Tampers and Water ERT Endpoints

Although the primary function of an ERT endpoint is to record and relay consumption, it also detects tamper events. The ERT endpoint communicates tampers through the tamper indicator value contained in the ERT® standard consumption message.

Types of Water ERT

Itron water endpoints are categorized by the method used to gather consumption data:

- **Pulser ERT** A pulser ERT reads consumption data by counting pulses or switch closures from the register.
  - Pit mount pulser ERTs record cut-cable tampers.
  - Remote mount pulser ERTs record cut-cable tampers and tilt tampers.
- **Encoder ERT** The encoder ERT initiates communication, requests consumption data from the register, extracts the information, and transmits the SCM message. This type of ERT does not physically record consumption.
  - Pit mount encoder ERTs record cut-cable tampers and register communication error events.
  - Remote mount encoder ERTs record tilt tampers, cut-cable tampers, and register communication error events.

Read Mode

The read mode, either wake-up or bubble-up, affects how the ERT records a tamper.

- **Wake-up Mode** When in wake-up mode, a tamper event will advance the tamper indicator by one count and then "latch," thereby preventing further count increments until the next time a data collection device communicates with the ERT. The value of the tamper indicator can be compared to its value at the last meter reading; any change indicates that a tamper or, in the case of an encoder ERT, a possible register communication error has occurred.
- **Bubble-up Mode** When in bubble-up mode, a tamper event does not latch the tamper indicator. Every event will increment the tamper indicator.

Regardless of mode, the standard consumption message from an ERT contains the value of the *tamper indicator*. The value of the tamper counter is internal to the ERT and can be read using a ReadOne Pro.

Encoder Tampers

Cut-cable tamper behavior for an encoder ERT is different from the cut-cable tamper in a pulser ERT. In addition to the cut-cable event, an encoder ERT records register communication errors using the same tamper indicator. Events that increment the cut-cable tamper indicator include:

- Cut cable
- Corrupted data messages between the ERT and meter
- Invalid characters as a result of an inter-digit state on the meter register
- Intermittent cable connections
- Incorrect interface
- Defective register

If one of these events occurs while the ERT is attempting to communicate with the register, the tamper indicator value will increment. This is the current functionality for all models of water encoder ERTs and cannot be changed.

Troubleshooting Tampers

Except for the obvious cut-cable failure, encoder tamper events may be difficult to analyze because of the absence of physical evidence.

If the tamper value remains unchanged after the next month's read cycle, the tamper was likely a corrupted data message or invalid characters.

If tamper values change sporadically over several read cycles, an interface issue or cable connection problem is likely. When this occurs, the ERT and meter register connections should be inspected for intermittent connections.

For More Information

For more information, refer to the *Endpoint Technology Guide* PUB-0156-001.