Descriptive Annex

1 INTRODUCTION

This certificate describes an electronic indication and calculating device intended for the processing of gas flow calculations and conversions as described in section 2.3. An example of the system architecture is shown in Figure 1.

2 CONSTRUCTION

2.1 Prime Parts with Metrological Function

Description	Manufacturer	Part Number	Software Version No.	Software Type	Software Extension(s)
C300 Controller	Honeywell	CC-PCNT02 F.W Rev C	Experion R311 or R400	U	L, S, D, I5
Metersuite Software	Honeywell	Experion R311 or R400	Experion R311 or R400	U	L, S, D, I5
ST103 Dual-Pulse and Proving Module	Swinton Technology	ST103	Rev 1.1	P	T, I5
Series C Digital Output Module	Honeywell	CC-PDOB01 F.W Rev D	Firmware revision: 5.00.08 Boot revision: 5.00.01	P	T, I5
Series C Digital Input Module	Honeywell	CC-PDIL01 F.W. Rev C	Firmware revision: 5.00.08 Boot revision: 5.00.01	P	T, I5
Series C Hart Analogue Output Module	Honeywell	CC-PAOH01 F.W Rev D	Firmware revision: 5.00.08 Boot revision: 5.00.01	P	T, I5
Series C Hart Analogue Input Module	Honeywell	CC-PAIH01 F.W. Rev E H.W. D	Firmware revision: 5.00.08 Boot revision: 5.00.01	P	T, I5
Series C Pulse Input Module	Honeywell	CC-PPIX01 F.W. B H.W. B and CC-TPIX11	Firmware revision: 5.00.08 Boot revision:	P	T, I5

		H.W. A	5.00.01		
Universal Input Output Module	Honeywell	CC-PUI031 F.W. C H.W. B	Firmware revision: 5.00.08 Boot revision: 5.00.01	P	T, I5
CF9 Controller Firewall	Honeywell	CC-PCF901	Not legally relevant		
Digital Output 24V	Honeywell	CC-PDOB01	Not legally relevant		
Digital Input 24V	Honeywell	CC-PDIL01	Not legally relevant		

Note: All parts listed above can be simplex or in a redundant configuration.

2.2 Software

All software is risk class C.

Software	**Software version access method**
C300 Controller	Displayed on start up.
Metersuite Software	The Experion Product version number is taken from the Experion Server. The version file is stored on the server for display on console station. (Figures 2 and 3).
ST103 Dual-Pulse and Proving Module	Firmware version number is marked on a tamper-evident label on the device and logged in files for display on console station (Figure 4).
Series C Digital Output Module	Firmware version number is logged in files for display on console station (Figure 4).
Series C Digital Input Module	Firmware version number is logged in files for display on console station (Figure 4).
Series C Hart Analogue Output Module	Firmware version number is displayed at power up and logged in files for display on console station (Figure 4).
Series C Hart Analogue Input Module	Firmware version number is logged in files for display on console station (Figure 4).
Series C Pulse Input Module	Firmware version number is logged in files for display on console station (Figure 4).
Universal Input Output Module	Firmware version number is logged in files for display on console station (Figure 4).

The Analogue input and output module version numbers are taken from the Monitor side of Control Builder – they are taken from the maintenance tab of the I/O Module details page.

This is the live running details for the I/O Module. Each I/O module has a details page of which the maintenance tab is one of the sections.

The software version number of the MeterSuite Software is Experion R311, or R400.

2.2.1 Alternative MeterSuite Software Version

Having an alternative software version number of Experion R410 for the MeterSuite Software. This is displayed in the product version file R410.3.

The Honeywell software descriptions defined in section 2.1 displayed by each device on start up are updated to R410.3.

2.2.2 Alternative MeterSuite Software Version R430

Having an alternative software version number of Experion R430 for the MeterSuite Software. This is displayed in the product version file R430
The Honeywell software descriptions defined in section 2.1 displayed by each device on start up are updated to R430.

2.2.3 Alternative MeterSuite Software Version R431

Having an alternative software version number of Experion R431 for the MeterSuite Software. This is displayed in the product version file R431

The Honeywell software descriptions defined in section 2.1 displayed by each device on start up are updated to R431.

