The intention of this errata technical note is to give a detailed description of known functional or electrical issues with the FTDI FT4222H series device.

The current revision of the FT4222H series is Revision C, released Oct 2016.

Use of FTDI devices in life support and/or safety applications is entirely at the user’s risk, and the user agrees to defend, indemnify and hold FTDI harmless from any and all damages, claims, suits or expense resulting from such use.
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1 FT4222H Revision

FT4222H part numbers are listed in Table 1. The letter at the end of the date code identifies the device revision.

The current revision of the FT4222H series is revision C, released Oct 2016. At the time of releasing this Technical Note there is no known issue with this silicon revision.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>32 pin VQFN</td>
</tr>
</tbody>
</table>

Table 1 FT4222H Part Numbers

This errata technical note covers the revisions of FT4222H listed in Table 2.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>First device revision. Launched Sep 2014</td>
</tr>
<tr>
<td>B</td>
<td>Second device revision. Launched Sep 2015</td>
</tr>
<tr>
<td>C</td>
<td>Third device revision. Launched Oct 2016</td>
</tr>
</tbody>
</table>

Table 2 FT4222H Series Revisions
## 2 Errata History Table – Functional Errata

<table>
<thead>
<tr>
<th>Functional Errata</th>
<th>Short description</th>
<th>Errata occurs in device revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222H</td>
<td>Android issues</td>
<td>A</td>
</tr>
<tr>
<td>FT4222H</td>
<td>CPU usage too high</td>
<td>A</td>
</tr>
<tr>
<td>FT4222H</td>
<td>I²C combined message support</td>
<td>A</td>
</tr>
<tr>
<td>FT4222H</td>
<td>Default pin status change</td>
<td>A</td>
</tr>
<tr>
<td>FT4222H</td>
<td>More suspend setting support</td>
<td>A</td>
</tr>
<tr>
<td>FT4222H</td>
<td>Custom PID settings are ignored</td>
<td>B</td>
</tr>
<tr>
<td>FT4222H</td>
<td>Slow response after the host restarts</td>
<td>B</td>
</tr>
<tr>
<td>FT4222H</td>
<td>SPI master performance improvement</td>
<td>C</td>
</tr>
</tbody>
</table>

Table 3 Functional Errata

### 2.1 Errata History Table – Electrical & Timing Specification Deviations

<table>
<thead>
<tr>
<th>Deviations</th>
<th>Short description</th>
<th>Errata occurs in device revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>No known issues</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 4 Electrical and Timing Errata
3 Functional Errata of FT4222H

3.1 Revision A

3.1.1 Android issues

Introduction:

FT4222H supports Android devices. With J2XX, it is possible to develop an app utilizing the FT4222H.

Issue:

The following issues may happen when the FT4222H connects to an Android device.
1. The FT4222H works as an SPI master, it may reset during transferring data.
2. The FT4222H works as I²C slave, the last byte may be lost when the receiving buffer is full.

Workaround:

There are no known workarounds available. This issue is corrected at revision B.

Package specific:

The effected packages are listed in Table 5.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 5 Effected Packages

3.1.2 CPU usage and latency timer issue

Introduction:

In USB, data is received from the device to the PC by a polling method. The driver will request a certain amount of data from the USB scheduler. The latency timer is provided to allow efficient polling and flushing short data packets.

Issue:

The FT4222H doesn’t support the latency timer feature and causes the USB scheduler to be busy and uses too much CPU resource.

Workaround:

There are no known workarounds available. This issue is corrected at revision B.
The effected packages are listed in Table 6.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 6 Effected Packages

### 3.1.3 I²C combined message issue

**Introduction:**

A master issue at least two reads and/or writes to one or more slaves. In a combined message, each read or write begins with a START and the slave address. After the first START, the subsequent starts are referred to as repeated START bits; repeated START bits are not preceded by STOP bits, which indicate to the slave the next transfer is part of the same message.

<table>
<thead>
<tr>
<th></th>
<th>7 bit address</th>
<th>slave address</th>
<th>write</th>
<th>ACK</th>
<th>8 bit data</th>
<th>ACK</th>
<th>7 bit address</th>
<th>read</th>
<th>ACK</th>
<th>8 bit data</th>
<th>ACK</th>
<th>8 bit data</th>
<th>ACK</th>
<th>STOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>I²C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Issue:**

Some I²C devices need to communicate with a combined message format. However, the FT4222H doesn't support this feature.

**Workaround:**

There are no known workarounds available. The feature of I²C combined messages will be supported at revision B.

