

### 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.

#### 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

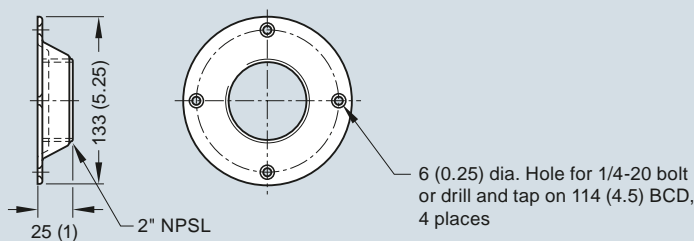
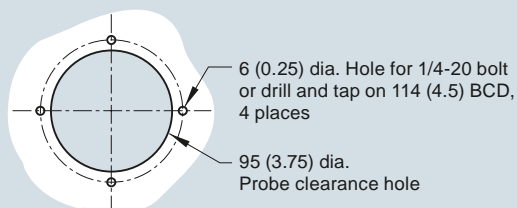
#### Benefits

- 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

#### Design

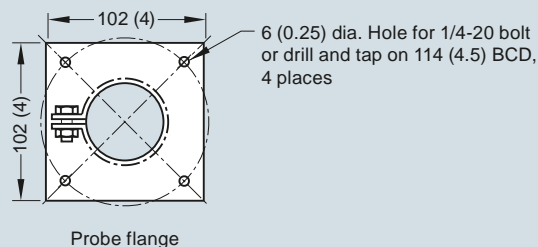
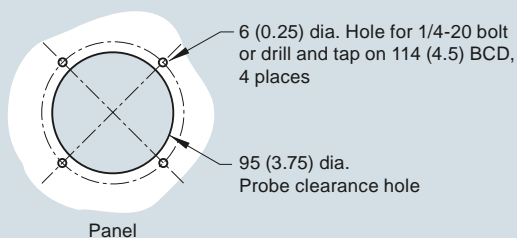
##### Mounting

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



**Note:** Mounting flange supplied with probe.

##### Mounting for Milltronics MSP-9



MSP-12, MSP-3, MSP-9, XPP-5 mounting, dimensions in mm (inch)

## Process Protection

### Motion sensors

#### Milltronics MFA 4p motion failure alarm controller

#### Probes



##### Standard Milltronics MSP-12

- Heavy-duty general purpose motion probe
- Long lasting aluminum body with internal amplifier
- Convenient mounting flange and locknut for fast installation and setup
- Temperature rating: -40 ... +60 °C (-40 ... +140 °F)
- Enclosure rating: Type/NEMA 4X, 6, IP67



##### 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



##### 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



##### 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)
- Enclosure rating: Type/NEMA 4X, 6, IP67
- Amplifier temperature rating -40 ... +60 °C (-40 ... +140 °F)



##### 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








Motion probes




#### Technical specifications



<b>Mode of operation</b>	
Measuring principle	Motion monitor and alarm
Typical application	Monitoring loss of motion in tail pulley, screw flights, bucket elevators
<b>Features</b>	<ul style="list-style-type: none"> <li>• Switch selectable overspeed or underspeed detection</li> <li>• Setpoint adjustment: 0.15 ... 3 000 PPM</li> <li>• Adjustable start-up time delay: 0 ... 60 seconds</li> <li>• Visual indication of probe operation and relay status</li> </ul>
<b>Output</b>	2 relays working in unison, each providing 1 SPDT Form C relay contact, rated 8 A at 250 V AC resistive
<b>Performance</b>	
Repeatability	± 1 %
Dead band	± 0.25 %



<b>Dynamic Range</b>	0 ... 7 200 PPM
<b>Ambient Temperature Range</b>	-20 ... +50 °C (-5 ... +122 °F)
<b>Design</b>	
Enclosure rating	Type 4X/NEMA 4X/IP65 (standard and optional stainless steel)
Enclosure dimensions	Type 4/NEMA 4/IP65 (optional mild steel) 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
<b>Power Supply</b>	100/115/200/230 V AC switch selectable, 50/60 Hz, 15 VA ± 10 % of rated voltage
<b>Certificates and approvals</b>	CE, RCM, CSA <sub>US/IC</sub> , FM



