Vera Mag 3000 Battery Powered Electromagnetic Flow Meter

Quick Start Installation Guide

30126-58
13SEP2024

About This Quick Start Guide

This Quick Start Guide is a supplement to the Installation, Operation and Maintenance manual supplied with this meter. It is intended to be a quick reference for the basic installation and reading of the Ultra Mag.

It is designed to provide installation instructions when the location of the sensor installation has been predetermined.

Refer to the meter manual (30126-25 Vera Mag 3000 IOM manual) for information on these topis:

- Preparation and planning for installation
- Site location
- Software configuration
- Detailed information on external connections, external power, outputs

WARNING!
Incorrect installation or removal of meters can result in serious injury or death. Read the instructions in this guide on the proper procedures carefully.

- Any person installing, inspecting, or maintaining a McCrometer flowmeter should have a working understanding of piping configurations and systems under pressure.
- Before adjusting or removing any meter, be certain the system has depressurized completely.
- Be careful when lifting meters. Meters can cause serious injury if lifted incorrectly or dropped.

1. Flow Meter Installation

I The Ultra Mag requires grounding to ensure proper functioning and accuracy. See section 4 for grounding instructions and methods.

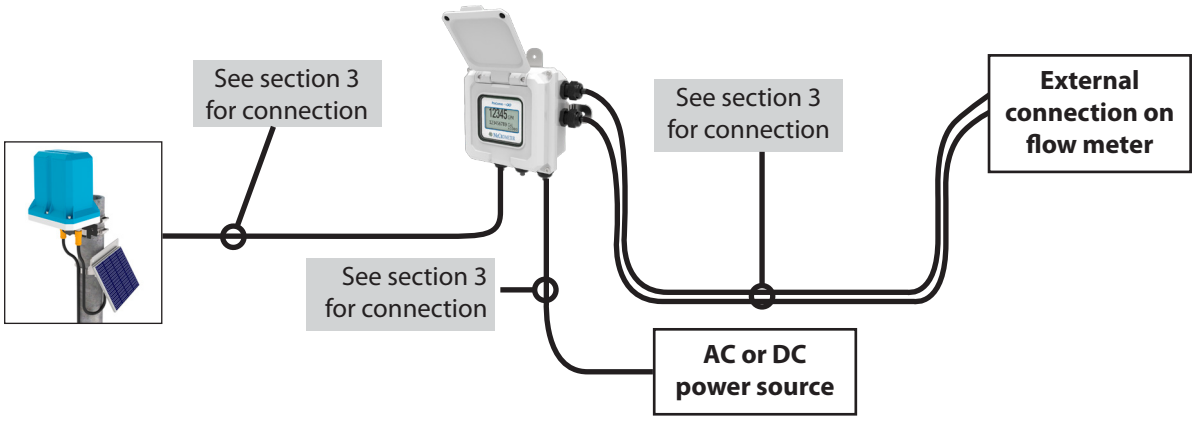
Flanged Meter Installation

Install the Ultra Mag flow meter inline between two flanged end pipes. The flow meter may require grounding, depending on the environment they are being installed in. Refer to section 4 for a full description of grounding methods that are available.

Remote Mount Installation

You will need to prepare the location where you will install the remote converter. The location cannot be further from the flow meter than the length of the 25' cable. This must be planned in advance because the cable cannot be lengthened. Doing so will alter the calibration accuracy between the meter and the converter and void the warranty.

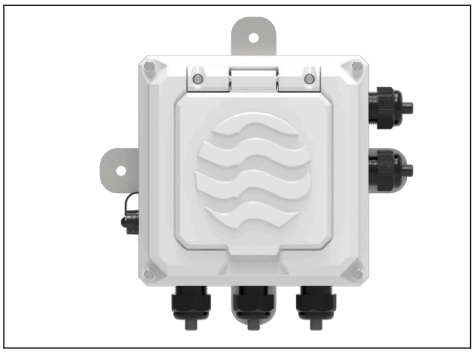
Install the flow meter as required. Mount the converter and connect the cable to the meter's junction box and the converter's external connection.