2.2.4 Alternative MeterSuite Software Version R500

Having an alternative software version number of Experion R500 for the MeterSuite Software. This is displayed in the product version file R500

The Honeywell software descriptions defined in section 2.1 displayed by each device on start up are updated to R500.

2.2.5 Alternative MeterSuite Software Version R511

Having an alternative software version number of Experion R511 for the MeterSuite Software. This is displayed in the product version file R511

The Honeywell software descriptions defined in section 2.1 displayed by each device on start up are updated to R511.

2.3 Programming and Conversions

2.3.1 Calculations

Calculation of flow rates and totals from Mass or Volume pulses to produce Mass or Volumetric flow totals and flow rates. This may include linearization of the flow meter and/or dual pulse integrity to level A or B to ISO 6551 / IP 252/76.

2.3.2 Conversions

The calculating and indicating device can perform conversion calculations according to the following methods:

AGA 3

AGA7
AGA9
AGA10
ISO5167 DUAL
ISO5167 DUAL_JT

The system is also capable of performing the following conversions which are not covered by this approval:

AGA8 GS – Gross Method
AGA8 DL – Detail Method
ISO6976

2.3.3 Essential Characteristics

Metersuite utilises a Fiscal 64 bit Totaliser.

The Totalizer function block provides the following basic functions:

- 6 modes as follows:
  - (Mode 1): Accumulation of pulse inputs into 4 off cumulative totals with
  - individual C1 scaling factors.
  - (Mode 2): Integration of an analogue value and accumulation into 4 off
  - cumulative totals with individual C1 scaling factors.
  - (Mode 3): Accumulation of numeric inputs into a cumulative total. The
  - numeric inputs may be sourced from a flow computer
  - (Mode 4): Accumulation of stream totals derived from any of the above
  - modes into a station total.
  - (Mode 5): Flow weighted averaging of up to 12 totals in parallel.
  - (Mode 6): Run averaging of up to 12 totals in parallel.
- Handling of retrospective K factors for Mode 1.
- Period totals for up to 4 periods for Modes 1 to 4.
- Batch totals for Modes 1 to 4.
- Bad pulse counting for Mode 1, including auto reset versus a set number of
- good pulses.
- Gated pulse counting for Mode 1.
- Totalizer inhibit for Modes 1 to 4.
- Maintenance mode for Modes 1 and 2.
- Health checking and status flags.
- Ability to handle restart and rollover of external sources for Mode 1 and 3.
- Ability to drive hard-wired external totalizers for Modes 1 to 4.
- Ability to calculate flowrate for Mode 1.

The Honeywell Series C Pulse Input Module (PIM) allows for high-accuracy pulse counting of pulse streams from flow meters, and densitometers.

Features include:

- High accuracy frequency, period, pulse width measurement
- Level A pulse integrity check in accordance with ISO 6551 and API 5.5

2.3.4 Security

Various levels of passwords can protect parameter settings. All legal parameters are protected by the highest level password. This highest level password acts as the W&M password and is therefore only known by the verifying body. The calculating and indicating device comes with a default factory password, which is then changed by the verifying body at initial verification. An event log showing all alterations can be printed.

The MeterSuite QVCS logging software also logs any changes in the read only event log for a minimum of 90 days.
Alarms are displayed on the hardware device panel and the attached HMI device. Alarms are also logged in special files and printed if configured that way.
Note: the MeterSuite product may also perform gas conversions, however this isn't part of this MID approval since the Gas flow rates that MeterSuite measures exceed the MID value defined.

2.3.5 Software updates

All Windows and Experion software updates are released by Honeywell in the form of patches. All patches and software updates are recorded in a Product Version log for audit and traceability purposes. A screen shot of file location and an example of the file is shown in Figure 5.

2.4 Housings

The MeterSuite components are all mounted in a metal cabinet housing that is locked. This cabinet may also be sealed if required. In this configuration the data would be viewed by the control DCS system or other third party system receiving the data hand off from the metering system.

2.5 Display and Reports

2.5.1 MeterSuite HMI Interface

The basic MeterSuite HMI display shows for one meter however the system can be configured to custom displays for more one than meter. All the displays are Web based and conform to the industry standard ASM style.

