

### Overview



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

### Benefits

- Up to 100 mm (4") gap between target and probe
- Switch selectable overspeed or underspeed detection
- Setpoint adjustment 2 to 3000 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.

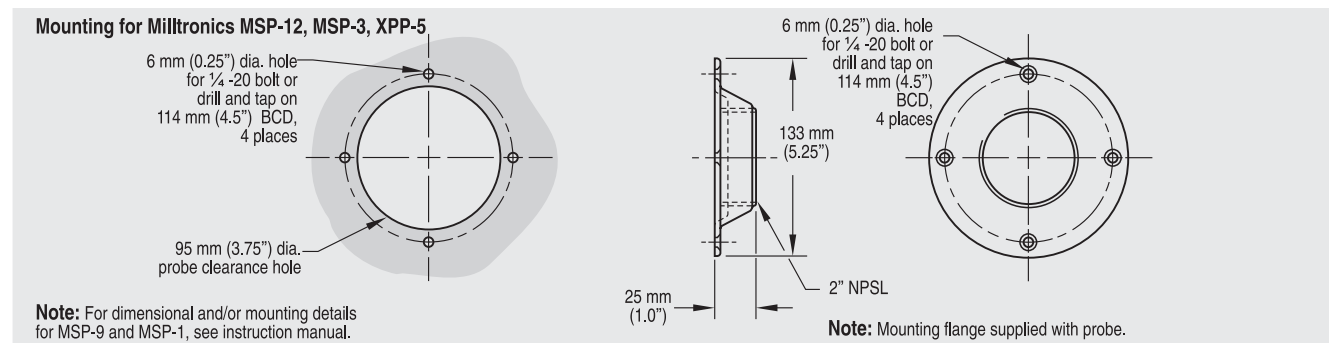
The single setpoint system suits most industrial applications. This versatile unit can be used on tail pulley shafts, driven pulleys, motor shaft sensing, belt or drag conveyors, screw conveyor flights, bucket elevators, fans and pumps.

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, corrosive, and Class I, II and III 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



MSP-12, MSP-3, XPP-5 mounting

# Process protection

## Motion sensors

### Milltronics MFA 4p

#### Probes



#### Standard Milltronics MSP-12

- Heavy-duty general purpose motion probe
- Long lasting phenolic body with internal pre-amp
- Convenient mounting flange and locknut for fast installation and setup
- Temperature rating: -40 to 60 °C (-40 to 140 °F)



#### High temperature Milltronics MSP-3

- Heavy-duty, high temperature aluminum probe designed to withstand operating temperatures to 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.
- Pre-amp remote mounted in painted cast aluminum NEMA 4 enclosure 140 mm x 140 mm x 100 mm (5.5" x 5.5" x 4"), ½" NPT conduit entry
- Pre-amp temperature rating -40 to 60 °C (-40 to 140 °F)



#### Stainless high temperature Milltronics MSP-9

- Heavy-duty, high temperature 304 stainless steel probe
- Special construction allows operation of probe in environment up to 260°C (500°F)
- 1.5 m (5 ft) special high temperature PTFE cable provided. Up to 30 m (100 ft) may be used.
- Pre-amp remote mounted in enamel painted steel (optional stainless steel) enclosure 150 mm x 150 mm x 100 mm (6" x 6" x 4")



#### Miniature Milltronics MSP-1

- Miniature probe 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 painted cast aluminum NEMA 4 enclosure 140 mm x 140 mm x 100 mm (5.5" x 5.5" x 4"), ½" NPT conduit entry
- Due to smaller size, probe sensitivity is reduced, gap max. 13 mm (0.5")
- Temperature rating: -40 to 80 °C (-40 to 180 °F)



#### 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)
- Phenolic / aluminum body that is fully potted
- Convenient mounting flange and locknut
- 3/4" NPT male hub connection
- Operating temperature from -40 to 60 °C (-40 to 140 °F)

MFA 4p motion probes

#### Technical specifications

##### Mode of operation

Measuring principle

Motion monitor and alarm

Typical application

Monitoring loss of motion in tail pulley, screw flights, bucket elevators

##### Features

- Switch selectable overspeed or underspeed detection
- Setpoint adjustment: 2 to 3000 PPM
- Adjustable start-up time delay: 0 to 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 @ 250 V AC resistive

##### Performance

Repeatability

± 1 %

Dead band

± 0.25 %

##### Dynamic Range

0 to 7200 PPM

##### Ambient Temperature Range

-20 to +50 °C (-5 to +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 mm x 240 mm x 82 mm  
(6.3" x 9.5" x 3.2")