### Milltronics MFA 4p motion failure alarm controller



Selection and Ordering data	Article No.
<b>MFA 4P Motion Failure Alarm Controller</b>  <b>7MH7144-</b> A highly sensitive single setpoint motion sensor system, used with MSP probes.    ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7MH7144-</b>    <b>1</b> <b>2</b> <b>3</b> <b>A</b> <b>A</b> <b>B</b> <b>2</b>
<b>Enclosure</b> NEMA 4X, polycarbonate enclosure NEMA 4, painted mild steel enclosure NEMA 4X, 304 (1.4301) stainless steel enclosure	
<b>Input Voltage</b> 100/115/200/230 V AC, 50/60 Hz, switch selectable	<b>A</b>
<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 (limit of 15 ppm)	<b>A</b> <b>B</b>
<b>Approvals</b> CE, RCM, CSA <sub>US/IC</sub> , FM	<b>2</b>

Selection and Ordering data	Order code
<b>Further designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
Manufacturer's test certificate: According to EN 10204-2.2	 <b>C11</b>
Acrylic coated, stainless steel tag [69 x 50 mm (2.7 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters), specify in plain text	 <b>Y15</b>
Painted mild steel, heated enclosure with viewing window for use down to -50 °C (-58 °F) (finished unit is mounted inside enclosure) 483 x 584 x 203 mm (19 x 23 x 8 inch)	<b>A35</b>
Stainless steel, sun/weather shield (finished unit is field mounted inside enclosure) [357 x 305 x 203 mm (14 x 12 x 8 inch)]	 <b>S50</b>
<b>Operating Instructions</b> English French Spanish German Note: The operating instructions should be ordered as a separate item on the order.	Article No. <b>A5E33988839</b> <b>7ML1998-5FM11</b> <b>7ML1998-5FM21</b> <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> <b>7MH7723-1DU</b> <b>7MH7723-1DV</b> <b>7MH7723-1GY</b>

 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.

Selection and Ordering data	Article No.
<b>Milltronics RMA Remote Mounted Amplifier</b>  <b>7MH7145-</b> Remote mounted amplifier for Milltronics MSP-3 and MSP-9 motion sensing probes.  ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7MH7145-</b> <b>0</b> <b>A</b> <b>C</b> <b>D</b>
<b>Enclosure</b> Aluminum enclosure, IP65, Type/NEMA 4X, ½" NPT entry Painted steel, Type/NEMA 4, IP65 rating 304 (1.4301) stainless steel enclosure, Type/NEMA 4X, IP65 rating	

Selection and Ordering data	Order code
<b>Further designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
Manufacturer's test certificate: According to EN 10204-2.20	 <b>C11</b>
Acrylic coated, stainless steel tag [38 x 51 mm (1.5 x 2 inch)]: Measuring-point number/identification (max. 16 characters), specify in plain text	 <b>Y18</b>
<b>Operating Instructions</b> English French Spanish German Note: The operating instructions should be ordered as a separate item on the order. This device is shipped with the Siemens Milltronics manual DVD containing the complete operating instructions library.	Article No. <b>A5E33988839</b> <b>7ML1998-5FM11</b> <b>7ML1998-5FM21</b> <b>7ML1998-5FM31</b>
<b>Spare Parts</b> Card, RMA	<b>7MH7723-1DT</b>

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## Process Protection

### Motion sensors

#### Milltronics MFA 4p motion failure alarm controller

##### Selection and Ordering data

###### Milltronics Motion Sensing Probes

A series of motion sensing probes used with the MFA 4p.  
 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 rated  
 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)<sup>1)</sup>

Add Order code Y01 and plain text:

"Total cable length ... m"

Extended cable length 2 ... 30 m  
(6.6 ... 98.4 ft)<sup>2)</sup>

Extended cable length 31 ... 50 m  
(101.7 ... 164 ft)<sup>4)</sup>

Extended cable length 51 ... 100 m  
(167.3 ... 328.1 ft)<sup>4)</sup>

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

MSP-3, 1/2" NPT cable inlet<sup>3)</sup>

[1.5 m (5 ft) high temperature cable]

MSP-9 [1.5 m (5 ft) high temperature cable]<sup>3)</sup>

MSP-12, 1/2" NPT cable inlet

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-5 [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

<sup>1)</sup> No Y01 needed in Order code for standard length

<sup>2)</sup> Only available with model options B, D, G, H, J

<sup>3)</sup> MSP-3 and MSP-9 probes required the use of RMA (amplifier)

<sup>4)</sup> Available with Model options G, H, and J only

➤ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⚡. For details see page 9/5 in the appendix.

