

Smart Output™ Field Installation for M-Series and L-Series Converter

Installation Procedure -- See section 5.0, "Installation Procedure"

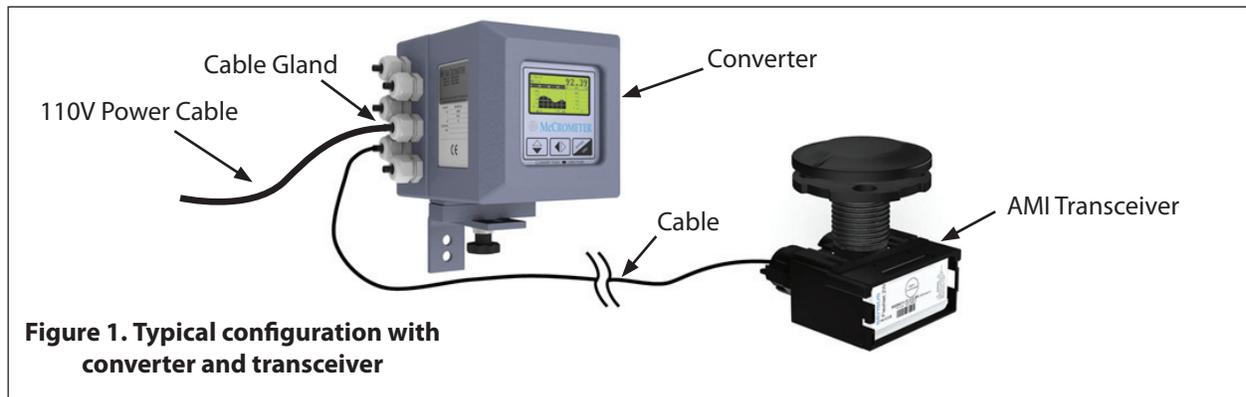
1. Open the Housing and Prepare for Installation
2. Plug the Ribbon Cable into the Main Circuit Board
3. Install the AMR Board in the Enclosure
4. Verify the Electrical Connection
5. Reconnect the Electrical Connection to the FPI
6. Connect the AMR Electronics Board to the Network
7. Restore the converter to service

1.0 Introduction

This document is an addendum to the McCrometer L-Series and M-Series Converter Installation, Operation and Maintenance manuals (Lit. No. 30120-46 and 30120-47).

Smart Output™ is an output option to interface with FlexNet networks sold by Sensus®, Itron, and other AMI systems. When this option is included, an additional output cable is also included to connect to a transceiver. (See Figure 1.) There is no procedure required for setting up the AMI interface; it will come with the cable already connected. There is no additional configuration required on the converter. However, the proper converter firmware must be installed.

For details on remote mount and outputs (4-20mA and/or pulse), please refer to the associated sections in the L-Series or M-Series Converter Manuals. This addendum will not cover those topics.



2.0 Scope

This procedure is intended to upgrade M-Series and L-Series converters to SmartOutput capability for use with industry standard AMI systems. See the table at right. The procedure describes the method for installing the circuit board and output cable.

	Purchased with Converter	Standalone Kit
Smart Output™ with Itron Systems (100W models, nine-digit output) (retrofit)	AMR-ITR9	AMR-ITR9-K
Smart Output™ with Itron Systems (All other models, six-digit output) (retrofit)	AMR-ITR6	AMR-ITR6-K
Smart Output™ with Sensus Systems (All three-wire models) (retrofit)	AMR-SEN	AMR-SEN-K

3.0 Tools Required

- Hex Driver, M5
- Screwdriver, Philips, #2
- Screwdriver, Slotted, #1
- Wire Strippers

4.0 Verify Product Contents

- Verify that the following components are present in the shipping container. (Refer to Figure 2.)
 - Circuit board with pluggable terminal block attached to black metal mounting bracket
 - Ribbon cable connector
 - ERT connection cable
- Verify that the ID label on the product specifies the communications protocol intended for this application.
- Contact the factory if any components are missing or if the wrong circuit board was received.



