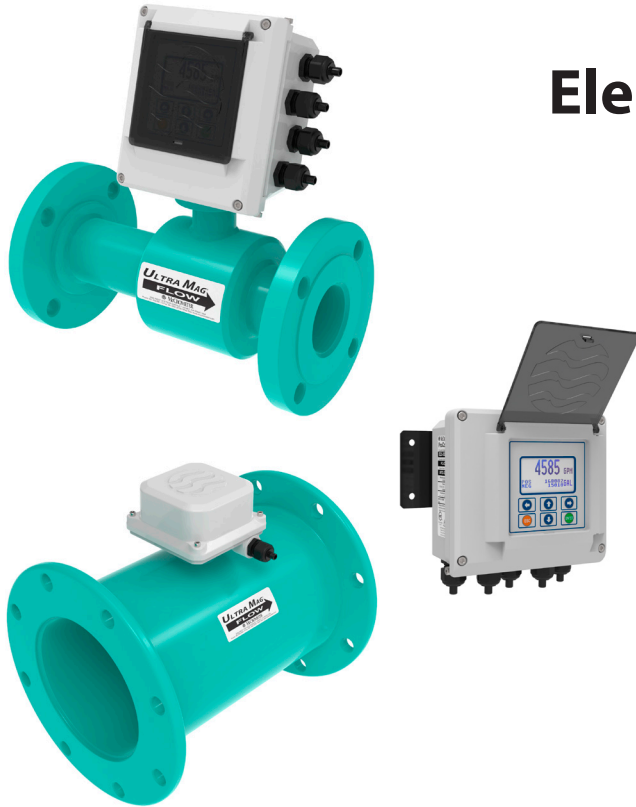




Ultra Mag 5000 Electromagnetic Flow Meter

Quick Start Installation Guide



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 5000.

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

Refer to the meter manual (30126-06 Ultra Mag 5000 IOM manual) for information on these topics:

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

For information on the data logger, refer to the manual (30121-87 McLogger IOM), downloadable from www.mccrometer.com).



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.

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1. Check Shipping Crate Contents

The shipping crate contains the following items:

- Electromagnetic meter assembly with grounding wire attached
- Converter cable (attached to meter)
- Signal converter
- Grounding rings
- Ground wires (2)
- User manuals for both the sensor and converter

When uncrating the Ultra Mag, any damage due to rough or improper handling should be reported to the transportation firm and McCrometer. If for any reason it is determined that the unit or parts of the unit should be returned to the factory, please contact McCrometer for clearance prior to shipment. Each unit must be properly crated to prevent any further damage. The factory assumes no responsibility for equipment damaged in return shipment due to improper packaging.

2. Pipe Run Requirements

The meter needs to be located a minimum distance before and after flow disturbances, such as elbows, pumps, partially opened valves, and changes in pipe diameter. The uneven flow created by these obstructions can vary with each system.

The minimum distance is measured in pipe diameters (D). To ensure accuracy locate the sensor upstream and downstream of flow disturbances as follows:

2" & 3" Wafer style meters	3D upstream 1D downstream
2" - 48" Steel flanged meters	1D upstream 0D downstream

3. Sensor Position and Location

Pipe Diameters

For proper accuracies any 90 or 45 degree elbows, valves, partially opened valves etc. should be placed not closer than two pipe diameters upstream and one pipe diameter downstream.

Flow Direction

It is very important to install the flow meter relative to the flow of the water. There is a sticker on the Ultra Mag that indicates the direction of flow.

Sensor Orientation

The following installation recommendations should be followed (see figures below):

Horizontal installation

In horizontal pipe runs, the meter should be installed so that the junction box is vertical insuring the electrodes are positioned to prevent coating by sediments or loss of electrode contact due to air bubbles.



