

MDI Series

Intrinsically Safe Modbus Display

Datasheet



The MDI Intrinsically Safe Modbus Display provides a local display in a Class I, Zone 1 hazardous area that can monitor and control a sensor in either a Class I, Zone 0 or Class I, Zone 1 area. The MDI can supply power to the sensor it controls, creating a complete monitoring-and-control system within the hazardous area. The MDI can also be connected to monitoring equipment outside the hazardous area through an IS barrier, allowing readings from the sensor to be seen across the monitoring or control network.

Features

- Large, full 5-digit display with 0.4 in. characters
- Environmentally sealed housing; IP66
- User selectable units of measure (barrels, cubic inches, liters, cubic meters, gallons, million cubic feet, cubic feet, custom)
- Software-based switchable power control for connected sensor
- Auxiliary connection allows for remote waking of MDI

DIMENSIONS

3" Aluminum Housing



SPECIFICATIONS

Performance

RS-485 (Modbus RTU)	2400, 9600, 19200, 38400 baud rates
Display Readings	Volume, Level, Distance, Pressure

Connectivity

Control	Modbus RTU
Online Access/Control	Via APG's Tank Cloud and RST-5003 or LOE Controller (non-IS installations only)

Environmental

Protection Rating	IP66
Storage Temperature	-45 to 90°C (-49 to 194°F)
Operating Temperature	-30 to 85°C (-22 to 185°F)

Physical

Aluminum Housing	
Display	5 digit LCD, 0.4 in. digits

Electrical

Battery Voltage	(3) AA 3.6V Lithium Low battery detection with 25% increments
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Programming

Programmable Features:	User selectable units of measure
	Client Mode
	Auto-Off

Materials of Construction

Aluminum Housing	Pressure die casting, 0.5% Mg Chemically resistant paint
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Mounting

Standard	No mounting hardware provided
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Compatible Intrinsically Safe APG Modbus Sensors

Ultrasonic	MNU-IS
Magnetostrictive	MPI-E, MPI-R, MPI-E Chemical, MPI-F, MPI-T

CERTIFICATIONS

cCSAus Certificate CSA19CA70219728:

- Ambient: -30° to 85°C
- Class I, Zone 1
- AEx ib [ja Ga] IIB 142°C (T3) Gb
- Ex ib [ja Ga] IIB 142°C (T3) Gb

ATEX Certificate Sira 18ATEX2289XX:

- II 2G Ex ib [ja Ga] IIB 142°C (T3) Gb
- Ta = -30° to 85°C

IECEX Certificate IECEX SIR 18.0076X:

- Ex ib [ja Ga] IIB 142°C (T3) Gb
- Ta = -30° to 85°C

MDI ACCESSORIES

Please order separately, by part number.

Description	Part Number
4-pin male M12 micro-connector, Field Wireable	200385
4-pin female M12 micro-connector, Field Wireable	200386
4 Conductor Cable (2 twisted pairs, shielded)	200388
(1) Replacement Battery (Xeno Model XL-060F)	200195

MODEL NUMBER CONFIGURATOR

Model Number: MDI - 9 - 4 - - 2 - 0 - - - - - - B0
 A B C D E F G H I J K

A. Power

- ▣ **9▲** Batteries (3) AA 3.6V Lithium Parallel

B. Output

- ▣ **4▲** Modbus RTU, IS Rated

C. Relays

- ▣ **0▲** No Relays
- ▣ **5** Switch Power

D. Enclosure

- ▣ **2▲** 3" Aluminum (1/2" NPT cable entry)

E. Mounting/Cover

- ▣ **0▲** Standard Mounting

F. Main Connection Location†

- ▣ **1▲** Position 1
- ▣ **2** Position 2

G. Main Cable or Connector

- ▣ **C_** Cable, in feet, with flying leads (ex. C100 = 100 feet, 5 ft increments only)
- ▣ **M_** Cable, in feet, with connector (ex. M5C5 = 4 pin M12 Female connector with 5 feet of cable, avail. in 5 ft increments only)
- ▣ **_** Connector only (select from Connector Table below)

Connector Table	
▣ 2	4 pin M12 Male
▣ 5	4 pin M12 Female

H. Auxiliary Connection Location†

- ▣ **0▲** No Auxiliary Connection
- ▣ **1** Position 1
- ▣ **2** Position 2

I. Auxiliary Cable or Connector

- ▣ **0▲** No Auxiliary Connection
- ▣ **C_** Cable, in feet, with flying leads (ex. C100 = 100 feet, 5 ft increments only)
- ▣ **M_** Cable, in feet, with connector (ex. M5C5 = 4 pin M12 Female connector with 5 feet of cable, avail. in 5 ft increments only)
- ▣ **_** Connector only (select from Connector Table below)

Connector Table	
▣ 2	4 pin M12 Male
▣ 5	4 pin M12 Female

J. Backlight

- ▣ **0▲** No Backlight
- ▣ **1** Backlight (decreases battery life)