I **IMPORTANT: The example shown above does not include grounding installation. Depending on your requirements, the meter will need to be grounded according to the methods shown in section 4.**

2. Remote Mount Converter Installation

Mounting the ProComm GO Converter



Note: This applies to the remote mount converter only.

If possible, mount the converter in an electronics shed or environmental enclosure. The sun shield should be oriented in a direction to reduce sun damage and ensure readability.

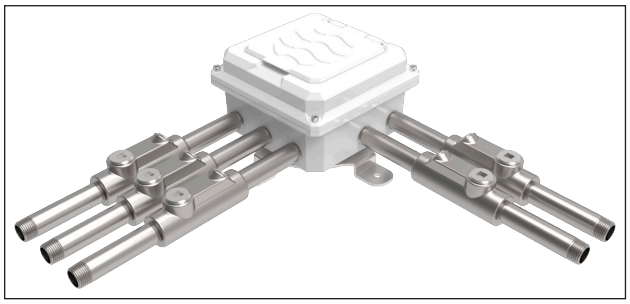
Mount the converter to a solid surface using four bolts. This electronic unit is rated IP67 for temporary flooding.

Installing Cables through Cable Glands and Conduit

All electrical cables enter the converter through compression fittings or optional customer-supplied conduit located on the side or bottom of the converter. Ensure that all compression glands are properly tightened and all unused fittings are plugged so the case remains sealed.

The power cable and wiring harnesses are each assigned specific cable glands where they will pass through into the converter. See section 3 for cable gland assignment for wiring harnesses and wiring diagrams.

All cable compression glands must be properly tightened to prevent moisture intrusion and maintain the IP67 rating. To insure IP67 rating, use only round cable 0.24" to 0.47" in diameter.



Attaching conduit directly to the enclosure may introduce dangerous gasses and moisture into the enclosure creating a dangerous condition, and will remove the enclosure's IP67 rating. **Damage caused by attaching conduit to the enclosure or altering the enclosure in any way is not covered by the warranty.**

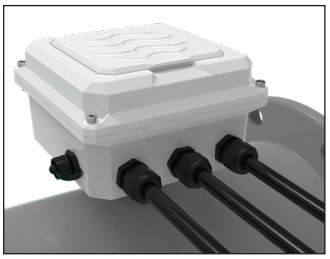
IMPORTANT: Do not cut or alter the cable length on power or signal cables!
Connections to the sensor must be made with cable supplied by McCrometer specifically for that purpose. Do not substitute the supplied cable with other types of cable, even for short runs. For repairs or added lengths of cable, the entire cable between the sensor and the converter must be replaced. (Consult factory for replacement cable.)

3. Converter Wiring and Connection

External Output Connectors

The flow meter is configured at the factory for the optional outputs and requested by the customer at the time of order. The external cables attach through a permanent cable gland (standard) or through a screw locking-type waterproof connector (quick connect option).

IMPORTANT:
When not in use, always keep the attached cap firmly screwed into the connector to insure a water-tight seal. Also, keep the contacts in the cable connector clean and dry during assembly.



