

EtherMeter®

**FLOW METER GATEWAY FOR SCADA,
TELEMETRY, & BUILDING AUTOMATION SYSTEMS**
COVERED BY US PATENT NO. 8,219,214



Flow-Meter Compatibility Matrix

21 September 2017

AUTHORIZED SCADAMETRICS RESELLER

SCADAMetrics
St. Louis, Missouri USA
scadmetrics.com

EtherMeter® Compatibility Matrix


1. PULSE-TYPE METERS

The EtherMeter was primarily designed for absolute-encoder-type meters. However, it also provides meter-reading support for many pulse-based meters. As a consequence, pulse meter signal(s) may be connected to either (or both) of the EtherMeter's meter input channels. Pulse processing technology allows the EtherMeter to collect meter totalization and flow rate data from non-encoder-based meters. Common examples include petroleum & chemical meters, commercial & industrial natural gas meters, volume correctors, and many others.

When the EtherMeter handles pulse-based meters, the totalization and flow-rate data is stored and transmitted from the same Modbus- and Rockwell-compatible memory registers that it uses for encoder-based meters. Therefore, regardless of which type of meter(s) is connected to the EtherMeter (encoder versus pulse), collection of totalization and flow data by the connected SCADA system is identical.

Because of the large number of pulse-type meters available, we cannot provide an exhaustive list of compatible pulse-type meter makes and models. Instead, we specify the acceptable pulse-type technologies, which include ONLY the following types:

- Mechanical Dry Contact
- Solid-State Dry Contact
- Open-Collector Input

<p>PULSE OUTPUT SIGNAL FLOW METERS</p>		<p>The EtherMeter is compatible with pulse output signal flow meters that feature a passive (mechanical-switch or solid-state switch) output.</p> <p>The EtherMeter is NOT compatible with pulse-output meters that feature an active (voltage) pulse.</p> <p>When using the EtherMeter with a pulse output signal flow meter, both the EtherMeter and the flow meter MUST BE powered by a battery-backed power supply.</p> <p>Wiring Codes:</p> <p>Meter Channel 1: PULSE(+)=EtherMeter.Terminal.15, PULSE(-)=EtherMeter.Terminal.16</p> <p>Meter Channel 2: PULSE(+)=EtherMeter.Terminal.18, PULSE(-)=EtherMeter.Terminal.19</p>
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

2. ENCODER-TYPE METERS





The provided Encoder-Type Meter Compatibility Matrix is by no means exhaustive, especially in light of the fact that there are a multitude of three-wire-protocol registers available on the market today. Advertised full compatibility is limited to registers deemed so based upon testing within the laboratory and/or the field; and those are denoted by the EtherMeter™ logo:










If there is a Sensus-protocol, Neptune-protocol, or K-Frame-protocol encoder meter register that is not listed as compatible based upon testing, and you would like to see it listed as such, then please contact SCADAmetrics. Note that in such cases, we may request a register for testing and verification.




ENCODER-TYPE METER COMPATIBILITY MATRIX




Make	Model	Notes
<p style="text-align: center;">ABB Elster-AMCO</p>	<p style="text-align: center;">AquaMaster III Mag-Meter K-Frame Protocol Option</p>	<p>Compatible (based upon laboratory and/or field testing). Test Results provided courtesy City of Montreal, Quebec, Canada.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.) Provides accurate bi-directional measurements of flow-rate and totalization.</p> <p>Note: The data-logging version of this meter does NOT provide the "ScanCoder" output signal that the EtherMeter requires.</p> <p>Mains-powered or battery-powered.</p> <p>Register requires user or factory pre-programming per Quick Reference Guide IM/AM/QRG_13:</p> <p>Set Parameter 326 (Adapter Code) to '0' (ScanCoder). Set Parameter 327 (Totalizer Source and Range) to '2' (Net x1).</p> <p>Must use the following EtherMeter setup command(s): SET ROLLn <most-significant 2 totalizer digits on meter display unit> SET PWRn 700</p> <p>Wiring Interface: +V(GREEN)=TX, DATA(RED)=RX, 0V(BLACK)=CMN Connect To: 3-Terminal PCB WADX2026</p>
<p style="text-align: center;">Badger</p>	<p style="text-align: center;">ADE®</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Badger Meter.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (6 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Badger</p>	<p style="text-align: center;">HRE-LCD High Resolution Encoder, LCD Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of ABS Water Cooperative (IL).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (9 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (20-year battery life).</p> <p>Register requires factory pre-programming. The maximum (9 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p>




