

EtherMeter in US Armed Forces Facilities – Supplemental Documentation

1. Network Hardening Procedures

Within US Armed Forces facilities, the EtherMeter is generally installed to serve as a Modbus/TCP gateway to water, gas, and other flow meters.

The EtherMeter’s main purpose is to translate readings from flow meters into non-proprietary Modbus industrial protocols, so that revenue-grade (error-free) meter data may be collected across an Ethernet network. The EtherMeter’s secondary purpose is to serve as a remote display for the flow meter, when it is installed within an industrial enclosure that features a clear door/cover.



The EtherMeter’s executable runs from flash memory as bare-metal firmware, without an underlying operating system, and without an underlying writeable file system.

It includes meter-reading interface hardware and firmware that auto-detects and interrogates every modern encoder-type water meter in the industry. The EtherMeter is also compatible with all pulse (dry-contact) type flow meters.

Consequently, the EtherMeter’s functionality also includes a basic TCP/IP stack – including a PING server, a HTTP Web server, a TELNET server, a MODBUS server, and an A-B EtherNet/IP server.

Please note that for Armed Forces applications, the EtherMeter may be purchased with the following special firmware pre-flashed into the unit(s): **ETH.MIL**

The **ETH.MIL** firmware provides Modbus/TCP functionality over Ethernet, but also reduces the device’s security defense surface area by disabling the following non-essential Ethernet features by default:

- HTTP Web Server (TCP Port 80)
- TELNET Server (TCP Port 23)
- A-B EtherNet/IP Server (TCP Port 44818)

However, if the EtherMeter is not pre-flashed with **ETH.MIL** firmware (e.g. **ETH.STANDARD**), the user may still field-configure the EtherMeter to disable the aforesaid ports via the **SERIAL SETUP MENU** interface.

Procedure:

- Enter **SERIAL SETUP MODE** using a notebook computer and HyperTerminal (or PuTTY).
- Repeatedly press the **TAB** key until arriving on Page.3 (of 8) of the **SETUP MENU**.
- Type the following commands:

```
SET PORT HTTP 0 <enter>
SET PORT TELNET 0 <enter>
SET PORT ETHIP 0 <enter>
```

(Note – Setting a server’s port number to zero disables the server.)

- Cycle power to the EtherMeter
- At this point, on the LAN, the EtherMeter will only respond to **MODBUS** requests and **PING** requests.

2. Static IP Addressing

By default, the EtherMeter has a DHCP client enabled. However, it is recommended that each EtherMeter on a control system or utility-monitoring LAN be set up for static IP addressing.

Procedure:

- a) Enter **SERIAL SETUP MODE** using a notebook computer and HyperTerminal (or PuTTY).
- b) Repeatedly press the **TAB** key until arriving on Page.3 (of 8) of the **SETUP MENU**.
- c) Type the following commands, where each ### is replaced by the user's desired parameters:

```
SET NETMASK ###.###.###.### <enter>
SET IP      ###.###.###.### <enter>
SET GATEWAY ###.###.###.### <enter>
SET DHCP    OFF             <enter>
```

- d) Cycle power to the EtherMeter

3. Non-Network-Based (RS.485 Serial) Data Collection

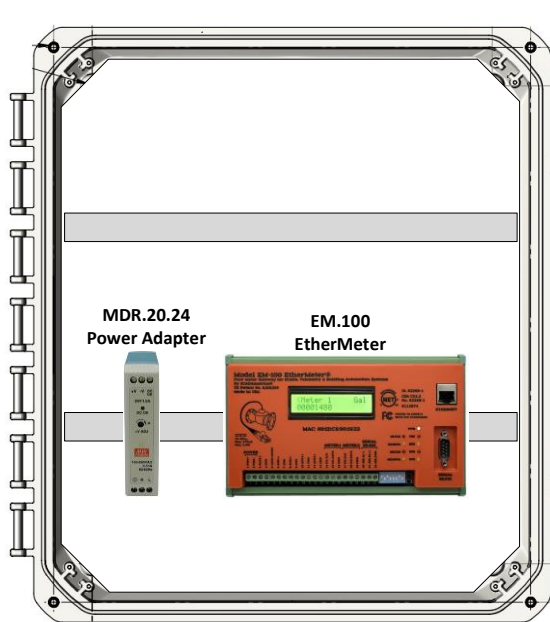
As an alternative to utilizing the Modbus/TCP data collection protocol over 10Base-T Ethernet, the user may utilize the Modbus/RTU data collection protocol over RS.485 Serial.

The RS.485 physical interface is available on EtherMeter terminal 20 (RS.485.A(-)) and terminal 21 (RS.485.B(+)). Please see the EtherMeter User Manual for details.

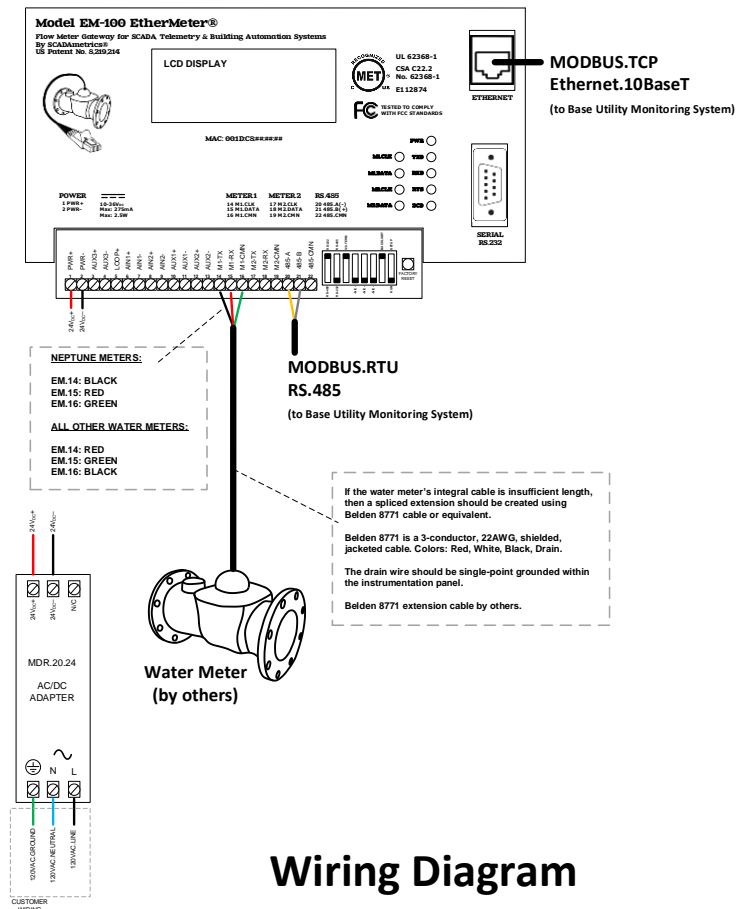
4. Physical Installation Procedures

The EtherMeter is designed to be installed within the confines of a control or meter interface panel. The EtherMeter mounts on standard 35mm DIN rail, it accepts 9-36V_{DC} (typically 24V_{DC}).

A typical installation is illustrated below:



**Panel Layout (Approx)
Enclosure and Panel by Others.
Power Adapter by Others.**



At a minimum, the following key documents should be downloaded from scadametrics.com and thoroughly studied:

- EtherMeter Pre-Start Checklist
- EtherMeter User Manual
- EtherMeter Datasheet (Specifications)