



## E-CODER® R450i™

**What is an E-Coder®)R450i™?**

- The E-Coder)R450i combines the battery-free, absolute encoder metrology of the E-Coder® with the high power, two-way capability of an R450™ MIU in one convenient, easy-to-install package.

**Does the E-Coder)R450i feature the same E-CoderPLUS functions as the standard E-Coder?**

- Yes. The E-Coder)R450i provides the same customer service value-added leak, tamper, and reverse flow detection, as well as priority alarm capability of the standard E-Coder and R450 MIU.

**Does the E-Coder)R450i have a battery inside to power the register?**

- No. The E-Coder)R450i registers water consumption using no external power supply and no internal battery. The E-Coder)R450i features an advanced application-specific integrated circuit (ASIC) design using non-volatile memory technology for a self-powered digital odometer. The LCD is powered by the solar cell on the register dial. The battery is only used to power the radio portion of the device.

**How does the radio performance compare to a standard R450 pit MIU?**

- The performance is designed to be the same as an R450 pit MIU.

**Can I use the same through-the-lid antenna as the R450 pit MIU?**

- Yes. The antenna is the same.

**The E-Coder®)R900i™ pit comes with a small whip antenna. Can I use the same antenna with the E-Coder)R450i?**

- No. There is no whip antenna option for the E-Coder)R450i. In order to ensure a reliable message success rate (MSR) and two-way capability of the R450 System, only the through-the-lid antenna is available for pit installations.

**Is an inside set version of the E-Coder)R450i available?**

- No. In order to ensure a reliable MSR and two-way capability of the system, an inside set application should use a standard R450 wall MIU mounted remotely on the exterior of the house.

**Is the battery replaceable on the E-Coder)R450i?**

- No. In order to maximize field robustness and reliability, the battery in the E-Coder)R450i is fully potted inside the unit.

**What is the expected battery life for the E-Coder)R450i?**

- All Neptune E-Coder)R450i registers come with a twenty (20) year published warranty. Refer to the Warranty Statement for further details.

**Is it possible to read the E-Coder)R450i if the LCD readout is not activated or has failed?**

- Yes. The unit will continue to transmit even when the LCD turns off due to low light. The absolute odometer reading is stored in non-volatile memory in the ASIC and is not dependent on the LCD.

**Is the E-Coder)R450i networkable for compound meters?**

- No. Due to the wireless design, a separate E-Coder)R450i must be installed on each side of a compound meter assembly. Note that one ID number is printed on each label.

**Is the E-Coder)R450i field programmable like the ProRead™ or standard E-Coder? If so, can you use the standard field programmer and the same programming functions that are used for ProRead?**

- No. The E-Coder)R450i does not require any programming. Once the MIU has been activated using a magnet swipe, the unit begins transmitting the 8-digit midnight meter reading, 24-hour interval consumption data, MIU ID, and the E-CoderPLUS data to the R450 System.

**Since the E-Coder)R450i does not have a mechanical odometer wheel bank, how are the digits encoded and what makes the E-Coder)R450i absolute?**

- The E-Coder)R450i features an advanced ASIC design using nonvolatile memory technology for a self-powered digital odometer. The digital registration odometer in the ASIC and the LCD readout are guaranteed to be absolutely the same. The visual registration and the remote reading are provided by the same source, making the E-Coder)R450i an absolute encoder.

**Why are there nine (9) digits on the LCD readout, but I receive only eight (8) digits on my reading device?**

- The E-Coder)R450i features nine (9) digits for a visual read only for high-resolution meter testing and leak indication. Eight (8) digits are passed through the N\_SIGHT™ host software for operational and billing purposes.

**I only bill in 100s/1,000s. What happens to the additional digits?**

- The meter reading software will truncate the unnecessary digits for billing if desired.

**What does it mean when the installed E-Coder)R450i has a forward arrow with a plus sign (+) flashing very slowly in the LCD readout and will not stop flashing?**

- This indicates a very slight flow. Watch the ninth digit in the LCD readout, and you will see it increment over time.