2.5.2 Reports

The following reports can be produced automatically by MeterSuite and printed if configured that way:

- Current
- Hourly
- Daily
- Monthly
- Proof
- K-Factor Accept/Reject
- Master Meter Verification Report
- Maintenance Entry/Exit
- Stream Destination Change
- K-factor Change
- Constant report

PDF format documents are printed normally to maintain security and validity of metering data.

3 MARKINGS

3.1 Type Plate

The cabinet carries a type plate with the following information:

‘UKCA or CEC UKNI” marking (as appropriate
Supplementary metrology marking
Notified body identification number
Serial number
Manufacturers name, registered trade name or registered trade mark and postal address
Number of the type examination certificate

The software firmware numbers of PROM based modules identified in section 2.2, are marked on a tamper-evident label on the device.

3.2 SEALING

The electronic parameters are password protected. These are set at initial setup/verification. See section 2.3.4 for MeterSuite password details. Metering cabinets are locked. This cabinet may also be sealed if required. In this configuration the data is viewed by the control DCS system or other third party system receiving the data hand-off from the metering system. Input signals to the MeterSuite event logger logs any unauthorised access to the cabinet and an alarm can be raised if configured that way.

The enclosures of PROM based modules identified in section 2.2 are sealed with a tamper evident security sticker.

4 SUPPORTING DOCUMENTATION

P01331 – MI002 checklist
P01331 – Software checklists
Documentation file, TRIM File TS21/0001/2
Metersuite R511 Solution Overview V1.7

5 ILUSTRATIONS

6 CERTIFICATE HISTORY

ISSUE No.	DATE	DESCRIPTION
UK/0126/0172	15 October 2014	Certificate first issued
UK/0126/0172 Revision 1	28 October 2014	Section 2.2.2 added; Alternative MeterSuite Software Version R430.
UK/0126/0172 Revision 2	14 August 2015	Section 2.2.3 added; Alternative MeterSuite Software Version R431.
UK/0126/0172 Revision 3	03 August 2017	Front page: Directive and implementing Regulations. Temperature range ambient: 5 °C to 55 °C corrected to +5 °C to +55 °C Section 2.2.4 added; Alternative MeterSuite Software Version R500. Section 3.1 wording amended to align with the text in the Directive Section 6: Revision numbering corrected.
UK/0126/0172 Revision 4	31 January 2020	Section 2.2.5 added
UK/0126/0172 Revision 5	11 March 2021	EU references replaced with UK equivalent throughout the certificate. Section 2.1: Table updated with software type and extension columns. Table corrected, Fieldbus Interface replaced with Universal Input Output Module 2 (CC-PUI031). Section 2.2: Risk class added, and software version access details clarified. Section 2.3.1 inserted, following sections renumbered. Section 2.3.5 added. Section 3.1 PROM based modules software label added. Section 3.2 PROM based modules sealing added. Section 4 Metersuite R511 Solution Overview V1.7 added. Figures 2, 3, 4 and 5 added.

