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 and UKCA approval allows the MFA 4p to consistently meet the needs of the mining aggregate, cement and other primary and secondary industries.

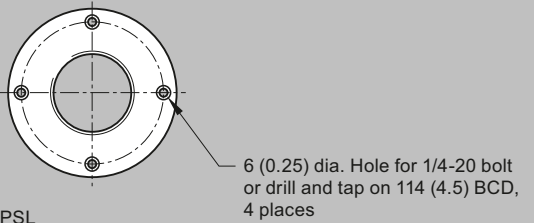- Key Applications: tail pulleys, motor shaft sensing, screw conveyor flights, bucket elevators
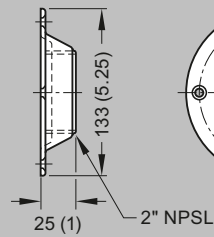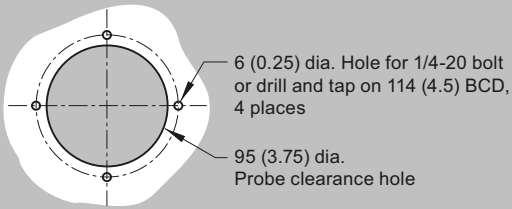
Process Protection

Motion sensors
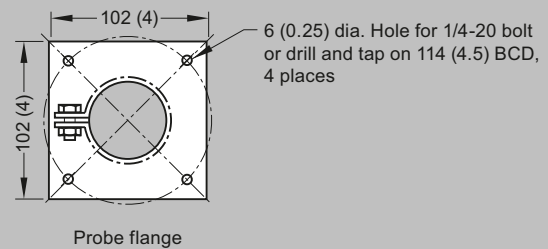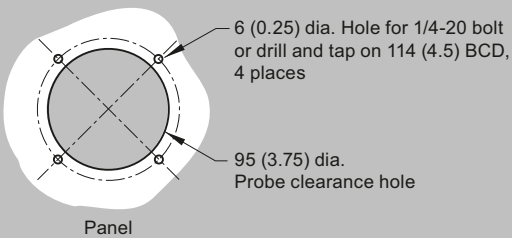
Milltronics MFA 4p Motion failure alarm controller

▌**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

133 (5.25)

25 (1)

2" NPSL

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

Note: Mounting flange supplied with probe.

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)

102 (4)

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

Probe flange

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

Design (continued)

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

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

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)
- 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

Milltronics motion probes

Selection and ordering data

Milltronics MFA 4p Motion failure alarm controller Set-point alarm controller, for use with MSP motion probes.	Article No. 7MH7144- ●	●	●	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				
Enclosure				
NEMA 4X, polycarbonate enclosure	1			
NEMA 4, painted mild steel enclosure	2			
NEMA 4X, 304 (1.4301) stainless steel enclosure	3			
Input Voltage				
100 ... 240 V AC, ± 10 %, 50/60 Hz, 15 VA		A		
Speed detection version				
Standard, underspeed (U/S) or overspeed (O/S), switch selectable			A	
Slow speed (S/S), U/S or O/S detection, switch selectable (limit of 15 ppm)			B	
Approvals				
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA, RCM, EAC, KC, cCSAus, FM				2

Process Protection

Motion sensors

Milltronics MFA 4p Motion failure alarm controller

■ **Selection and ordering data** (continued)

Selection and Ordering data	Order code
Further designs	
Please add "**-Z**" to Article No. and specify Order code(s).	
Manufacturer's test certificate: According to EN 10204-2.2	**C11**
Acrylic coated, stainless steel tag [69 x 50 mm (2.7 x 1.97 inch)]: Measuring-point number/id-entification (max. 27 characters), specify in plain text	**Y15**
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)]	**A35**
Stainless steel, sun/weather shield (finished unit is field mounted inside enclosure) [357 x 305 x 203 mm (14 x 12 x 8 inch)]	**S50**

Spare parts	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Spare Parts	
Circuit Card, standard	**7MH7723-1DU**
Circuit Card, Slow speed	**7MH7723-1DV**
Lid with overlay for MFA 4p	**7MH7723-1GY**

	Article No. 7MH7145- **0**		●
Milltronics RMA Remote mounted amplifier 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.			
Enclosure			
Aluminum enclosure, IP65, Type/NEMA 4X, ½" NPT entry			A
Painted steel, Type/NEMA 4, IP65 rating			C
304 (1.4301) stainless steel enclosure, Type/NEMA 4X, IP65 rating			D

Selection and Ordering data	Order code
Further designs	
Please add "**-Z**" to Article No. and specify Order code(s).	
Manufacturer's test certificate: According to EN 10204-2.20	**C11**
Acrylic coated, stainless steel tag [38 x 51 mm (1.5 x 2 inch)]: Measuring-point number/id-entification (max. 16 characters), specify in plain text	**Y18**

Spare parts	Article No.
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	**7MH7723-1DT**

▷ **DASTEC**

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Selection and ordering data (continued)