**Package specific:**

The effected packages are listed in Table 7.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 7 Effected Packages
3.1.4 Default pin status

Introduction:
By default, the FT4222H will be initialized as an SPI master after power on. When the FT4222H is ready, i.e. finishes USB enumeration, the status of the pins of the Rev.A device is as shown below:

<table>
<thead>
<tr>
<th>pin num</th>
<th>pin name</th>
<th>mode 0</th>
<th>mode 1</th>
<th>mode 2</th>
<th>mode 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>SCK</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
</tr>
<tr>
<td>9</td>
<td>MISO</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
</tr>
<tr>
<td>10</td>
<td>MOSI</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
</tr>
<tr>
<td>11</td>
<td>IO2</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
</tr>
<tr>
<td>12</td>
<td>IO3</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
</tr>
<tr>
<td>13</td>
<td>GPIO0</td>
<td>GPIO0 (OUT, low)</td>
<td>SS10 (OUT, low)</td>
<td>SS10 (OUT, low)</td>
<td>GPIO0 (OUT, low)</td>
</tr>
<tr>
<td>14</td>
<td>GPIO1</td>
<td>GPIO1 (OUT, low)</td>
<td>SS20 (OUT, low)</td>
<td>SS20 (OUT, low)</td>
<td>GPIO1 (OUT, low)</td>
</tr>
<tr>
<td>15</td>
<td>GPIO2</td>
<td>suspend out (OUT, low)</td>
<td>suspend out (OUT, low)</td>
<td>SS30 (OUT, low)</td>
<td>suspend out (OUT, low)</td>
</tr>
<tr>
<td>16</td>
<td>GPIO3</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
</tr>
<tr>
<td>17</td>
<td>SS0O</td>
<td>SS0O (OUT, low)</td>
<td>SS0O (OUT, low)</td>
<td>SS0O (OUT, low)</td>
<td>SS0O (OUT, low)</td>
</tr>
<tr>
<td>32</td>
<td>SS</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
</tr>
</tbody>
</table>

**Table 8 Rev.A FT4222H ready**

In the Rev.B, the pin status will be changed as per the table below:

<table>
<thead>
<tr>
<th>pin num</th>
<th>pin name</th>
<th>mode 0</th>
<th>mode 1</th>
<th>mode 2</th>
<th>mode 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>SCK</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
</tr>
<tr>
<td>9</td>
<td>MISO</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
</tr>
<tr>
<td>10</td>
<td>MOSI</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
<td>MOSI (OUT, high)</td>
</tr>
<tr>
<td>11</td>
<td>IO2</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
</tr>
<tr>
<td>12</td>
<td>IO3</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
</tr>
<tr>
<td>13</td>
<td>GPIO0</td>
<td>GPIO0 (IN)</td>
<td>SS10 (OUT, high)</td>
<td>SS10 (OUT, high)</td>
<td>GPIO0 (IN)</td>
</tr>
<tr>
<td>14</td>
<td>GPIO1</td>
<td>GPIO1 (OUT, high)</td>
<td>SS20 (OUT, high)</td>
<td>SS20 (OUT, high)</td>
<td>GPIO1 (IN)</td>
</tr>
<tr>
<td>15</td>
<td>GPIO2</td>
<td>suspend out (OUT, low)</td>
<td>suspend out (OUT, low)</td>
<td>SS30 (OUT, high)</td>
<td>suspend out (OUT, low)</td>
</tr>
<tr>
<td>16</td>
<td>GPIO3</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
</tr>
<tr>
<td>17</td>
<td>SS0O</td>
<td>SS0O (OUT, high)</td>
<td>SS0O (OUT, high)</td>
<td>SS0O (OUT, high)</td>
<td>SS0O (OUT, high)</td>
</tr>
<tr>
<td>32</td>
<td>SS</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
</tr>
</tbody>
</table>

**Table 9 Rev.B FT4222H ready**
Package specific:

The effected packages are listed in Table 10.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 10 Effected Packages

3.1.5 Additional suspend settings supported

Introduction:

The FT4222H provides flexible settings for suspend behavior via FT_Prog. The rev.B of the FT4222H device provides additional options for customers to configure the pin status during suspend.