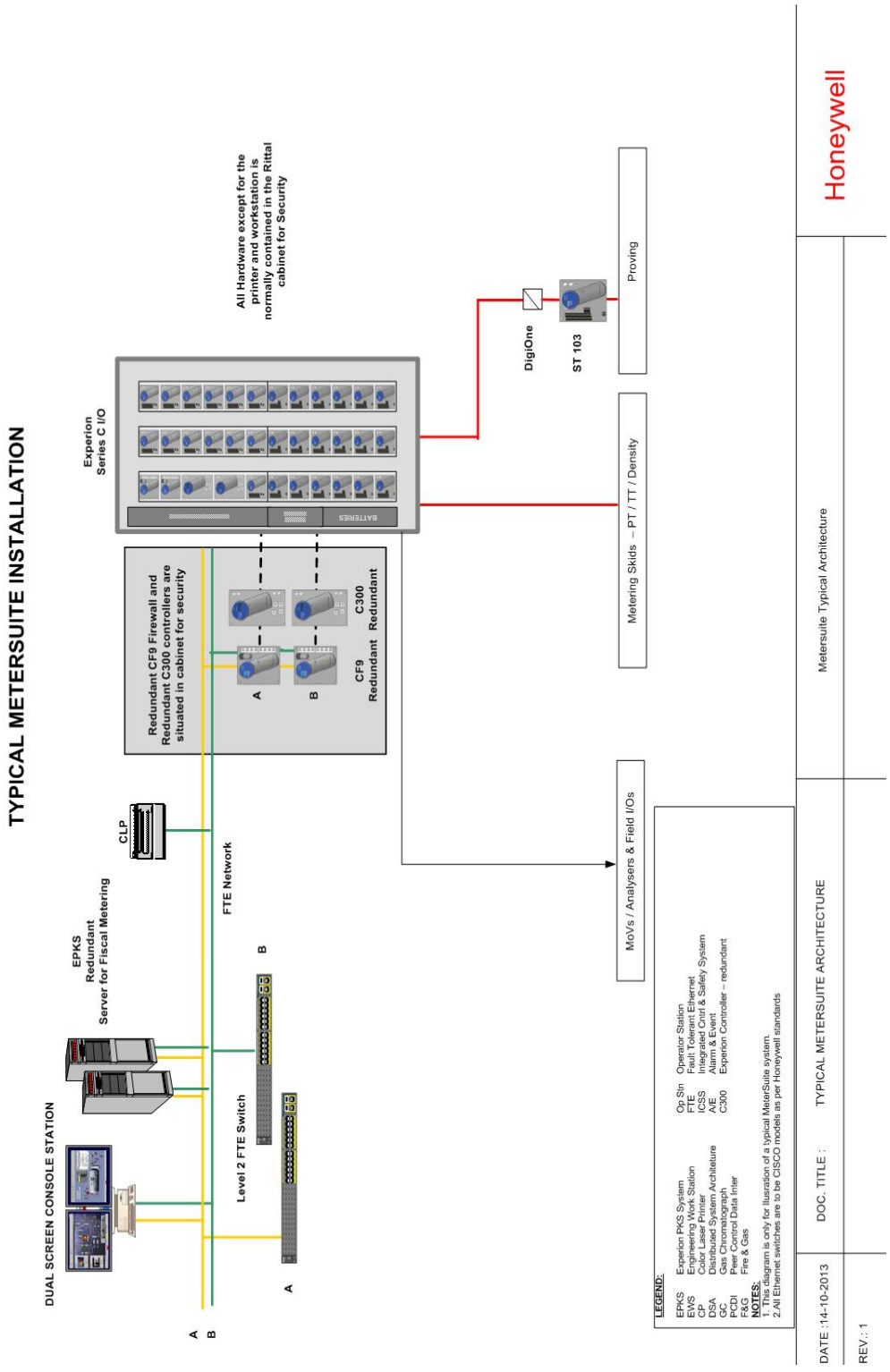


Figure 1 Example of System Architecture

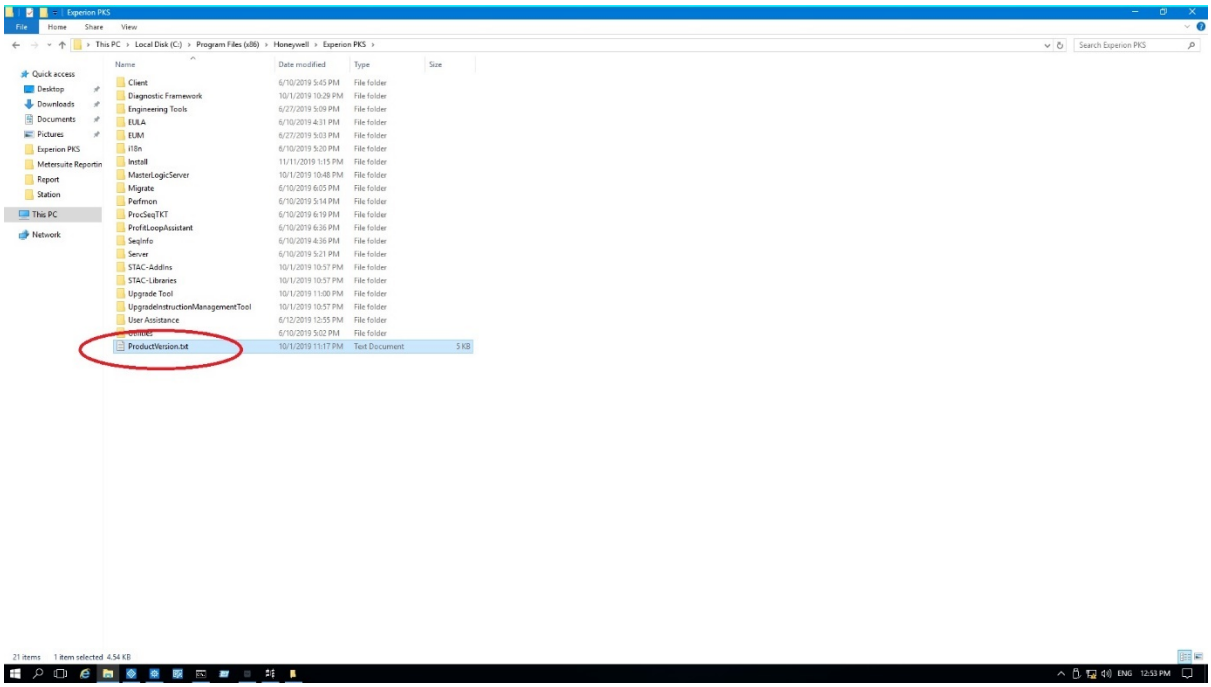


