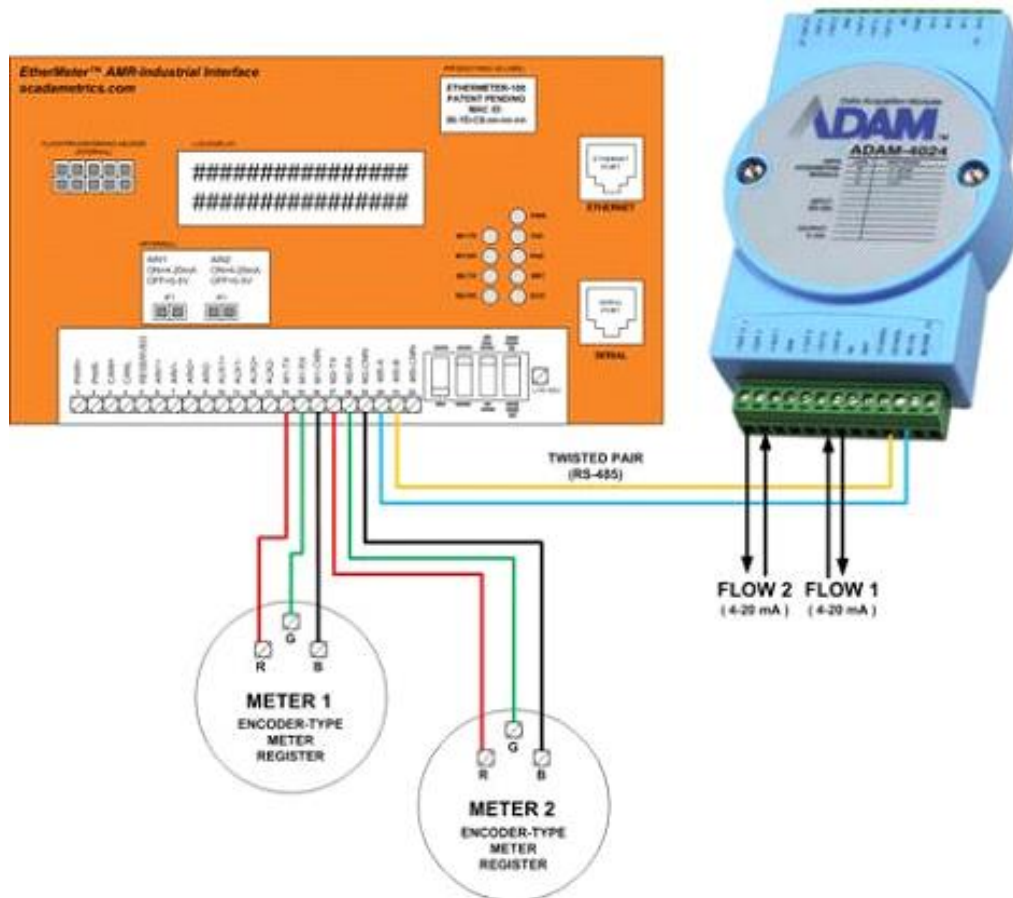


Application Note 015
 Version 005
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Using an EtherMeter® that is Flashed with the Special Analog Output Firmware



This document describes the wiring procedures and EtherMeter settings that are required when using the Special Analog Output Firmware.

In most cases, the user will collect flow rate data via the digital Ethernet and Serial communication channels of the EtherMeter. Digital communication protocols include MODBUS®/TCP/RTU/ASCII, DF1, and EtherNet/IP™.

However, in some instances, the user may wish to interface to 4-20mA analog signals that are proportional to flow. To support this concept, SCADAMetrics has made available special firmware that enables the EtherMeter to translate its flow-rate signals to an ADAM-4024 multi-channel analog output module (manufactured by Advantech).

It is important to note that only high-resolution (8- or 9-digit) flow meter registers should be utilized in conjunction with the Special Analog Output Firmware.