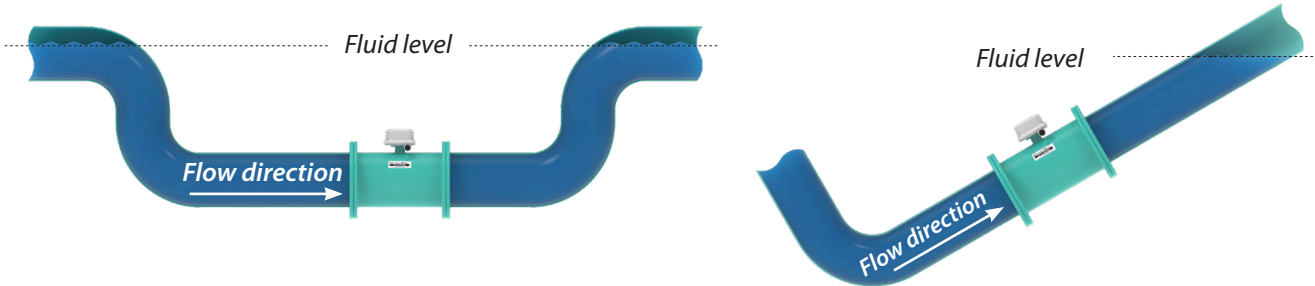
Vertical installation

In vertical pipe runs, the flow should be upward. In slurry application, a vertical position ensures optimal distribution of solids under all flow conditions.



Less than full pipes

In pipes which may encounter less than a full pipe of fluid, the meter must be positioned in a trap to ensure that the sensor is always completely filled with liquid.



4. Flow Meter Installation

I The Field Mag requires grounding to ensure proper functioning and accuracy. See section 8 for grounding instructions and methods.

Flanged Meter Installation

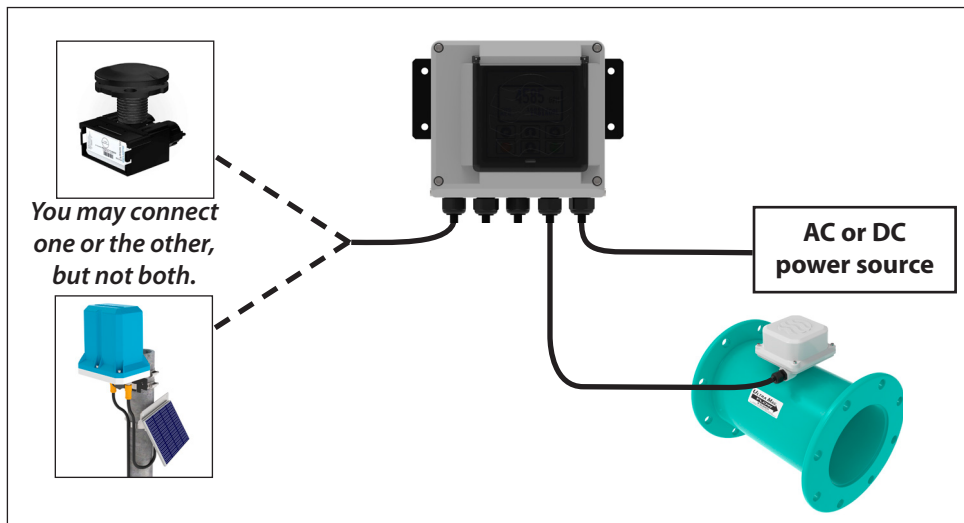
Install the Ultra Mag flow meter inline between two flanged end pipes. The flow meter may require grounding, depending on the environment they are being installed in. Refer to section 10 for a full description of grounding methods that are available.

5. Example Remote Mount Configuration

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 below does not include grounding installation. Depending on your requirements, the meter will need to be grounded.



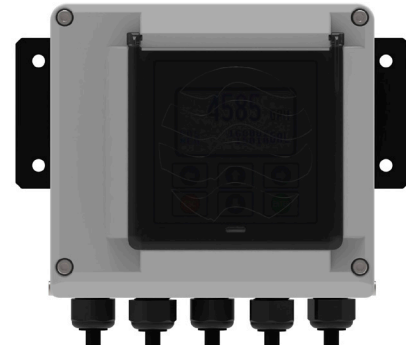
6. Remote Mount Converter Installation

Mounting the ProComm 5000 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.



