Field Mag 5000 Electromagnetic Flow Meter

Quick Start Installation Guide

Standard Model
For use in non-hazardous locations

HL Model
For use in hazardous locations:
- Class I, Division 2, Groups A-D, T5
- Class I, Zone 2 IIC T5

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 Field Mag.

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

Refer to the meter manual (30126-46 Field Mag 5000 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

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. 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 (flanged meters only)
- Ground wires (2) (flanged meters only)
- User manuals for both the sensor and converter

When uncrating the Field 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. Check Serial Numbers

The converter and sensor are supplied as a matched system. Verify the meter serial numbers on both the converter and sensor match. This will insure a properly calibrated system.

The tag on the side of the converter has the converter model number, the converter serial number and the meter serial number, which is calibrated to the converter. An example is shown below.

IMPORTANT

Verify the meter serial numbers on both the converter and sensor match. This will insure a properly calibrated system. The meter serial number is located on a plate on the body of the sensor, and the converter serial number and the meter serial number are located on a label on the side of the converter. Insure the meter serial number on the sensor and the converter tags match.

3. 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:

1D upstream / 0D downstream

4. 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

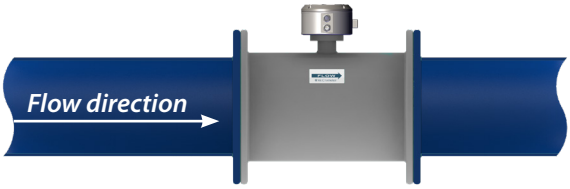
It is very important to install the flow meter relative to the flow of the water. There is a sticker on the Field Mag that indicates the direction of flow.

Sensor Orientation

The following installation recommendations should be followed:

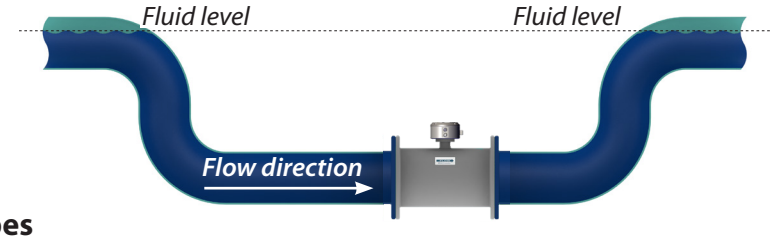
Horizontal installation

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.



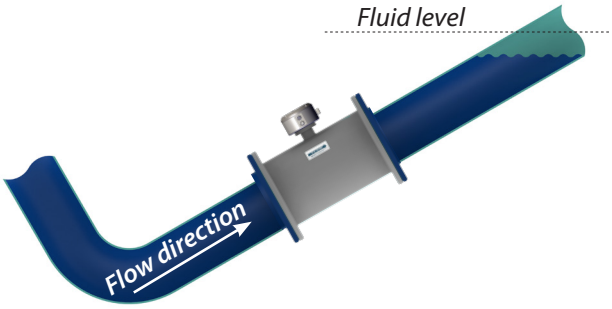
Vertical installation

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.



5. Flow Meter Installation

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

Meters with Grooved End Connections

Meters with grooved ends are easily installed by connecting two pipe ends to the meter body. Clamp the two ends using standard clamps used for this purpose. (Clamps are not provided by the factory.) Clamps should be bolted on tight, but torquing is not required. Refer to section 8 for a full description of grounding methods that are available.