Figure 2 Project Version File Location

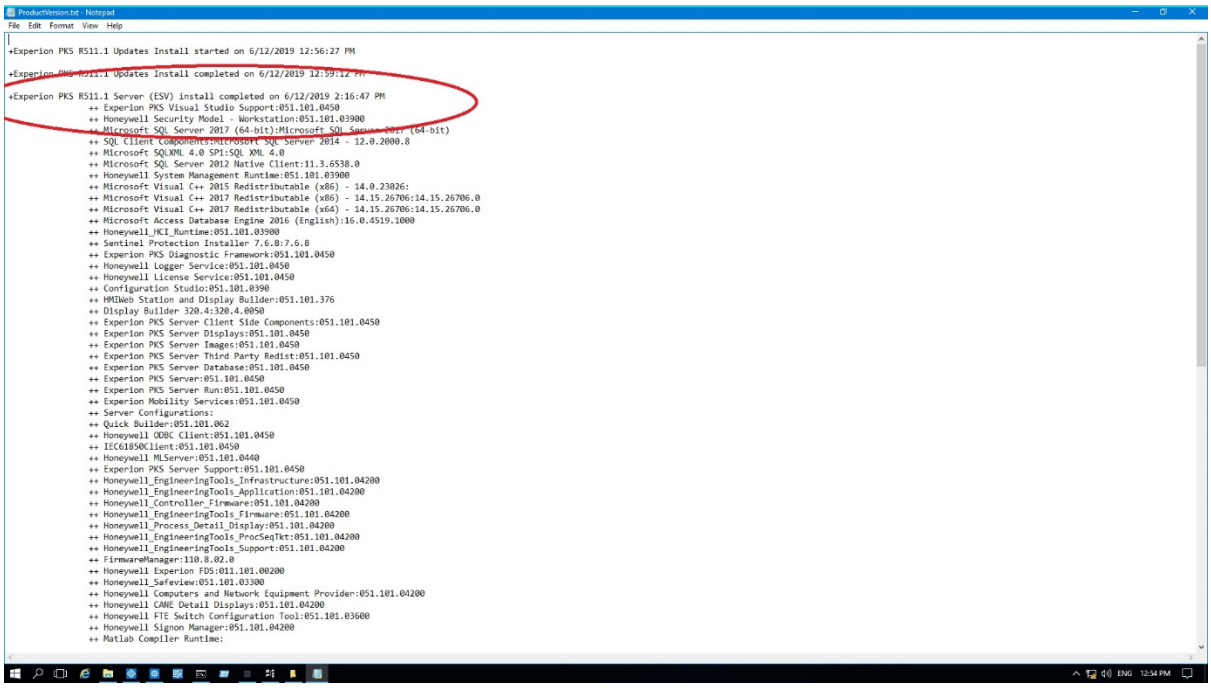


