sensing, screw conveyor flights, bucket elevators
Design

Mounting for Milltronics MSP-12, MSP-3, XPP-5

- 6 (0.25) dia. Hole for 1/4-20 bolt or drill and tap on 114 (4.5) BCD, 4 places
- 95 (3.75) dia. Probe clearance hole

Mounting for Milltronics MSP-9

- 6 (0.25) dia. Hole for 1/4-20 bolt or drill and tap on 114 (4.5) BCD, 4 places
- 95 (3.75) dia. Probe clearance hole

Panel

- 102 (4) 25 (1) 2" NPSL
- 123 (4.8)
- 25 (1)

Probe flange

Note: Mounting flange supplied with probe.

High temperature Milltronics MSP-3
- Heavy-duty, high temperature aluminum probe designed to withstand operating temperatures from -50 ... 260 °C (500 °F)
- Cast aluminum probe with convenient mounting flange and locknut
- 1.5 m (5 ft) of high temperature PTFE cable provided. Up to 30 m (100 ft) may be used.
- Amplifier remote mounted in enclosure 140 x 140 x 100 mm (5.5 x 5.5 x 4 inch), available in cast aluminum (½" NPT conduit entry), painted steel (Type/NEMA 4, IP65 rating), or stainless steel (Type/NEMA 4X, IP65 rating)
- Amplifier temperature rating -40 ... +60 °C (-40 ... +140 °F)
- Enclosure rating: Type/NEMA 4X, 6, IP67

Stainless high temperature Milltronics MSP-9
- Heavy-duty, high temperature 304 stainless steel probe
- Special construction allows operation of probe in environment from -50 ... 260 °C (500 °F)
- 1.5 m (5 ft) special high temperature PTFE cable provided. Up to 30 m (100 ft) may be used.
- Amplifier remote mounted in enclosure 140 x 140 x 100 mm (5.5 x 5.5 x 4 inch), available in cast aluminum (½" NPT conduit entry), painted steel (Type/NEMA 4, IP65 rating), or stainless steel (Type/NEMA 4X, IP65 rating)
- Amplifier temperature rating -40 ... +60 °C (-40 ... +140 °F)
- Enclosure rating: Type/NEMA 4X, 6, IP67

Milltronics XPP-5
- CSA hazardous approval (Class I, Div. 1, Groups A, B, C, D; Class II Div. 1, Groups E, F, G; Class III)
- Aluminum body that is fully potted
- Convenient mounting flange and locknut
- 3/4" NPT male hub connection
- Operating temperature from -40 ... 60 °C (-40 ... 140 °F)
- Enclosure rating: Type/NEMA 4X, 6, IP67

Milltronics RMA (Remote Mounted Amplifier)
- Available for internal mounting within Probe, or in enclosure for remote mounting
- Enclosures available in cast aluminum (½" NPT entry), painted steel (Type/NEMA 4 rating) or stainless steel (Type/NEMA 4X, IP65 rating)
- Operating temp. from -40 ... +60 °C (-40 ... +140 °F)
- Enclosure rating: Type/NEMA 4X, 6, IP67

Milltronics motion probes
## Technical specifications

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<td>Monitoring loss of motion in tail pulley, screw flights, bucket elevators</td>
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### Features
- Switch selectable overspeed or underspeed detection
- Setpoint adjustment: 0.15 ... 3 000 PPM
- Adjustable start-up time delay: 0 ... 60 seconds
- Visual indication of probe operation and relay status

### Output
- 2 relays working in unison, each providing 1 SPDT Form C relay contact, rated 8 A at 250 V AC resistive

### Performance
- **Repeatability**: ± 1 %
- **Dead band**: ± 0.25 %

### Dynamic Range
- 0 ... 7 200 PPM

### Ambient Temperature Range
- -20 ... +50 °C (-5 ... +122 °F)

### Storage temperature
- -20 ... +50 °C (-5 ... +122 °F)

### Design
- **Enclosure rating**: Type 4X/NEMA 4X/IP65 (standard and optional stainless steel)
- Type 4/NEMA 4/IP65 (optional mild steel)
- **Enclosure dimensions**: 160 x 240 x 82 mm (6.3 x 9.5 x 3.2 inch)
- Optional: mild steel or 304 (1.4301) stainless steel
- 203 x 254 x 102 mm (8 x 10 x 4 inch)
- **Enclosure material**: Polycarbonate
  - Optional: mild steel or stainless steel
- **Power Supply**: 100 ... 240 V AC, 50/60 Hz, 15 VA, ± 10 % of rated voltage

