User's Manual

Model MLD
Loop Powered Process Indicator

IM 61A01A01-01E-A

1. PREFACE

The Model MLD field mounted indicator receives a DC current signal from electronic transmitters and indicates process measurement values. This instruction manual gives instructions on handling, mounting, and wiring of the MLD indicator.

2. MODEL CODE AND SPECIFICATIONS

■ STANDARD SPECIFICATIONS

Voltage Drop:
1.8V typ., 2V max.

Scale:
0-1999 w/decimal

Accuracy:
± 0.05% of full scale (1999) ±1 count

Operating Temperature Range:
-20 to 60°C

Temperature drift: ±0.3 Count/°C

Insulation Resistance: Between input terminals and case 100 Mohm at 500 V DC

Dielectric Strength: Between input terminals and case: 1000 VAC for 1 minute.

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

Explosion Protection Type: FM, CSA, EXPLOSIONPROOF CL1, DIV1, GROUPS A,B,C,D, DUST-IGNITIONPROOF CLII / III, GROUPS E,F,G

Case and Cover: Die cast aluminum or 316 Stainless Steel, baked polyurethane paint. Moss Green (Stainless Steel is unpainted); NEMA 4X

Electrical Connection: ½ x 14 NPT or M20 x 1.5

Weight: 2.7 lbs

Model	Suffix Codes	Description
MLD		Field Mounted Loop Indicator (Digital)
Input Signal	-A	4 to 20 mA DC
Mounting	1 2	2" Horizontal Pipe 2" Vertical Pipe (or wall mount)
Housing	/1 /2	Cast Aluminum Alloy - (Standard Housing) SUS316 Cast Stainless Steel and ASTM CF-8M
Electrical Connection	/00 /20 /30 /40	ANSI ½ NPT female, without blind plug ANSI ½ NPT female, 316 Stainless Steel blind plug ISO M20 female, without blind plug ISO M20 female, 316 Stainless Steel blind plug
Ex Protection	/FF1 /CF1	FM Explosion Proof CSA Explosion Proof
Optional Specifications		
Coating	/X1 /X2	Epoxy resin coating Polyurethane-Epoxy Anti-corrosion coating
Paint	/P1 /P2 /P3 /P4 /P5 /P6 /P7	Light Blue (RAL # 5012) Orange (RAL # 2008) Red (Munsell # 7.5 R4/14) Mint Green Silver (RAL # 9006) Yellow (RAL # 1018) Gray (RAL # 7046)
Calibration	/ENG	Engineering Unit Calibration (MLD Only)
Stainless Steel Tag	/SST	Stainless Steel tag screw attached to housing
Stainless Steel Tag	/SSW	Stainless Steel tag wired to housing

■ ORDERING INSTRUCTIONS

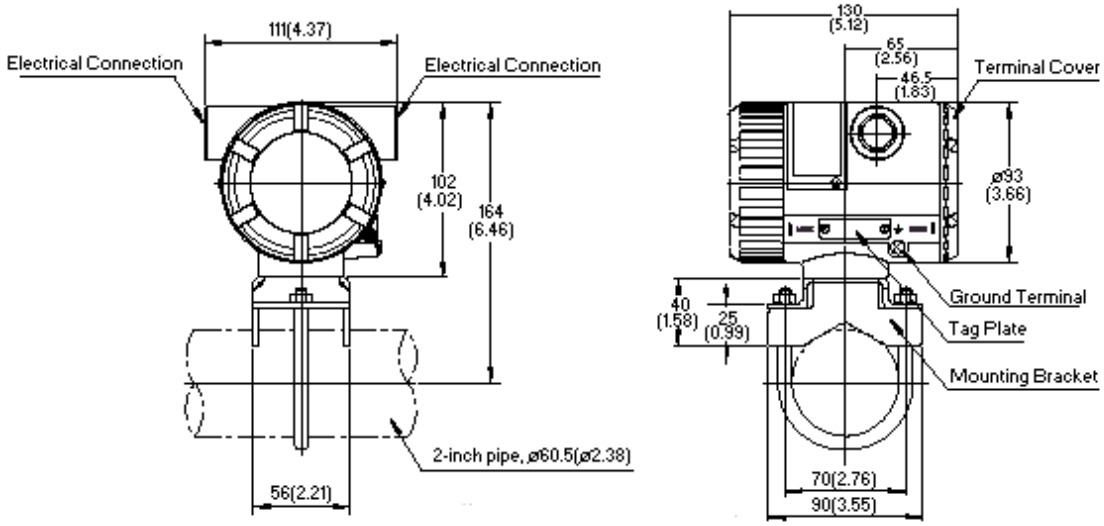
1. Model and Suffix codes.
2. Option Codes