Standard cable gland

Quick connect connectors

Cable Gland Assignment for Wiring Harnesses

Port assignment

1 - Outputs

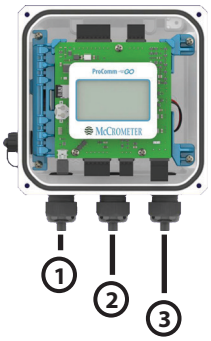
2 - Outputs

3 - Power

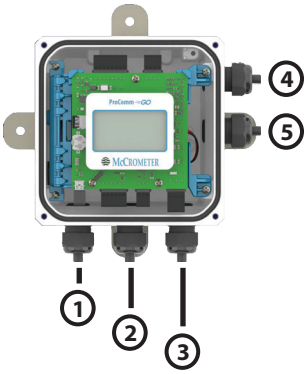
4 - Coils

5 - Electrodes

Meter mount view

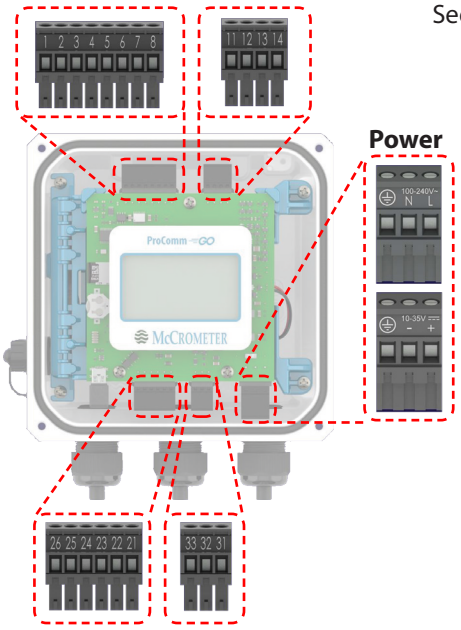


Remote mount view



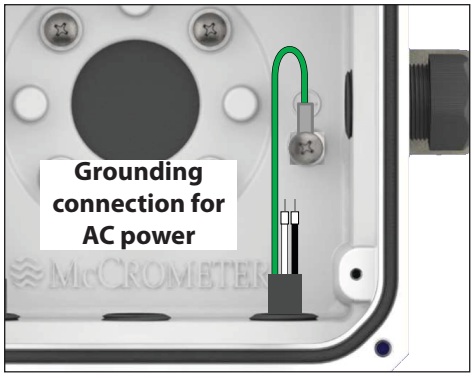
Terminal Block Diagram and Grounding Lug

Coils and electrodes

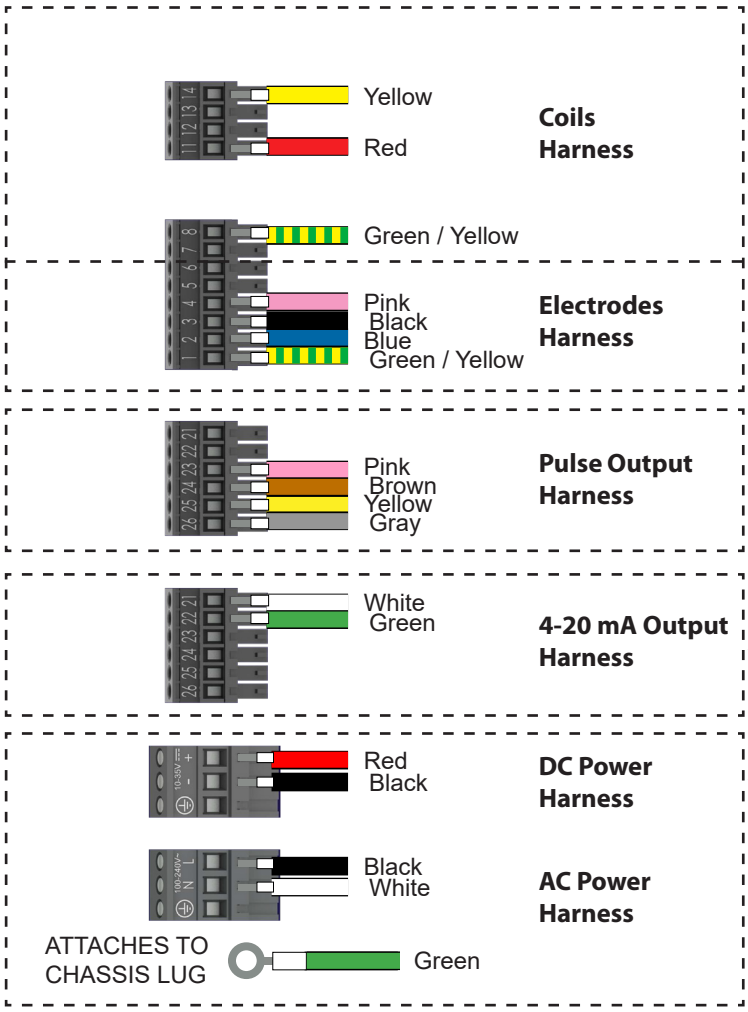


Pulse / 4-20 mA outputs **AMI outputs**

See next page for wiring diagram for each terminal block.