Article No.

7MH7146-



##### Selection and Ordering data

###### Further designs

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

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

###### Operating Instructions

English

French

Spanish

German

Note: The operating instructions should be ordered as a separate item on the order.

This device is shipped with the Siemens Milltronics manual DVD containing the complete operating instructions library.

###### 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, 1/2" 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

➤ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⚡. For details see page 9/5 in the appendix.

Order code

Y01

Y17

A57

C11

Article No.

A5E3398839

7ML1998-5FM11

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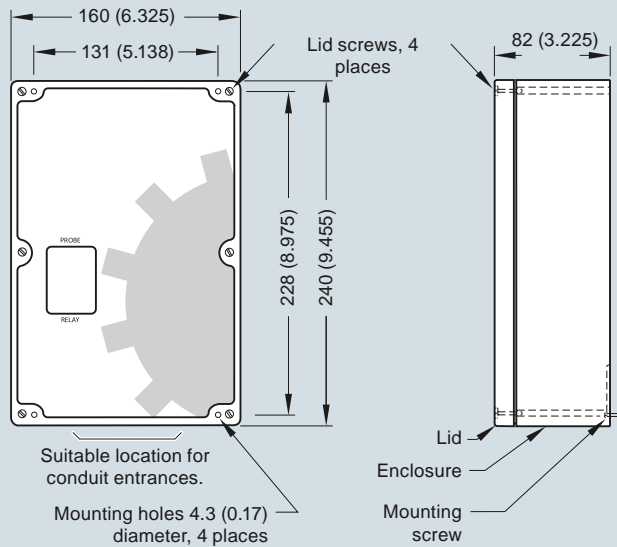
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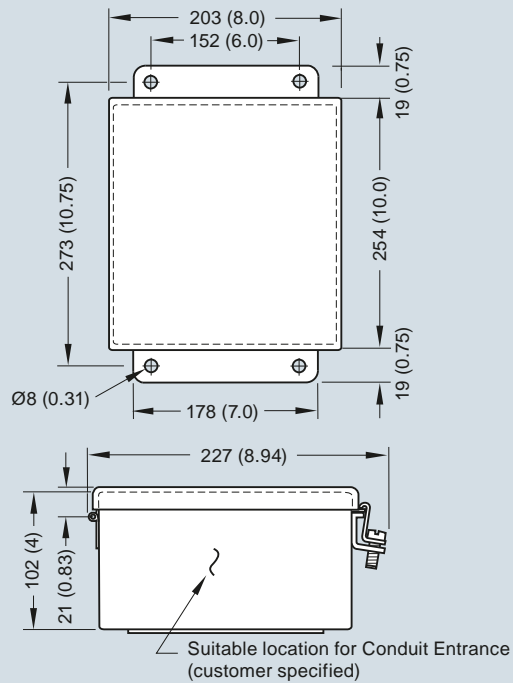
7ML1998-5FM31

**Dimensional drawings**

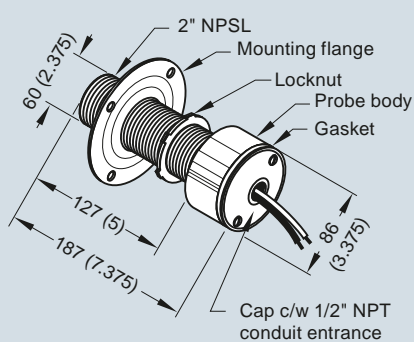
**Type 4X/NEMA 4X/IP65 Polycarbonate Enclosure**