The photo in Figure 1 on the following page illustrates SCADAMetrics' laboratory demonstrator panel for analog flow signaling:

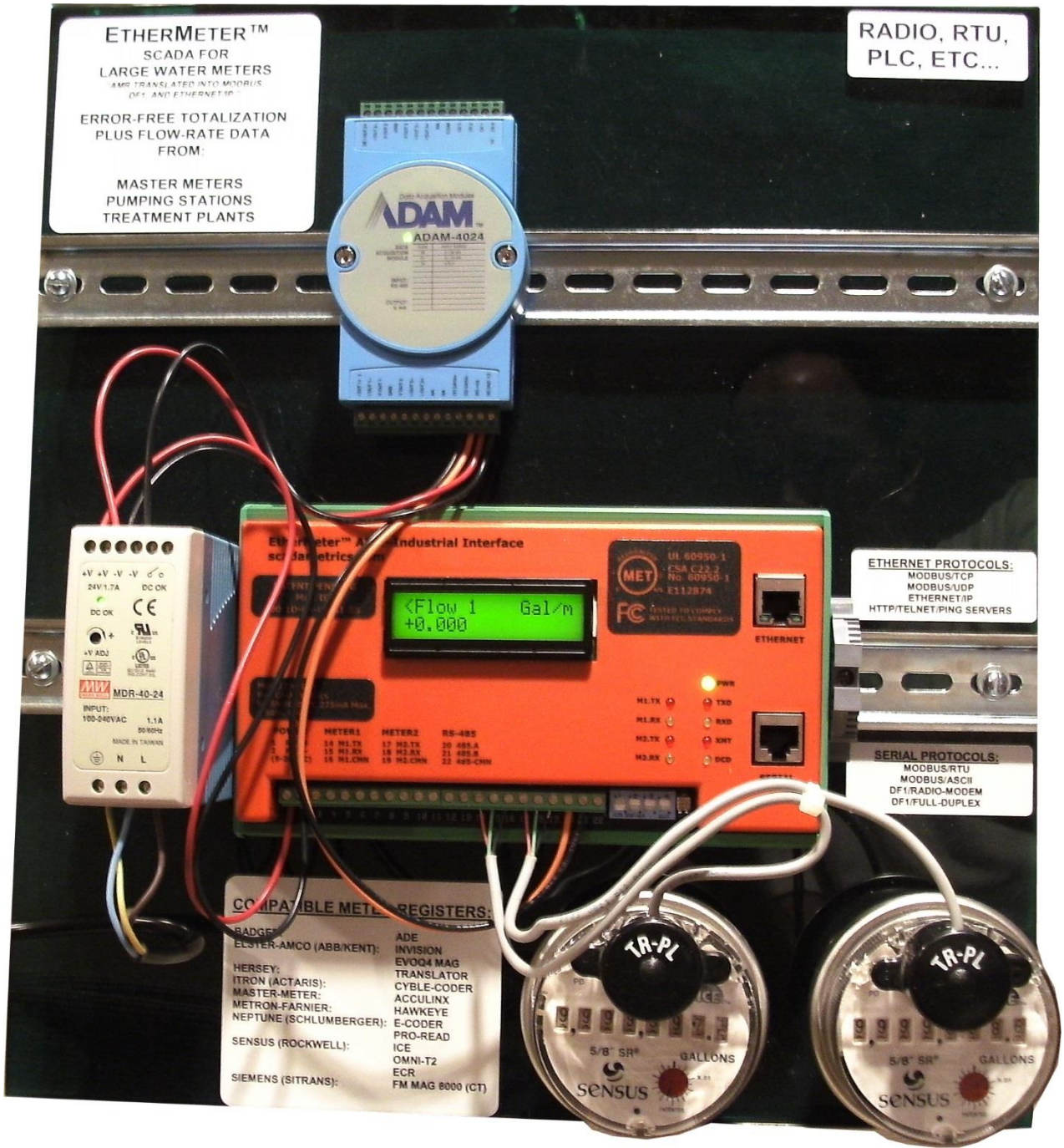


Figure 1. SCADAmetrics Analog Flow Signaling Demonstrator Panel

Note that either one or two meter registers may be connected to the EtherMeter. In the demonstration panel illustrated in Figure 1, two meters are connected to the EtherMeter. Meter wire color codes are according to the Meter Compatibility Matrix.

A detailed view of the ADAM-4024 module wiring is illustrated in Figure 2. Like the EtherMeter, the ADAM-4024 accepts a wide range of DC power supply voltages. In the demonstration panel, the EtherMeter and ADAM-4024 share a common +24VDC power supply.

Note that the Flow#1 4-20mA signal is obtained from IOUT0+ and IOUT0-, and the Flow#2 4-20mA signal is obtained from IOUT1+ and IOUT1-. Please note that the maximum supported loop resistance is 500 ohms.

