

Application Note ABB.PROCESSMASTER.1
Version 001
04 February 2026

Connect an ABB ProcessMaster Magnetic Flow Meter to an AMI/AMR System Using the SCADAmetrics MBE Encodalizer™



[ABB \(Stockholm, Sweden\)](#) is a global technology leader with over 140 years of history in electrification and automation.

The **ProcessMaster** (pictured left) is one of ABB's flagship, closed-pipe electromagnetic flow meters – aka “mag meter”. Mag meters are based upon the principle of measuring fluid flow as proportional to voltage induced across the liquid by its flow through a magnetic field. [Read more here.](#)

Mag meters have no moving parts, and also have no protrusions into the flow tube – thereby lending themselves as suitable for both water and wastewater applications.

The **ProcessMaster** is available with SCADA connectivity, which includes a pulse (totalizing) output, a 4-20mA (flow) output, HART, Profibus, and Modbus/RTU (RS.485) industrial protocol.

Today, the latest release of the **SCADAmetrics Model MBE Modbus Encodalizer** now adds UI.1203 (Sensus) protocol and Neptune ECODER.PLUS protocol to this important flow meter, so that it may now be easily integrated into modern potable water AMI/AMR systems.

The purpose of this Application Note is to provide technical assistance to the **ProcessMaster** User who wishes to connect his meter to an AMI system.

This Application Note assumes that the ProcessMaster is outfitted with the optional Modbus/RTU communication card installed into Transmitter **Option Card Slot #1**.



ABB P/N: 3KQZ400028U0100
Modbus/RTU Communication Card

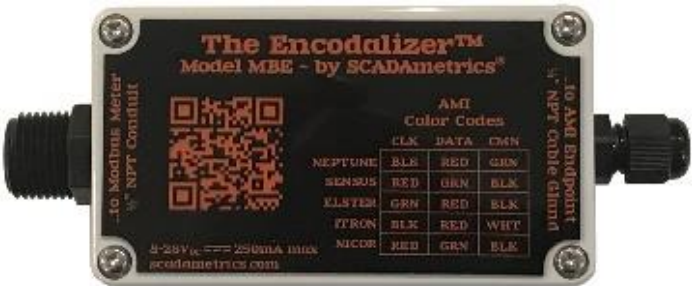
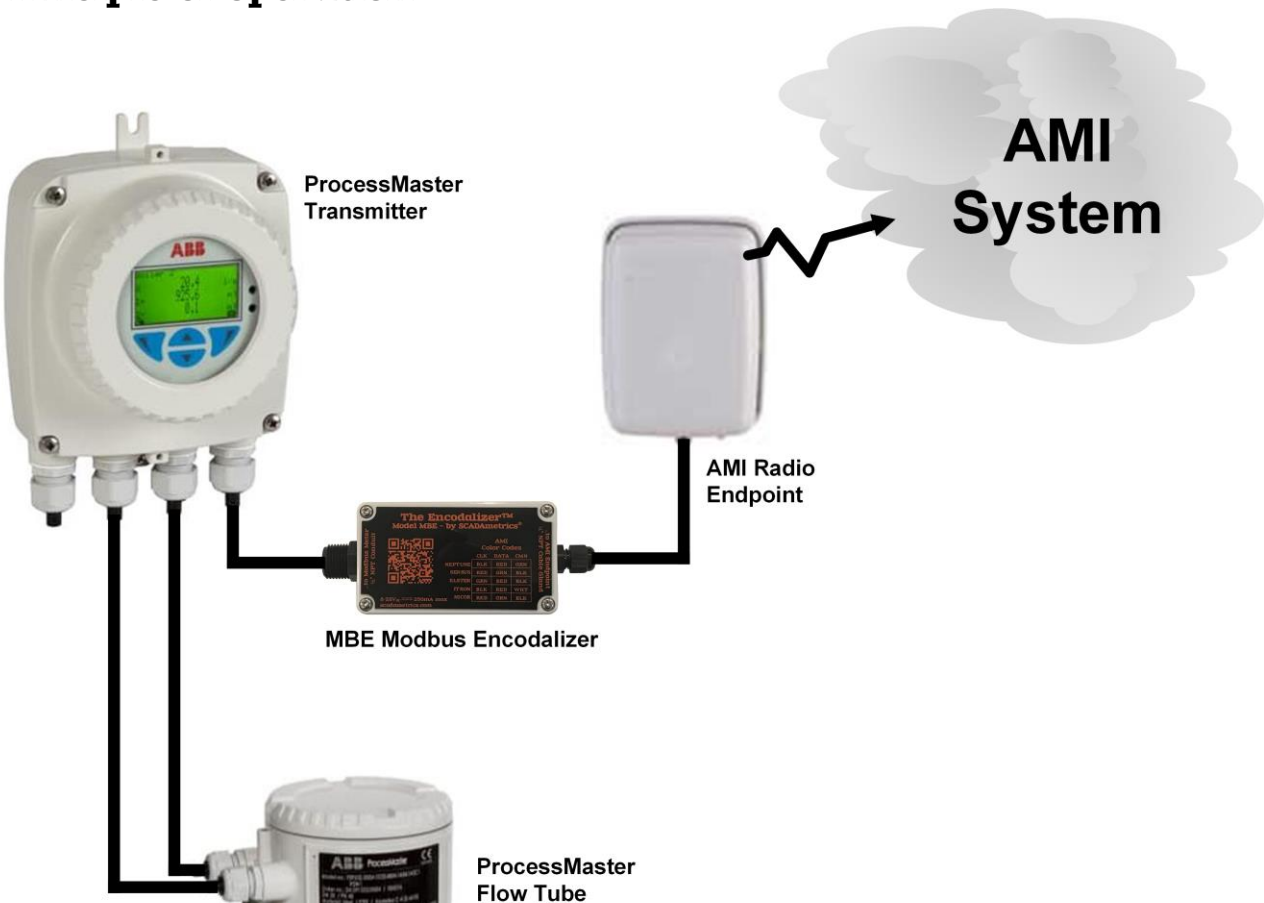
The operational convenience of the **MBE Encodalizer** is based upon the principle that the User sets the Meter Type (Make & Model) via Encodalizer DIP switches, connects the Encodalizer to the meter via Modbus/RTU (2-Wire RS.485), and the Encodalizer interacts with the target meter using the meter's factory default Modbus/RTU settings.

