PPM ADVANCE
User Manual
Version 1.03

Table of Contents

1 Document History 3
2 Document Scope 4
3 Product Overview 4
4 Functionality 5
5 Serial Extension Port Pinout (HII/RS232) 5
6 PPM Advance Start-Up Screen 6
7 LED Status Indicator 6
8 PPM Advance Main Menu 7
8.1 BA Update 8
8.2 BA Information 8
8.3 Bill Inhibits 8
8.4 BA Audit 9
8.5 BA Diagnostics 9
8.6 Connect to PC 10
8.7 BA Configuration 11
8.8 PPM Settings 11
8.9 PPM Files 12
8.10 Error Log 12
9 PPM Advance “Simple Menu” Setting 13
10 Loading Files into PPM Advance 14
11 Programming SC Device with Firmware Stored in PPM Advance 15
12 Auditing SC Device with PPM Advance 16
12.1 Forced Audit Procedure 16
12.2 Automatic Audit Read and Audit Clear 17
13 Unregistering PPM Advance with CASHFLOW STS Program 17
14 Bluetooth Connectivity 19
15 Appendix - PPM Advance Errors List 20
16 Appendix - PPM Advance Menu Structure (version 1.03) 22
17 Product Compliance 23

1 Document History

Rev	Name	Change
1.0	S.Balovnev	Initial Release
1.01	S.Balovnev	Compliance Statement changed, Short/Long PPM Menu setting on STS 7.05
1.03	S.Balovnev	Adding “Loading Files into PPM”, “Programming device with PPM Advance” and “Auditing device with PPM Advance” chapters. Adding PPM Advance handheld screenshots and updating PPM Advance menu map according to version 1.03.

2 Document Scope

This document describes the usage and general functionality of PPM Advance®, the next generation of “Punch Programming Module” (PPM).

3 Product Overview

PPM Advance is used for programming, auditing and diagnosing MEI CASHFLOW SC® and SC Advance® note acceptors, as well as MEI SCR® banknote recyclers.

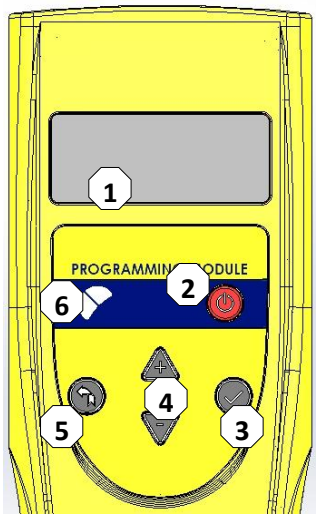
PPM Advance is available in two different configurations: with Bluetooth and without Bluetooth. The unit with Bluetooth has the additional functionality to communicate with Android-powered mobile platforms (smartphone or tablet PC) for wireless data transfer and configuration.

Both versions of PPM Advance look externally similar, except for the labels on the back of the unit. For product models, please refer to following Part Numbers:

- 252009173P1 STANDARD PPM ADVANCE
- 252007174P1 BLUETOOTH PPM ADVANCE

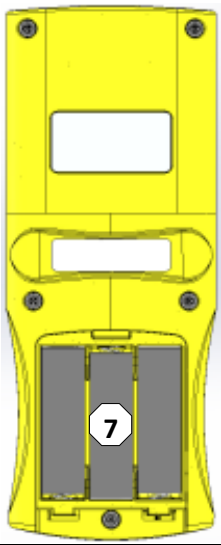
Hardware Description:

Front View

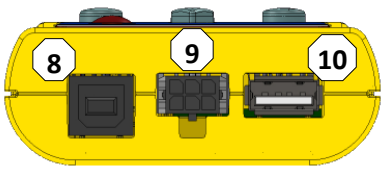


1. Functional Display
2. Power On/Off
3. “OK” Button
4. Navigation Buttons
5. “BACK” Button
6. LED Status Indicator
7. Battery Holder

Back View



Top View



8. USB Device Port (Port B)
9. Serial Extension Port
10. USB Host Port (Port A)

4 Functionality

PPM Advance has 5 buttons that can be used to navigate through different functions. The handheld also has 3 communication ports that utilize USB A-to-B cables (included with the product) to connect with remote SC and host PC devices.

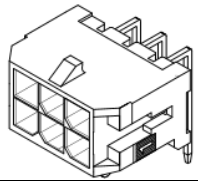
Function	Description
"Power On/Off" Button	This button will turn the unit ON or OFF.
"Arrow UP/DOWN" Buttons	These buttons are used to navigate through different PPM Advance functions.
"OK" Button	This button is used to execute a particular function and confirm or deny selections.
"BACK" Button	This button is used to navigate through different menu levels. It can also be used to cancel in-progress operations.
USB Host Port (Port A)	This port is used to connect with and program an SC device.
USB Device Port (Port B)	This port is used to connect with a PC or external 5V USB power supply
Serial Extension Port (HII/RS232)	This port is used to connect with an external 12VDC power supply[1] and for serial programming MEI coin products[2]
Battery Holder	PPM Advance can be powered with three (3) AA batteries or with equivalent rechargeable 1.2V batteries.

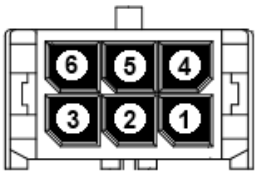
[1,2] *This feature is not yet supported and will be implemented in the future.*

5 Serial Extension Port Pinout (HII/RS232)

The serial extension port on PPM Advance uses a MOLEX Microfit 3.0[3] connector. Use this port to connect PPM Advance with an external 12VDC power supply.