■ **Example Ordering Instructions:**

MLD-A1/1/00/FF1/ENG/SST	Field Mounted Indicator (Digital), 4 to 20 mA DC, 2" Horizontal Pipe, FM Explosion Proof
0-200 InH2O	Scale in Engineering Units. Please specify Scale and Engineering units when ordering /ENG
FT-201	Specify Tag Number when ordering /SST or /SSW

DIMENSIONS

Unit: mm (Approx. inch)



3. INSTALLATION

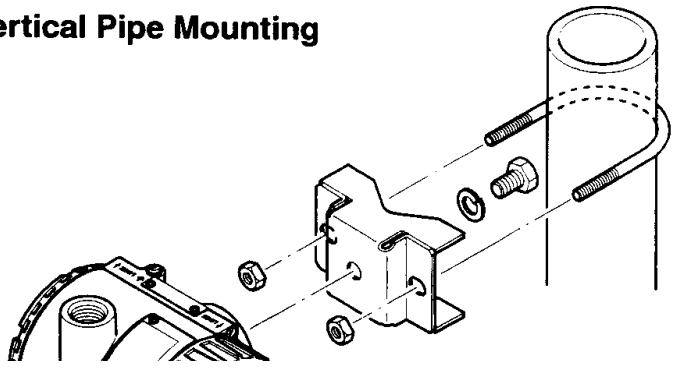
The Loop Powered Indicator can be mounted on a wall or a 2" pipe. The housing is a NEMA 4X Explosion Proof housing so it can be mounted outside in the field.

Do not install the unit in the following conditions:

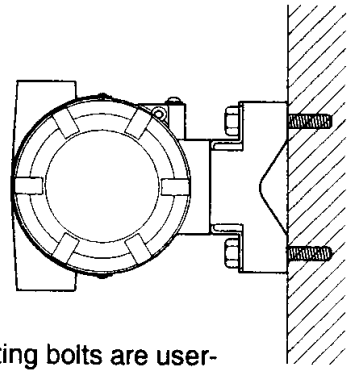
- Extreme Temperatures beyond the temperature rating of the instrument.
- High vibration areas above the vibration rating of the instrument.
- Extremely corrosive environments.

MOUNTING EXAMPLES

Vertical Pipe Mounting

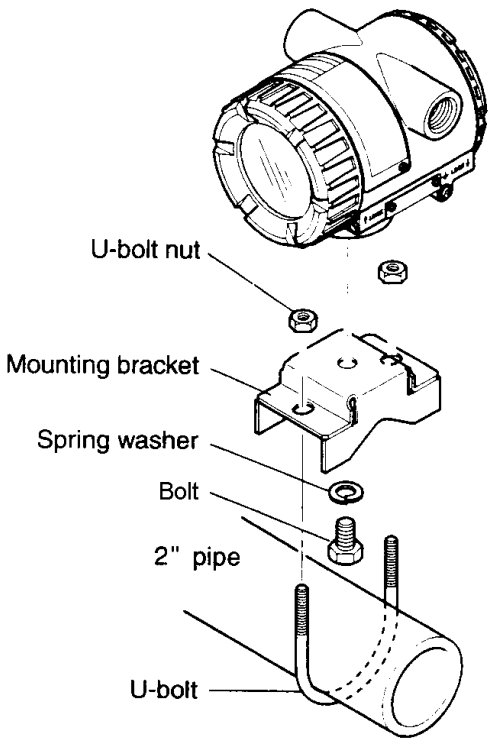


Wall Mounting



Note: Wall mounting bolts are user-supplied.

Horizontal Pipe Mounting



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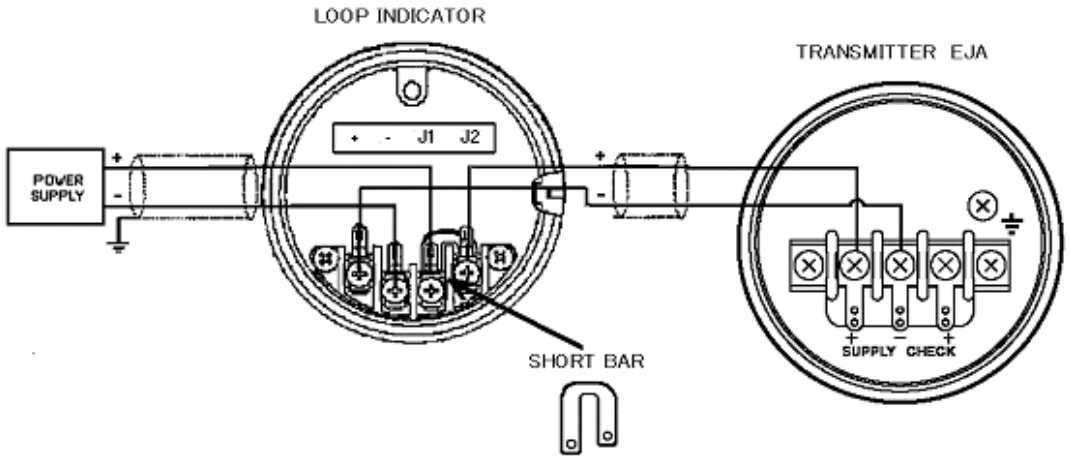
4. WIRING