Figure 3 Project Version Text File Contents

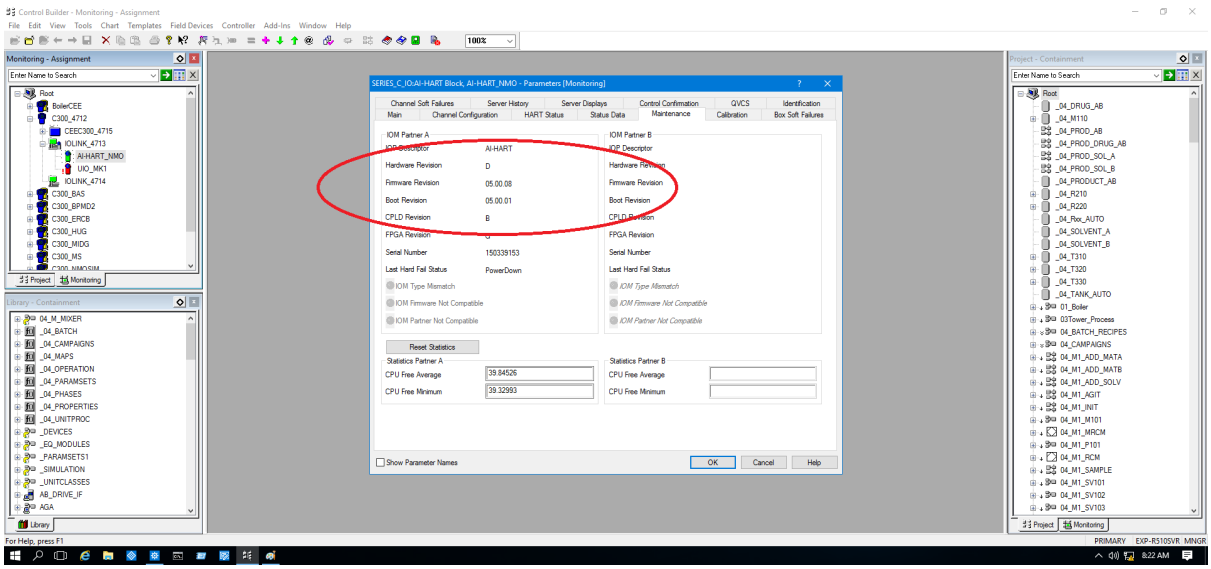
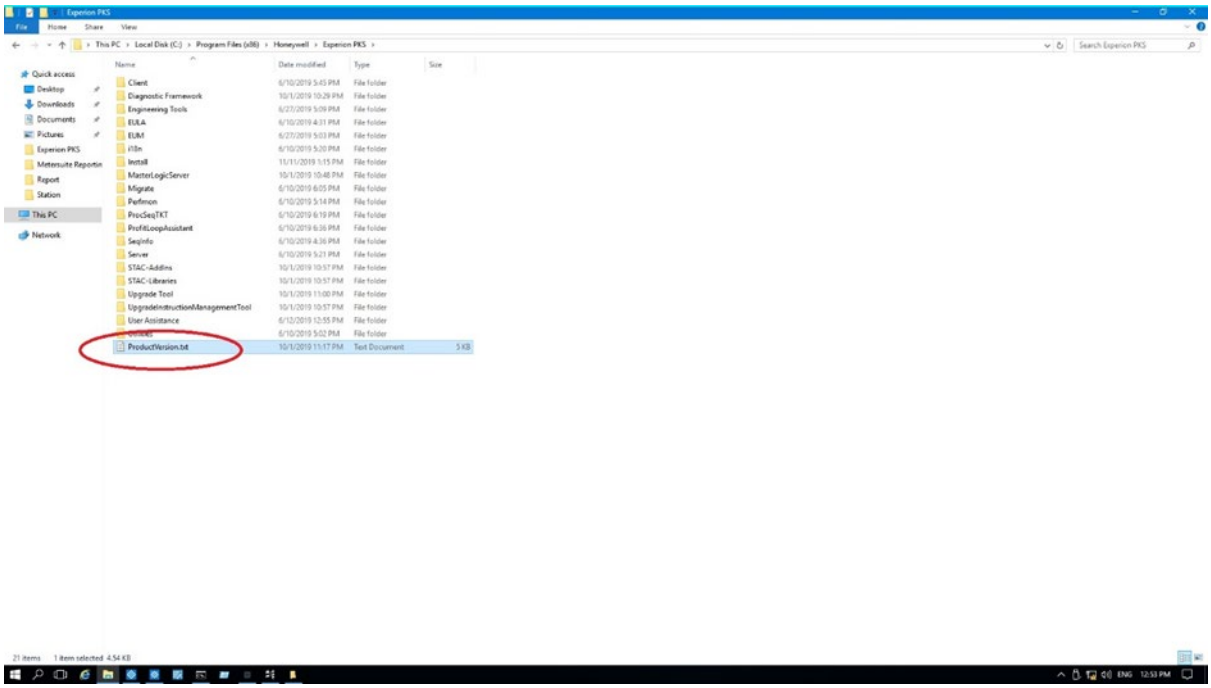