<p>Badger</p>	<p>HRE-MECH High Resolution Encoder, Mechanical Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of ABS Water Cooperative (IL).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>Badger</p>	<p>E-Series® Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Results provided courtesy City of Montreal, Quebec, Canada.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (9 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (20-year battery life).</p> <p>Register requires factory pre-programming. Specify 'High-Resolution E-Series ADE Mode'. The maximum (9 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p>
<p>Badger</p>	<p>M5000 Mag-Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Results provided courtesy City of Montreal, Quebec, Canada.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register requires field- or factory-programming. The maximum (8 digits) is recommended: Ouput #4 should be set to ADE. Communication method should be set to ADE.</p> <p>Mains-powered or battery-powered. SCADAmetrics recommends mains-powered, so that regular battery replacement is not required.</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring: INPUT+ = TX, ADE_DATA = RX, INPUT- JUMPERED TO ADE_GROUND = CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p>
<p>Elster-AMCO (ABB/Kent)</p>	<p>InVISION™ Sensus- Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Bond-Madison Water District.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (6 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>




<p>Elster-AMCO (ABB/Kent)</p>	<p>InVISION™</p> <p>K-Frame Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Elster-AMCO Water.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Wiring Color Codes: GREEN=TX, RED=RX, BLACK=CMN Note: On the EtherMeter, the user must set PWRn parameter to 700 msec.</p>
<p>Elster-AMCO (ABB/Kent)</p>	<p>ScanCoder</p> <p>K-Frame Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing).</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Wiring Color Codes: BLACK=TX, RED=RX, GREEN(OR BARE SHIELD)=CMN Note: On the EtherMeter, the user must set PWRn parameter to 700 msec.</p>
<p>Elster AMCO</p>	<p>evoQ4</p> <p>Mag-Meter</p> <p>Sensus- Protocol Option</p>	<p>Likely Compatible (based upon published specifications).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (10-year battery life).</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>Elster AMCO</p>	<p>evoQ4</p> <p>Mag-Meter</p> <p>K-Frame Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Elster-AMCO Water.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Provides accurate measurement of bi-directional flow-rate and totalization.</p> <p>Battery-powered (10-year battery life).</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring Color Codes: WHITE=TX, RED=RX, BLACK=CMN Note: On the EtherMeter, the user must set PWRn parameter to 700 msec.</p>
<p>Itron (Actaris)</p>	<p>Cyble™ Coder</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Itron (Actaris).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-Powered (12-year battery life).</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>




<p style="text-align: center;">Kamstrup</p>	<p style="text-align: center;">Flow IQ 2100 Ultrasonic Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Kamstrup USA.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (9 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows. Also provides advanced alarm flags, which can be accessed by the EtherMeter. Please request special Kamstrup Firmware when ordering the EtherMeter.</p> <p>Note: On the EtherMeter, SAMPn should always be set to an even multiple of 32 seconds. Example: On the EtherMeter, set SAMPn to 64, TOn to 64 (same as SAMPn), FCALCn to DTOTAL</p> <p>Battery-powered (16-year battery life). Note: For maximum Kamstrup meter battery life preservation, the user should set the EtherMeter's SAMPn setting to >=320 Seconds.</p> <p>Register requires factory pre-programming. The maximum (9 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Master Meter</p>	<p style="text-align: center;">Acculinx™</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register and Results courtesy of Davis-Monthan AFB (Tucson, AZ).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register should <u>NOT</u> include the Factory RESISTOR option. Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Master Meter</p>	<p style="text-align: center;">Octave® Ultrasonic Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register and Results courtesy of Davis-Monthan AFB (Tucson, AZ).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Battery-powered (10-year battery life).</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register should <u>NOT</u> include the Factory RESISTOR option. Register requires factory pre-programming. The maximum (8 digits) is recommended. "NET UNSIGNED" Totalization Mode is Recommended.</p> <p>When ordering the Octave®, specify ENCODER_UPDATE_PERIOD as 60 seconds.</p> <p>Note: On the EtherMeter, Recommended SAMPn Setting: 60, 120, 180, 240, 300, 600, or 900 Seconds. (Must Be A Multiple of 60 Seconds). Example. On the EtherMeter, set SAMPn to 60, TOn to 60 (same as SAMPn), FCALCn to DTOTAL</p> <p>Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>