Wiring Diagrams



TERMINAL BLOCK ASSIGNMENTS

Terminal	Port	Wire Color
8	4	Green/Yellow
11	4	Red
14	4	Yellow

Terminal	Port	Wire Color
1	5	Green/Yellow
2	5	Blue
3	5	Black
4	5	Pink

Terminal	Port	Wire Color
23	1	Pink
24	1	Brown
25	1	Yellow
26	1	Gray

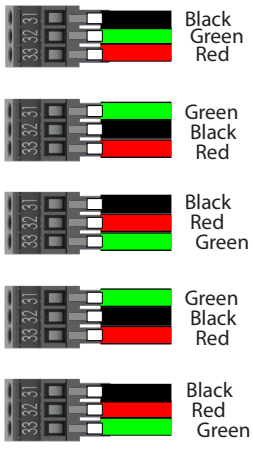
Terminal	Port	Wire Color
21	1	White
22	1	Green

Terminal	Port	Wire Color
Negative	3	Black
Positive	3	Red

Terminal	Port	Wire Color
Chassis lug	3	Green
Neutral	3	White
Load	3	Black

To complete AC power connection, connect green ground jumper as shown on the previous page.

Optional Smart Output Hook Up



	Sensus	Itron	Badger	Neptune	Elster
31	Black	Green	Black	Green	Black
32	Red	Black	Red	Black	Green
33	Green	Red	Green	Red	Red

The convertor comes pre-wired with an interconnection that should readily connect to most AMI transceivers. Where interconnective devices are not mechanically compatible or where non-standard wiring is encountered, the installer can opt to remove the connector from the end of the converter's interface cable and make direct connection via the wiring table shown at right.

- Signals and associated wire colors in the McCrometer SmartOutput™ interface cable are identified together in the top row of the table above.
- Corresponding wire colors for transceivers from each compatible AMI vendor are identified in the columns under the top row.

4. Grounding

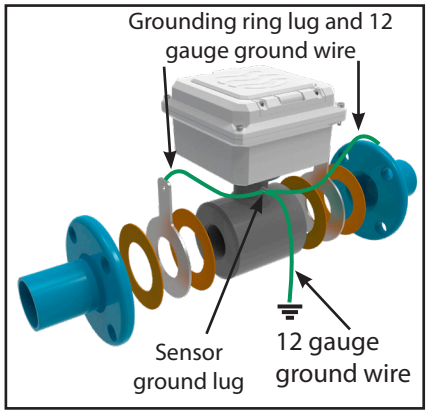
1. Preferred method of grounding

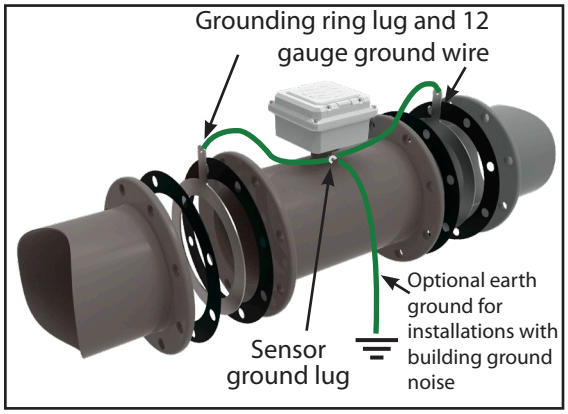
Ultra Mag meters come standard with a set of grounding rings for use with the preferred method of grounding Ultra Mag meters.

