ARB® UTILITY MANAGEMENT SYSTEMS™

NEPTUNE
TECHNOLOGY GROUP

E-CODER)R900*i*™
INSIDE AND PIT VERSIONS

Solving tomorrow's problems with today's technology, the E-Coder)R900*i* combines the field-proven R900 with our solid-state absolute E-Coder.

The E-Coder)R900*i*™ combines the field-proven R900® radio frequency meter interface unit (MIU) with our E-Coder® Solid State Absolute Encoder into one integrated package to offer utilities the advantages of the cost savings associated with the ease and speed of installation. The E-Coder)R900*i* does not have any external wires to be installed or require any special programming for operation. The E-Coder)R900*i* operates within the 902-928 unlicensed RF band.

The R900 MIU portion of the integrated unit collects meter-usage data and transmits the data for collection by the meter reader. Data transmitted by the R900 MIU is received by the Neptune walk-by, mobile, or R900® Gateway fixed network data collection systems and stored for downloading at the utility office. The R900 MIU is a one-way communication device that transmits data every 14 seconds using frequency-hopping, spread-spectrum technology to ensure data security and improved meter reading accuracy and reliability. The E-Coder portion of the integrated unit features a custom integrated circuit design that digitally encodes the rotation of the measuring chamber, providing "absolute" registration with no internal battery requirement.

The E-Coder)R900*i* provides high resolution, 8-digit remote meter reading and data logging along with value-added features such as leak, tamper, and reverse flow detection. The data logging functionality provides up-to-the hour consumption data. Consumption is recorded as it happens, every hour on the hour, helping to identify existing or potential problems. Graphic charts can be generated to show a possible leak when usage doesn't approach or reach zero. When a leak flag is triggered, the utility can identify when the event actually occurs; the same goes for negative consumption that implies a backflow event.

Using Neptune's E-Coder)R900*i* with data logging, the utility can send a reader to retrieve up to 96 days of historical data directly from the meter and then download the information directly into ARB® N_SIGHT™ AMR host software. The daily or hourly consumption can then be run as a graph — justifying the amount charged on the bill. Neptune's data logging is simple with the system designed to minimize download time as well as service technician visits.

It's not unusual for a utility to field a customer complaint regarding a high water bill. But until now that utility didn't have the information that proved not only that the excess consumption occurred but exactly when it occurred.

The E-Coder)R900*i* PLUS features are communicated through the E-Coder protocol, allowing host software platforms to interpret the data and pass the information directly to the billing packages, CIS screens, and operations and maintenance reports. The value-added data received through Neptune's E-Coder)R900*i* enhances customer service and improves operational efficiencies.

The E-Coder)R900*i* Inside Version
The inside version features a plastic enclosure with an integrated antenna. This unit also features a field-replaceable battery.

The E-Coder)R900*i* Pit Version
The pit version features a roll-sealed copper shell and glass lens housing for superior protection in a flooded pit environment. The standard unit is designed with a whip antenna for installation under a pit lid and can be easily upgraded to a through-the-lid antenna if desired. The unit also features a field replaceable battery.

KEY FEATURES

- 8-digit remote meter reading and usage profiling
- Logs 96 days of hourly consumption data
- Leak, tamper, and reverse flow detection
- Ease of installation – no external wiring
- Solid-state absolute encoder
- No FCC license required
- No MIU programming required
- Long-life lithium battery with capacitor
- Encoder metrology requires no battery
- Available in both pit and inside versions
- Fully submersible pit version
- LCD leak indicators
- Directional flow indicator
- Rate of flow on LCD display

KEY BENEFITS

- Enhanced "customer care"
  - Leak history/diagnostics
  - Proactive leak notification
  - Provides hourly consumption data
  - Improves meter reading accuracy
  - Eliminates estimated reads
- Enhanced cost savings and ease of installation
  - No external wires
  - Reduces labor cost
  - Reduces potential wire vandalism
- Drought management
  - Reduction of water loss through proactive notification of water leaks
  - Ability to enforce odd/even day water restrictions
- Increased operational efficiencies
  - Reduces costs
  - Minimizes reading time
  - Improves meter reading safety
  - Work order reduction for high water bill inquiries
  - Prioritization of meter maintenance
- Tamper management
  - Identification and prioritization of potential tamper situations

Replaceable Battery **1**
Antenna **2**
Light Sensor **3**
Flow Indicators **4**
Date of Manufacture **5**
LCD Display **6**
T-10 Meter **7**

LIGHT SENSOR
Recessed under the small hole near the center of the faceplate of the E-Coder)R900*i*, supplies the power for the LCD panel (light activated) as well as the activation of the data logging extraction.

FLOW INDICATOR
Shows the direction of flow through the meter:
ON   Water in use.
OFF   Water not in use.
Flashing   Water is running slowly.
(-)   Reverse flow.
(+)   Forward flow.

LEAK INDICATOR
Displays a possible leak:
OFF   No leak indicated.
Flashing   Intermittent leak indicates that water has been used for at least 50 of the 96 15-minute intervals during a 24-hour period.
On Continuously   Indicates water use for all 96 15-minute intervals during a 24-hour period.

RATE

RATE OF FLOW
Average flow rate is displayed every six seconds on LCD display.

RF LOG

DATA LOGGING
displayed on LCD during extraction of data logging consumption data.
*"DL" on dial face denotes data logging

LCD DISPLAY
Nine-digit LCD displays the meter reading in billing units of measure: U.S. gallons, cubic feet, Imperial gallons, or cubic metres.

1 E-Coder Basic Reading/Customary 6-digit remote reading
2 Customary sweep hand digits
3 E-CoderPLUS Reading (8-digit remote reading)
4 Testing units used for diagnostics
5 Extended reading units
6 Customary billing units

TECHNICAL SPECIFICATIONS

- Electrical Specifications:
  - MIU Power: Lithium battery with capacitor
- Transmitter Specifications:
  - Transmit period: Every 14 seconds
  - Transmitter channels: 50
  - Channel frequency: 910 to 920 MHz spread spectrum
  - Output Power: Meets FCC Part 15.247
  - FCC Verification: Part 15.247
- Environmental Conditions: MIU and E-Coder
  - Operating temperature: -22°F to 149°F (-30°C to 65°C)
  - Storage temperature: -40°F to 158°F (-40°C to 70°C)
  - Operating humidity:
  - Inside Set: 0 to 95%, condensing
  - Pit Set: 100% submersible
- Materials
- Register housing:
  - Inside Set: Plastic Polycarbonate
  - Pit Set: Roll-sealed copper shell
- Lens:
  - Inside Set: Plastic
  - Pit Set: Glass
- Antennas
  - Inside Set: Fixed antenna
  - Pit Set: Standard whip type
  Optional through the lid
  - 18" Coax
  - 6' Coax
  - 20' Coax

OPTIONS

- Sizes
  - Available for all sizes and makes of current Neptune meters
  - Data Collection Systems
  - Handhelds - Walk-by RF
  - MRX920™ - Mobile RF
  - R900 Gateway
- Units of Measure: U.S. Gallons, Cubic Feet, Imperial Gallons, Cubic Metres

WARRANTY

- Register: 20 years (10/10)
- R900 MIU: 20 years (10/10)
- R900 Battery: 20 years (10/10)

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