Figure 2. Product contents

5.0 Installation Procedure

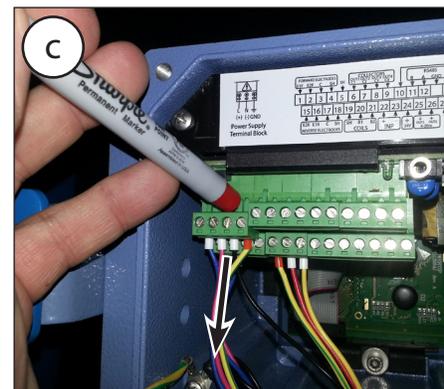
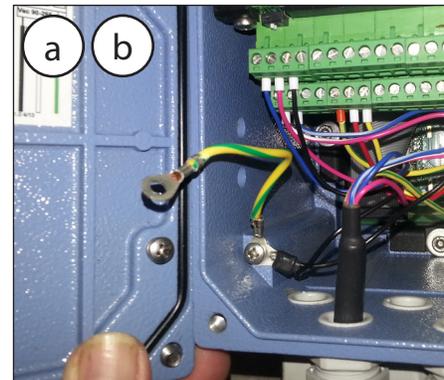
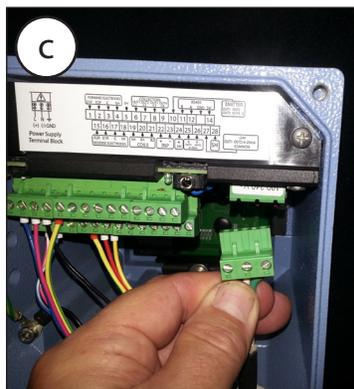
Prior to installing the AMR board, verify that the McCrometer L-Series or M-Series converter is running with the proper firmware version. For Smart Output to function, the converter firmware must be version 3.03.

Immediately after you power on the unit, the current firmware version will be displayed on the LCD screen during boot-up. If the converter's firmware needs to be upgraded, contact McCrometer Customer Service to make arrangements to have it sent to the factory to be reflashed.

5.1 Open the Housing and Prepare for Installation

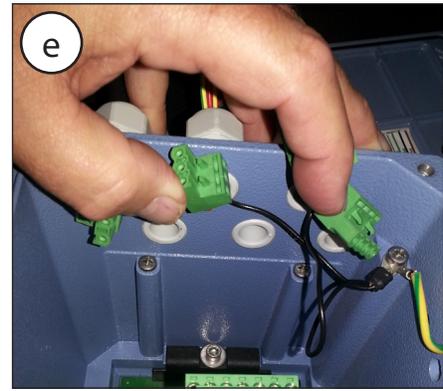
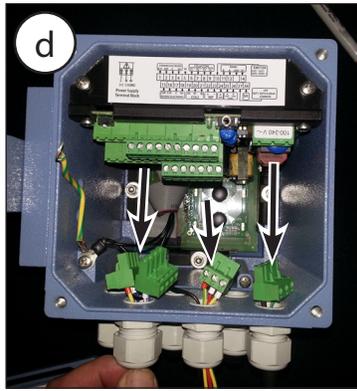
Important! Remove power from the converter before proceeding!

- Using an M5 hex driver, unfasten the lid of the converter electronics enclosure from its main housing. Loosely fasten the securing screws back to the enclosure.
- Using a #2 Philips screwdriver, fully detach the lid by detaching the safety ground wire from the lid. Return the screw to the lid.
- Unplug the wired green connectors from the power terminal block and the electronic terminal blocks on the main electronics board.



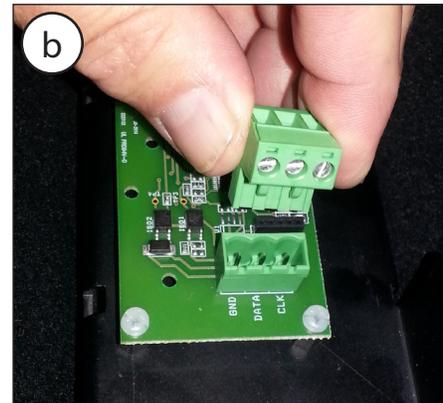
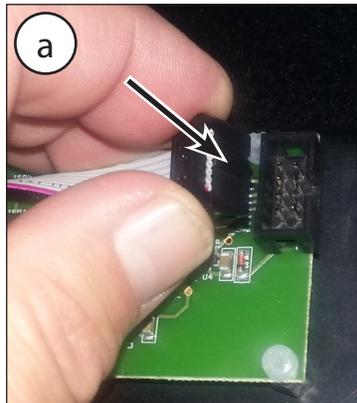
Note: The example shown is the FPI Mag 394L bidirectional cable harness. Your model model may be different.

