

## Diagnostic capabilities of FOUNDATION™ fieldbus "Open / Closed" Function module

### Diagnostics on FOUNDATION fieldbus

The FieldQ function module with FOUNDATION™ fieldbus communication has diagnostic capabilities.

These process parameters can give information about communication condition, valve and/or actuator unit. It enables to predict failures in advance and makes maintenance easier to schedule. The following diagnostics are available for the FieldQ:

#### 1 Open Break Time & Close Break Time

Break time is defined the time from when the command to travel is given and the corresponding switch changes states indicating that the actuator has started travelling.

The software compares the instantaneous open and close break times to a baseline time for each. Should the break time exceed a specified amount, the applicable test shall fail.

This will return the event action code:

**Check Valve System.**

#### 2 Open Travel Time & Close Travel Time

The software compares the average open and close times to a baseline average time for each. Should the average travel time exceed a specified amount, the test shall fail.

This will return the event action code:

**Check Valve System Wear.**

#### 3 Time In Position

Time in position is determined as the amount of time that the valve travel has been the same value, plus or minus a specified amount (a.k.a. Deadband)."

For this test, time is measured in seconds by the device. The specified value shall have a typical default value that can be modified by the user.

The software compares the Time in Position (TIP) Timer to a specified value. If the actual value exceeds the specified value, the test shall fail.

This will return the event action code:

**Stroke test the Valve System.**

#### 4 Cycle Count

Four cycle counters are available:

1. Cycle Count **Set Point** - Counts how many times the set point (read: controller) cycles (changed direction)
2. Cycle Count **Solenoid** - Counts how many times the solenoid cycles.
3. Cycle Count **Actuator** - Counts how many times the actuator cycles.
4. Cycle Count **Valve** - Counts how many times the valve cycles.

The Cycle Counter test compares the current value of each cycle counter with a specified value for each counter. The test fails if any of the cycle counters exceeds its specified value.

The specified value shall have default values that can be modified by the user.

Customer advantage:

**Provides indication of wear on the actuator/valve assembly**

#### 5 IO Communication failure

This feature provides an information to the user that the device is no longer controlling the actuator-valve assembly.

The following tests exists when an I/O board is used between the bus interface board and the I/O termination:

##### Board Fault:

This test indicates a fault condition within the I/O board, as communicated by the I/O board. Any fault information passed by the I/O board, as part of the fault communication, shall be saved in memory for use by the event executive.

##### Bad Communications:

This test indicates when messages received from the I/O board contains errors when they are received. Communication errors are defined by the communication medium utilized. These could include faults such as bad CRC, framing error, parity error, etc.

##### No Communications:

This test indicates a fault due to lack of communications from the I/O board. A lack of communications is indicated when a message expected from the I/O board is not received within a certain period of time. The number of missed communications shall be stored in memory.

This will return the event action code:

**Replace Device Electronics**