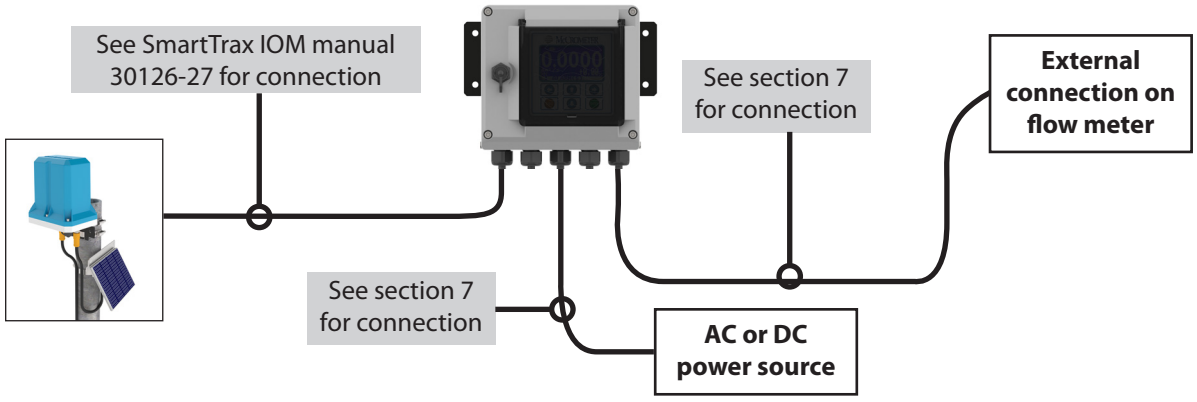
Flanged Meter Installation

Install the Field 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 8 for a full description of grounding methods that are available.

6. 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.



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 8.

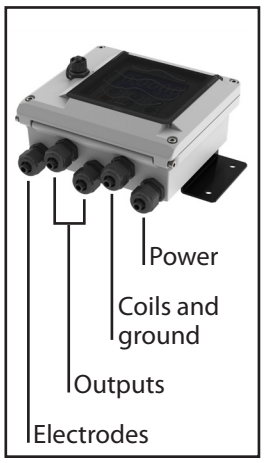
7. Installing Cables through Cable Glands and Conduit

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.

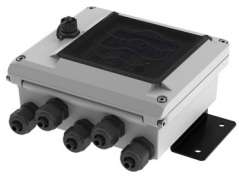
The power cable and wiring harnesses are each assigned specific cable glands where they will pass through into the converter.

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.

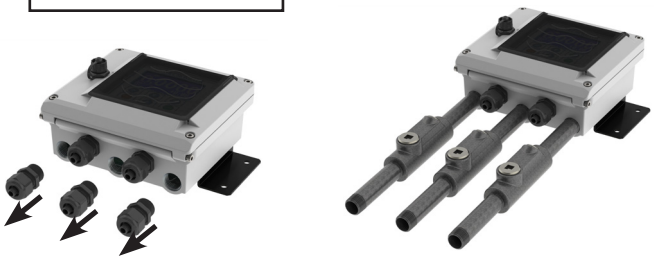
Attaching conduit directly to the enclosure may introduce dangerous gasses and moisture into the enclosure creating a dangerous condition, and will remove the enclosure's IP67 rating.



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

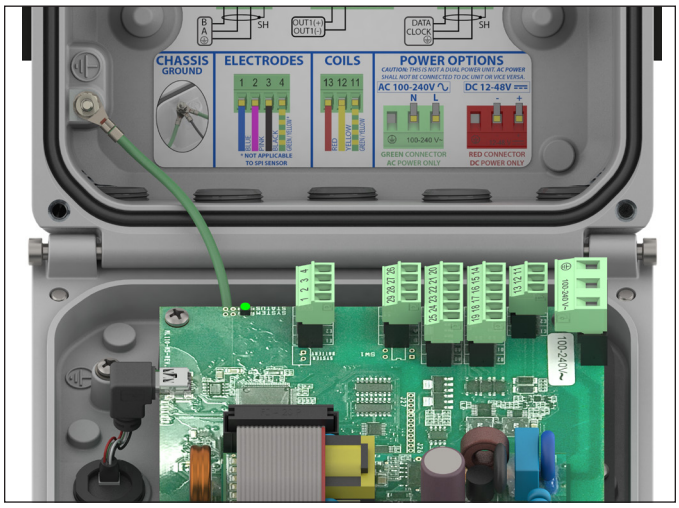


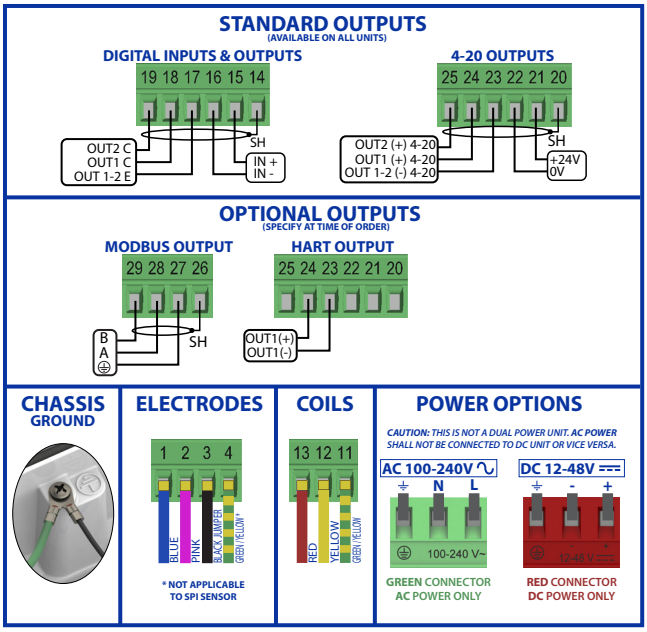
Remote mount converter with conduit pass-throughs

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.