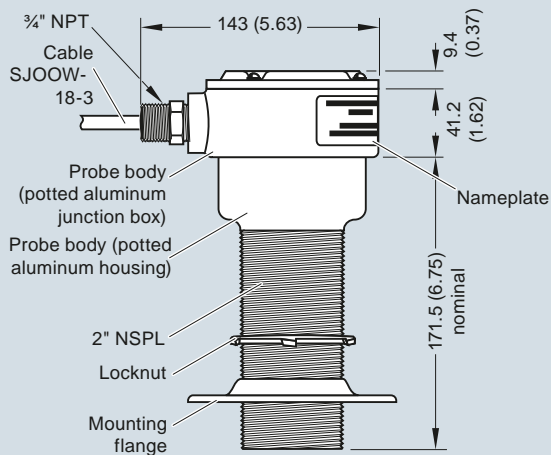
**Type 4/NEMA 4/IP65 Painted Steel Enclosure & Type 4X/NEMA 4X/IP65 Stainless Steel Enclosure**



**Standard Probe MSP-12**



**Hazardous Locations XPP-5**



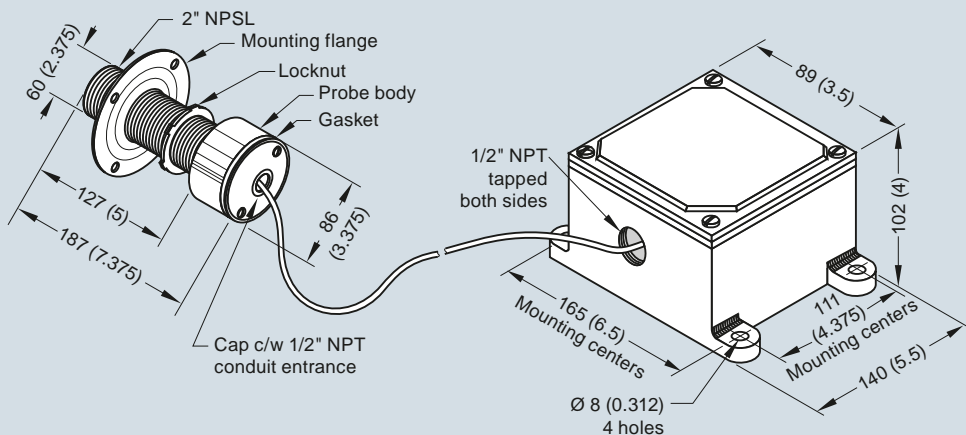
MFA 4p and probe, dimensions in mm (inch)

## Process Protection

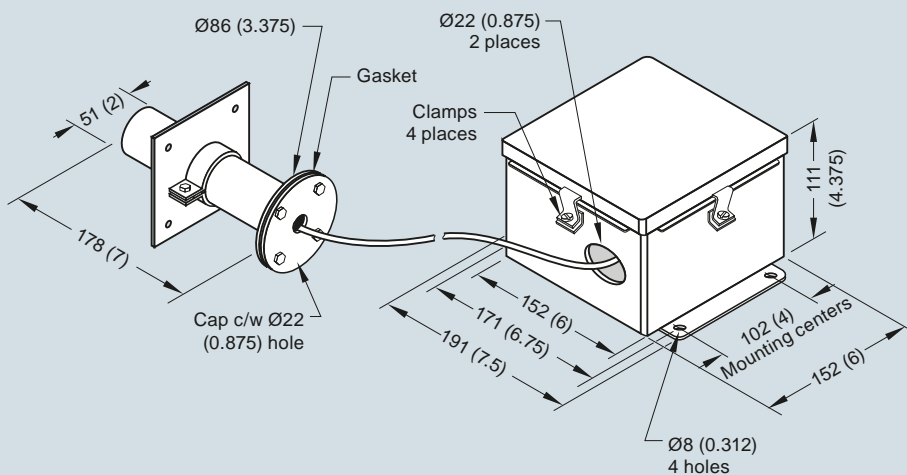
### Motion sensors

#### Milltronics MFA 4p motion failure alarm controller

##### High temperature probe MSP-3



##### High temperature stainless steel probe MSP-9



Probe, dimensions in mm (inch)