

# Thank you

Thanks for purchasing a MDI Intrinsically Safe Modbus Display from us! We appreciate your business and your trust. Please take a moment to familiarize yourself with the product and this guide before installation. If you have any questions, at any time, don't hesitate to call us at 435-753-7300. Find additional product documents, specifications, accessories, and more on the MDI online product page. Go to:

[apgsensors.com/product/intrinsically-safe-modbus-display/](https://apgsensors.com/product/intrinsically-safe-modbus-display/)

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### 1 Description

The MDI Intrinsically Safe Modbus Network Display and Controller provides a local display in a Class I, Zone 1 hazardous area that can monitor and control a sensor within 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.

### 2 How to Read Your Label

Each label comes with a full model number, a part number, and a serial number. The model number for the Series FS-400 or FS-410 Float Switch will look something like this:

Sample: MDI-94020-1M5C30-00-0-0

The model number correlates with all the configurable options and tells you exactly what you have. Compare the model number to the options on the datasheet to identify your exact configuration. You can also call us with the model, part, or the serial number and we can help you.

### 3 Warranty & Return Information

This product is covered by APG's warranty to be free from defects in material and workmanship under normal use and service of the product for 24 months. For a full explanation of our Warranty, please visit

[apgsensors.com/warranty-returns/](https://apgsensors.com/warranty-returns/)

Contact Technical Support to receive a Return Material Authorization (RMA) before shipping your product back.

If your product needs to be returned for evaluation, contact us via email, phone, or online chat on our website. We will issue you an RMA number with instructions. You can also find the form on our website by clicking "RMA" in the web footer, or go to

[apgsensors.com/RMA-form](https://apgsensors.com/RMA-form)

- Phone: (435) 753-7300
- Email: [sales@apgsensors.com](mailto:sales@apgsensors.com)
- Online chat at [apgsensors.com](https://apgsensors.com)

Please have your part number and serial number available.

# MDI

## Intrinsically Safe Modbus Display

### INSTALLATION GUIDE



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Doc # 9005618  
Part # 200334  
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### 4 Installation Instructions

The MDI should be installed in an area--indoors or outdoors--which meets the following conditions:

- Ambient temperature between -30°C and 85°C (-22°F to +185°F)
- Relative humidity up to 100%
- Altitude up to 2000 meters (6560 feet)
- IEC-664-1 Conductive Pollution Degree 1 or 2
- IEC 61010-1 Measurement Category II
- No chemicals corrosive to stainless steel (such as NH<sub>3</sub>, SO<sub>2</sub>, Cl<sub>2</sub> etc.) or aluminum
- Ample space for maintenance and inspection

#### Specific Conditions of Use

- Install per Document #9005447.
- Use only three-SAFT model LS14500 or three-Xeno model XL-060F battery cells.
- Do not replace batteries when an explosive atmosphere is present.
- The enclosure is manufactured from aluminum. In rare cases, ignition sources due to impact and friction could occur. This shall be considered during installation.

Specific mounting steps may vary based on mounting methods being used.

- A general approach is as follows:
- Use fasteners through 7mm holes on either side of housing for surface mounting of MDI.
- For conduit mounting, make electrical connections prior to final conduit connections.

**IMPORTANT:** Ensure settings on MDI are correct prior to installation. Settings cannot be adjusted while MDI is installed in explosive environment. See section 7 for Menu Flow Chart and see Manual for full programming instructions.

#### For MDI Controlling Single IS Sensor:

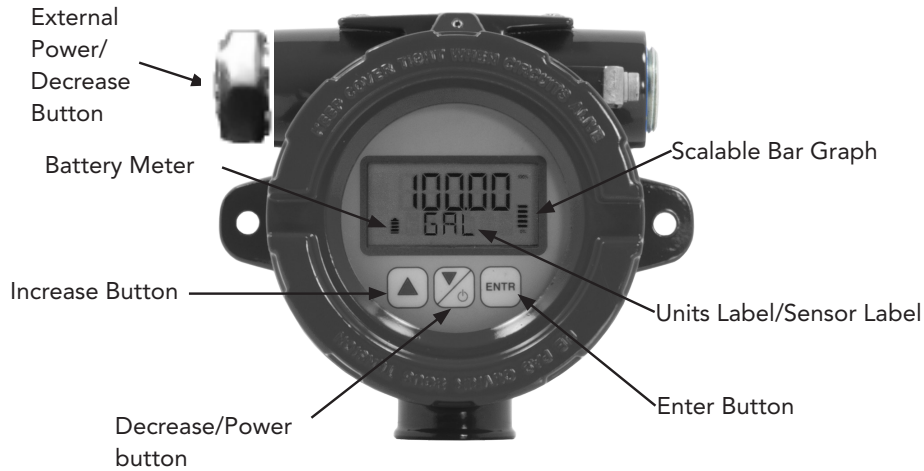
- For MDI with connector: Mate connector to sensor, or to connector attached to sensor.
- For MDI with flying leads: Connect the leads to terminal strip in junction box or on sensor.
- Ensure MDI enclosure is properly connected to Earth Ground.

#### For MDI Controlling Single IS Sensor with Passive Control Equipment:

- Connect MDI to sensor, using instructions above.
- Connect MDI to Approved IS Barrier using methods outlined above.
- Last, connect Passive Control Equipment to Approved IS Barrier.
- Ensure MDI enclosure is properly connected to Earth Ground.

Use care in selecting externally connected equipment to ensure that circuits are appropriately isolated from hazardous live potentials (SELV or PELV), as specified in CAN/CSA C22.2 No. 61010-1.