Therefore, minimal setup of the **ProcessMaster** is required. All ProcessMaster factory defaults are used, including baud (9600), data bits (8), parity (odd), stop bits (1). The only settings that must be VERIFIED using the ProcessMaster's integral Display & Menu are the following: Modbus Device ID = “1” , IEEE Word Ordering = “Big-Endian”.



James Mimlitz, SCADAmetrics – ‘Slim’

Principle of Operation



Model MBE Modbus Encodizer™
By SCADAmetrics

Encoder DIP Switch Settings:

1. Set DIP Switches 1-6 Per Desired Data Type:
 - **“ProcessMaster Forward Total”:**
(DIP Switches **4=ON**. DIP Switches 1,2,3,5,6=OFF)
 - **“ProcessMaster Reverse Total”:**
(DIP Switches **1,4=ON**. DIP Switches 2,3,5,6=OFF)
 - **“ProcessMaster Net Total (Forward – Reverse)”:**
(DIP Switches **2,4=ON**. DIP Switches 1,3,5,6=OFF)
2. Set DIP Switches 7,8 = OFF,OFF.
3. Set DIP Switches 9,10 = OFF,OFF.
4. Set DIP Switches 11,12 per the Desired Number of Encoded Digits. For example, if 8 encoded digits are desired, then set 11,12 = OFF,**ON**.
5. Set DIP Switches 13,14,15,16 according to the desired totalizer multiplier.

Example 1: The ProcessMaster Totalizer Screen Displays 925,402.44
Desired AMI Reading: 00925402
Set Multiplier DIP Switches to x1
(13,14,15,16 = OFF,OFF,OFF,OFF)

Example 2: The ProcessMaster Totalizer Screen Displays 925,402.44
Desired AMI Reading: 00092540
Set Multiplier DIP Switches to x10
(13,14,15,16 = **ON**,OFF,OFF,OFF)

Example 3: The ProcessMaster Totalizer Screen Displays 925,402.44
Desired AMI Reading: 09254024
Set Multiplier DIP Switches to x0.1
(13,14,15,16 = OFF,OFF,**ON**,OFF)

ProcessMaster Communication Settings:

It is vitally important that the User ensure that the ProcessMaster communication factory defaults are pre-set as expected. Communication settings may be observed and modified (if necessary) through the ProcessMaster Display and Keypad Menu. The main communication parameters to watch are the following:

- Communication Protocol = "Modbus"
- Modbus Device ID = "1"
- IEEE Word Ordering = "Big-Endian"
- Baud = "9600"
- Data Bits = "8"
- Parity = "Odd"
- Stop Bits = "1"