**The installed E-Coder)R450i has a reverse arrow with a negative (-) sign in the LCD readout. What does this mean?**

- This icon indicates reverse flow. You either have reverse flow occurring at the site, or the water meter has been installed backwards.

**What is the solid faucet icon on the LCD readout?**

- The solid faucet indicates a continuous leak occurrence over the last 24 hours. Check the ninth digit in your LCD readout to see if it is incrementing. If so, check the interior and exterior faucets, the valves in the toilets, and look around the exterior of the home for signs of surface water.

**What is the flashing faucet icon on the LCD readout?**

- The flashing faucet indicates an intermittent leak occurrence over the last 24 hours. Check the interior and exterior faucets and the valves in the toilets to see if leakage is occurring.

**Does the E-Coder)R450i provide rate of flow information?**

- The E-Coder)R450i provides a localized readout of average flow rate every twelve (12) seconds on the LCD display. Every twelve (12) seconds the word "RATE" will flash and the flow rate will be displayed for four (4) seconds.

**Does the E-Coder)R450i unit provide data logging capabilities?**

- Yes. Hourly consumption profile data is uploaded automatically on a daily basis to N\_SIGHT R450 host software. Data logging information is readily available for all MIUs at the host without having to roll a truck.

**How can I distinguish an E-Coder)R450i from an E-Coder)R900i?**

- The R450 MIU features an orange label on the outside of the housing in lieu of the yellow label utilized by Neptune's R900® MIU. In addition, "E-Coder)R450i" is clearly marked on the lid of the register.

**Is the E-Coder)R450i compatible with other meters besides Neptune?**

- No.

**Describe the flow monitoring/consumption profiling capabilities (including the maximum number of readings the MIU can store) and the effects the profiling has on the MIU battery life.**

- All R450 MIUs, including the E-Coder)R450i, provide 24-hour usage/consumption information as part of their standard configuration. In addition to the midnight meter reading, the R450 MIU reads the encoder register to which it is connected every hour. The 24-hour consumption information is also transmitted on a daily basis. The MIUs do the work for the utility and provide usage in volume totals for each hourly period. Hourly usage data is displayed in a graph and on a chart in the host software.

**How does the E-Coder)R450i achieve maximum MSR?**

- The E-Coder)R450i utilizes a communication scheme called the "aloha model" that utilizes random programmed transmission times and multiple transmission times per day to ensure maximum daily system message success rate. Under this "aloha model", each R450 MIU is pre-programmed to transmit its meter data randomly between 12:01AM and 7:15AM (Modified Aloha Model). When an R450 MIU receives confirmation from the R450 DC that its meter data was received properly by the R450 DC, it will go back to sleep until the next scheduled read transmission. When an R450 MIU does not receive confirmation from the R450 DC that its meter data was received properly, its firmware is designed to transmit up to three (3) more times (total of four (4) times per day possible for an MIU) to ensure maximum daily system MSR.

**When installing an E-Coder)R450i, do you have to swipe the MIU with an activation magnet to wake up the MIU?**

- Yes. The E-Coder)R450i is shipped from the Neptune factory in sleep mode due to FCC regulations that require 450 MHz transmitters to be in sleep mode during transit. Upon installation, an installer will swipe the MIU as described in the *E-Coder®)R450i™ Installation and Maintenance Guide* to activate the MIU prior to leaving the work site.

**Can I verify during installation that data transmission from an E-Coder)R450i was successful?**

- Yes. Upon a magnet swipe, the E-Coder)R450i will listen and transmit its configuration packet (see example below) which identifies itself and provides N\_SIGHT R450 host software all the necessary information about the MIU. Fifteen (15) seconds after the configuration packet is transmitted, the R450 MIU will transmit a reading packet.

***Example of MIU Config Email***

Subject: 2022/G/-105/Fredrick Road

MIU RSSI.....Pass[-84]

Collector RSSI.....Pass[-105]

Register.....Valid Read[0]

Activation Time.....01:33:04 PM

Collector.....Fredrick Road

Signal/Noise.....123

Noise.....18

MIU\_id.....110002022

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