PPM Advance Extension Port and Pinout:





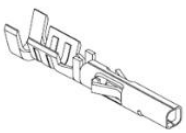
Pin Nr.	Description
1	+12VDC Power
2	n/a
3	n/a
4	Data Transmit (TX)
5	Data Receive (RX)
6	GND

[3] *More information at http://www.molex.com*

Mating connector for External Harness:

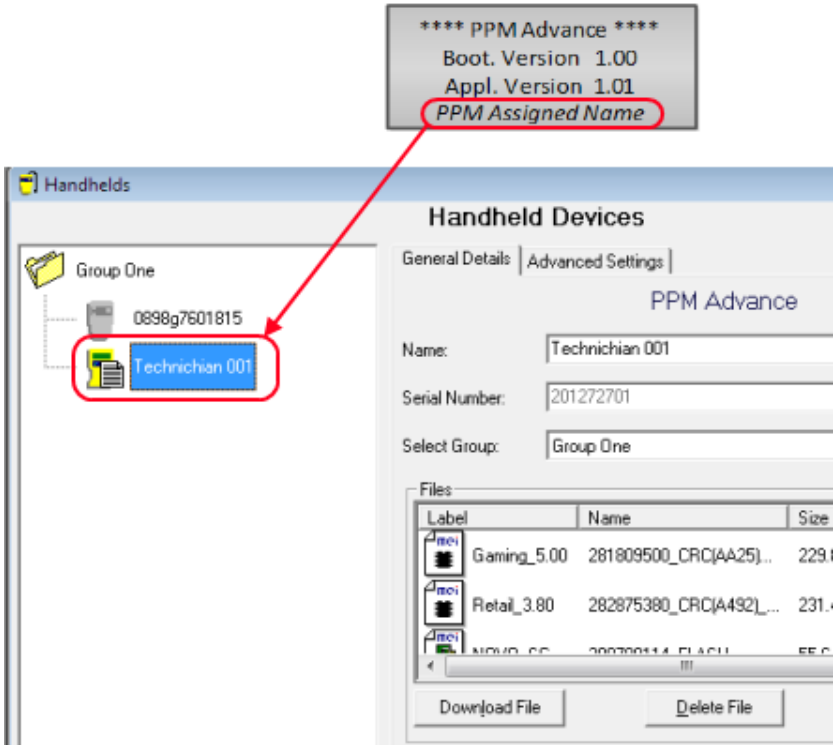
MOLEX 0430250600

TERMINAL PIN
MOLEX 0430300007



6 PPM Advance Start-Up Screen

Within 3 seconds after it has been turned on, PPM Advance will display its start-up information screen, which shows the handheld's installed software versions (boot and application) and the name it's been assigned through the CASHFLOW STS program.



CASHFLOW STS "Handheld Devices" Window

7 LED Status Indicator

PPM Advance has dual LED lights to indicate its internal status. User should refer to the following LED patterns:

Status	PPM Advance Status	LED Indicators	
OK	PPM is On and Idle (no warnings or error conditions)	Solid Green	
	Active communication with SC device or the PC	1 Flash Green	
Warnings	PPM is On and Idle, with one or more early warnings	Solid Yellow	
	PPM is On and Idle, with one or more critical warnings	1 Flash Yellow	
	Active communication with SC device or the PC	Flashing Green and Yellow	
Errors	Soft Error	Solid Red	
	Hard Error	1 Flash Red	

8 PPM Advance Main Menu

PPM Advance can provide necessary functionality to field service technicians for MEI CASHFLOW SC® and SC Advance® Series note acceptors, as well as MEI SCR® banknote recyclers.

The complete Main Menu for PPM Advance has 3 levels of functionality:

Use the (+) and (-) keys to scroll through the Main Menu list.

Main Menu Functions List:		
Function	**Description**	**Notes**
BA Update	This function updates the SC device's software.	
BA Information	This function reads and displays the SC device's installed Application (firmware) and Variant (bill set software) versions, as well as its Serial Number.	Make sure SC device is connected through front USB port.
Bill Inhibits	This function reads and displays the SC device's list of bill inhibits. Setting bill inhibits restricts specific bills (within a particular bill set) from acceptance.	Make sure SC device is connected through front USB port.
BA Audit	This function audits the SC device and stores the audit data in storage memory. This file will be transferred further to the CASHFLOW STS database.	Make sure SC device is connected through front USB port.
BA Diagnostics	This function provides two diagnostic tools: 1) "BA Self Test" (for complete diagnostics) and 2) "Cashbox Status" (for determining whether the cashbox requires cleaning).	Make sure SC device is connected through front USB port. When running the "BA Self Test", the SC device will perform the run-and-stack test.
Connect to PC	Activate this function to connect PPM Advance with CASHFLOW STS program.	PPM Advance will be recognized as a USB device.
BA Configuration	This function provides the opportunity to change some of the SC device's configurations.	Make sure SC device is connected through front USB port.
PPM Settings	This function provides the opportunity to check or modify PPM Advance settings, including language, name assigned, memory status, etc.	
PPM Files	This function provides a view of the stored data in PPM Advance memory.	All data will be grouped by type.
Error Log	This function provides a view of the last 50 PPM Advance errors.	

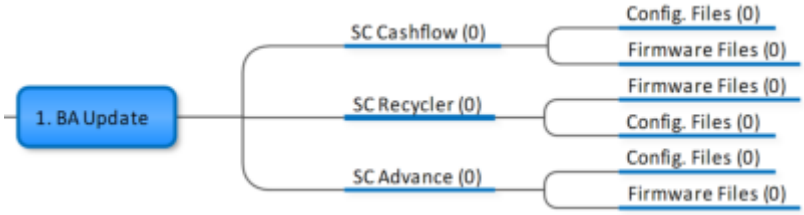
8.1 BA Update

”BA Update” is used to update the SC device’s software. The menu for this function offers three options based upon which SC device is connected:

1. SC Cashflow (legacy CASHFLOW SC product)
2. SC Advance (next generation SC Advance product)
3. SC Recycler (SCR banknote recycler)

Next to each option is a number in parentheses. This number indicates how many software updates are available and stored in PPM Advance memory for your SC device. For instance, “SC Recycler (1)” means there is one update available for a connected SCR banknote recycler.

