

MTS Magnetic Target Sensor

Available Certifications:

cULus:

Class I, Zone 1, Division 1, Groups A, B, C and D;
Class II, Zone 21, Division 1, Groups E, F, and G, Class III
Class I, Zone 2, Division 2, Groups A, B, C and D;
Class II, Zone 22, Division 2, Groups F and G, Class III

IECEx/ATEX/UKEX:

Ex db IIC T6...T4 Gb; Ex tb IIIC T85°C...T135°C Db
IECEx UL 20.0082, UL 20 ATEX 2406, UL 22 UKEX 2367
Ex ia IIC T6...T4 Ga [Ui: 30V, Ii: 250mA]
IECEx UL 20.0091, UL 20 ATEX 2419, UL 22 UKEX 2368

Ambient Temperature Ratings:

-40°C to +70°C (T6, T5)

-40°C to +85°C (T4)

RoHS Compliant: Yes

Environmental Ratings: IP 66/67; NEMA 4, 4X, 6, 6P

Regional Certs: InMetro, KOSHA, CCC, PESO, EAC

File Number: E79070 HazLoc; E81878 OrdLoc

Series/Model Specifications & Installation Diagram

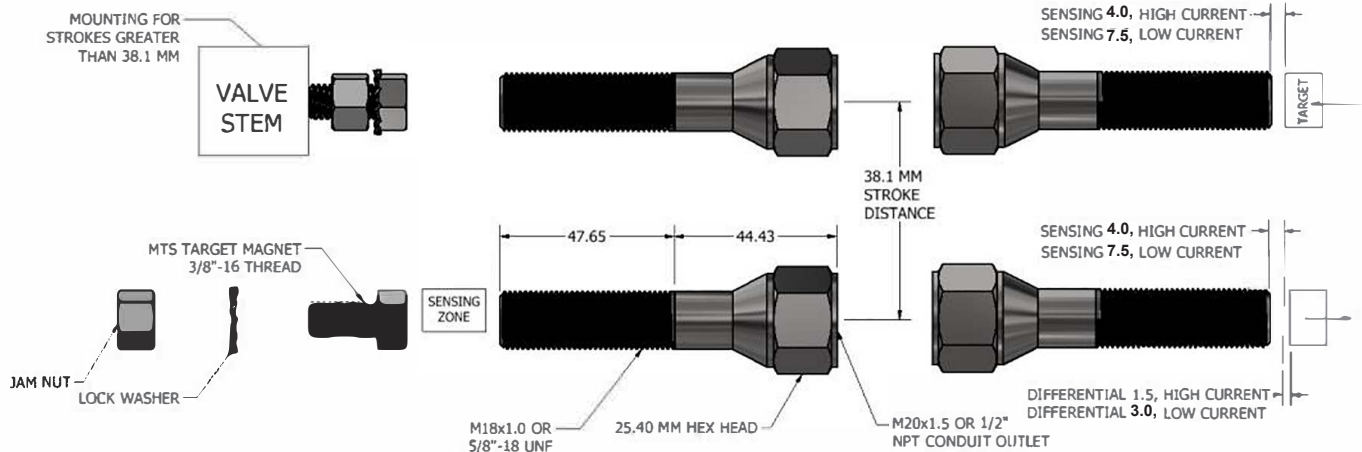


Figure 1: Dimensional Drawing

Attachment of Conduit/Field Wiring

- When using long runs of conduit, place supports close to the switch to avoid pulling switch out of position.
- If switch is mounted on a moving part, be sure flexible conduit is long enough to allow for movement, and positioned to eliminate binding or pulling.
- All conduit connected electrical devices, including the TopWorx MTS, must be sealed against water ingress through the conduit system, or 3rd party certified cable gland where applicable.
- Over sheathed or individual conductors must be mechanically protected against damage and appropriately terminated within a terminal or junction facility.
- An external ground connection must be protected via external mounting device, cable connection or conduit.

The MTS is hermetically sealed and does not require fitment of separate conduit lead seals in conduit connected systems.

WARNING

To reduce risk of death, serious injury or property damage:

- Personnel installing, maintaining, or operating this equipment must be qualified, must read, understand, and follow these instructions before proceeding.
- This document must be retained for future reference.
- Please contact local Topworx representative for questions, clarifications, or comments.