Terminal	Cable	Wire Color
#1 (E1)	A	Blue
#2 (E2)	A	Pink
#3 (C)	A	Black
#4 (SH)	A	Green/Yellow
Chassis Lug	B	Black
#11 (SH)	B	Green/Yellow
#12 (C2)	B	Yellow
#13 (C1)	B	Red

8. Grounding

Grounding the meter body for safety according to national (NEC) or local electrical codes is recommended on ALL meter installations. All Field Mag flow meter installations require minimum grounding with a 12-gauge ground wire to an earth ground.

Flanged end meters

See below for grounding examples, including the preferred method of grounding.

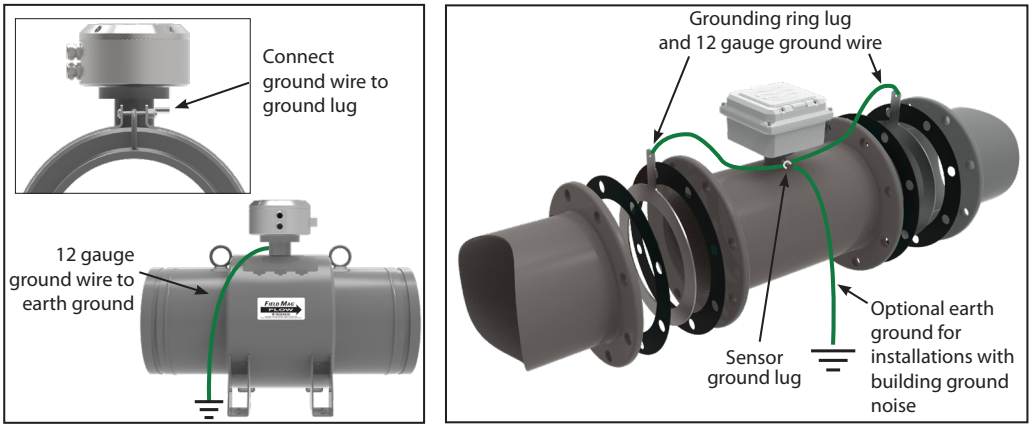
When installing into a PVC or plastic pipe system, grounding rings for flanged meters are recommended for all sizes. For best performance, McCrometer provides grounding rings for all sizes.

For best performance, grounding the fluid column is recommended when the meter is installed in an electrically noisy environment, such as with VFD pumps or nearby electrical systems with insufficient grounding.

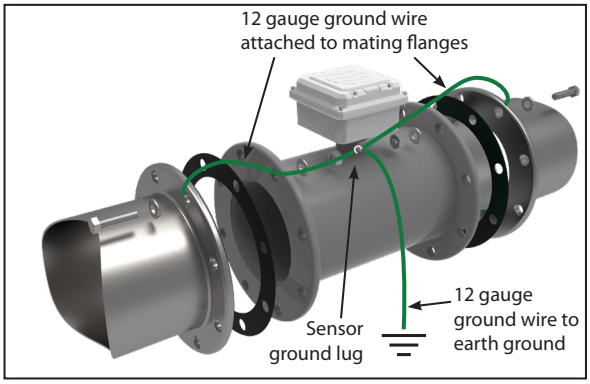
Grooved end meters

Grooved end meters do not require grounding rings and only require a ground wire connecting the ground lug to a ground.

Meter Grounding Recommendations



Recommended method of grounding



Alternative method of grounding with conductive or uncoated pipe

9. Operation

See the ProComm 5000 IOM manual, 30126-48.

3255 WEST STETSON AVENUE • HEMET, CALIFORNIA 92545 USA
TEL: 951-652-6811 • 800-220-2279 • FAX: 951-652-3078
www.mccrometer.com