Selecting an option on the Update menu will bring up a submenu of configuration or firmware binary files for updating your SC device’s software.



8.2 BA Information

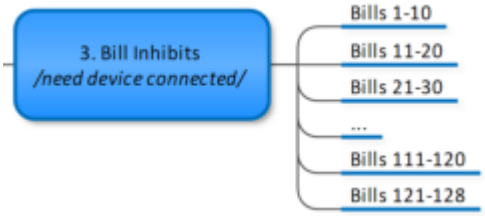
The “BA Information” function reads and displays information about an SC device that has been connected to the front USB port of PPM Advance. This information includes the installed Application (firmware) and Variant (bill set software) versions, as well as the unit’s Serial Number.

.

8.3 Bill Inhibits

The “Bill Inhibits” function reads the bill set of an SC device that has been connected to the front USB port of PPM Advance. Bill identities are provided in groups of ten. These groups are called

channels. By scrolling through these channels, you can open and switch ON/OFF any programmed denominations in your bill set. Denominations that are switched OFF, called bill inhibits, are restricted from being accepted.



Note! Different SC device models will have different bill channels.

8.4 BA Audit

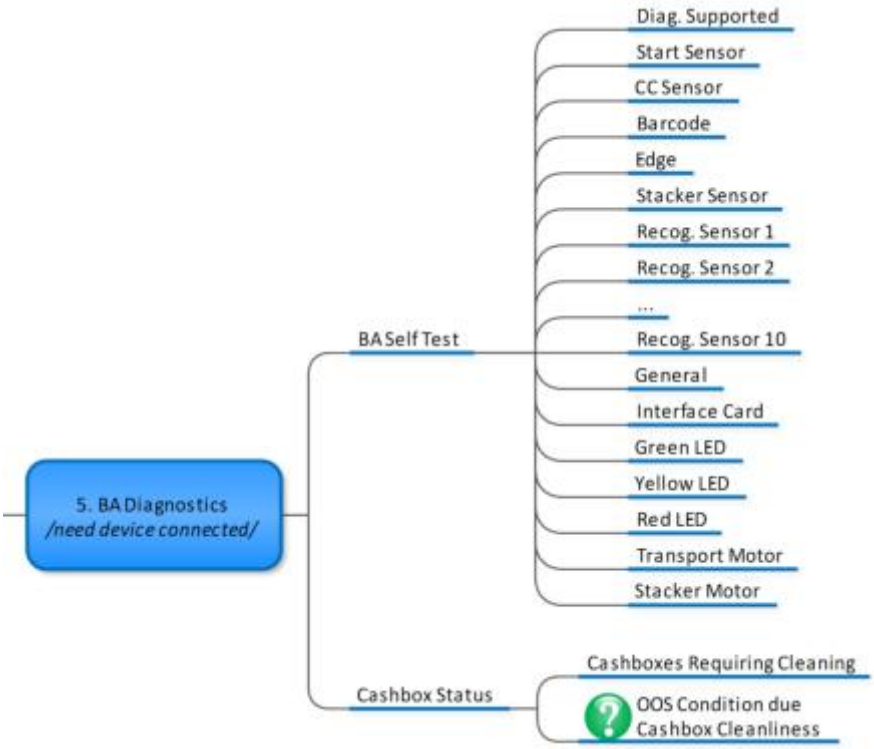
The “BA Audit” function audits data from a connected SC device and stores that information in PPM Advance memory. This makes the audit data accessible through the “PPM Files” menu, or it can be automatically downloaded to the PC using the CASHFLOW STS program. At the end of the operation, PPM Advance will request to clear the audit data.

8.5 BA Diagnostics

The “BA Diagnostics” function offers two diagnostic tools for a connected SC device: “BA Self Test” and “Cashbox Status” check.

The “BA Self Test” operation initiates an SC device’s internal self test. This test will cycle the SC device’s motors and cause each of its MMI LED lights (green → yellow → red) to blink once for control. For additional control, PPM Advance will display a list of diagnostic parameters, each marked with (✓) if its test was passed or with (✕) if it failed.

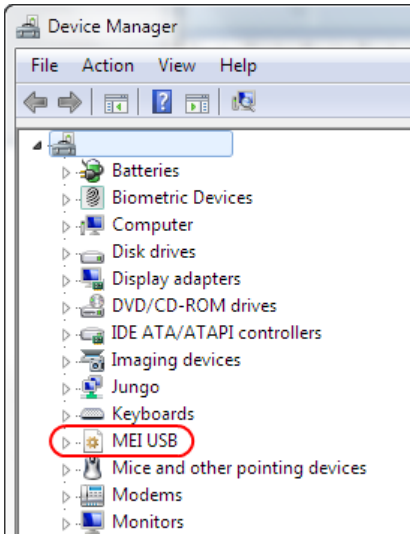
The “Cashbox Status” operation offers two possible verifications: 1) “Cashboxes requiring cleaning” and 2) “OOS condition due cashbox cleanliness”. In both cases, PPM Advance will show the number of failures caused by a lack of cashbox maintenance. If the cashbox is clean, PPM Advance will display “NA”.