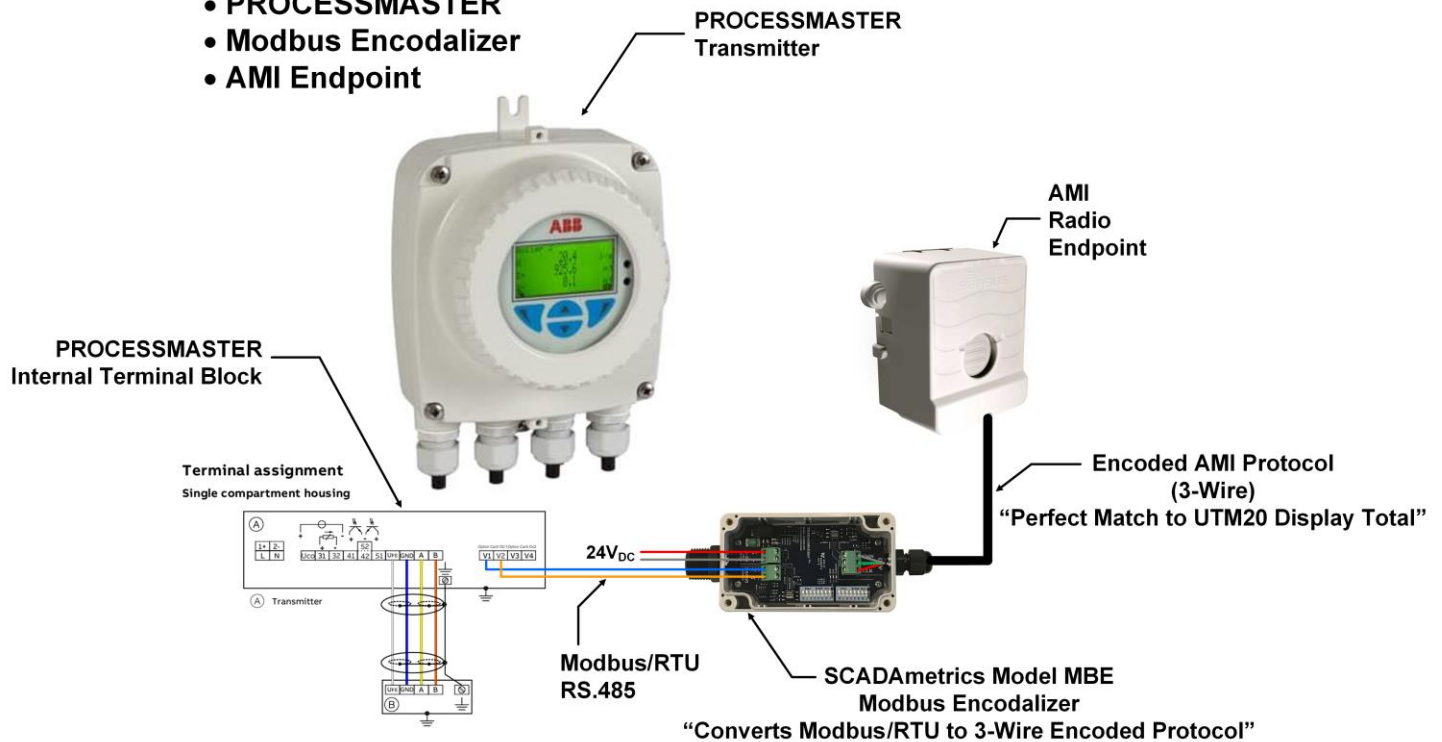
ProcessMaster and Encodalizer Wiring:

See the Wiring Detail, as illustrated on the following page.

1. Install ABB ProcessMaster MagMeter, per ABB Instruction Manual.
2. Connect Encodalizer Modbus Terminals to ProcessMaster Modbus/RTU Terminals:
 - MBE.A(-) to PROCESSMASTER.OPTION.CARD.V1
 - MBE.B(+) to PROCESSMASTER.OPTION.CARD.V2
3. Connect Mains Power to the ProcessMaster.
4. The ProcessMaster bootup process completes after a few seconds.
5. Connect DC Power to MBE Encodalizer (24V_{DC} or 12V_{DC}).
6. The Encodalizer LED should NOT blink RED. Red Blinks Denote a Configuration and/or Read Error.

Wiring Detail:

- PROCESSMASTER
- Modbus Encodizer
- AMI Endpoint



Testing:



If you experience any problems, use of a SCADAmetrics model TMD TheMeterDisplay™ is highly recommended. When the TMD is operated in DEBUG mode (dip switch #10 = ON), the raw Sensus Protocol ASCII data can be observed on the LCD display.

Connections:

TMD.Terminal.1	to →	Encodizer.Terminal.CLK
TMD.Terminal.2	to →	Encodizer.Terminal.DATA
TMD.Terminal.3	to →	Encodizer.Terminal.CMN