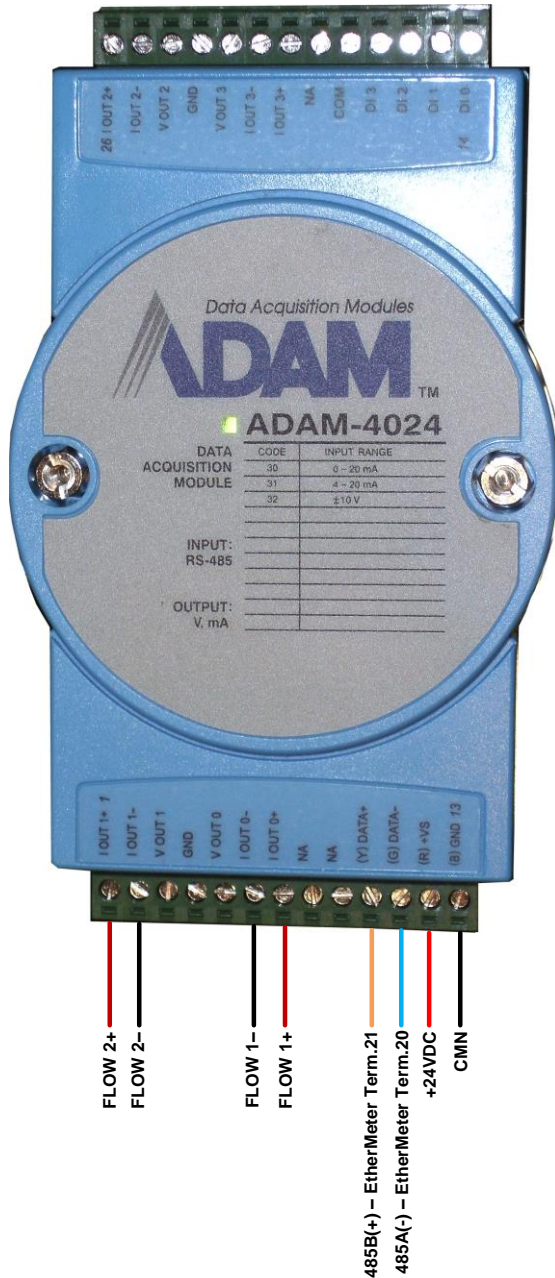


Figure 2. ADAM-4024 Hookup Detail.

ADAM-4024 Configuration:

The Mode Switch on the side of the ADAM-4024 module should be in the “**NORMAL MODE**” position (NOT “INIT MODE”). Otherwise, the ADAM-4024 should be in the factory-default condition (Active Protocol=ADAM, Device ID=1, Baud=9600). No further user setup modifications are necessary.



Switch on side of ADAM-4024 module should be set to **NORMAL MODE!**

Setting the EtherMeter DIP Switches:

The EtherMeter’s DIP Switches must be set according to the following summary:

v257 EtherMeter...

DIP SWITCH 1: DOWN (Serial Port=RS-485)
DIP SWITCH 2: UP (Serial Port=RS-485)
DIP SWITCH 3: UP (RS-485 Term. Resistor ON)
DIP SWITCH 4: DOWN (Reserved)
DIP SWITCH 5: DOWN (Reserved)
DIP SWITCH 6: DOWN (Reserved)
DIP SWITCH 7: UP or DOWN (UP: Display Backlight=ON, DOWN: Display Backlight=OFF)
DIP SWITCH 8: DOWN (Run-Mode)

v256 EtherMeter and Earlier...

DIP SWITCH 1: DOWN (Run-Mode)
DIP SWITCH 2: DOWN (Serial Port=RS-485)
DIP SWITCH 3: UP (RS-485 Term. Resistor ON)
DIP SWITCH 4: UP or DOWN (UP: Display Backlight=ON, DOWN: Display Backlight=OFF)

Setting the Span(s) Of The 4-20mA Signals:

When the flow-rate of a Meter is zero (or less than zero), then its corresponding analog signal will equal 4.00mA. However, the user must define the SPAN – the flow-rate that corresponds to 20.00mA.

The factory default flow-rate that corresponds to 20.00mA is 1000 flow units.
(Examples of flow units are: Gallons/Minute, Liters/Minute, etc.).

The user can modify the SPAN with the following command within the **ETHERMETER SETUP MENU**:

SET CALn M, where n is the meter channel (1 or 2) and M is the 20mA flow-rate.

Examples:

SET CAL1 2000 (“20mA on Meter Ch.1 Corresponds To 2000 GPM.”
– or 2000 CFM, if registration units=FT³)

SET CAL2 3000 (“20mA on Meter Ch.2 Corresponds To 3000 GPM.”
– or 3000 CFM, if registration units=FT³)