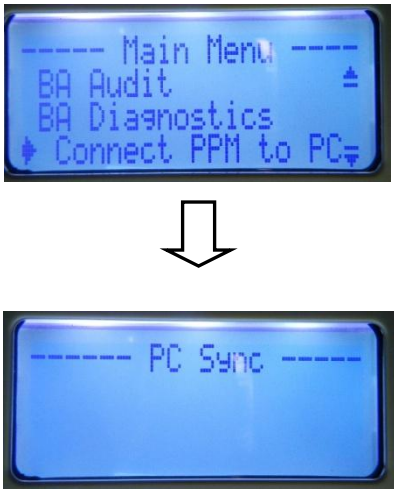
Use the (+), (-) and OK keys to send diagnostic commands to the SC device. “NA” represents NULL value. Each diagnostic parameter will display a (✓ or ✕) on the PPM Advance screen once its test has been completed.

8.6 Connect to PC

Use the “Connect to PC” function when connecting PPM Advance to a PC. This will turn USB-Slave mode ON so PPM Advance will be recognized by the computer as an MEI USB device.



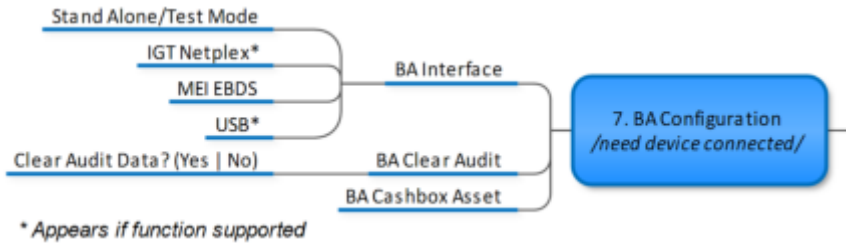
Windows "Device Manager" Window



PPM Advance "PC Sync" Screen. This screen will remain active during the entire time PPM Advance is connected with a PC.

8.7 BA Configuration

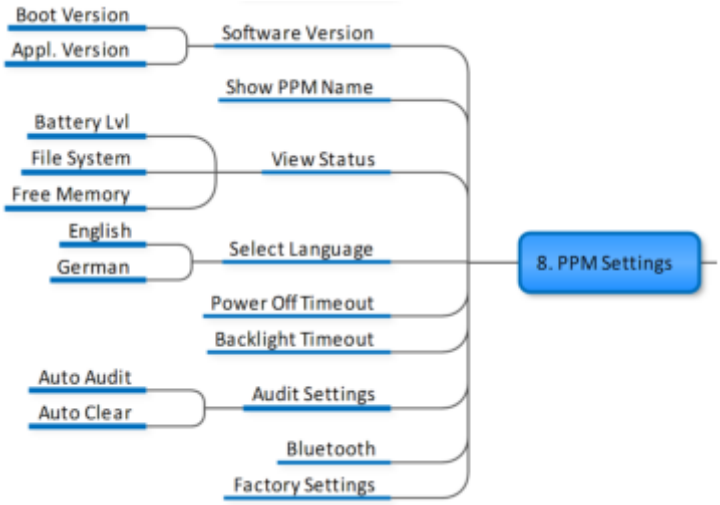
The "BA Configuration" function offers the opportunity to change some of the SC device's configuration settings as well as clear the SC device's audit data. It requires PPM Advance to be connected to the SC device.



Note! The "BA Cashbox Asset" function requires having MEI EASITRAX© hardware installed.

8.8 PPM Settings

The "PPM Settings" function offers the opportunity to check or modify PPM Advance settings, including language, timeout values and the installed firmware version. User can reset PPM Advance back to factory default settings as well.

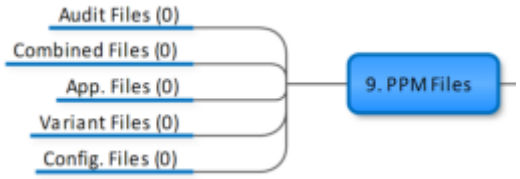


The “Audit Settings” submenu provides the same features offered by the CASHFLOW STS program, but it does not require PPM Advance to be connected with a PC. Both “Auto Audit” and “Auto Clear” functions will be executed after each “Firmware Download” operation.

The Bluetooth function will be disabled on PPM Advance models that are not equipped with Bluetooth hardware.

8.9 PPM Files

The “PPM Files” function allows users to browse and check the data files that are stored in PPM Advance internal memory. All saved files are grouped by type.



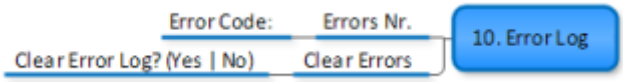
Note! Audit files are stored and displayed by serial number (as shown below). They will be stored and visible on PPM Advance until it is connected to the PC and the CASHFLOW STS program, at which point the files are automatically transferred into the CASHFLOW STS audit database.

The “App Files” and “Variant Files” menus will show single firmware files, as well as firmware files that are transferred to PPM Advance as part of a configuration (.xcf) file.

8.10 Error Log

The “Error Log” function provides a list of possible PPM Advance errors. The user can review the last 50 recorded errors by reference number or delete the error log altogether.

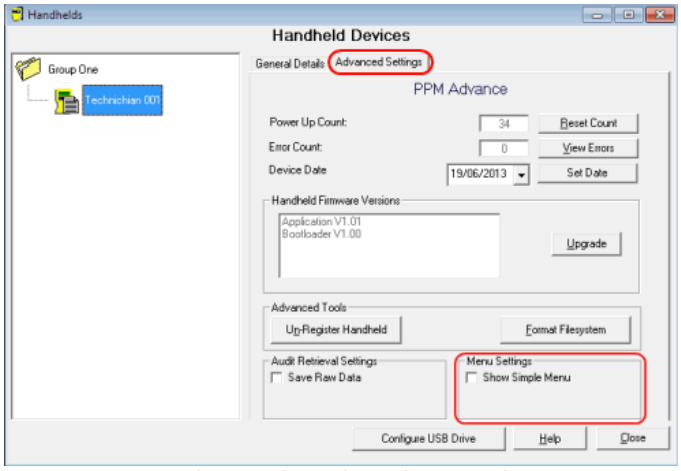
For more information on Error Types, please see the Appendix at the end of this document.