### Certificates and approvals
- CE, RCM, EAC, KCC, CSAUS/C, FM
### Selection and ordering data

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**Milltronics MFA 4p Motion failure alarm controller**
- Set-point alarm controller, for use with MSP motion probes.
- Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

**Enclosure**
- NEMA 4X, polycarbonate enclosure
- NEMA 4, painted mild steel enclosure
- NEMA 4X, 304 (1.4301) stainless steel enclosure

**Input Voltage**
- 100 ... 240 V AC, ± 10 %, 50/60 Hz, 15 VA

**Speed detection version**
- Standard, underspeed (U/S) or overspeed (O/S), switch selectable
- Slow speed (S/S), U/S or O/S detection, switch selectable (limit of 15 ppm)

**Approvals**
- CE, RCM, EAC, KCC, CSAUS/C, FM

**Further designs**
- Please add "-Z" to Article No. and specify Order code(s).
- Manufacturer’s test certificate:
  - According to EN 10204-2.2
  - Acrylic coated, stainless steel tag
  - Measuring-point number/identification (max. 27 characters), specify in plain text

**Operating Instructions**
- All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation

### Milltronics RMA Remote mounted amplifier

**Enclosure**
- Aluminum enclosure, IP65, Type/NEMA 4X, ½” NPT entry

**Further designs**
- Please add "-Z" to Article No. and specify Order code(s).
- Manufacturer’s test certificate:
  - According to EN 10204-2.20
  - Acrylic coated, stainless steel tag
  - Measuring-point number/identification (max. 16 characters), specify in plain text

**Operating Instructions**
- All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation

**Spare Parts**
- Card, RMA
- Article No. 7MH7723-1DT
Milltronics MFA 4p Motion failure alarm controller

### Selection and ordering data

**Milltronics Motion sensing probes**

- Heavy duty, 100 mm measuring range, for use with RMA, MFA 4p, WM300 MFA, or other control.
- Note: Milltronics MSP-3 and MSP-9 probes require the use of Milltronics RMA (amplifier).

> Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

#### Cable Length

Standard length (as described in Model options)\(^1\)

- Add Order code Y01 and plain text:
  - Total cable length: enter the total cable length in plain text description
  - Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]
  - Measuring-point number/identification (max. 16 characters), specify in plain text
  - Cable gland kit
  - Manufacturer's test certificate: According to EN 10204-2.2

- Extended cable length: enter the total cable length in plain text description

#### Model [standard cable length/type]

- MSP-3, \(\frac{3}{16}\)” NPT cable inlet\(^3\) [1.5 m (5 ft) high temperature cable]
- MSP-9, \(\frac{3}{16}\)” NPT cable inlet, no cable
- MSP-12, \(\frac{3}{16}\)” NPT cable inlet, no cable
- XPP-5 [1.5 m (5 ft) cable, (CSA Class I, Groups A, B, C and D; Class II Groups E, F, and G)]
- XPP-6 [10 m (32.8 ft) cable, (CSA Class I, Groups A, B, C, and D; Class II Groups E, F, and G)]
- XPP-5 [15 m (49.2 ft) cable, (CSA Class I, Groups A, B, C, and D; Class II Groups E, F, and G)]

#### Approvals

- CE, RCM, EAC, KCC

**Further designs**

- Please add “Z” to Article No. and specify Order code(s).

<table>
<thead>
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<td>Y17</td>
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**Operating Instructions**

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**Spare Parts**

- Locknut, for MSP-3, MSP-7, MSP-12, XPP-5
- Mounting flange, for MSP-3, MSP-7, MSP-12, XPP-5
- Mounting bracket for MSP-9
- Lid, \(\frac{3}{8}\)” NPT cable inlet for MSP-3, MSP-7, MSP-12
- Lid for MSP-9
- Lid gasket, for MSP-3, MSP-9
- Lid gasket, for MSP-7, MSP-12
- Motion cable gland adaptor kit

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1. No Y01 needed in Order code for standard length.
2. Only available with model options B, D, G, H, J.
3. MSP-3 and MSP-9 probes required the use of RMA (amplifier).
4. Available with Model options G, H, and J only.
Milltronics MFA 4p and probe, dimensions in mm (inch)
Process Protection
Motion sensors

Milltronics MFA 4p Motion failure alarm controller

Dimensional drawings (continued)

High temperature probe MSP-3

High temperature stainless steel probe MSP-9

Milltronics probes, dimensions in mm (inch)