- d. Loosen the gland nuts for all of the cables that you unplugged and pull the wires back until they are against the side of the housing and out of the way.
- e. Remove the two #2 Philips screws in the screw posts attached to the wall under the gland nuts and set them aside for later use.

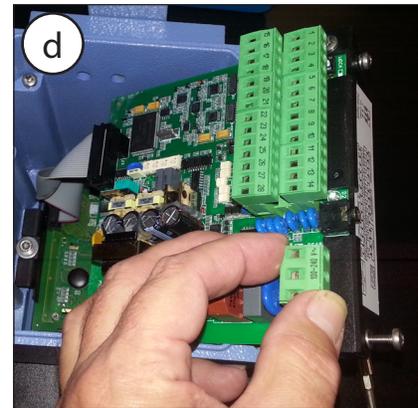
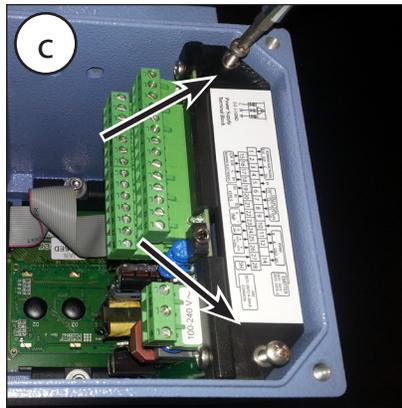


5.2 Plug the Ribbon Cable into the Main Circuit Board

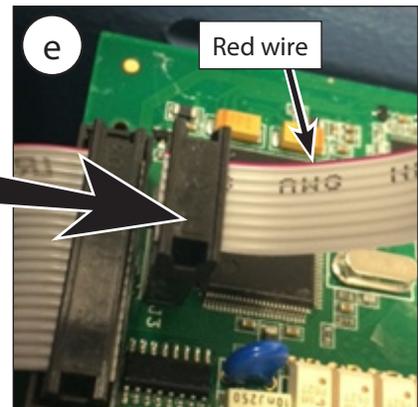
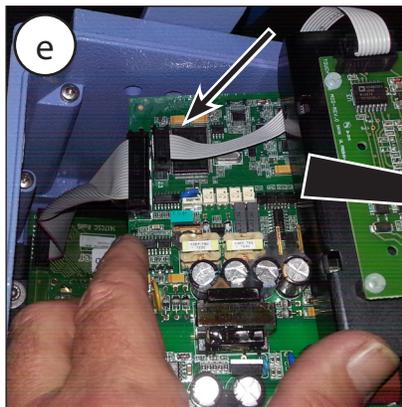
- a. Unplug the ribbon cable from the AMR interface board.
- b. Unplug the green terminal block for the ERT connector cable.



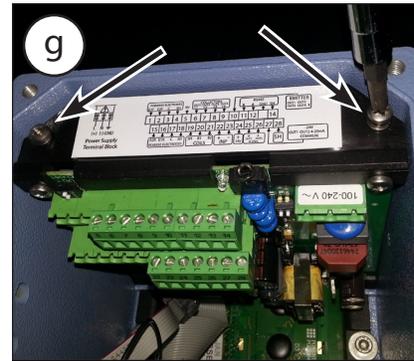
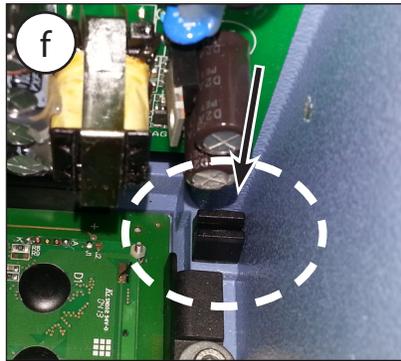
- c. Using a #2 Philips screwdriver, remove the two screws securing the main electronics PCB to the housing.
- d. Lift the main electronics PCB from the housing until the ribbon cable attaching it to the front panel display board becomes taut. (The AMR port of the main electronics board should now be readily visible and accessible.)