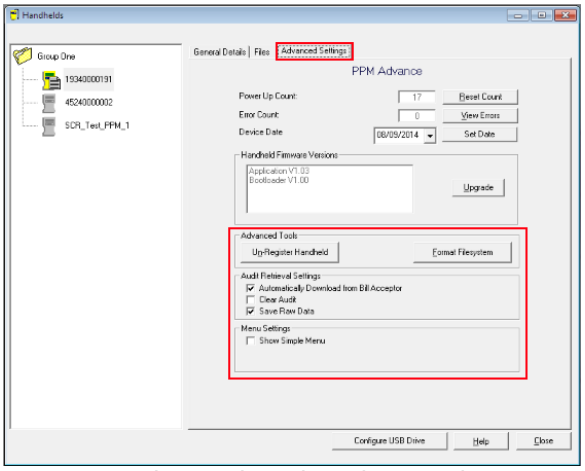
9 PPM Advance "Simple Menu" Setting

To simplify usage of PPM Advance, CASHFLOW STS (version 7.05 or later) offers a special feature that allows users to enable a shortened version of the PPM Advance menu. To change between the shortened (Simple) or full menu, PPM Advance must be connected to a PC running the CASHFLOW STS program.

To enable the Simple Menu, select "Advanced Settings" in the "Handheld Devices" window and tick the "Show Simple Menu" box in the "Menu Settings" section (see illustration below).

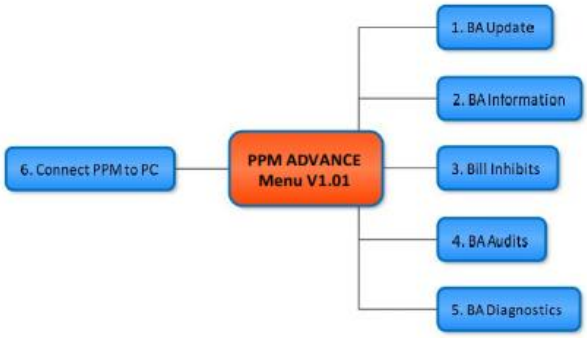


Advanced Settings (ver 1.01)



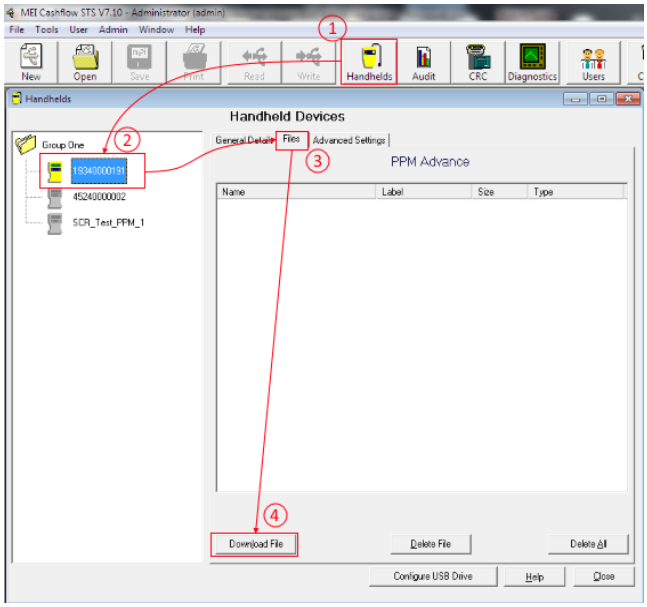
Advanced Settings (ver 1.03)

The Simple Menu will show only the following functions: "BA Update", "BA Information", "Bill Inhibits", "BA Audit", "BA Diagnostics" and "Connect to PC".



10 Loading Files into PPM Advance

Uploading files into PPM Advance requires connection to a PC running the CASHFLOW STS program. To upload files, follow this procedure (which can be repeated multiple times to accommodate all required firmware files):



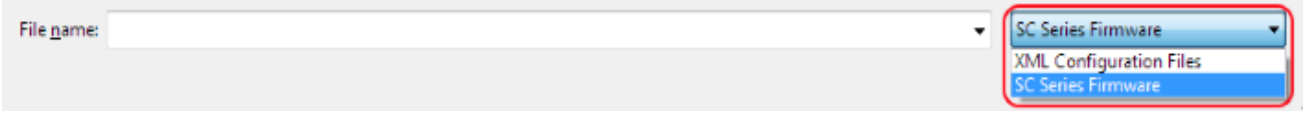
Step 1: Open the “Handhelds” menu on STS.

Step 2: Select your connected PPM Advance from the list of devices.

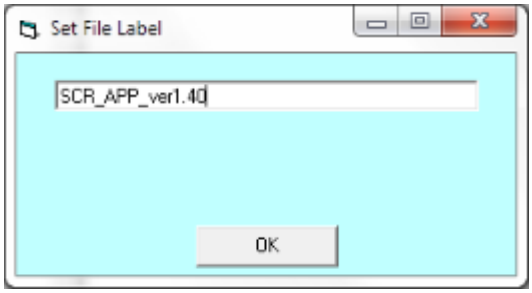
Step 3: Click on “Files” tab.

Step 4: Click the “Download File” button to begin uploading files into PPM Advance memory.

When selecting firmware to upload, please pay attention to the selected file type. Most MEI firmware files utilize binary extension (.bin).