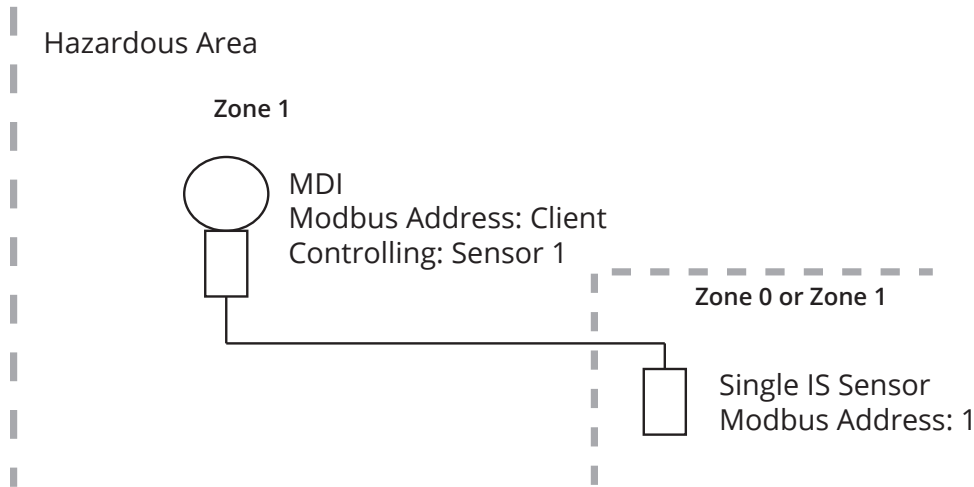
K. Factory Use Only

- ▣ **B0▲**
▲This option is standard.

†Note: Auxiliary Connection Location (when used) cannot be the same as the Main Connection Location.

MDI INTRINSICALLY SAFE USE CASE DIAGRAMS

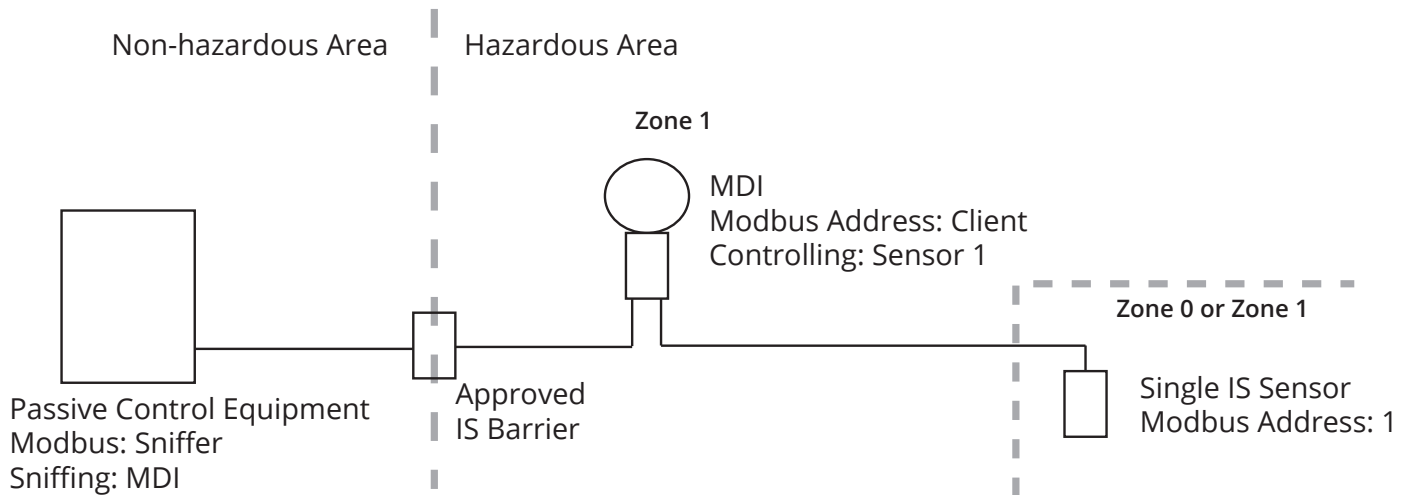
MDI controlling single IS sensor



Single MDI controlling a single IS sensor

- MDI is located in Zone 1 area. Sensor can be in Zone 0 or Zone 1 without additional barriers.
- MDI is battery powered; allows for software-based switchable power for sensor.
- No external controller.
- Any changes to sensor settings done via MDI buttons.

MDI controlling single IS sensor with Passive Control Equipment



Single MDI controlling a single IS sensor with Passive Control Equipment

- MDI is located in Zone 1 area. Sensor can be in Zone 0 or Zone 1 without additional barriers.
- MDI is battery powered; allows for software-based switchable power for sensor.
- External controller passively reads (Sniffs) readings from MDI.
- External controller can activate MDI.
- Approved IS Barrier **required** between Passive Control Equipment and MDI.
- Auxiliary connection required for MDI.
- Any changes to sensor settings done via MDI buttons.



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