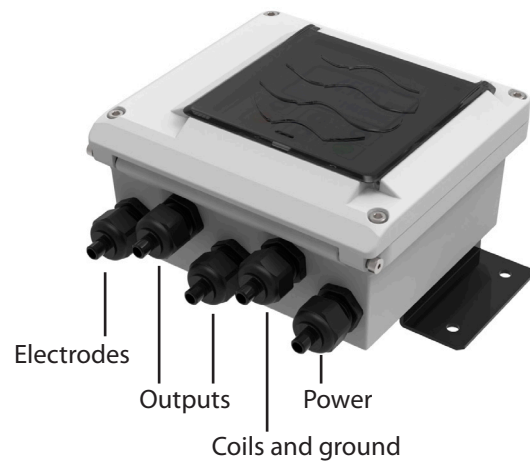
7. Installing Cables through Cable Glands and Conduit

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.

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.



The remote mount converter is shipped with five 1/2" NPT cable glands. Up to three cable glands may be removed and replaced with 1/2" conduits.



Standard cable gland



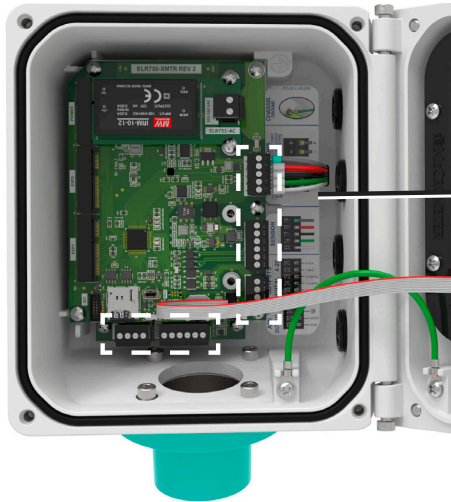
Remote mount converter with conduit pass-throughs

8. ProComm Converter Wiring Connection

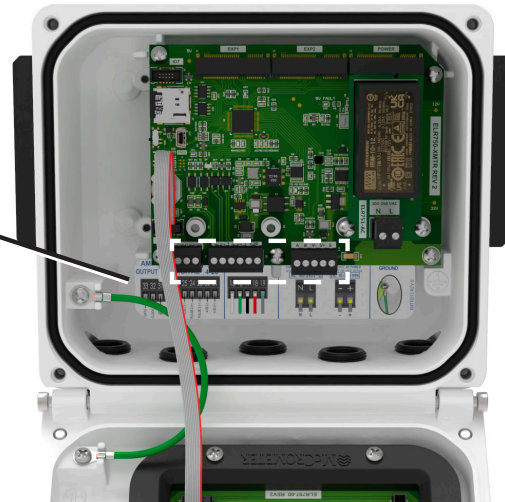
All connections are made on the terminal board. To access the terminal board, loosen the four screws on the front of the converter and lift the converter open.

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

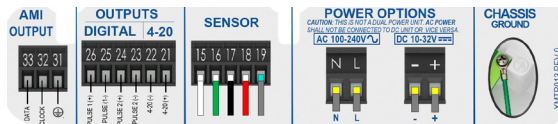
Remote mount view



Meter mount view



Terminal block and wiring label



NOTE: All terminal blocks unplug from the circuit board for easy connection.

9. Installing Expansion Cards

See the transmitter manual (30126-48 ProComm 5000 IOM manual) or the meter manual (30126-06 Ultra Mag 5000 IOM manual)

10. Grounding

Information For Grounding Ring Installations

- The grounding rings and gaskets must be used to ensure a positive seal at the flanges, and to ensure fluid is properly grounded to sensor. For best performance, McCrometer provides grounding rings, which should be installed for all sizes.
- Rings & gaskets must align concentrically with the pipe so they do not obstruct or affect flow through the tube.
- The preferred method of installation is connecting the Ultra Mag to its own isolated grounding rod.
- The two grounding rings and four gaskets require an additional installation width of 0.5”.

When installing into a PVC or plastic pipe system, grounding rings are required for all sizes.

NOTE: See the Ultra Mag 5000 Series IOM Manual, Lit. #30126-06, for more information on grounding using grounding rods and grounding rings.