Installation Information

Nominal Sensing Distance: 7.5 mm (Low Current) 4 mm (High)

Nominal Differential: 3 mm (Low Current) 1.5 mm (High)

Repeatability: 0.06 - 0.08 mm

Response Time: 4.2 milliseconds max

Target Material: Bolt: 316SS; Magnet: Neodymium

Conduit Outlet: 1/2" NPT or M20x1.5

Body Thread Size: 5/8"-18 UNF or M18x1.0

Enclosure Material: 316L Stainless Steel

*Sensing Distance and Differential rounded to nearest 0.5 mm

Installation Instructions

TopWorx™ VIP Bracket Kits are available for most linear control valve and quarter-turn actuators

(Installation and Wiring diagram on reverse)

1. Mount the MTS using the appropriate mounting kit. If utilizing two sensors, make sure one is set for "Open" and one is set for "Closed."
2. Sensors are not position or axis sensitive and can be mounted in any plane.
3. All wiring for hazardous and nonhazardous locations should be in accordance with the latest edition of the Local Electrical Code and comply with all local codes.

Operating Principle

The MTS is specifically designed to provide position feedback on linear control valves, knifegate valves, or non-precision applications.

The magnetic target provided will cause the internal reed switch to close when the target comes into the sensing zone. When the target leaves the sensing zone, the switch will return to open.

May be wired: COM/NO, COM/NC

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Electrical Ratings

Contact Form: Single Pole Double Throw (SPDT) Form C
Contact Material: Rhodium (Low Current), Tungsten (High Current)
Contact Seal: Hermetically Sealed
Contact Ratings: See Table below

For intrinsic safe installations, the switch must be wired to an isolating barrier rated for the area classification of installation.

Safety Function:	1.To close a normally open contact	2.To open a normally closed contact.
Architectural constraints & Type of product A/B	HFT = 0 Type A	HFT = 0 Type A
Safe Failure Fraction (SFF)	15.40%	84.60%
Random hardware failures: λ_{DD} [h ⁻¹]	0	0
	λ_{DU} 1.22E-06	2.23E-07
Random hardware failures: λ_{SD} [h ⁻¹]	0	0
	λ_{SU} 2.23E-7	1.22E-6
Diagnostic coverage (DC)	0.0%	0.0%
PF _D @ PTI = 8760 Hrs.	5.38E-03	9.81E-04
MTTR = 24 Hrs.		
Probability of dangerous failure (High Demand - PFH) [h ⁻¹]	1.22E-06	2.23E-07
Hardware safety integrity compliance	Route 1 _H	Route 1 _H
Systematic safety integrity compliance	Route 1 _S	Route 1 _S
Systematic Capability	SC 3	SC 3
Hardware safety integrity SIL 1 achieved	SIL 1	SIL 2

Note: Dangerous, undetected failure modes [λ_{DU}] consist of: A normally open circuit that fails to close, or a normally closed circuit that fails to open.

EU Declaration of Conformity

The products described herein, conform to the provisions of the following Union Directives, including the latest amendments:
 ATEX Directive (2014/34/EU)
 Low Voltage Directive (2014/35/EU)
 Electromagnetic Compatibility(2014/30/EU)

Safety Integrity Level (SIL)

Models MTS, MTSM
 Highest SIL capability: SIL2 (HFT:0)
 Highest SC capability: SC3 (HFT:0)
 1 Year Full Proof Test Interval

Contact	Seal	Rating
IS	Hermetic	Ui = 30V; li = 250 mA
Low Current	Hermetic	0.2A@120VAC, 1A@24VDC
High Current	Hermetic	3A@120VAC, 1.5@240VAC, 2A@24VDC, 3W minimum load

Wiring Diagram

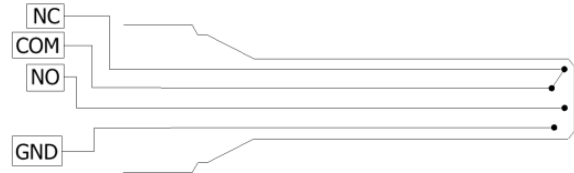


Figure 2: Switch requires a load to operate; intended for use with resistive loads only.

Wiring Color Schemes			
Contact	Flying Leads ('A')	Silicone Cable ('S')	PVC Cable ('B')
NC	RED	BROWN	RED
NO	BLUE	GREY	WHITE
COM	BLACK	BLACK	BLACK
GND	GREEN	YELLOW/GREEN	GREEN

Part Name 部件名称 Contact	Hazardous Substances / 有害物质					
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr +6)	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴联苯醚 (PBDE)
5/8" JAM NUT	X	O	O	O	O	O

本表格系依据SJ/T11364的规定而制作。
 O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。
 X: 意为在该部件所使用的均质材料里, 至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求。

For more information please visit

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Korean Compliance Statement

Ministry of Employment and Labor
 Notification No. 2020-33
 Explosion-proof device installation should comply with KS C IEC 60079-14 so as not to pose a risk due to incorrect installation, use and maintenance.

ES-08524-1 AD