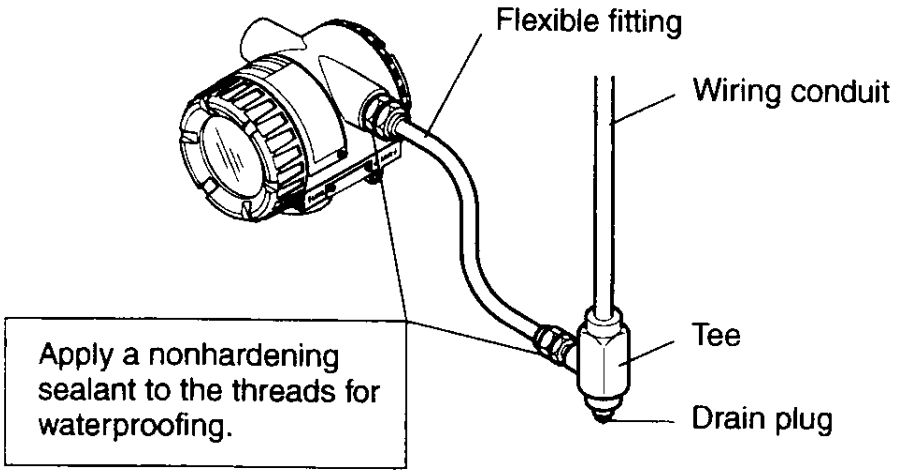
The loop powered indicator series is powered by the current output loop and does not require external power. All devices must be wired in series with the current loop. Twisted pair shielded cable is recommended.

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



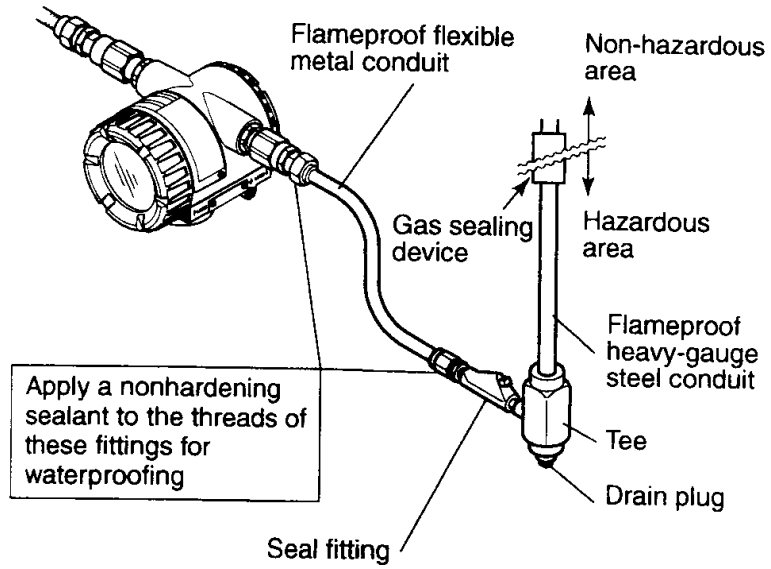
The Loop Indicator is available in FM Explosion Proof and CSA Explosion Proof types for hazardous locations. Wire sealing is required for these approvals. The following diagrams show some wire sealing examples.

