

## Connect a Siemens HydroRanger 200 to an AMI/AMR System Using the SCADAmetrics MBE Encodalizer™



The Siemens HydroRanger 200 (pictured left) is a popular transmitter for open-channel flow meters; and it is suitable for a broad range of water and wastewater flow metering applications.

The HydroRanger features traditional 4-20 milliamp and pulse SCADA signals, as well as modern Modbus/RTU communication protocols. Like most process flow meter transmitters, the HydroRanger 200 does not offer native AMI/AMR-compatibility.

However, today, the latest release of the SCADAmetrics Model MBE Encodalizer now adds Neptune and Sensus protocols to this important flow meter transmitter, so that it may now be easily integrated into today's modern AMI/AMR systems.



The purpose of this Application Note is to provide technical assistance to the HydroRanger 200 User who wishes to connect his meter to an AMI/AMR system.

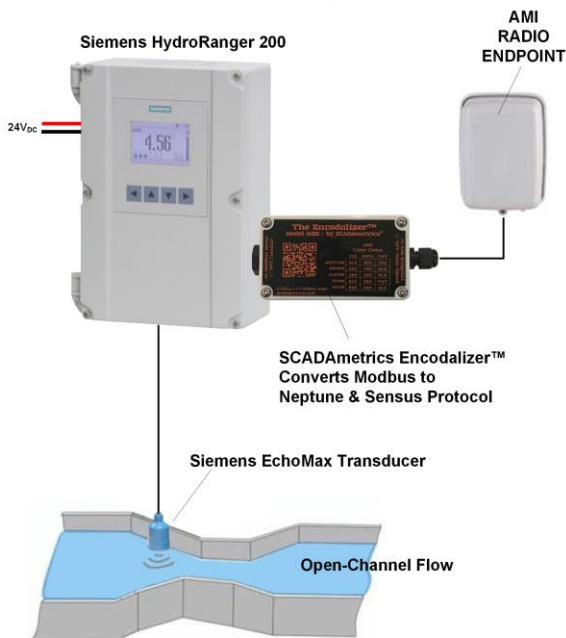
The operational convenience of the MBE Encodalizer is based upon the principle that the User sets the Meter Type (Make & Model) via Encodalizer DIP switches, connects the Encodalizer to the meter via Modbus/RTU (2-Wire RS.485), and the Encodalizer interacts with the target flow meter using the meter's factory default Modbus/RTU settings. No special setup of the meter should be required beyond normal initialization procedures.



*Jim 'Slim' Mimplitz, SCADAmetrics*

### Principle of Operation:

#### Connecting an Open-Channel Wastewater Flow Meter to an AMI System



## Encodalizer DIP Switch Settings:

1. Set DIP Switches 1-6 Per Meter Type “HydroRanger 200 Channel 1”  
(DIP Switches 1,2,6=ON. DIP Switches 3,4,5=OFF)
2. Set DIP Switch 8 Per Desired AMI Protocol: Sensus or Neptune: OFF=Sensus, ON=Neptune.
3. DIP Switches 9 and 10 Have No Effect Upon the AMI Units (Gal, FT<sup>3</sup>, M<sup>3</sup>...), and Therefore May Be Ignored. AMI Units for The HydroRanger Always Follow the HydroRanger Units of Channel 1.
4. Set DIP Switches 11,12 Per Number of Desired AMI Digits: 6, 7, 8, or 9.  
If AMI Protocol is Set to Neptune, Then Setting Number of AMI Digits to 6 Will Force 6-Digit Neptune Protocol. Otherwise, Neptune Protocol Returns 8 or 6 Digits – Depending Upon Interrogation Device Protocol.
5. Set DIP Switches 13,14,15,16 Per Desired Totalizer Multiplier (x1, x10, x100, etc...).  
**(FOR SIMPLICITY – SEE DIP SWITCH TABLES AT THE END OF THIS DOCUMENT!!)**

## HydroRanger 200 and Encodalizer Wiring:

1. Connect Mains Power to HydroRanger 200. Connect Ground to HydroRanger grounding lug. The HydroRanger bootup process completes after approximately 15-30 seconds.
2. If SCADA Connection is Required, Then Connect SCADA System to appropriate HydroRanger discrete I/O terminals, such as 4-20mA, Dry-Contact, etc...
3. Connect Encodalizer Modbus Terminals to HydroRanger 200 Modbus/RTU Terminals (A to A, B to B)
4. Connect DC Power to Encodalizer (8-28V<sub>DC</sub>).
5. The Encodalizer LED should NOT blink RED. Red Blinks Denote a Configuration and/or Read Error.

## HydroRanger 200 Setup:

1. Set Totalizer Units in HydroRanger Menu: GAL, KGAL, FT<sup>3</sup>, or M<sup>3</sup>, or L
2. Set Totalizer Display Decimal Point Location: (n Digits After Decimal Point)
3. Do NOT Modify HydroRanger 200 Modbus/RTU Default Settings.  
(Device ID: 1, Baud: 19200, Stop Bits: 1, Parity: None, Byte Order: 3-2-1-0)
4. Ensure That HydroRanger 200 Totalizer Channel 1 Is Set To: FLOW TOTAL

## Connecting AMI Endpoint:

Function	Sensus Meter Color (Badger, Metron-Farnier, Master Meter, Kamstrup, Mueller, Zenner, RG3, Nicor Cable)	Neptune Color	Itron ERT Cable
CLK	Red	Black	Black
DATA	Green White	Red	Red
CMN	Black	Green	White Shield

## Testing:



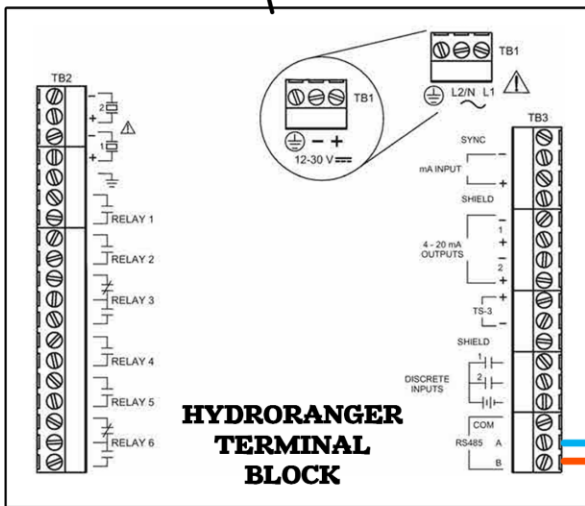
If you experience any problems, use of a SCADAmetrics model TMD TheMeterDisplay™ is highly recommended. The TMD can be used to display the AMI totalizer reading and/or AMI Serial Number:

### Connections:

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

# HydroRanger 200 Connection to AMI System:

**SIEMENS  
HYDRORANGER 200**



**SCADAMETRICS  
MODEL MBE  
MODBUS  
ENCODALIZER™**