- e. Plug the ribbon cable into the main electronics board. Verify that all pins of the ribbon connector are properly aligned with the connector and proper orientation of the red wire of the ribbon cable.

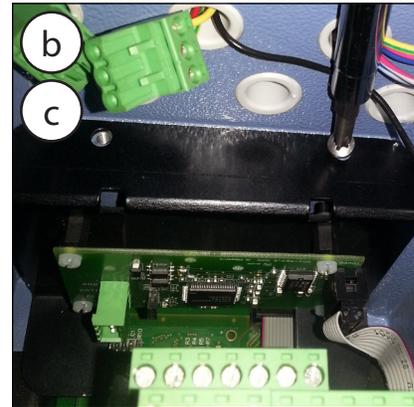
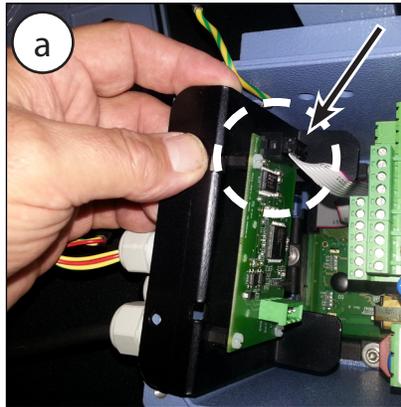


- f. Reseat the main electronics board into the guides located near (and just above) the front panel display board.
- g. Secure the main electronics board to the electronics enclosure using the two #2 Philips screws removed earlier in this step.



5.3 Install the AMR Board in the Enclosure

- a. Plug the ribbon cable in the AMR interface board with the red wire oriented towards the centerline of the AMR interface board.
- b. Position the AMR bracket/circuit assembly with the auxiliary bracket mounting holes.
- c. Secure the AMR bracket to the electronics enclosure using the two screws removed in step 5.1 c.



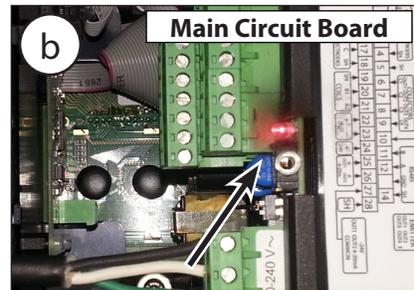
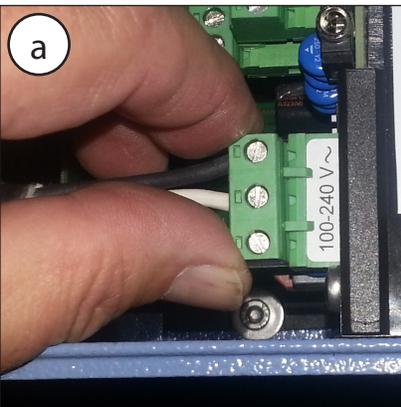
5.4 Verify the Electrical Connection



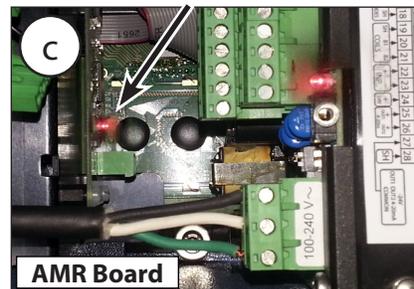
Dangerous voltages may be present and exposed when the converter cover is removed and power is applied. Use appropriate caution and do not contact any components within the enclosure during steps 5.4 and 5.5.

Verify proper electrical connection with the converter electronics.

- a. Reconnect the power terminal block to the main electronics board and apply power.
- b. Wait approximately 10 seconds after applying power for the red LED on the main electronics board to change from a steady-on state to a flashing state.
- c. Approximately 10 seconds later, the LED on the AMR interface should change from a steady-on state to a flashing state.