- **SUSPEND_OUT_POL**
  - *Suspend output is High active. (default)*
  - Suspend output is Low active.
- **SPI_SUSPEND_MODE**
  - *Disable SPI IP and make SPI pins input (tri-state). (default)*
  - Keep SPI pin status when the FT4222H suspends.
  - Enable SPI pin control. Refer to SPI_SUSPEND for detail settings.
- **SPI_SUSPEND** (enable by SPI_SUSPEND_MODE)
  - **miso_suspend**
    - push low when suspend
    - push high when suspend
  - **mosi_suspend**
    - push low when suspend
    - push high when suspend
  - **io2_io3_suspend**
    - push low when suspend
    - push high when suspend
  - **ss0O_suspend**
    - No change (default)
    - push low when suspend
    - push high when suspend
- **GPIO_SUSPEND**
  - **gpio0_suspend**
    - No change (default)
    - input (tri-state)
    - push low when suspend
    - push high when suspend
  - **gpio1_suspend**
    - No change (default)
    - input (tri-state)
    - push low when suspend
    - push high when suspend
  - **gpio2_suspend**
    - No change (default)
    - input (tri-state)
    - push low when suspend
    - push high when suspend
  - **gpio3_suspend**
    - No change (default)
    - input (tri-state)
    - push low when suspend
    - push high when suspend
The default pin status of the Rev.A device during suspend is shown below:

<table>
<thead>
<tr>
<th>pin num</th>
<th>pin name</th>
<th>mode 0</th>
<th>mode 1</th>
<th>mode 2</th>
<th>mode 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>SCK</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
<td>SCK (OUT, low)</td>
</tr>
<tr>
<td>9</td>
<td>MISO</td>
<td>MISO (OUT, low)</td>
<td>MISO (OUT, low)</td>
<td>MISO (OUT, low)</td>
<td>MISO (OUT, low)</td>
</tr>
<tr>
<td>10</td>
<td>MOSI</td>
<td>MOSI (OUT, low)</td>
<td>MOSI (OUT, low)</td>
<td>MOSI (OUT, low)</td>
<td>MOSI (OUT, low)</td>
</tr>
<tr>
<td>11</td>
<td>IO2</td>
<td>IO2 (OUT, low)</td>
<td>IO2 (OUT, low)</td>
<td>IO2 (OUT, low)</td>
<td>IO2 (OUT, low)</td>
</tr>
<tr>
<td>12</td>
<td>IO3</td>
<td>IO3 (OUT, low)</td>
<td>IO3 (OUT, low)</td>
<td>IO3 (OUT, low)</td>
<td>IO3 (OUT, low)</td>
</tr>
<tr>
<td>13</td>
<td>GPIO0</td>
<td>GPIO0 (OUT, low)</td>
<td>SS10 (OUT, no</td>
<td>SS10 (OUT, no</td>
<td>GPIO0 (OUT, low)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>change)</td>
<td>change)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>GPIO1</td>
<td>GPIO1 (OUT, low)</td>
<td>SS20 (OUT, no</td>
<td>SS20 (OUT, no</td>
<td>GPIO1 (OUT, low)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>change)</td>
<td>change)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>GPIO2</td>
<td>suspend out (OUT, high)</td>
<td>suspend out (OUT, high)</td>
<td>suspend out (OUT, high)</td>
<td>suspend out (OUT, high)</td>
</tr>
<tr>
<td>16</td>
<td>GPIO3</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
</tr>
<tr>
<td>17</td>
<td>SS00</td>
<td>SS00 (OUT, no change)</td>
<td>SS00 (OUT, no change)</td>
<td>SS00 (OUT, no change)</td>
<td>SS00 (OUT, no change)</td>
</tr>
<tr>
<td>32</td>
<td>SS</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
</tr>
</tbody>
</table>

Table 11 Rev.A FT4222H suspend
In the Rev.B device, the default suspend setting is changed as per the table below:

