

General Specifications

Model MLX Loop Powered Process Indicator

GS 60A02S01-01E-A

The Model MLX Loop-Powered Process Indicator receives DC current signals from electronic transmitters and indicates process measurement values. Standard models are general purpose.

■ STANDARD SPECIFICATIONS

□ FUNCTIONAL SPECIFICATIONS

Input: 4-20mA DC 2-wire

Voltage Drop: 3.5V at 20mA

LCD Display

Numerical: Six 7-segment digits

Alpha-numerical: Six 14-segment characters

Bar graph: 20-segment Bar graph.

Symbols: P, SP, T, F, %, $\sqrt{\quad}$, x10, x100, x1000

Configuration: User configurable for desired engineering units.

Method: User configurable from front panel

Zero & Span: Zero and span can be set between ± 999999 .

Turn-on Time: 12 second (includes power on self-test and memory integrity check)

Update Time: 1 second

Isolation: Input/Output/Ground isolated to 500V DC

□ PERFORMANCE SPECIFICATIONS

Accuracy: $\pm 0.05\%$ of full scale +1 digit

Operating Current: 3.6mA to 28mA

Ambient Temperature: -40 to +80°C (-40 to 176°F)

Ambient Humidity: 0 to 100%RH at 23°C (73°F)

Ambient Temperature Effect: 0.1°C per 10°C

Over range: 200mA without damage

Maximum error: +0.02%, -0.03% (of full scale)

Conformity (Linearity): 0.03%

Hysteresis error: 0.03%

Repeatability: 0.03%

Vibration: 3G @ 10-150Hz

Shock: 50G

Explosion Protection: FM, CSA, ATEX, IEC and INMETRO

□ PHYSICAL SPECIFICATIONS

Enclosure Material

Housing: Low copper cast aluminum alloy with Polyurethane resin baked finish - Deep sea moss green (equivalent of Munsell 0.6GY3.1/2.0) or SUS316 cast stainless steel (ASTM CF-8M)

Name plate: 316 SST

Tag: 316 SST

Wired tag: 316 SST

Degrees of Protection: NEMA 4X, IP66 and IP67

Mounting: Nominal 2" (50mm) pipe mount or surface. (horizontal or vertical)

Weight: 1.25kg (2.70 lbs)*

*: Without mounting bracket

Add 0.8 kg (0.35 lbs) for mounting bracket

Electrical Connection: ½ NPT female or M20 female



■ FEATURES

HART Transparent

Allow for HART signal in the loop to pass through the MLX without disruption. Operator can connect to the MLX and communicate to a connecting HART device.

User interface

A front panel push button switch combined with four touch switches allows easy configuration of the indicator (calibration, span, zero and engineering units).

Root extraction

For applications where the process variable is non-linear and based on the square root, 3/2 root or 5/2 root, the MLX can be configured to display the root function of the input.

Field Configurable

Via the front panel user interface, the process variable parameters can be modified as desired in the field.

LCD Display features

The LCD display includes a bar graph for an analog indication of the process variable magnitude. The 6 digit display and 6 character display (combined with several symbols) give an instant view of all process variable parameters. A menu system allows customizing parameters such as decimal point position, engineering units, status of symbols and state of bar graph.

Self-diagnostics

Built-in diagnostics operate at power-up and during operation for ease of maintenance and troubleshooting.

EMC Conformity Standard:

EN61326-1 Class A, Table 2
(For use in industrial location)

Built-in Loop Protection

Includes circuitry that, in the event of MLX failure, automatically takes the MLX out of the loop thus maintaining loop integrity.

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
MLX	Loop Indicator
Input signal	-A	4 to 20mA DC
Mounting	1 2	2 inch Horizontal Pipe 2 inch Vertical Pipe (or wall mount)
Housing	1 2	Cast aluminum alloy SUS316 cast stainless steel and ASTM CF-8M ^{*1}
Communication	-1	Standard
Electrical Connection	0 2 3 4 5 6	ANSI ½ - 14NPT female, two electrical connections without blind plug ANSI ½ - 14NPT female, two electrical connections and one 316 SST blind plug ISO M20 x 1.5 female, two electrical connections without blind plug ISO M20 x 1.5 female, two electrical connections and one 316 SST blind plug ISO G1/2 x 14 female, two electrical connections without blind plug ISO G1/2 x 14 female, two electrical connections and one 316 SST blind plug
Optional Codes		/ <input type="checkbox"/> Optional specification

OPTIONAL SPECIFICATIONS (For Explosion Protected Type)