<p>Master Meter</p>	<p>Elinx™ Interpreter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of Master Meter Inc.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (20-year battery life). Note: On the EtherMeter, the user should set SAMPn >= 30 seconds to preserve battery life.</p> <p>On the EtherMeter, the user should set PWRn to 500.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>McCrometer (& Water Specialties)</p>	<p>FlowCom Smart-Output Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register courtesy of McCrometer Corp. (Hemet, CA).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered. In order to preserve battery capacity, recommend that the Flowcom be purchased with the 4-20mA output option, which allows for externally-powering the meter.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>McCrometer (& Water Specialties)</p>	<p>UltraMag™ Flanged MagMeter</p> <p>Models UM06 & UM08</p> <p>Smart-Output Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Meter courtesy of McCrometer Corp. (Hemet, CA).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 or 9 digits). The high-resolution totalization speeds the flow-rate calculation.</p> <p>Order with "MIM085 Smart Output™ Option: 9-Digit Absolute Encoder Signal. ...or... Order with "MIM087 Smart Output™ Option: 8-Digit Absolute Encoder Signal.</p> <p><u>Note:</u> If the meter is to be connected <u>only</u> to an EtherMeter, then the MIM085 option is recommended. If the meter is to be co-connected to a utility AMR system, then select the output compatible with the utility AMR system (MIM085=9 Digit, MIM087=8 Digit, MIM086=6 Digit)</p> <p>MIM085 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM086 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM087 Option Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>



<p>McCrometer (& Water Specialties)</p>	<p>FPI Mag™ Insertion MagMeter</p> <p>Smart-Output Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Meter courtesy of McCrometer Corp. (Hemet, CA).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 or 9 digits). The high-resolution totalization speeds the flow-rate calculation.</p> <p>Order with “MIM085 Smart Output™ Option: 9-Digit Absolute Encoder Signal. ...or... Order with “MIM087 Smart Output™ Option: 8-Digit Absolute Encoder Signal.</p> <p><u>Note:</u> If the meter is to be connected <u>only</u> to an EtherMeter, then the MIM085 option is recommended. If the meter is to be co-connected to a utility AMR system, then select the output compatible with the utility AMR system (MIM085=9 Digit, MIM087=8 Digit, MIM086=6 Digit)</p> <p>MIM085 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM086 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM087 Option Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>McCrometer (& Water Specialties)</p>	<p>SPI Mag™ Insertion MagMeter</p> <p>Smart-Output Version</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Meter courtesy of McCrometer Corp. (Hemet, CA).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 or 9 digits). The high-resolution totalization speeds the flow-rate calculation.</p> <p>Order with “MIM085 Smart Output™ Option: 9-Digit Absolute Encoder Signal. ...or... Order with “MIM087 Smart Output™ Option: 8-Digit Absolute Encoder Signal.</p> <p><u>Note:</u> If the meter is to be connected <u>only</u> to an EtherMeter, then the MIM085 option is recommended. If the meter is to be co-connected to a utility AMR system, then select the output compatible with the utility AMR system (MIM085=9 Digit, MIM087=8 Digit, MIM086=6 Digit)</p> <p>MIM085 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM086 Option Wiring Color Codes: BLACK=TX, RED=RX, WHITE=CMN MIM087 Option Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p>Metron-Farnier</p>	<p>HawkEye™ OER</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Metron-Farnier. (Note: The 6-digit (newest) version of this register is recommended.)</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The “FIXED DTOTAL” flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (6 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, WHITE=RX, BLACK=CMN</p>