<table>
<thead>
<tr>
<th>pin num</th>
<th>pin name</th>
<th>mode 0</th>
<th>mode 1</th>
<th>mode 2</th>
<th>mode 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>SCK</td>
<td>SCK (tri-state)</td>
<td>SCK (tri-state)</td>
<td>SCK (tri-state)</td>
<td>SCK (tri-state)</td>
</tr>
<tr>
<td>9</td>
<td>MISO</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
<td>MISO (IN)</td>
</tr>
<tr>
<td>10</td>
<td>MOSI</td>
<td>MOSI (IN)</td>
<td>MOSI (IN)</td>
<td>MOSI (IN)</td>
<td>MOSI (IN)</td>
</tr>
<tr>
<td>11</td>
<td>IO2</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
<td>IO2 (IN)</td>
</tr>
<tr>
<td>12</td>
<td>IO3</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
<td>IO3 (IN)</td>
</tr>
<tr>
<td>13</td>
<td>GPIO0</td>
<td>GPIO0 (no change)</td>
<td>SS10 (OUT, no change)</td>
<td>SS10 (OUT, no change)</td>
<td>GPIO0 (no change)</td>
</tr>
<tr>
<td>14</td>
<td>GPIO1</td>
<td>GPIO1 (no change)</td>
<td>SS20 (OUT, no change)</td>
<td>SS20 (OUT, no change)</td>
<td>GPIO1 (no change)</td>
</tr>
<tr>
<td>15</td>
<td>GPIO2</td>
<td>suspend out (OUT, high)</td>
<td>suspend out (OUT, high)</td>
<td>SS30 (OUT, no change)</td>
<td>suspend out (OUT, high)</td>
</tr>
<tr>
<td>16</td>
<td>GPIO3</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
<td>remote wakeup (IN)</td>
</tr>
<tr>
<td>17</td>
<td>SS0O</td>
<td>SS0O (OUT, no change)</td>
<td>SS0O (OUT, no change)</td>
<td>SS0O (OUT, no change)</td>
<td>SS0O (OUT, no change)</td>
</tr>
<tr>
<td>32</td>
<td>SS</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
<td>SS (IN)</td>
</tr>
</tbody>
</table>

Table 12 Rev.B FT4222H suspend

**Package specific:**
The effected packages are listed in Table 13.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 13 Effected Packages

### 3.2 Revision B

#### 3.2.1 Custom PID settings are ignored

**Introduction**

It is not possible to change the PID on the FT4222H from our default value of 601C to a custom value. Note, there are no problems changing the VID.

**Issue**

Any changes made to the PID using the OTP are ignored and the value returns to its default state.

**Workaround**

There are no known workarounds available. This issue is corrected at revision C.
**Package specific:**
The effected packages are listed in Table 14.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Table 14 Effected Packages**

### 3.2.2 Slow response after the host restarts

**Issue**

After the host restarts, the FT4222H may have slow response or outputs unexpected bytes from its USB interface.

**Workaround**

There are no known workarounds available. This issue is corrected at revision C.

**Package specific:**
The effected packages are listed in Table 15.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Table 15 Effected Packages**

### 3.2.3 SPI master in single mode loses data and no response

**Issue**

The SPI master in single mode may lose the last byte and then no response. This issue may be observed easily in the following configurations:

- 48M/128, 48M/256, 48M/512
- 24M/64, 24M/128, 24M/256, 24M/512

When this issue happens, the support lib function FT4222_SPIMaster_SingleReadWrite may not return, or return FT_FAILED_TO_WRITE_DEVICE.

This issue can be observed with the rev A also.

**Workaround**

There are no known workarounds available. This issue is corrected at revision C.
The effected packages are listed in Table 16.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT4222HQ</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 16 Effected Packages
4 FT4222H Series Package Markings

The FT4222H is supplied in a RoHS compliant leadless VQFN-32 package. The package is lead (Pb) free, and uses a ‘green’ compound. The package is fully compliant with European Union directive 2002/95/EC. An example of the markings on the package is shown in the figures below.

![Figure 4.1 VQFN-32 Package Markings](image)

The date code format is **YYWW** where **WW** = 2 digit week number, **YY** = 2 digit year number. This is followed by the revision number. The code **XXXXXXXX** is the manufacturing LOT code.
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## Appendix A – References

### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Terms</th>
<th>Description</th>
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<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
</tr>
<tr>
<td>GPIO</td>
<td>General Purpose Input/output</td>
</tr>
<tr>
<td>I2C</td>
<td>Inter-Integrated Circuit</td>
</tr>
<tr>
<td>MISO</td>
<td>Master In Slave Out</td>
</tr>
<tr>
<td>MOSI</td>
<td>Master Out Slave In</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
</tr>
<tr>
<td>SS</td>
<td>Slave Select</td>
</tr>
<tr>
<td>SCK</td>
<td>Serial Clock</td>
</tr>
<tr>
<td>SPI</td>
<td>Serial Peripheral Interface</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
</tr>
<tr>
<td>VQFN</td>
<td>Very Thin Quad Flat Non-Leaded Package</td>
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## Appendix B – List of Tables & Figures

### List of Tables

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<td>6</td>
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<td>Table 9</td>
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<td>8</td>
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## Appendix C – Revision History

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<th>Revision</th>
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<tr>
<td>1.0</td>
<td>Initial Release</td>
<td>2015-08-31</td>
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<td>Updated with custom PID issue.</td>
<td>2016-05-17</td>
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<td>1.2</td>
<td>Updated with rev C fixes</td>
<td>2016-10-18</td>
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