Item	Description	Code
Factory Mutual (FM)	FM Explosion-proof/FM Dust-Ignition-Proof Approval Conforms to: FM3600, FM3615, UL 1203 Explosionproof/Dust-Ignition-Proof for Class I, II, III, Division 1 & 2, Groups A – G, Class I, Zone 1, Group IIC T4 Ambient Temperature: –40 to 80°C (–22 to 176°F) Temperature class: T4	FF1
	FM Intrinsically Safe/FM Explosion-proof/ FM Dust-Ignition-Proof /FM Non-incendive Approval Conforms to: FM3600, FM3610, FMRC 3611, FM 3615, FM 3616, UL 913, UL 1203, UL 60079-0, UL 60079-11 Intrinsically Safe for Class I, II, III, Division 1 & 2, Groups A - G, Zone 20, Class I, Zone 0, AEx ia IIC, T4 Ga –40°C < Ta < 80°C (–22 to 176°F) Explosion-proof/Dust-Ignition-Proof for Class I, II, III, Division 1 & 2, Groups A - G, Class I, Zone 1, Group IIC T4 Amb. Temp.: –40 to 80°C (–40 to 176°F) Non-incendive for Class I, II, III, Division 2, Groups A - D, F, G, Class I, Zone 2, Group IIC T4 Enclosure: "NEMA 4X", Temp. Class: T4, Amb. Temp.: –40 to 80°C (–40 to 176°F) Intrinsically Safe Apparatus Parameters [Groups A - G] Vmax=28 V, Imax=115 mA, Pmax=0.65 W, Ci=0 nF, Li=0 H Non-Incendive Apparatus Parameters [Groups A - G] Vmax=30 V, Imax=150 mA, Pmax=0.85 W	FU1
ATEX	ATEX Flameproof and Dustproof Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-1:2014, EN IEC 60079-31:2014, EN IEC 60079-31:2022 Certificate: ITS13ATEX17857X/03 II 2G Ex d IIC T4 Gb II 2D Ex tb IIIC T135°C Db Degree of protection: IP66 Temperature class: T4, Ambient Temperature: –40 to 80°C (–40 to 176°F)	KU21
	ATEX Intrinsically Safe Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-11:2012 Certificate: ITS13ATEX27856X/04 II 1G Ex ia IIC T4 Ga Entity parameters: Ui=28 V, li=115 mA, Pi=0.65 W, Ci=0 nF, Li=0 H Degree of protection: IP66 Temperature class: T4, Ambient Temperature: –40 to 80°C (–40 to 176°F)	
	ATEX Non-incendive Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-15:2015 Certificate: ITS13ATEX47858X/03 II 3G Ex nA IIC T4 Gc Entity parameters: Ui=30 V, li=150 mA, Pi=0.65 W Degree of protection: IP66 Temperature class: T4, Ambient Temperature: –40 to 80°C (–40 to 176°F)	
Canadian Standards Association (CSA)	CSA Intrinsically Safe/CSA Explosionproof/ CSA Dust-Ignition-Proof /CSA Non-incendive Approval Certified to: CSA C22.2 No. 25, CSA C22.2 No. 30, CSA C22.2 No. 157, CSA C22.2 No. 213, CSA C22.2 No. 60079-0, CAN/CSA E60079-11 Explosionproof/Dust-Ignition-Proof for: Class I, II, III; Groups A - G; Divisions 1 & 2. Class I, Zone 1, Group IIC T4. Tamb. –40°C to 80°C Intrinsically Safe for: Class I, Division 1, II, III; Groups A - G; Divisions 1 & 2. Zone 20, Class I, Zone 0 AEx ia IIC T4 Tamb. –40°C to 80°C Entity parameters: Ui=28 V, li=115 mA, Pi=0.65 W, Ci=0 nF, Li=0 H Non-Incendive for: Class I, II, III; Groups A - D, F, G; Divisions 2. Class I, Zone 2, Group IIC T4. Tamb. –40°C to 80°C Entity parameters: Ui=30 V, li=150 mA, Pi=0.85 W Enclosure rating: "Type 4X." Temperature Class: T4 Ambient Temperature: –40°C to 80°C	CU1

OPTIONAL SPECIFICATIONS (For Explosion Protected Type)