<p>Metron-Farnier</p>	<p>MIU (Register Attachment)</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Metron-Farnier.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.) Reverse-flows can cause erroneous readings and are not detected with this register.</p> <p>Battery-powered.</p> <p>Register requires factory pre-programming. The maximum (7 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, WHITE=RX, BLACK=CMN</p>
<p>Metron-Farnier</p>	<p>Innov8™</p>	<p>NOT Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Metron-Farnier.</p>
<p>Mueller (Hersey)</p>	<p>Translator</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Hersey Meter.</p> <p><u>Good</u> register for SCADA System interrogation of encoder register.</p> <p>Provides medium-resolution totalization (6 digits). The medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (6 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, WHITE=RX, BLACK=CMN</p>
<p>Mueller (Hersey)</p>	<p>HbMAG Mag-Meter</p> <p>Sensus Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Siemens Industry.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>This mag-meter provides accurate measurement of bi-directional flow-rate and totalization.</p> <p>By Default, this meter is Battery-powered. We recommend the meter configuration that features the line-powered option with a small internal battery backup option.</p> <p>Line-Powered Option: 12/24 V AC/VDC Mains (Line) Powered.</p> <p>Internal Battery Backup Option: HBBAT1D.</p> <p>Register requires user/factory pre-programming. The maximum (8 digits) is recommended. Adjust Parameter 305 to provide desired resolution. For 3" size meters and below, set to "Two Digits After Decimal Point" (GALx100 x 0.01 = GALx1 Resolution). For 4" size meters and above, set to "One Digit After Decimal Point (GALx100 x 0.1 = GALx10 Resolution).</p> <p>Note: On the EtherMeter, Recommended SAMPn Setting: 15, 30, 45, 60, 75,... (Must Be A Multiple of 15 Seconds).</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring Codes: TX=TERM.91, RX=TERM.92, CMN=TERM.93</p>

<p style="text-align: center;">Neptune (Schlumberger)</p>	<p style="text-align: center;">E-Coder™</p> 	<p>Compatible (based upon laboratory and/or field testing).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register does not require any special factory pre-programming (Neptune Factory Defaults = OK).</p> <p>Note: On the EtherMeter, the user should set PWRn parameter to 401 msec; and set SAMPn >= 20 seconds.</p> <p>Note: The EtherMeter is <u>NOT</u> compatible with the R900i version of the E-Coder. The R900i has a built-in radio, but no hookup cables or terminals, and therefore it is not compatible with the EtherMeter or any other non-Neptune reading equipment.</p> <p>Wiring Color Codes: BLACK=TX, RED=RX, GREEN=CMN</p> <p>SPECIAL NOTE FOR NEPTUNE COMPOUND METERS OUTFITTED WITH TWO E-CODER REGISTERS: When using a compound meter, and 2 registers are connected in parallel, that means the registers are programmed into 'Network Mode'. The EtherMeter is not compatible with registers that are in 'Network Mode'. The register signal wires must be separated; and the registers must be re-programmed into 'Normal Mode' using a Neptune Handheld Programmer. Please call if a more details are required.</p>
<p style="text-align: center;">Neptune (Schlumberger)</p>	<p style="text-align: center;">Tru/Mag™</p> 	<p>Compatible (based upon laboratory and/or field testing).</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation.</p> <p>Register does not require any special factory pre-programming (Factory Defaults = OK).</p> <p>Note: On the EtherMeter, the user should set PWRn parameter to 401 msec; and set SAMPn >= 20 seconds.</p> <p>Note 1: External-Power is recommended. Note 2: The Tru/Mag only measures flow in the forward direction (7/24/2012).</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring Color Codes: BLACK=TX, RED=RX, GREEN=CMN</p>
<p style="text-align: center;">Neptune (Schlumberger)</p>	<p style="text-align: center;">ProRead™ "3-Board"</p> 	<p>Compatible (based upon laboratory and/or field testing). Register must be an Auto-Sense and Revision H or above (eg: "AUTO H65N").</p> <p><u>Fair</u> register for SCADA System interrogation of encoder register.</p> <p>Provides low/medium-resolution totalization (5.2 digits). The low/medium-resolution totalization delays flow-rate calculations and reverse-flow detection. (The "FIXED DTOTAL" flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (5.2 digits) is recommended.</p> <p>Wiring Color Codes: BLACK=TX, RED=RX, GREEN=CMN</p> <p>SPECIAL NOTE FOR NEPTUNE COMPOUND METERS OUTFITTED WITH TWO PRO-READ REGISTERS: When using a compound meter, and 2 registers are connected in parallel, that means the registers are programmed into 'Network Mode'. The EtherMeter is not compatible with registers that are in 'Network Mode'. The register signal wires must be separated; and the registers must be re-programmed into 'Normal Mode' using a Neptune Handheld Programmer. Please call if a more details are required.</p>