Lights change from steady to flashing

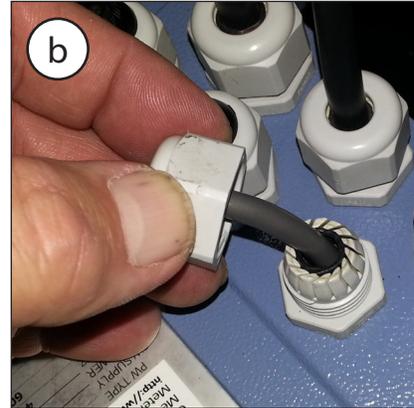
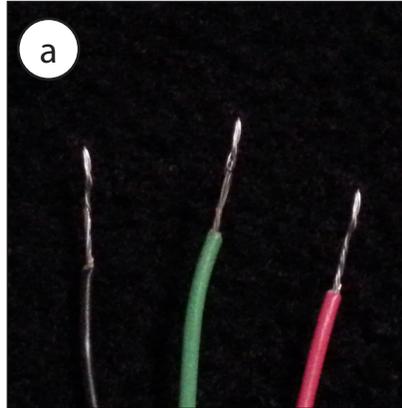


Note: If both lights are not flashing, review the assembly steps. Then, if necessary, contact McCrometer Customer Service Department.

- d. Remove power.

5.5 Connect the AMR Electronics Board to the Network

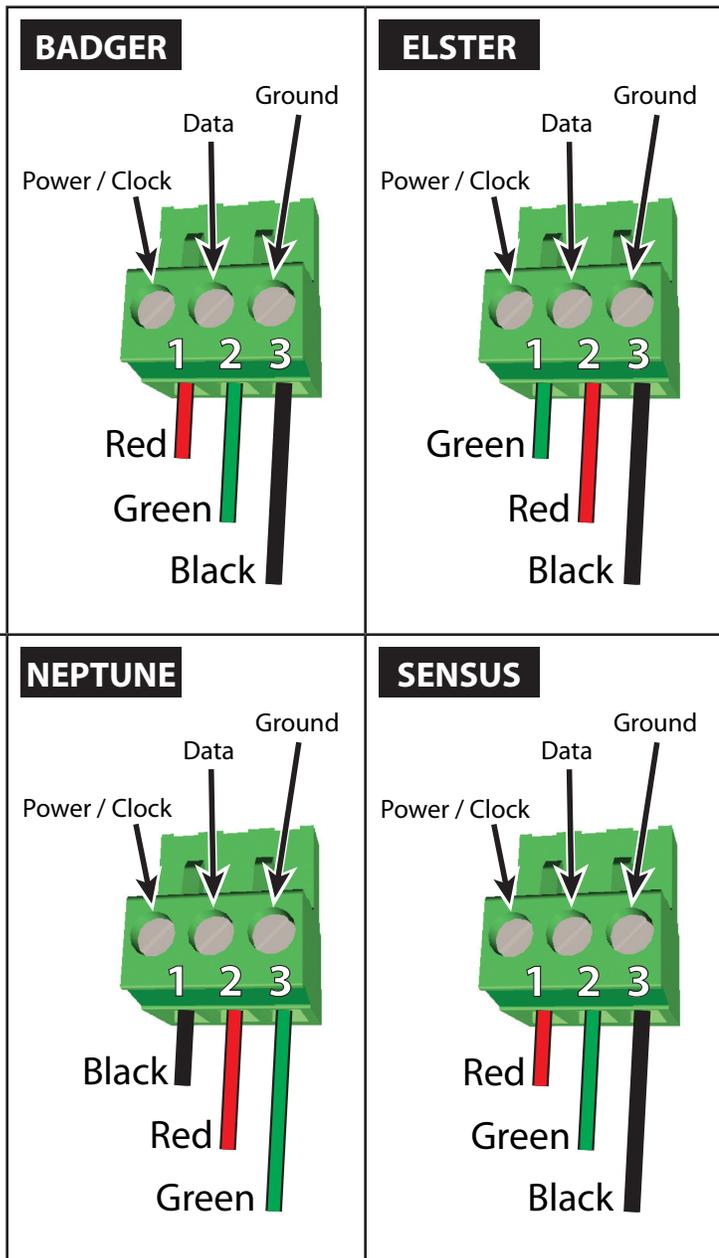
- Prepare the three individual wires of the cable for wiring to the pluggable terminal strip.
- Remove the nut from one of the cable glands and feed the ERT connection cable through it until sufficient cable extends into the interior of the electronics housing.