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)**	Article No. 7MH7146- ●	●	●
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]	0		
Add Order code Y01 and plain text: "Total cable length ... m"			
Extended cable length 2 000 ... 30 000 mm (79.2 ... 1 181 inch)[2]	1		
Extended cable length 30 001 ... 50 000 mm (1 181 ... 1 969 inch)[4]	2		
Extended cable length 50 001 ... 100 000 mm (1 969 ... 3 937 inch)[4]	3		
Model [standard cable length/type]			
MSP-3, ½" NPT cable inlet[3] [1.5 m (5 ft) high temperature cable]		B	
MSP-9 [1.5 m (5 ft) high temperature cable][3]		D	
MSP-12, ½" NPT cable inlet, no cable		E	
XPP-5 [1.5 m (5 ft) cable, (CSA Class I, Groups A, B, C and D; Class II Groups E, F, and G)]		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)]		H	
XPP-5 [15 m (49.2 ft) cable, (CSA Class I, Groups A, B, C, and D; Class II Groups E, F, and G)]		J	
Approvals			
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA, RCM, EAC, KC			A

[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.

Selection and Ordering data	Order code
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	**Y01**
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	**Y17**
Cable gland kit	**A57**
Manufacturer's test certificate: According to EN 10204-2.2	**C11**

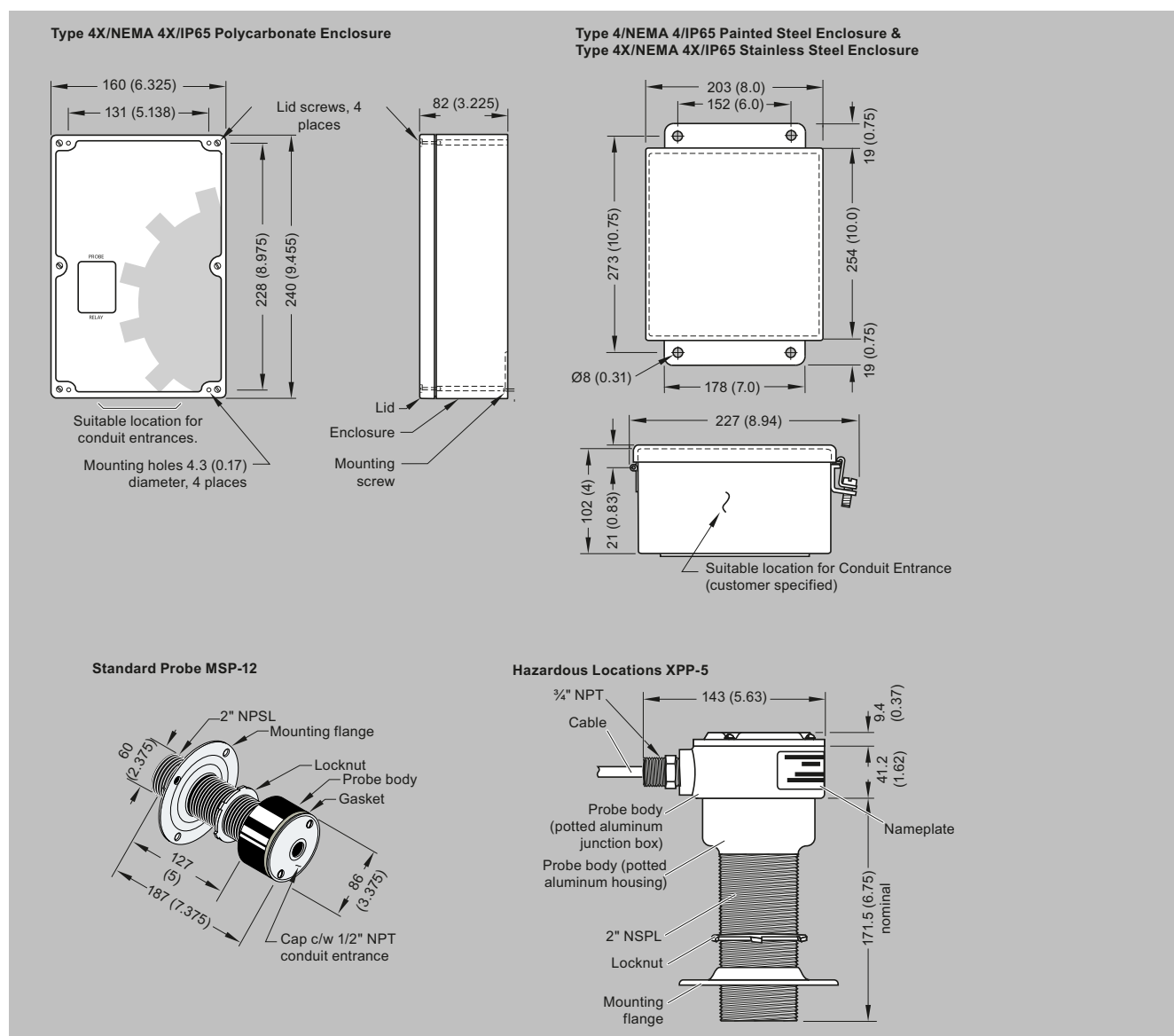| Spare parts	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Spare Parts	
Locknut, for MSP-3, MSP-7, MSP-12, XPP-5	7MH7723-1CR
Mounting flange, for MSP-3, MSP-7, MSP-12, XPP-5	7MH7723-1CS
Mounting bracket for MSP-9	7MH7723-1CT
Lid, 1/2" NPT cable inlet for MSP-3, MSP-7, MSP-12	7MH7723-1CU
Lid for MSP-9	7MH7723-1CV
Lid gasket, for MSP-3, MSP-9	7MH7723-1CW
Lid gasket, for MSP-7, MSP-12	7MH7723-1CX
Motion cable gland adaptor kit	7MH7723-1JU