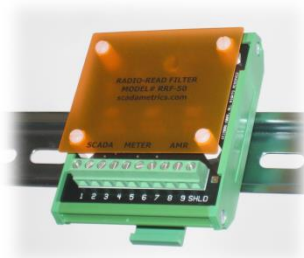
<p style="text-align: center;">Neptune (Schlumberger)</p>	<p style="text-align: center;">ProRead™ “2-Board”</p> 	<p>Compatible (based upon laboratory and/or field testing). Register must be an Auto-Sense and Revision H or above (eg: “AUTO H49N”). Test Register provided courtesy of Ti-Sales.</p> <p><u>Fair</u> register for SCADA System interrogation of encoder register.</p> <p>Provides low -resolution totalization (4 digits). The low -resolution totalization delays flow-rate calculations and reverse-flow detection. (The “FIXED DTOTAL” flow calculation method is recommended.)</p> <p>Register requires factory pre-programming. The maximum (4 digits) is recommended.</p> <p>Wiring Color Codes: BLACK=TX, RED=RX, GREEN=CMN</p> <p>SPECIAL NOTE FOR NEPTUNE COMPOUND METERS OUTFITTED WITH TWO PRO-READ REGISTERS: When using a compound meter, and 2 registers are connected in parallel, that means the registers are programmed into 'Network Mode'. The EtherMeter is not compatible with registers that are in 'Network Mode'. The register signal wires must be separated; and the registers must be re-programmed into 'Normal Mode' using a Neptune Handheld Programmer. Please call if a more details are required.</p>
<p style="text-align: center;">RG3</p>	<p style="text-align: center;">Tomahawk™</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of RG3 Meter Company.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (20-year battery life). Note: On the EtherMeter, the user should set SAMPn >= 30 seconds to preserve battery life.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">ICE® (ECR-III)</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of HD Supply Waterworks.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p><u>Recommended Pre-Programming Parameters:</u> Reading Wheels: 8 thru 1 Programmable ID: <disabled> Programmable Text: <disabled/blank> Multiplier: <disabled> Unit: <disabled> Reading String: <Normal Reading String></p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>

<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">OMNI T² Turbo, C² Compound, F² Fire Svc, R² Residential</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of HD Supply Waterworks.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Battery-powered (10-year battery life). Note: On the EtherMeter, the user should set SAMPn >= 30 seconds to preserve battery life.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p><u>Recommended Pre-Programming Parameters:</u> Reading Wheels: 8 thru 1 Programmable ID: <disabled> Programmable Text: <disabled/blank> Multiplier: <disabled> Unit: <disabled> Reading String: <Normal Reading String></p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">ECR</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of HD Supply Waterworks.</p> <p>Note 1: Register Utilizes The “Fixed-Length” Variation Of The Sensus Protocol.</p> <p>Note 2: Obsolete Register, No Longer Available From Sensus. SCADAmetrics recommends replacement with ICE® Register.</p> <p>Note 3: Sensus/Rockwell produced a register called “ECR/TRC” which has been tested and found to be NOT compatible with the EtherMeter.</p> <p><u>Fair</u> register for SCADA System interrogation of encoder register.</p> <p>Provides low resolution totalization (4 digits). The low -resolution totalization delays flow-rate calculations and reverse-flow detection. (The “FIXED DTOTAL” flow calculation method is recommended.)</p> <p>Register does not require factory pre-programming.</p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN</p>
<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">iPerl™ Mag-Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of HD Supply Waterworks.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Battery-powered (10-year battery life). Note: On the EtherMeter, the user should set SAMPn >= 30 seconds to preserve battery life.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended. Requires iPerl 3-Wire, Plain-End Connector.</p> <p><u>Recommended Pre-Programming Parameters:</u> Reading Wheels: 8 thru 1 Programmable ID: <disabled> Programmable Text: <disabled/blank> Multiplier: <disabled> Unit: <disabled> Reading String: <Normal Reading String></p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p>