This method can be used for all installations, but it is required for non-conductive or internally coated pipe. When pipes are non-conductive, such as PVC or internally coated pipe, you must substitute direct grounding with grounding rings.

Attach the provided 12 gauge wire or equivalent to the sensor ground lug. Then connect this sensor ground lug to an earth ground point; refer to NEC or local grounding regulations for wiring requirements in making this connection.

Next, connect the two mating grounding rings with a 12 gauge wire or equivalent, attached to the grounding ring lugs, and connect them both to the earth ground. The Ultra Mag should be electrically isolated from the pipeline.



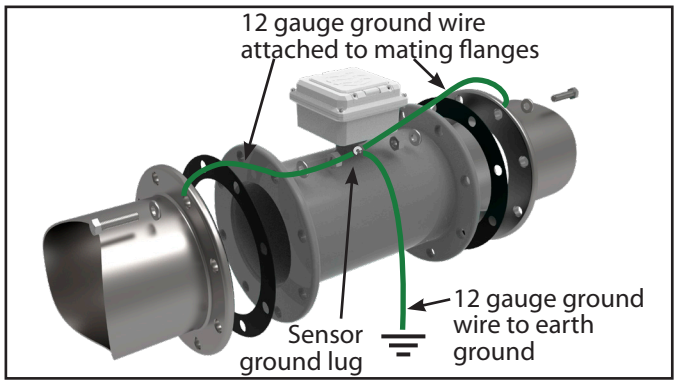


2. Sensor grounding for meters in an electrically noisy environment

If there is electrical noise in the fluid column or electrical current in the pipe, it can be minimized or eliminated using grounding rings or by grounding the pipeline. This applies to meters mated to conductive uncoated pipe.

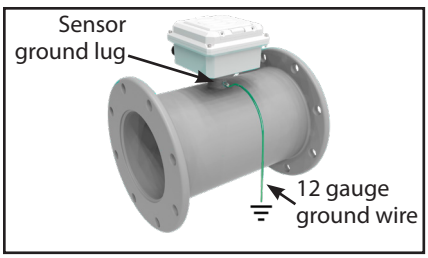
Attach the provided 12 gauge wire, or equivalent, to the ground lug. Then connect the sensor ground lug to an earth ground point.

Next, connect the two mating pipe sections with a 12 gauge wire or equivalent and connect them both to the earth ground. The Ultra Mag should be electrically isolated from the pipeline.



3. Sensor grounding for meters with minimal ground noise

Attach the provided 12 gauge wire, or equivalent, to the sensor ground lug. Then connect this sensor ground lug to an earth ground point.



5. Activating The Display

The display is activated when the lid is opened. The display will remain active for 30 seconds.

The various parts of the interface screen is shown below. Depending on how the converter is configured with the configuration tool the display will show either single direction or bidirectional total flow quantities. Bidirectional flows are represented as either positive (POS) or negative (NEG), as shown at right.

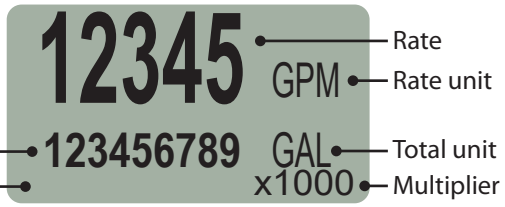
NOTE The converter display is light activated and requires a minimum amount of light to appear. Environments where light is low, such as in dimly lit buildings or outdoors after sundown may prevent the display from appearing when the lid is raised.

There is an optical sensor embedded in the display located under the McCrometer "swirl" logo at the lower left. If the display does not appear, a flashlight will provide sufficient light to bring it up.

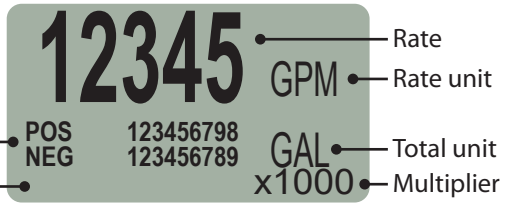
I ***CAUTION:***
If the lid is broken off, contact the Factory for a lid replacement kit. In the meantime, set the lid on the meter in its proper position and use the boot to hold it in place.