Item	Description	Code
IECEx Scheme	IEC Flameproof and Dustproof Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-1:2014, EN IEC 60079-31:2014, EN IEC 60079-31:2022 Certificate: IECEx ETL 13.0029X/05 Flameproof and Dust-Ignition-Proof for: Ex d IIC T4 Gb Ex tb IIIC T135°C Db Ambient Temperature: -40°C to 80°C Enclosure: IP67	SU2
	IEC Intrinsically Safe Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-11:2012 Certificate: IECEx ETL 13.0028X/05 Intrinsically Safe for: Ex ia IIC T4 Ga Entity parameters: Ui=28 V, Ii=115 mA, Pi=0.65 W, Ci=0 nF, Li=0 H Ambient Temperature: -40°C to 80°C Enclosure: IP67	
	IEC Non-Incendive Approval Applicable Standard: EN IEC 60079-0:2018, EN IEC 60079-15:2015 Certificate: IECEx ETL 13.0030X/05 Non-Incendive for: Ex nA IIC T4 Gc Entity parameters: Ui=30 V, Ii=150 mA, Pi=0.85 W Ambient Temperature: -40°C to 80°C Enclosure: IP67	
Combination of Approvals	Combination of FU1, CU1 and KU21 Approvals	V1U
INMETRO (Brazil)	INMETRO Intrinsically Safe/INMETRO Flameproof Approval /INMETRO Non-Incendive Applicable Standard: ABNT IEC 60079-0:2020 Versão Corrigida 2022, ABNT IEC 60079-1:2016 Versão Corrigida 2020, ABNT IEC 60079-11:2013 Versão Corrigida 2017, ABNT IEC 60079-26:2022, ABNT IEC 60079-31:2014 Versão Corrigida 2021 Explosionproof/Dust-Ignition-Proof for: Ex d IIC T4 Gb Ex tb IIIC T135 Db Intrinsically Safe for: Ex ia IIC T4 Ga Entity parameters: Ui=28 V, Ii=115 mA, Pi=0.65 W, Ci=0 nF, Li=0 H Non-Incendive for: Ex nA IIC T4 Gc Entity parameters: Ui=30 V, Ii=150 mA, Pi=0.85 W Ambient Temperature: -40°C to 80°C Enclosure: IP66 and IP67	US2

OPTIONAL SPECIFICATIONS

Item	Description	Code
Coating ^{*2}	Epoxy resin coating	X1
	Polyurethane-Epoxy Anti-corrosion coating	X2
Calibration	Calibration range and scale	ENG
Stainless steel tag plate	Stainless steel tag screw attached to housing	SST
	Stainless steel tag wired to housing	SSW
Paint ^{*3}	Light Blue (RAL # 5012)	P1
	Orange (RAL # 2008)	P2
	Red (Munsell # 7.5 R4/14)	P3
	Mint Green (CC55)	P4
	Silver (RAL # 9006)	P5
	Yellow (RAL # 1018)	P6
	Gray (RAL # 7046)	P7

*1 Consult factory availability for Housing code 2.

*2 Some coating options available via Tokuchu and may require additional lead time. Consult factory for further information.

*3 Some painting options available via Tokuchu and may require additional lead time. Consult factory for further information.

■ ORDERING INFORMATION

Specify the following when ordering:

1. Model and suffix codes.
2. Option codes.
3. Tag number
4. Calibration range desired (optional)

□ Example Ordering Information:

MLX-A11-10/FF1/ENG/SST

(Field Mounted Loop Indicator, 4 to 20mA DC, 2" Horizontal Pipe mount, aluminum housing, standard communication, ANSI 1/2 NPT electrical connection without blind plugs, FM Explosion-proof approval)

0-200 InH₂O

Scale in Engineering Units. Please specify Scale and Engineering units when ordering /ENG.