<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">AccuStream™</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Registers provided courtesy of HD Supply Waterworks.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Register requires factory pre-programming. The maximum (8 digits) is recommended.</p> <p><u>Recommended Pre-Programming Parameters:</u> Reading Wheels: 8 thru 1 Programmable ID: <disabled> Programmable Text: <disabled/blank> Multiplier: <disabled> Unit: <disabled> Reading String: <Normal Reading String></p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2.</p>
<p style="text-align: center;">Sensus (Rockwell/ Invensys)</p>	<p style="text-align: center;">AccuMag™ Mag-Meter</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Results provided courtesy of City of Montreal, Quebec, Canada.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>Note: On the EtherMeter, SAMPn should always be set to an even multiple of 30 seconds. Example: On the EtherMeter, set SAMPn to 60, TOn to 60 (same as SAMPn), FCALCn to DTIME or DTOTAL.</p> <p>Battery-powered (8 to 15-year battery life). Note: For maximum meter battery life preservation, the user should set the EtherMeter's SAMPn setting to >=300 Seconds.</p> <p>Note: It has been our observation that the 30 second update period of the Accumag is only approximate. Therefore, setting FCALCn to DTIME is likely to provide better results than DTOTAL.</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p><u>Recommended Pre-Programming Parameters:</u> Reading Wheels: 8 thru 1 Programmable ID: <disabled> Programmable Text: <disabled/blank> Multiplier: <disabled> Unit: <disabled> Reading String: <Normal Reading String></p> <p>Wiring Color Codes: RED=TX, GREEN=RX, BLACK=CMN Note: On the EtherMeter, the user must set CLKLOWn parameter to 2, and the user must set PWRn parameter to 500.</p>

<p style="text-align: center;">Siemens (Sitrans)</p>	<p style="text-align: center;">F M MAG 8000 Mag-Meter</p> <p style="text-align: center;">Sensus Protocol Option</p> 	<p>Compatible (based upon laboratory and/or field testing). Test Register provided courtesy of Siemens Industry.</p> <p><u>Excellent</u> register for SCADA System interrogation of encoder register.</p> <p>Provides high-resolution totalization (8 digits). The high-resolution totalization speeds the flow-rate calculation and detection of reverse flows.</p> <p>This mag-meter provides accurate measurement of bi-directional flow-rate and totalization.</p> <p>By Default, this meter is Battery-powered. We recommend the meter configuration that features the line-powered option with a small internal battery backup option.</p> <p>Line-Powered Option: 12/24 V AC/VDC Mains (Line) Powered.</p> <p>Internal Battery Backup Option: HBBAT1D.</p> <p>Register requires user/factory pre-programming using the Siemens Flow Tool Software. The maximum (8 digits) is recommended.</p> <p>Adjust Parameter 305 to provide desired resolution: For All Size Meters, Set to "Zero Digits After Decimal Point", which will provide GALx1 Resolution.</p> <p>To Monitor NET Totalization, Set Parameter 310 (Flow Direction Totalizer 1) to "NET".</p> <p>For Gallon Registration, Set Parameter 8 (Totalizer Unit) to GAL; and Set Parameter 9 (Flowrate Unit) to GPM.</p> <p>Note: On the EtherMeter, Recommended SAMPn Setting: 15, 30, 45, 60, 75,... (Must Be A Multiple of 15 Seconds).</p> <p>MagMeter: Meter grounding lug(s) MUST be tied to the control panel electrical grounding terminal/lug.</p> <p>Wiring Codes: TX=TERM.91, RX=TERM.92, CMN=TERM.93</p>
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Radio-Read Filter Compatibility Matrix




























The Radio-Read Filter is only suitable for Encoder-Type flow meters – NOT Pulse-Type flow meters. The following is a list of compatible encoder-type meters.

Please note that the Compatibility Matrix is by no means exhaustive, especially in light of the fact that there are a multitude of three-wire-protocol registers available on the market today. Advertised full compatibility is limited to registers deemed so based upon testing within the laboratory and/or the field; and those are denoted by the EtherMeter™ logo:

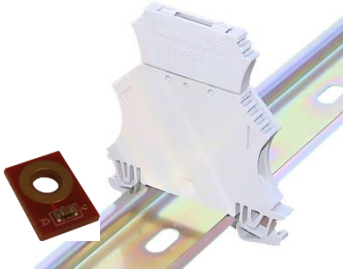


If there is a “3-Wire” Sensus-protocol, Neptune-protocol, or K-Frame-protocol encoder meter register that is not listed as compatible based upon testing, and you would like to see it listed as such, then please contact SCADAmetrics. Note that in such cases, we may request a register for testing and verification.