Process Protection

Motion sensors

Milltronics MFA 4p Motion failure alarm controller

■ **Technical specifications**

Milltronics MFA 4p Motion failure alarm controller	
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: 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, UKCA, RCM, EAC, KC, $_c$CSA$_{US}$, FM

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
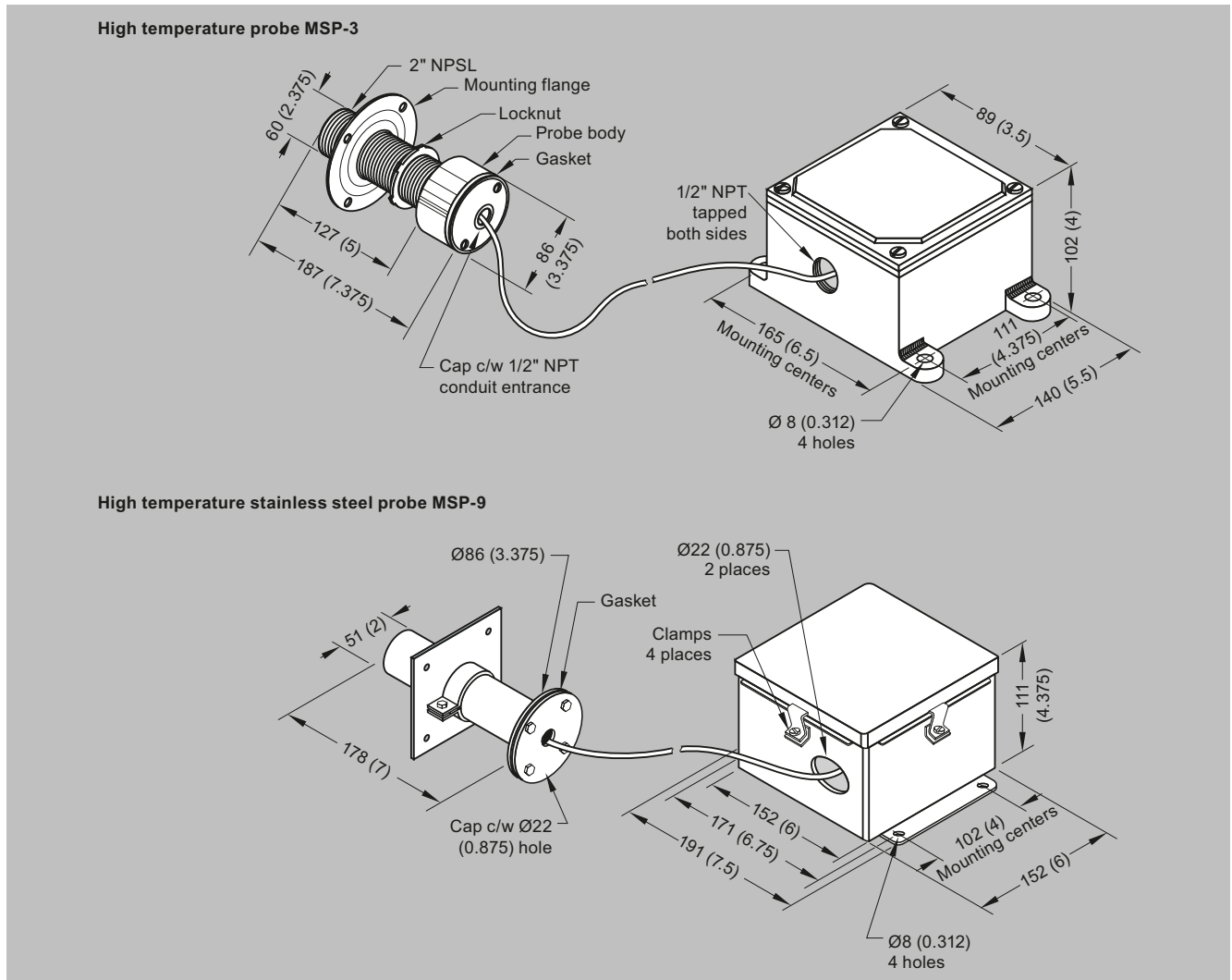
Standard Probe MSP-12

Hazardous Locations XPP-5

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)

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