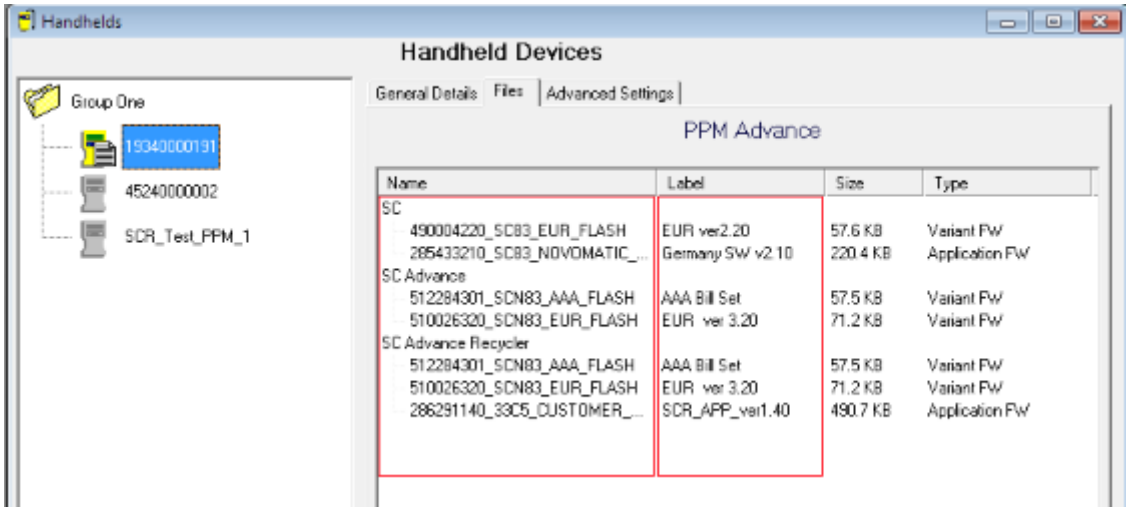
After a firmware file has been successfully selected, STS will request to give the file a shorter name (Label) for storage in PPM Advance memory.



The **maximum length** for shorter filenames is 18 characters.

This name will be shown on the PPM Advance screen and will be used for all other PPM Advance operations.

All files uploaded to and stored in PPM Advance memory will be grouped by type and by the product they are suitable for.



11 Programming SC Device with Firmware Stored in PPM Advance

Use this procedure to update an SC device's software. Before you begin, be sure 1) PPM Advance has the required firmware update file(s) stored in its memory, and 2) PPM Advance is connected to the SC device with a USB cable.

Activate PPM Advance and navigate to the "BA Update" menu to view the list of supported SC devices. Next to each device is a number, displayed in parentheses, that indicates how many firmware files are available for that particular device.

In this picture, for example, one (1) firmware file is available on PPM Advance for the SCR banknote recycler.

Select your SC device. In the resulting file type submenu, select "Firmware Files" to view the available firmware files.

Select the file you need and press the "OK" button. This will initiate the programming process, and the firmware file will be transferred into the connected SC device's memory.

Once the programming procedure is complete, the SC device will perform an initialization reset. Do not disconnect the PPM Advance from the SC device until the screen displays the “Enable Auto-DL?” message.

“Automatic Download” mode can be enabled to update multiple SC devices with the same firmware. To enable Automatic Download, select “Yes” on the PPM Advance screen and confirm your selection by pressing the “OK” button.

For confirmation, the “Disconnect BA to continue” message will display on the PPM Advance screen as it waits for the next SC device to be connected via USB. .

To cancel this operation, press the “Back” button as you would to cancel any other PPM Advance operation.

To disable “Automatic Download” mode, select “No” and confirm your selection by pressing the “OK” button.

12 Auditing SC Device with PPM Advance

12.1 Forced Audit Procedure

This procedure can be used to read audit data from any SC device with PPM Advance. Each audit file will be stored in PPM Advance memory and labeled with the serial number of the connected SC device. Multiple audit files from the same SC device are stored using a number in parentheses for differentiation (as shown in picture below).

Audit files are stored in PPM Advance memory until the handheld is connected to the CASHFLOW STS program, at which point all audit files are automatically transferred to the PC and deleted from PPM Advance.

To read the audit data from a connected SC device, execute the “BA Audit” command from the PPM Advance main menu.

After audit data has been successfully collected, PPM Advance will request to clear the audit data from the device's memory. Select "Yes" or "No" and confirm the action by pressing the "OK" button.

The "Automatic Audit Clear" feature can be enabled through the "PPM Settings" menu.

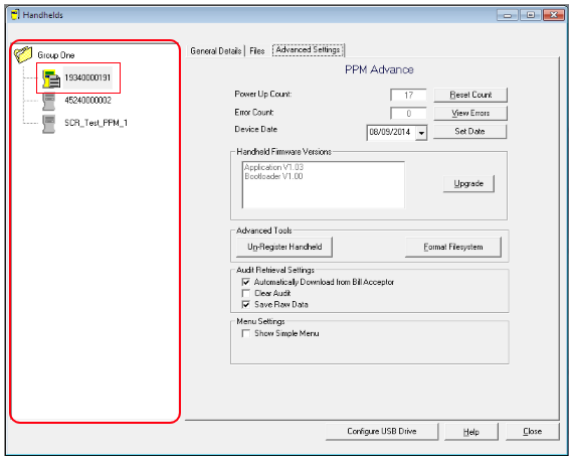
12.2 Automatic Audit Read and Audit Clear

PPM Advance offers "Auto Audit" reading and "Auto Clear" functions. If the "Auto Audit" feature is enabled, PPM Advance will automatically collect and store audit data each time the firmware update procedure is executed. If the "Auto Clear" feature is enabled, all performance data will be deleted from the SC device after audit data has been successfully collected by PPM Advance.