Make	Model		Notes
ABB	AquaMaster K-Frame		Not yet tested. If used, recommend RRF-50 Vers.400+
Badger	ADE®		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Badger Meter.
Badger	HRE-LCD High Resolution Encoder		Compatible (based upon laboratory and/or field testing). Register provided courtesy of ABS Water Cooperative (IL).
Badger	HRE-MECH High Resolution Encoder		Compatible (based upon laboratory and/or field testing). Register provided courtesy of ABS Water Cooperative (IL).
Badger	E-Series® Meter		Likely compatible based upon published specifications, but not yet tested.
Badger	M5000 Mag-Meter		Likely compatible based upon published specifications, but not yet tested.
Elster AMCO (ABB/Kent)	InVISION™ Sensus-Protocol		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Bond-Madison Water District.
Elster AMCO (ABB/Kent)	InVISION™ K-Frame		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Bond-Madison Water District. Must Use RRF-50 Vers.400+.
Elster AMCO (ABB/Kent)	ScanCoder		Compatible (based upon laboratory and/or field testing). Must Use Version RRF-50, Vers.400+
Elster AMCO	evoQ4 Sensus-Protocol		Likely compatible based upon published specifications, but not yet tested.
Elster AMCO	evoQ4 K-Frame		Compatible (based upon laboratory and/or field testing). Meter provided courtesy of Elster AMCO Water. Must Jumper Terminals 3,6, and 9 or use RRF-50 Vers.400+.
Itron (Actaris)	Cyble™ Coder		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Actaris Metering Systems.
Kamstrup	Flow IQ 2100		Compatible (based upon laboratory and/or field testing). Register and results courtesy of Kamstrup USA.
Master Meter	Acculinx™		Compatible (based upon laboratory and/or field testing). Register and results courtesy of Davis-Monthan AFB (Tucson, AZ).

Master Meter	Elinx™ Interpreter		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Master Meter Inc. (Mansfield, TX).
Master Meter	Octave®		Compatible (based upon laboratory and/or field testing). Results courtesy of City of Boone, IA.
McCrometer	FlowCom Sensus-Protocol Version		Compatible (based upon laboratory and/or field testing). Register provided courtesy of McCrometer Corp. (Hemet, CA).
McCrometer	UltraMag™ Smart Output Version		Likely compatible based upon published specifications, but not yet tested.
McCrometer	FPI Mag™ Smart Output Version		Likely compatible based upon published specifications, but not yet tested.
McCrometer	SPI Mag™ Smart Output Version		Likely compatible based upon published specifications, but not yet tested.
Metron Farnier	HawkEye OER		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of Metron Farnier.
Mueller (Hersey)	Translator		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Hersey Meter.
Mueller (Hersey)	HbMag		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Siemens Industry.
Neptune (Schlumberger)	E-Coder™		Compatible (based upon laboratory and/or field testing). Note: Must Jumper Terminals 3,6, and 9 or use RRF-50 Vers.400+.
Neptune (Schlumberger)	Tru/Mag™		Compatible (based upon laboratory and/or field testing). Note: Must Use RRF-50 Vers.400+ (otherwise, jumper terminals 3,6,9)
Neptune (Schlumberger)	ProRead™		Compatible (based upon laboratory and/or field testing). (Rev. "AUTO H65N" or "AUTO H49N" or later.) Registers provided courtesy of Ti-Sales. Note: Must Use RRF-50 Vers.400+ (otherwise, jumper terminals 3,6,9)
RG3	Tomahawk™		Compatible (based upon laboratory and/or field testing). Register provided courtesy of RG3 Meter Company (Longview, TX).
Sensus (Rockwell/Invensys)	ICE®		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Sensus (Rockwell/Invensys)	OMNI T ² , C ² , F ² , R ²		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Sensus (Rockwell/Invensys)	iPerl™		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Sensus (Rockwell/Invensys)	AccuStream™		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Siemens (Sitran)	F M MAG 8000		Compatible (based upon laboratory and/or field testing). Meter provided courtesy of Siemens Industry.
PULSE OUTPUT SIGNAL FLOW METERS			The Radio-Read Filter is NOT compatible with any pulse output signal flow meters. It is designed for use with encoder-signal flow meters only.