Enclosure material

Polycarbonate [optional: mild steel or stainless steel, 203 mm x 254 mm x 102 mm (8" x 10" x 4")]

##### Power Supply

100/115/200/230 V AC switch selectable, 50/60 Hz, 15 VA ± 10 % of rated voltage

##### Certificates and approvals

CE, CSA<sub>US/C</sub>, FM

# Process protection

## Motion sensors

### Milltronics MFA 4p

Selection and Ordering data	Order No.
<b>MFA 4P Motion Failure Alarm Controller</b> A highly sensitive single setpoint motion sensor system, used with MSP and XPP probes.	C) <b>7MH7144-</b>
<b>Enclosure</b> NEMA 4X, polycarbonate enclosure NEMA 4, painted mild steel enclosure NEMA 4X, stainless steel enclosure	1 2 3
<b>Input Voltage</b> 100/115/200/230 V AC, 50/60 Hz, switch selectable	A
<b>Speed detection version</b> Standard, underspeed (U/S) or overspeed (O/S), switch selectable Slow speed (S/S), U/S or O/S detection, switch selectable	A B
<b>Approvals</b> CE, CSA <sub>US/IC</sub> , FM	2
<b>Further designs</b> Please add <b>"-Z"</b> to Order No. and specify Order code(s).	Order code
Manufacturer's test certificate M to DIN 55 350, Part 18 and to ISO 9000	<b>C11</b>
Acrylic coated, stainless steel tag [69 x 50 mm (2.7 x 1.97")]: Measuring-point number/identification (max. 16 characters), specify in plain text	<b>Y15</b>
<b>Instruction manual</b> English French Spanish German Note: The instruction manual should be ordered as a separate item on the order.  This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.	Order No. C) <b>7ML1998-5FM01</b> C) <b>7ML1998-5FM11</b> C) <b>7ML1998-5FM21</b> C) <b>7ML1998-5FM31</b>
<b>Spare parts</b> Relay Transformer Circuit Card, standard Circuit Card, Slow speed Lid with overlay for MFA 4p	<b>7MH7723-1DW</b> <b>7MH7723-1DX</b> C) <b>7MH7723-1DU</b> C) <b>7MH7723-1DV</b> <b>7MH7723-1GY</b>
C) Subject to export regulations AL: N, ECCN: EAR99	

Selection and Ordering data	Order No.
<b>Milltronics RMA Remote Mounted Amplifier</b> Remote mounted amplifier for Milltronics MSP-1, MSP-3 and MSP-9 motion sensing probes.	C) <b>7MH7145-</b>
<b>Enclosure</b> Aluminum enclosure, 1/2" NPT entry Painted steel, NEMA 4 rating Stainless steel enclosure, NEMA 4X rating	0 A C D
<b>Further designs</b> Please add <b>"-Z"</b> to Order No. and specify Order code(s).	Order code
Manufacturer's test certificate M to DIN 55 350, Part 18 and to ISO 9000	<b>C11</b>
Acrylic coated, stainless steel tag [38 x 51 mm (1.5 x 2")]: Measuring-point number/identification (max. 16 characters), specify in plain text	<b>Y18</b>
<b>Instruction manual</b> English French Spanish	Order No. C) <b>7ML1998-5FM01</b> C) <b>7ML1998-5FM11</b> C) <b>7ML1998-5FM21</b>

Selection and Ordering data	Order No.
<b>Milltronics RMA Remote Mounted Amplifier</b> Remote mounted amplifier for Milltronics MSP-1, MSP-3 and MSP-9 motion sensing probes. German Note: The instruction manual should be ordered as a separate item on the order.	C) <b>7MH7145-</b> 0 C) <b>7ML1998-5FM31</b>
<b>Spare parts</b> Card, RMA	C) <b>7MH7723-1DT</b>
C) Subject to export regulations AL: N, ECCN: EAR99	