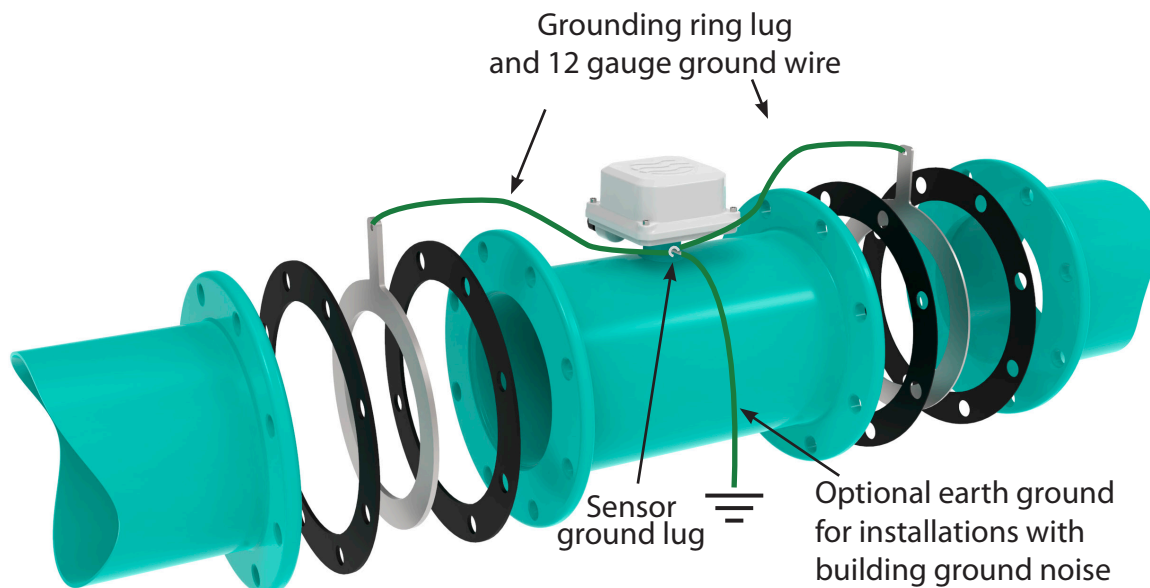
1. Preferred method of grounding

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.

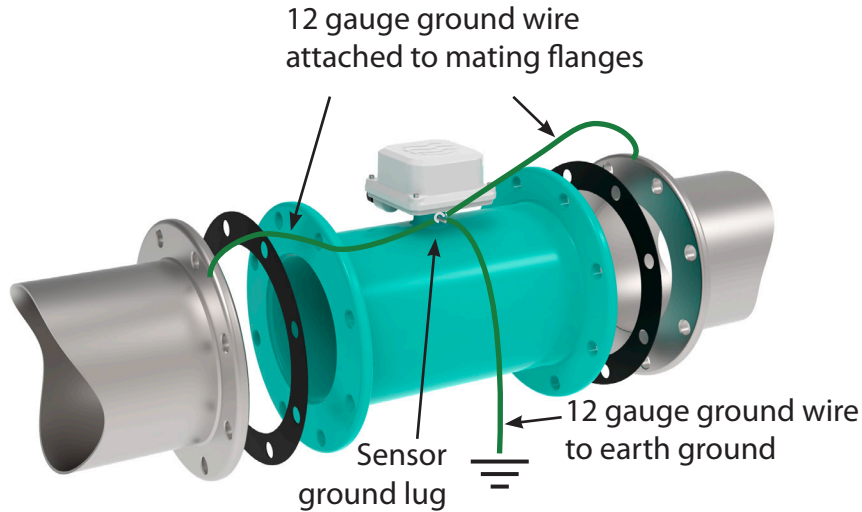


2. Sensor grounding for meters in an electrically noisy environment

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.

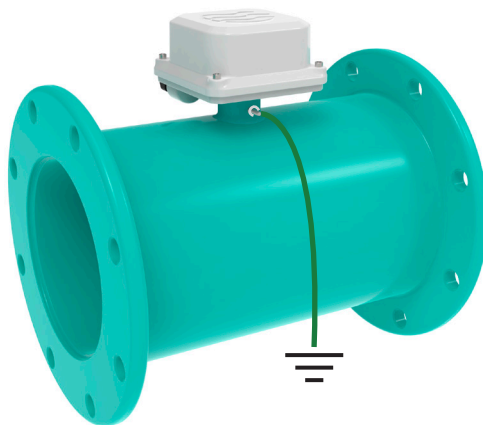
Attach the provided 12 gauge wire, or equivalent, to the ground lug. Then connect the sensor ground lug to an earth ground point.

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.





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