Go to "PPM Settings" → "Audit Settings" submenu and select the feature you wish to enable (✓) or disable (✕). Press the "OK" button to confirm. PPM Advance will then jump one menu level up.

13 Unregistering PPM Advance with CASHFLOW STS Program

PPM Advance requires CASHFLOW STS version 7.05 or higher installed on your computer. The first time PPM Advance is connected to the CASHFLOW STS program, it will be automatically added to the list of registered handheld devices (as shown in the picture below).

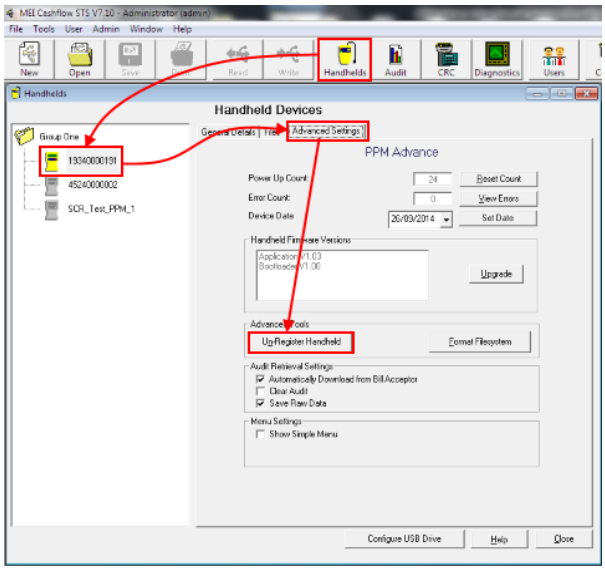


CASHFLOW STS "Handheld Devices" Window

Note! It is very important to remember that as long as PPM Advance is “registered” and remains listed in the “Handheld Devices” list, it will work on the same computer and any other PC installed with the CASHFLOW STS program (under the same License Key or Group License).

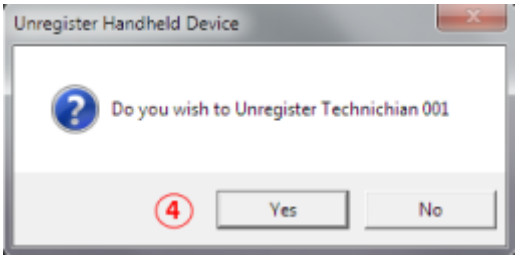
To “un-register” PPM Advance from CASHFLOW STS, please follow the steps below:

Step 1: Click on the “Handhelds” button.
Step 2: Select the required PPM Advance handheld from the list.
Step 3: Go to the “Advanced Settings” menu.
Step 4: Press the “Un-Register Handheld” button in the “Advanced Tools” section.



CASHFLOW STS “Handheld Devices” Window

Step 5: Confirm the un-registration.



IMPORTANT (!) After this procedure, the CASHFLOW STS program will delete all memory content from PPM Advance, so please do not “un-register” PPM Advance unless it is absolutely necessary!

14 Bluetooth Connectivity

The Bluetooth model of PPM Advance offers Bluetooth connectivity with Android mobile devices. This allows users to upload and download files to/from the SC device wirelessly, using the MEI PPM Advance Android application instead of USB cables.

To enable Bluetooth connectivity, PPM Advance requires specific hardware installed and enabled through the “PPM Settings” menu (PPM Settings → Bluetooth → Bluetooth ON|OFF).

For more information, please refer to the PPM Advance Bluetooth manual.

