

# Technical Note

## Flow-QC<sup>®</sup> Keys: How They Work



Selected HT300-Series Flowmeters (HT314, HT354, HT364) are activated by inserting a disposable Flow-QC Key. If the meter is turned on without a Flow-QC Key, the Flowmeter displays [INSERT KEY].

Two Flowprobe Tests can be performed without the Flow-QC Key inserted in the Flowmeter.

1. Flowprobe/Flowmeter Compatibility Test. When a Flowprobe is connected to the Flowmeter, the Flowmeter displays one of two messages:
  - a) the Flowprobe's ID such as [HQD3FMC] or
  - b) [NOT A VALID PROBE]
2. Flowprobe Ultrasonic Signal Quality Test. If the Flowprobe is coupled by immersion in saline or couplant gel and the Flowprobe is connected to the Flowmeter, the Flowmeter will test the transmitted ultrasound signal and will display either:
  - a) [GOOD SIGNAL]
  - b) [LOW SIGNAL] or
  - c) [X NO SIGNAL] (where X equals probe size).

### FLOW-QC KEY FUNCTIONALITY

The Flow-QC Key may be tested by inserting the key into the Flowmeter without a Flowprobe. When an invalid key is inserted into the Flowmeter, the Flowmeter displays

1. [NOT A VALID KEY] (indicating that the key has already been used)
2. [NO PROBE] (indicating that it is a good key but no Flowprobe is connected to the Flowmeter).

### FLOW-QC KEY MEASUREMENT PERIOD

The Flow-QC Key's measurement period begins when a Flowprobe is connected to the Flowmeter and the Flowprobe's ultrasonic window is filled with ultrasonic couplant enabling signal transmission. Once the Flowprobe is coupled (with saline or gel), the Flow-QC Key's four-hour time period begins. At the end of four hours, the Flow-QC Key expires. If the Flowmeter is unplugged during the four-hour window for 20 minutes or more, the Flow-QC Key will expire.

### FLOW-QC KEY EXPIRATION

To warn the user that a Flow-QC Key's measurement period is ending, the Flowmeter generates two types of alarms beginning five minutes before the key's flow measurement period is up.

1. Display Alarm as the minutes count down: [TIME LEFT 5 MIN], [TIME LEFT 4 MIN], [TIME LEFT 3 MIN], [TIME LEFT 2 MIN], [TIME LEFT 1 MIN].
2. Audio Alarm during the last five minute count down: three beeps, once each minute.

### FLOW-QC KEY DISPOSAL

When a Flow-QC Key's flow measurement period is up, the Flowmeter will display [TIME IS UP] followed by a second message [DISCARD KEY] when acoustic transmission has been disrupted for more than 15 seconds. Discard the key immediately.