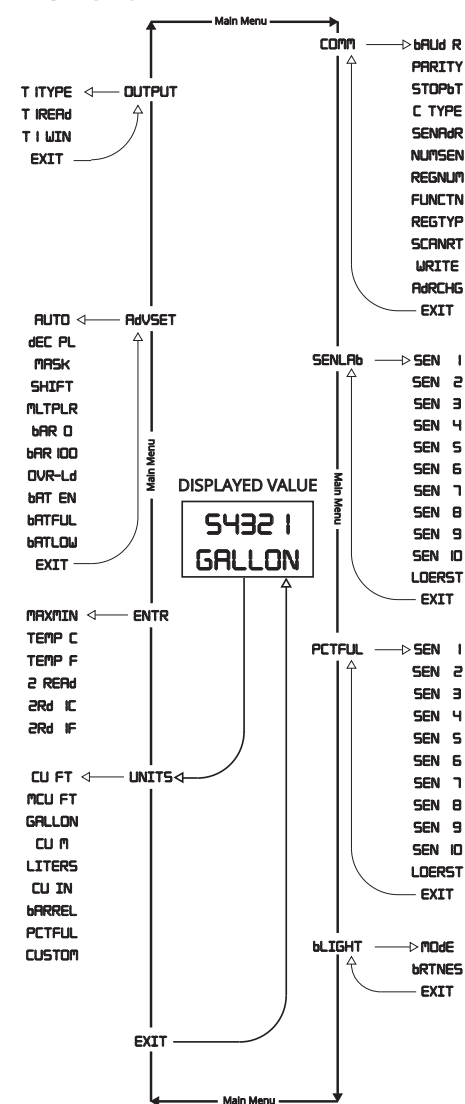
## 5 Dimensions & User Interface



### During MDI operation

- Increase Button - Cycles through sensor readings for multiple display configuration.
- Decrease/Power Button - Press to enter the Main Menu.
  - Press and hold for 1 second to power MDI on or off.
- Enter Button - Cycle between readings selected in ENTR menu.

## 7 Menu Flow Chart



### Within MDI Menus

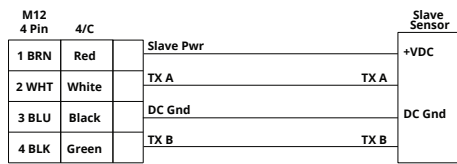
- Increase Button - Cycle upward through menu, or increase blinking value.
- Decrease/Power Button - Cycle downward through menu, or decrease blinking value.
- Enter Button - Press to enter selected menu, or accept blinking value.

### Specific Conditions Use

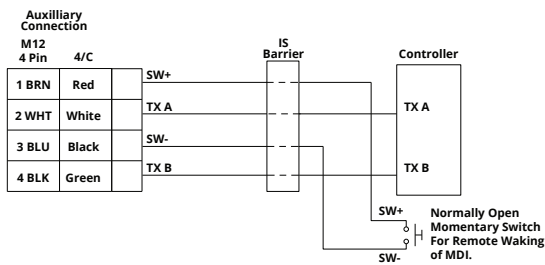
- Install per Doc #9005447.
- Use only three-SAFT model LS14500 or three-Xeno model XL-060F batter cells.
- Do not replace batteries when an explosive atmosphere is present.
- The enclosure is manufactured from aluminum. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during the installation.

## 6 Wiring Diagrams

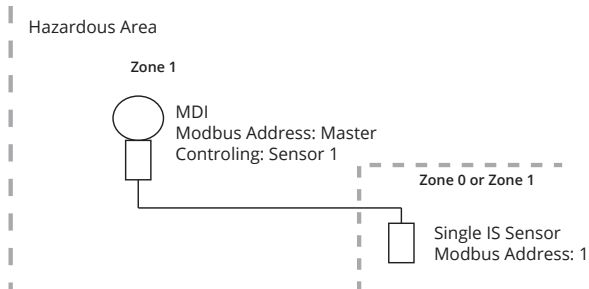
### Wiring Diagram For Client Sensor Connection



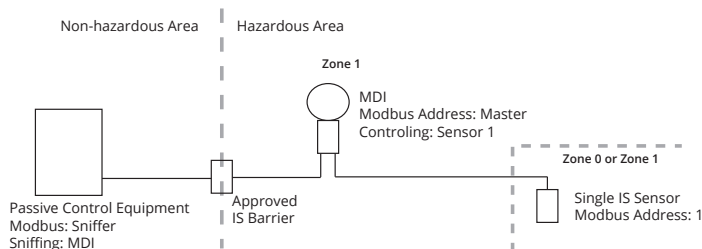
### Wiring Diagram For Passive Control Connection



### MDI Controlling Single IS Sensor



### MDI Controlling Single IS Sensor with Passive Control Equipment



## 8 General Care

Your MDI is very low maintenance and will need little care as long as it is installed correctly. However, in general, you should:

- Avoid applications for which the MDI was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals and fumes, or other damaging environments.
- For the MDI's aluminum housing, inspect the threads whenever the MDI changes location.
- If necessary, clean the face of the MDI with a damp cloth.

Should you need to replace the lithium batteries in your MDI, follow these steps:

- If the unit is installed in a hazardous location, remove it from service. Batteries must never be replaced in the presence of an explosive atmosphere.
- Remove enclosure lid.
- Pull display faceplate out to remove electronics from enclosure.
- Remove two (2) screws from battery cover.
- Slide battery holder out of cover.
- Replace batteries with three (3) SAFT LS14500 or three (3) XENO XL-060F batteries. Using any other battery types will void Intrinsic Safety certification. Do not mix battery types.
- Slide battery holder back into cover.
- Reposition battery holder in enclosure and reattach screws.
- Place electronics back into enclosure, making sure display is straight.
- Replace enclosure lid. Ensure lid is properly seated and enclosure is sealed.

## 9 Hazardous Location Wiring

