| **Test Name** | Pump controller will not start pump if an alarm signal is active |
| --- | --- |
| **Use Case Tested:** |  |
| **Test Description:** | This test verifies the firmware will not attempt to switch the pump on if an alarm signal is active. |
| **Pre-conditions** | * Pump controller is running (no restartController flag set in status messages) * Pump is not running. * No alarm signals are active. |
| **Post-conditions** | Same as pre-conditions. |
| **Notes:** | This test is conducted entirely on the feather. Look for the status messages in the serial monitor. |

|  | **TEST STEP** | **EXPECTED TEST RESULTS** |
| --- | --- | --- |
|  | Ground the low bore level pin. | A status message is sent with boreLowLevel: 1, all other flags 0. |
|  | Issue the ‘n’ command via the serial monitor. | A message is logged saying the pump was not started because of the bore low level signal.  The feather LED stays off. |
|  | Release the bore low level pin. | A status message is sent with all flags set to 0. |
|  | Ground the soft start fail pin. | A status message is sent with softStartFail: 1, all other flags 0. |
|  | Issue the ‘n’ command via the serial monitor. | A message is logged saying the pump was not started because of the soft start fail signal.  The feather LED stays off. |
|  | Release the soft start fail pin. | A status message is sent with all flags set to 0. |
|  | Ground the no flow pin. | A status message is sent with noFlow: 1, all other flags 0. |
|  | Issue the ‘n’ command via the serial monitor. | A message is logged saying the pump was not started because of the no flow signal.  The feather LED stays off. |
|  | Release the no flow pin. | A status message is sent with all flags set to 0. |
|  | Ground the pump overload pin. | A status message is sent with pumpOverload: 1, all other flags 0. |
|  | Issue the ‘n’ command via the serial monitor. | A message is logged saying the pump was not started because of the pump overload signal.  The feather LED stays off. |
|  | Release the pump overload pin. | A status message is sent with all flags set to 0. |
|  | Ground the high pressure pin. | A status message is sent with highPressure: 1, all other flags 0. |
|  | Issue the ‘n’ command via the serial monitor. | A message is logged saying the pump was not started because of the highPressure signal.  The feather LED stays off. |
|  | Release the high pressure pin. | A status message is sent with all flags set to 0. |

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| --- | --- | --- | --- | --- | --- |
| **Test Data Table** | | | | | |
|  | **1** | **2** | **3** | **4** | **5** |
| [Data field 1] | [data set 1 input value for field 1] |  |  |  |  |
| [Data field 2] | [data set 1 input value for field 2] |  |  |  |  |
| [Data field 3] | [data set 1 input value for field 3] |  |  |  |  |

**Results**

25/08/2020

Failed.

There has been a regression in the firmware since adding the timer code. The logging output from step 2 shows the pump is being started even though there is an alarm active. The pump is stopped immediately afterwards but it should not have started at all.

Step 1.

14:30:26.136 -> Sending status due to state change.

14:30:26.136 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':1,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:30:26.136 -> Sending status byte: 02

14:30:28.243 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 2.

14:30:41.287 -> callback got data 1

14:30:41.287 -> Switched pump on.

14:30:41.287 -> Sending status due to state change.

14:30:41.287 -> Stopping pump due to low bore level

14:30:41.287 -> Switched pump off.

14:30:41.287 -> Sending status due to state change.

14:30:41.287 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':1,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:30:41.287 -> Sending status byte: 02

14:30:43.394 -> EV\_TXCOMPLETE (includes waiting for RX windows)

25/08/2020

Passed.

Step 1 – Bore low level still active from last test attempt.

Step 2

14:51:38.911 -> callback got data 1

14:51:38.911 -> Not starting pump due to bore low level.

Step 3

14:52:29.135 -> Sending status due to state change.

14:52:29.135 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:52:29.135 -> Sending status byte: 00

14:52:31.491 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 4

14:53:35.019 -> Sending status due to state change.

14:53:35.019 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':1,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:53:35.019 -> Sending status byte: 04

14:53:37.384 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 5

14:53:59.235 -> callback got data 1

14:53:59.235 -> Not starting pump due to soft start fail signal.

Step 6

14:54:12.197 -> Sending status due to state change.

14:54:12.197 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:54:12.197 -> Sending status byte: 00

14:54:14.555 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 7

14:55:02.178 -> Sending status due to state change.

14:55:02.178 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':1}

14:55:02.178 -> Sending status byte: 40

14:55:04.539 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 8

14:55:19.637 -> callback got data 1

14:55:19.637 -> Not starting pump due to no flow.

Step 9

14:55:49.955 -> Sending status due to state change.

14:55:49.955 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:55:49.955 -> Sending status byte: 00

14:55:52.327 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 10

14:56:34.020 -> Sending status due to state change.

14:56:34.020 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':1,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:56:34.020 -> Sending status byte: 08

14:56:36.401 -> EV\_TXCOMPLETE (includes waiting for RX windows)

Step 11

14:57:04.611 -> callback got data 1

14:57:04.611 -> Not starting pump due to pump overload signal.

Step 12

14:57:53.817 -> Sending status due to state change.

14:57:53.817 -> LoRaWAN will encode and send this message: {'pumpRunning':0,'boreLowLevel':0,'softStartFail':0,'pumpOverload':0,'controllerRestart':0,'highPressure':0,'noFlow':0}

14:57:53.817 -> Sending status byte: 00

14:57:55.411 -> EV\_TXCOMPLETE (includes waiting for RX windows)