Touch-Read Filter Compatibility Matrix








The Touch-Read Filter is only suitable for Encoder-Type flow meters – NOT Pulse-Type flow meters. The following is a list of compatible encoder-type meters.







The following compatibility matrix is by no means exhaustive, especially in light of the fact that there are a multitude of three-wire-protocol registers available on the market today. Advertised full compatibility is limited to registers deemed so based upon testing within the laboratory and/or the field; and those are denoted by the EtherMeter™ logo:

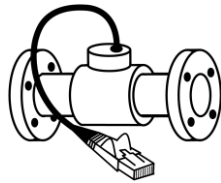


If there is a “2-Wire” Sensus-protocol, Neptune-protocol, or K-Frame-protocol encoder meter register that is not listed as compatible based upon testing, and you would like to see it listed as such, then please contact SCADAmetrics. Note that in such cases, we may request a register and touch-reader for testing and verification.

Important Note: The Touch-Read Filter is a tuned device, and therefore is NOT compatible with ALL Touch-Read Pads and Readers. Therefore it is recommended that the user perform validation testing to verify compatibility with your specific equipment.

Make	Model		Notes
ABB	AquaMaster K-Frame		Not yet tested.
Badger	ADE®		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Badger Meter. Note: On the EtherMeter, the user must set PWRn parameter to 150 msec.
Badger	HRE-LCD High Resolution Encoder		Not yet tested.
Badger	HRE-MECH High Resolution Encoder		Not yet tested.
Badger	E-Series® Meter		Not yet tested.
Elster AMCO (ABB/Kent)	InVISION™ Sensus-Protocol		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Bond-Madison Water District.
Elster AMCO (ABB/Kent)	InVISION™ K-Frame		Not yet tested.
Elster AMCO (ABB/Kent)	ScanCoder		Not Compatible (Based On Field Testing).
Elster AMCO	evoQ4 Sensus-Protocol		Likely compatible based upon published specifications, but not yet tested.
Elster AMCO	evoQ4 K-Frame		Not yet tested.
Mueller (Hersey)	Translator		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Hersey Meter.
Itron (Actaris)	Cyble™ Coder		Compatible (based upon laboratory and/or field testing). Register provided courtesy of Actaris Metering Systems.
McCrometer	FlowCom Sensus-Protocol Version		Not yet tested.
Master Meter	Acculinx™		Compatible (based upon laboratory and/or field testing). Register and results courtesy of Davis-Monthan AFB (Tucson, AZ).

Master Meter	Octave®		Likely compatible based upon published specifications, but not yet tested.
Metron Farnier	HawkEye OER		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of Metron Farnier.
Neptune (Schlumberger)	E-Coder™		Compatible (based upon laboratory and/or field testing). Note: On the EtherMeter, the user must set PWRn parameter to 200 msec.
Neptune (Schlumberger)	Tru/Mag™		Compatible (based upon laboratory and/or field testing). Note: On the EtherMeter, the user must set PWRn parameter to 200 msec.
Neptune (Schlumberger)	ProRead™		Compatible (based upon laboratory and/or field testing). (Rev. "AUTO H65N" or "AUTO H49N" or later.) Registers provided courtesy of Ti-Sales. Note: On the EtherMeter, the user must set PWRn parameter to 200 msec.
Sensus (Rockwell/Invensys)	ICE®		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Sensus (Rockwell/Invensys)	OMNI T ² , C ² , F ² , R ²		Compatible (based upon laboratory and/or field testing). Registers provided courtesy of HD Supply Waterworks.
Sensus (Rockwell/Invensys)	iPerl™		Likely compatible based upon published specifications, but not yet tested.
Sensus (Rockwell/Invensys)	AccuStream™		Likely compatible based upon published specifications, but not yet tested.
PULSE OUTPUT SIGNAL FLOW METERS			The Touch-Read Filter is NOT compatible with any pulse output signal flow meters. It is designed for use with encoder-signal flow meters only.



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