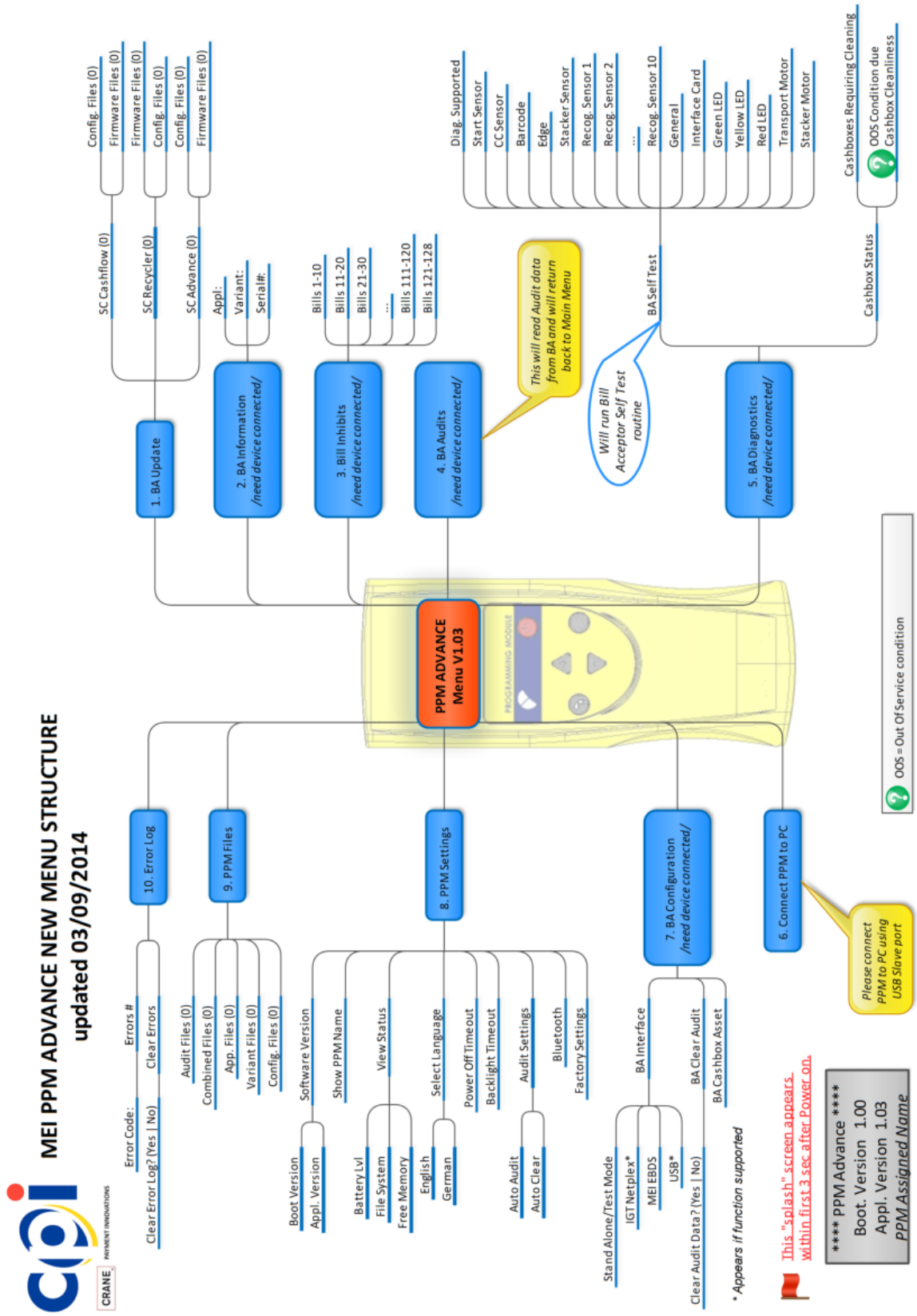
15 Appendix - PPM Advance Errors List

Error Code	Error Message	Error Level
0	No Error	None
1	File System Not Initialized	Soft Error[1]
2	File System Not Formatted	Soft Error
3	File System Timeout	Soft Error
4	File System Fatal Error	Hard Error[2]
5	File System Full	Critical Warning[3]
6	File System Failed to Initialize	Hard Error
7	SD Card Missing	Soft Error
8	Error Creating File	Critical Warning
9	Error Opening File	Critical Warning
10	Error Reading File	Critical Warning
11	Error Closing File	Critical Warning
12	Error Writing File	Critical Warning
13	Error Deleting File	Critical Warning
14	File Not Open	Critical Warning
15	File Not Found	Critical Warning
16	File Object is Invalid	Critical Warning
17	Selected Language File Not Found	Critical Warning
18	Configuration Directory Not Found	Critical Warning
19	Command Not Supported by BA	Early Warning[4]
20	Invalid Parameter in BA Command	Early Warning
21	BA Comms. Max Retries Exceeded	Critical Warning
22	BA Comms. Timeout	Critical Warning
23	BA Firmware File Not Found	Critical Warning
24	Error Opening BA Firmware File	Critical Warning
25	Error Reading BA Firmware File	Critical Warning
26	Error Closing BA Firmware File	Critical Warning
27	Firmware File Rejected by BA	Early Warning
28	BA Firmware File is Corrupt	Critical Warning
29	BA Firmware Update Cancelled	Early Warning
30	BA Firmware Update Aborted	Early Warning
31	BA Configuration File Not Found	Critical Warning
32	Error Opening BA Configuration File	Critical Warning
33	Error Reading BA Configuration File	Critical Warning
34	Error Closing BA Configuration File	Critical Warning
35	BA Configuration File Invalid Name	Early Warning
36	BA Configuration File is Corrupt	Critical Warning
37	Error Creating BA Audit File	Critical Warning
38	Error Writing BA Audit File	Critical Warning
39	Error Closing BA Audit File	Critical Warning
40	Error Reading BA Memory	Critical Warning

41	Error Writing BA Memory	Critical Warning
42	Batteries Low. Batteries will be depleted soon	Critical Warning
43	Verification Failed Download Corrupt	Critical Warning
44	Batteries Low. Batteries should be replaced soon	Early Warning
45	BA Audit File is Corrupt	Critical Warning
46	Invalid PPM Firmware File	Critical Warning
47	PPM Firmware Update Failed	Hard Error
48	The selected file is not compatible with the connected BA	Early Warning

[1]**Soft Errors** are errors that prevent PPM Advance from working correctly.
[2]**Hard Errors** are fatal errors from which PPM Advance cannot recover.
[3]**Critical Warning** indicates an internal PPM Advance error that can cause some data loss or corruption.
[4]**Early Warning** indicates an internal PPM Advance error that may lead to a hard or soft error.

16 Appendix - PPM Advance Menu Structure (version 1.03)



17 Product Compliance

MEI, Inc.
1-800-345-8215
http://www.meigroup.com

Contains Transmitter Module
FCC ID: X3ZBTMOD4
IC: 8828A-MOD4

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Internal Supply – Battery Type:
3 x AA 1.5V Alkaline (IEC LR6) or 3 x AA 1.2V NiMH (IEC HR6)

External Supply – Operating Voltage:
USB Port: 5Vdc ⎓ 1W peak or Serial Extension Port: **12Vdc ⎓ 2W peak**
CAUTION: The external supply shall be a suitable Listed Class 2 power limited source of supply.

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO LOCAL REGULATION.

The MEI PPM Advance operates at Safety Extra Low Voltage (SELV) as defined in EN 60950 'Information Technology Equipment - Safety'. The PPM Advance is of Class III construction.

The MEI PPM Advance must not be operated in the presence of flammable gasses, fumes or water. The PPM Advance is not suitable for use in areas where there could be direct contact with water jets.

Do not dispose of any part of MEI PPM Advance by incineration.

Part Name	Toxic or hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated Biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
MEI PPM Advance	O	O	O	O	O	O
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.						