Thank You

Thanks for purchasing an 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 manual before installation. If you have any questions, at any time, don't hesitate to call us at 888-525-7300.

Scan the QR code to the right to see the full user manual on your tablet or smartphone. Or visit https://www.apgsensors.com/support to find it on our website.

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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 MDI will look something like this:

SAMPLE: MDI-94020-1MSC10-00-0

The model number tells you exactly what you have. You can also call us with the model, part, or the serial number and we can help you.

3. Warranty

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 https://www.apgsensors.com/about-us/terms-conditions. Contact Technical Support to receive a Return Material Authorization before shipping your product back.

Scan the QR code below to read the full explanation of our Warranty on your tablet or smartphone.

4. Mounting Instructions & Electrical Installation

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)
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- Temperature above freezing during installation
- Mechanical shock less than 4 g
- Altitude up to 2000 meters (6560 feet)
- Relative humidity up to 100%
- Ambient temperature between -30°C and 85°C (-22°F to +185°F)

ATEX Stated 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.
- For MDI controlling Single IS Sensor:
  - Ensure MD 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.

For MDI Controlling Single IS Sensor:
- For MDI with connector: Make 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 MD 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.

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.

IMPORTANT: Your MDI MUST be installed according to drawing 9005447 (Intrinsically Safe Installation Drawing For Hazardous Locations) in section 9 to meet listed approvals. Faulty installation will invalidate all safety approvals and ratings.

During MDI operation
Increase Button: Cycles through sensor readings for multiple display configuration.
Decrease/Power Button: Press to enter the Main Menu. Cycle and hold for 1 second to power MDI on or off.

5. Dimensions & User Interface

The MDI is designed with a user-friendly interface that includes a Scalable Bar Graph, Battery Meter, Units Label/Sensor Label, and Enter Button for easy navigation.

- Scalable Bar Graph: Visual representation of sensor readings.
- Battery Meter: Indicates battery level.
- Units Label/Sensor Label: Displayed sensor information.
- Enter Button: Accesses the Main Menu and other functions.

6. Wiring Diagrams

7. Menu Flow Chart

8. Repair Information

9. Hazardous Location Wiring

10. General Care

MDI - Intrinsically Safe Modbus Display Installation Guide

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Thank You

*NOTE: Scan the QR code to the right to see the full user manual on your tablet or smartphone. Or visit https://www.apgsensors.com/support to find it on our website.*
Repair Information
If your MDI needs repair, contact us via email, phone, or online chat on our website. We will issue you an RMA number with instructions.

- Phone: 888-525-7300
- Email: sales@apgsensors.com
- Online chat at www.apgsensors.com

Hazardous Location Wiring

Wiring Diagram For Slave Sensor Connection

Wiring Diagram For Passive Control Connection

Wiring Diagram For RST-6001 Programming

MDI Controlling Single IS Sensor with Passive Control Equipment

MDI Controlling Single IS Sensor

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.

Important: Your MDI MUST be installed according to drawing 9005447 (Intrinsically Safe Installation Drawing For Hazardous Locations) in section 9 to meet listed approvals. Faulty installation will invalidate all safety approvals and ratings.

GENERAL CARE

- 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:

1. 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.
2. Remove enclosure lid.
3. Pull display faceplate to remove electronics from enclosure.
4. Remove two (2) screws from battery cover.
5. Slide battery holder out of cover.
6. Replace batteries with three (3) SANY 14500 or three (3) ENER XL 060F batteries. Using any other battery types will void Intrinsically Safe certification. Do not mix battery types.
7. Slide battery holder back into cover.
8. Reinstallation battery holder in enclosure and reattach screws.
9. Place electronics back into enclosure, making sure display is straight.
10. Replace enclosure lid. Ensure lid is properly seated and enclosure is sealed.
11. If unit was removed from service, follow Mounting and Installation Instructions in chapter 2 to replace unit.

Follow the steps below to reset your MDI to the factory standard defaults:
- Press and hold the Decrease/Power button and Enter button for approximately 5 seconds.
- When the Operating Mode number appears, change it to 125, and press enter.