Figure 4 AI Module Revision



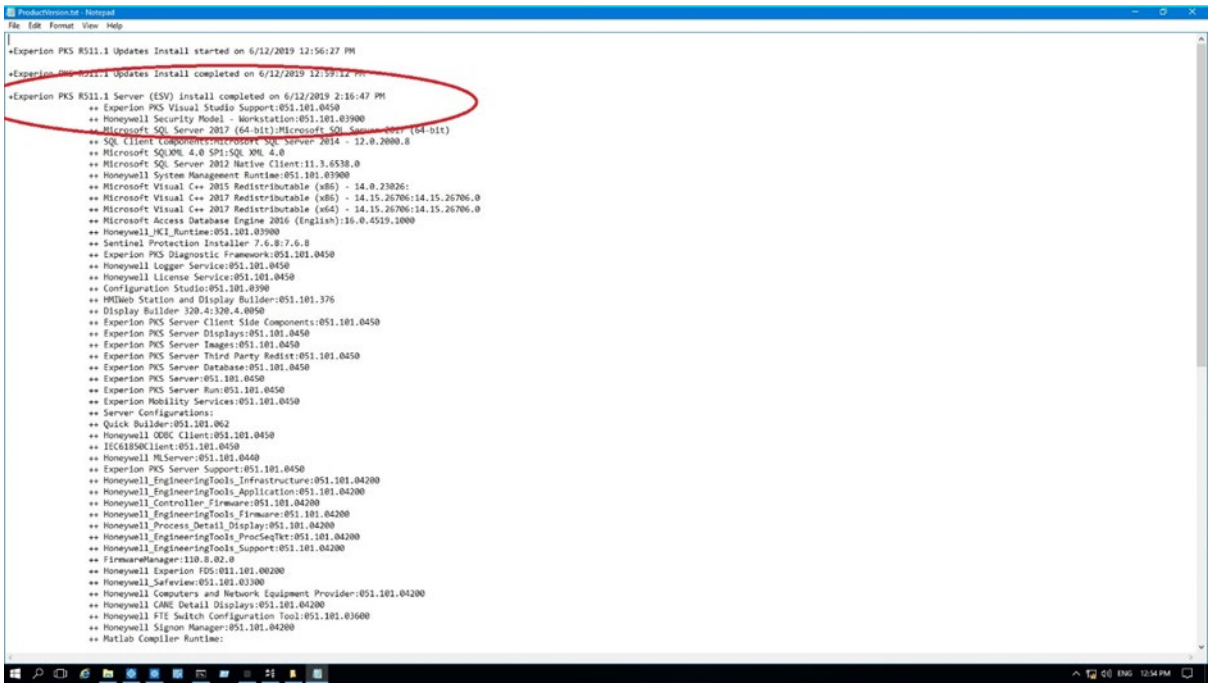


Figure 5 Screen shot of file location and an example of the file