GENERAL PURPOSE TYPE USING WIRING CONDUIT



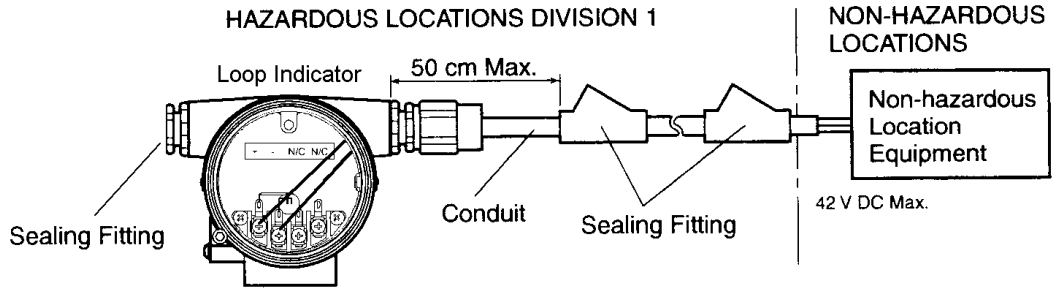
For Flameproof type, use Flameproof Packing Adapter or Flameproof Conduit in connection above.

FLAMEPROOF TYPE USING FLAMEPROOF METAL CONDUIT



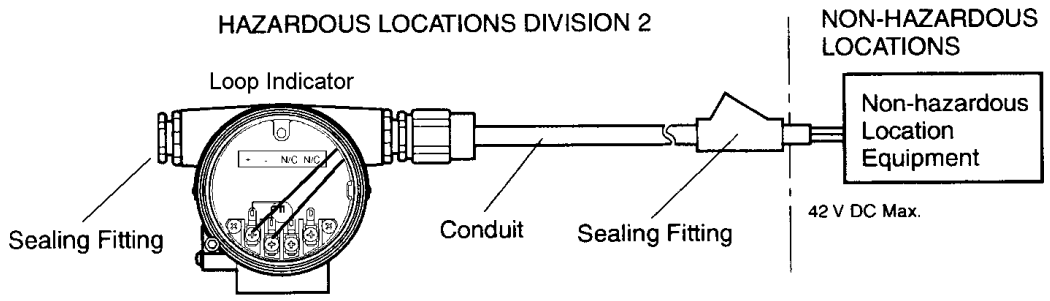
(After wiring, impregnate the fitting with a compound to seal tubing.)

MOUNTING IN HAZARDOUS LOCATIONS



Explosionproof Class I, Groups C and D
Dustignitionproof Class II, Groups E, F and G, Class III

Wiring method shall be suitable for the specified hazardous locations.



Explosionproof Class I, Groups C and D
Dustignitionproof Class II, Groups E, F and G, Class III

Wiring method shall be suitable for the specified hazardous locations.

5. CALIBRATION

Calibration of MLD Units

(1) The MLD model ships with a calibration range of 0-100% unless ordered with the /ENG Engineering Units option.
(2) If adjustments are needed the 2 screws holding the plate will need to be removed
(3) Connect unit to a Current Standard (red to +, black to -). Current Standards can be purchased through Yokogawa Corporation of America. Recommended models are CA310 (Voltage/Current Calibrator) or CA71 (Multifunction Calibrator).
(4) Set range switches based on the following table (for standard 0-100% unit set SW1 and SW8 to ON):

Desired Display Reading							
4mA Adjustment	**20mA Adjustment Minimum**	**20mA Adjustment Maximum**	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**
000	1200	1999	OFF	OFF	OFF	OFF	OFF
000	600	1200	ON	OFF	OFF	OFF	OFF
000	400	600	OFF	OFF	ON	OFF	OFF
000	200	400	ON	ON	ON	OFF	OFF
000	100	200	ON	ON	ON	ON	OFF

(5) Set the Decimal value as follows:
   a. If tenths (ex. XXX.X) set SW8 on.
   b. If hundredths (ex. XX.XX) set SW7 on.
   c. If thousandths (ex. X.XXX) set SW6 on.
(6) The values to check are shown in the table below.

	Suffix –A 4-20mA
0%	4.0mA
25%	8.0mA
50%	12mA
75%	16mA
100%	20mA

(7) Set the Current standard to the 0% value. Adjust the Zero Pot (top one) to read the minimum value needed.
(8) Set the Current Standard to the 100% value. Adjust the Span Pot (bottom one) to read the maximum value needed.
(9) Check all points in the table above and verify unit is within specification.

6. ROTATING DISPLAY DIRECTION

The loop indicator display is designed so that it can be rotated in 90 degree increments. This is accomplished by ordering the unit as a horizontal pipe mount or a vertical pipe mount. However there may be the need for the customer to change the angle of the display. The following are procedures for the display rotation:

Display Rotation:

(1) Remove power from the unit.
(2) Remove the glass cover from the display side.
(3) Remove the 2 screws holding the mounting plate to the standoffs.
(4) Rotate the display to the desired position (can be rotated in 90 degree increments).
(5) Replace and tighten firmly the 2 screws into the standoffs.
(6) Replace the glass cover.