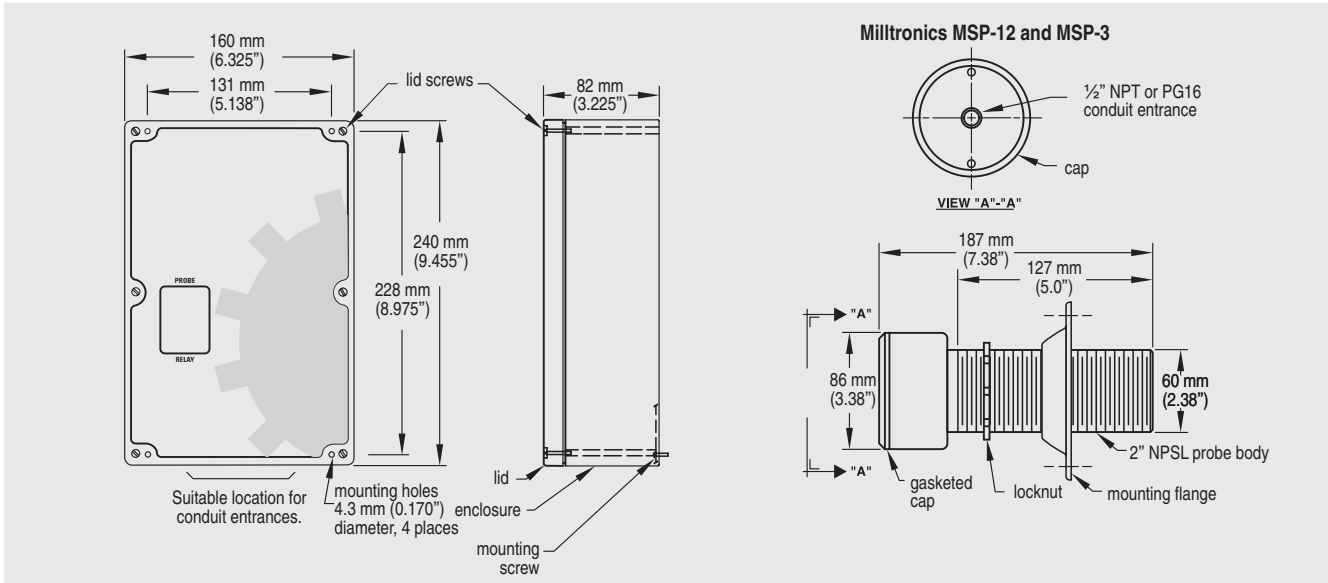
Selection and Ordering data	Order No.
<b>Milltronics Motion Sensing Probes</b> A series of motion sensing probes used with the MFA 4p. Milltronics MSP-1: miniature motion sensing probe Milltronics MSP-3: heavy-duty, high temperature aluminum Milltronics MSP-9: heavy-duty, high temperature stainless steel Milltronics MSP-12: heavy-duty, general purpose Milltronics XPP-5: hazardous rate Note: Milltronics MSP-1, MSP-3 and MSP-9 probes require the use of Milltronics RMA (amplifier)	C) <b>7MH7146-</b> 0
<b>Model</b> MSP-1 with 1.8 m (6 ft) of cable MSP-3, 1/2" NPT cable inlet with 1.5 m (5 ft) high temperature cable MSP-9 with 1.5 m (5 ft) high temperature cable MSP-12, 1/2" NPT cable inlet XPP-5, with 1.5 m (5 ft) cable, (CSA Class I, Group A, B, C and D; Class II Group E, F and G) XPP-5, with 10 m (32.8 ft) cable, (CSA Class I, Group A, B, C and D; Class II Group E, F and G) XPP-5, with 15 m (49.2 ft) cable, (CSA Class I, Group A, B, C and D; Class II Group E, F and G)	A B D E G H J
<b>Approvals</b> CE	A
<b>Further designs</b> Please add <b>"-Z"</b> to Order No. and specify Order code(s).	Order code
Manufacturer's test certificate M to DIN 55 350, Part 18 and to ISO 9000	<b>C11</b>
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75")]: Measuring-point number/identification (max. 16 characters), specify in plain text	<b>Y17</b>
<b>Instruction manual</b> English French Spanish German Note: The instruction manual should be ordered as a separate item on the order.	Order No. C) <b>7ML1998-5FM01</b> C) <b>7ML1998-5FM11</b> C) <b>7ML1998-5FM21</b> C) <b>7ML1998-5FM31</b>
<b>Spare parts</b> Locknut, for MSP-1 Locknut, for MSP-3, MSP-4, MSP-12, XPP-5 Mounting flange, for MSP-3, MSP-4, MSP-12, XPP-5 Mounting bracket for MSP-9 Lid, 1/2" NPT cable inlet, for MSP-3, MSP-12 Lid for MSP-9 Lid gasket, for MSP-3, MSP-9 Lid gasket, for MSP-12	<b>7MH7723-1CQ</b> C) <b>7MH7723-1CR</b> <b>7MH7723-1CS</b> <b>7MH7723-1CT</b> <b>7MH7723-1CU</b> <b>7MH7723-1CV</b> <b>7MH7723-1CW</b> <b>7MH7723-1CX</b>
C) Subject to export regulations AL: N, ECCN: EAR99	

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### Milltronics MFA 4p

#### Dimensional drawings



MFA 4p dimensions