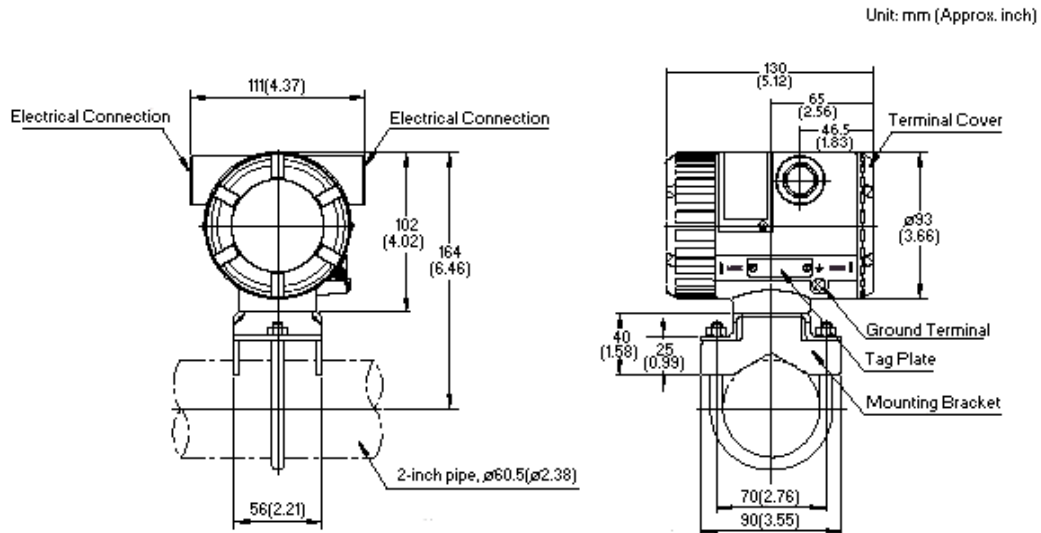
FT-201

Specify Tag Number when ordering /SST and/or /SSW.

■ OPTIONS

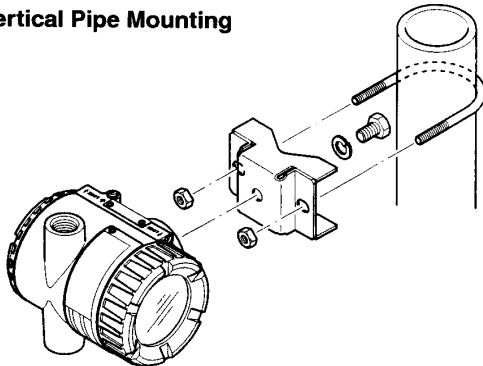
The MLX is fully field configurable from the front panel. To order a pre-configured unit, specify the /ENG option followed by the desired setpoints (zero, full scale, and engineering units).

DIMENSIONS

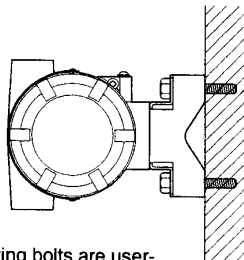


MOUNTING

Vertical Pipe Mounting

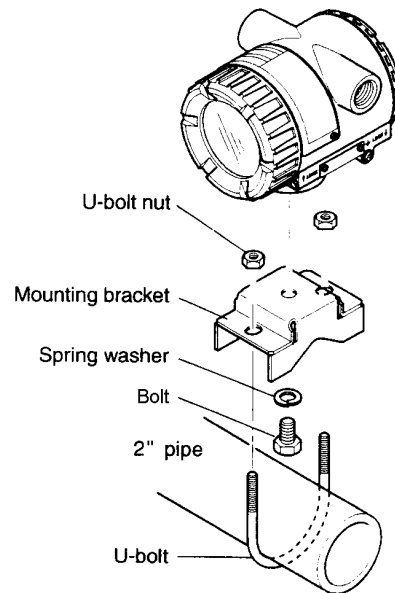


Wall Mounting



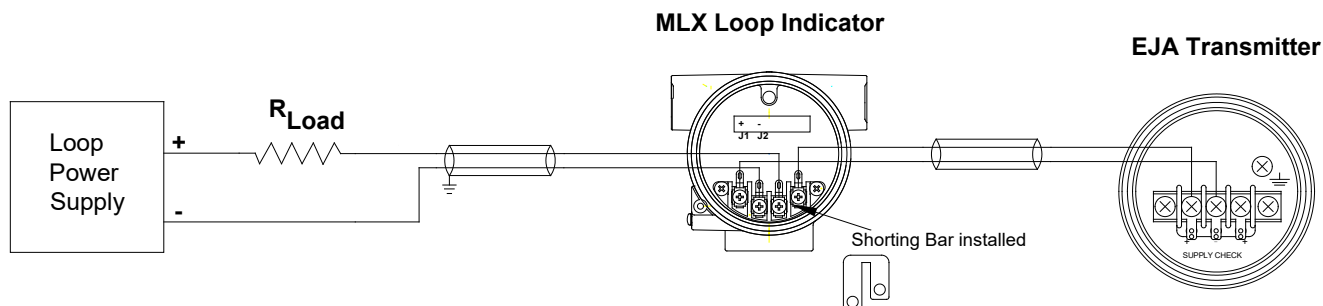
Note: Wall mounting bolts are user-supplied.

Horizontal Pipe Mounting



The loop powered indicator series is powered by the current loop and does not require external power. All devices must be wired in series with the current loop. Twisted pair shielded cable is recommended.

The following is a typical wiring example of the MLX Loop Indicator connected to an EJA Pressure Transmitter (Note: The EJA Transmitter below can be replaced with any 4-20mA 2 wire device).



The above configuration is easily adaptable for use with a HART Transmitter, as shown below.