NOTE *The default setting for the ProComm GO converter is the positive totalizer. This is done so that any negative flow will be set to 0 and not recorded. Bidirectional flow has to be turned on with either negative or net showing for the converter to show a negative flow rate and calculate a negative total.*

Default display setting



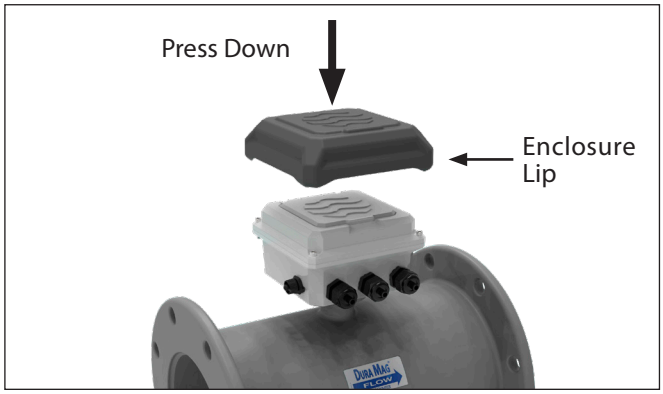
Bidirectional display setting

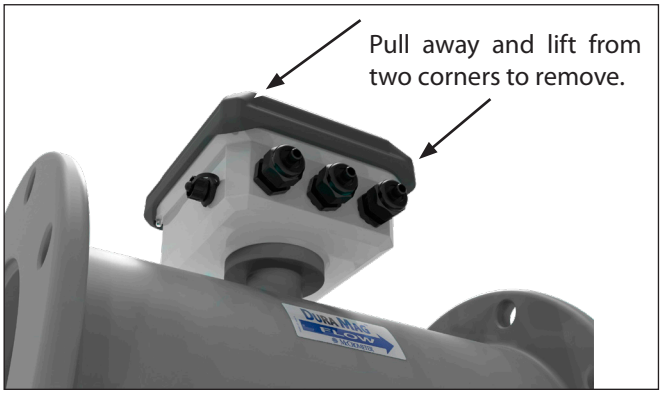


6. Converter Boot

The Ultra Mag comes with a boot to help protect the meter. The boot simply slips over the electronics enclosure. When installing the boot, ensure the corners of the boot fit snugly over the lip of the enclosure. To remove the boot, grip two corners and pull them away from the lip of the enclosure and then pull upwards.

I ***IMPORTANT***
It is HIGHLY recommended that the boot be utilized at all times when the meter is not being read. The boot adds protection to the meter and ensures proper closure of the lid, ensuring the maximum battery life.





7. Converter Configuration

The converter can be programmed to customize how the data is measured and stored. The configuration tool runs only on Windows 7, 8, or 10 and requires a computer with a USB port. You must have your flow meter's serial number before you begin.

See the manual for instructions on using the configuration software.

8. Error Messages for Troubleshooting

DISPLAY MESSAGE	Troubleshooting
BAT LOW	Battery replacement Kit is needed to replace batteries. The batteries Should last approximately 6-9 months from the time the warning is shown.
420 ERR	The 4-20 circuit is not wired correctly. Check the wiring diagram and ensure 9-30VDC power is supplied to the circuit. The output is not source powered.
COIL XCT	There is an issue with the electro magnetic coils. Check that the internal wiring is correct in the converter for the coil wires.
ADC CLIP	The meter signal exceeds the limit of the converter, likely due to noise. Check the meter grounding meets the IOM guidelines and identify any sources of noise.
HIGH HUM	Humidity inside converter housing has exceeded limits. Check for any loose connections on converter housing that could be creating a leak.
COIN LOW	Datalogger time backup battery is low. This is part of the battery replacement kit and should be replaced with the main battery packs.

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