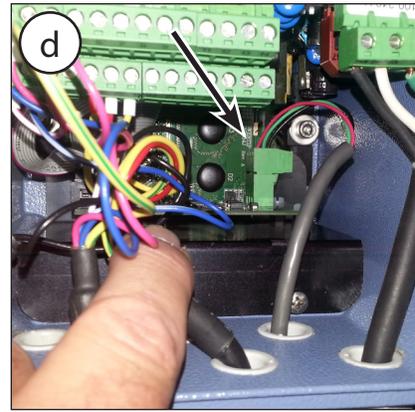
- Connect the 3-wire interface to the terminal block per the wire color code provided in the table below.

McCrometer AMR Interface Pinout

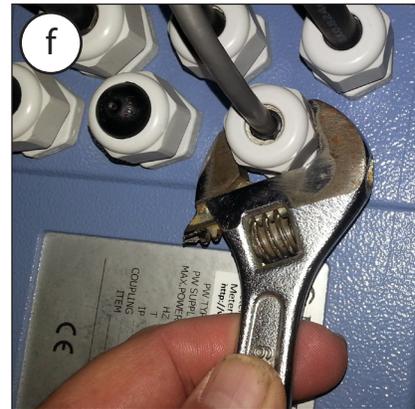
	1 Power/ Clock	2 Data	3 Ground
Badger	Red	Green	Black
Elster	Green	Red	Black
Itron	Black	Red	Green
Neptune	Black	Red	Green
Sensus	Red	Green	Black



- d. Reconnect the pluggable terminal block to the AMR interface board.
- e. Recheck seating/connectivity of both ends of the ribbon cable connecting the AMR interface board to the main electronics board.

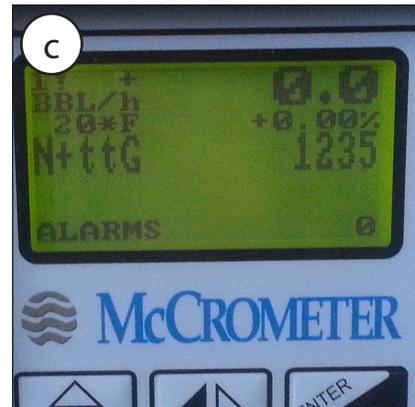
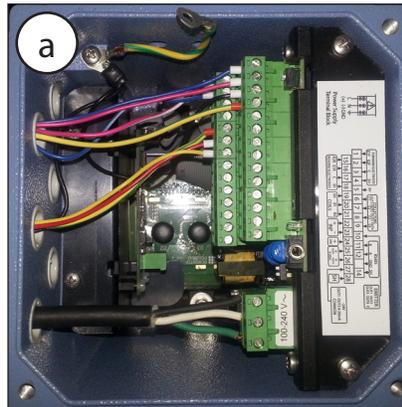


- f. Tighten the sealing nut of the cable gland properly to secure the ERT connection cable to the electronics housing as well as ensure proper sealing of the enclosure.
- g. Using a #2 Philips screwdriver, reconnect the safety ground wire (still connected internally to the housing) to the lid.
- h. Using an M5 hex driver, close and secure the lid of the McCrometer convertor electronics enclosure to its main housing.



5.6 Reconnect the Electrical Connection to the FPI

- a. Reconnect the electrical terminal blocks to the FPI previously removed in step 5.1.
- b. Apply power to the main electronics board.
- c. After the system reboots, verify that no alarms are present and that flow measurement correlates to the actual flow present.



5.7 Restore the converter to service

- a. Apply power to the system. Verify proper communication between the McCrometer convertor electronics and the AMR endpoint device.