FMU Data Logger Installation and Use

CAUTION	The Data Logger does not support FAT32 formatted SD cards. The Cactus SD card supplied with the Data Logger is formatted to FAT16. Do not reformat the Cactus SD card, and do not reformat a FAT32 card unless you are certain you have the capability to format to FAT16. Cactus FAT16 SD cards are available from Syntech using part number 249718*.

NOTE	Beginning with FMU firmware v3.66 and FuelMaster software v5.2.3.10, captured text may be downloaded from the Data Logger SD card directly to the Central Controller when transaction downloads are performed. The SD card must be removed from the Data Logger and read in an SD card reader to view and save the captured text in prior versions.
	If an FMU with an existing Data Logger has firmware v3.66 or later and the FuelMaster software is being upgraded to v5.2.3.10, an error message may appear during the first download to the Central Controller when the option to download Data Logger files has been selected. The error message will prompt to erase the SD card or call our Customer Satisfaction Center (CSC) for assistance. The error message will not appear if the SD card is removed and erased (delete files on SD card) after the firmware is upgraded and before a download to the Central Controller is attempted.
	For versions of FMPlus 5.34.3.0 and greater, a database update to SQL DB 554 is required and may be facilitated by the SQL Database Converter.

The FMU Data Logger (Syntech part number 941B0427) captures an electronic file of FMU transactions and text messages. The captured text is arranged in chronological order according to date and time.

Use of the Data Logger can eliminate the need for conduit, cabling, a serial printer, and paper to support an external transaction printer. In addition, capture of the text in an electronic file permits the user to search for information contained within the file and to edit it to support other needs. WordPad presents Data Logger files in the same format printed on a transaction printer and offers search options.

The Data Logger is an accessory circuit board, which plugs into any expansion slot of the mainboard of a Classic or Plus FMU-2500, FMU-3000, FMU-3500, or FMU-3535 series Fuel Management Unit (FMU). If desired, the Data Logger may be used in conjunction with a transaction printer. A short adapter cable permits the Data Logger to be installed as well as any existing (or new) transaction printer cable to be connected using the same outputs from the FMU.

The text is captured on an SD compact flash card inserted in a card slot on the Data Logger. The Data Logger reads only FAT16 formatted SD cards with a maximum memory capacity of 2 GB. The 1 GB SD card supplied with the Data Logger will store approximately 175,000 pages of transaction printer text and over 900,000 transactions. The Data Logger SD card will maintain 10 MB of free space. As memory reaches capacity, the free space is maintained by deleting the oldest files.

A Cactus FAT16 1GB SD card (Syntech part number 249718*) is supplied with the Data Logger as it has been noted as the most successful. The Cactus SD card is an industrial grade card, and all cards for the Data Logger application are made to the same manufacturing process.

NOTE	FMU hardware (correct mainboard CPLD) and firmware must be compatible for the generated *.txt files to be legible.

Because the Data Logger is inserted into an expansion slot in the FMU mainboard and the FMU mainboard is susceptible to surge damage, the Data Logger is also susceptible to surge damage. Downloading data from the Data Logger on a regular basis will prevent loss of data.

Install Data Logger

Refer to Figure 1 for Data Logger component locations, Figure 2 for Data Logger installation location, and Figure 3 for 941B0431 adapter cable installation for FMU's with Revision F and older mainboards.

NOTE   There are jumper positions on the Data Logger located at positions J5 RTCK, and J6 BSL. There should not be any jumpers installed in these positions.
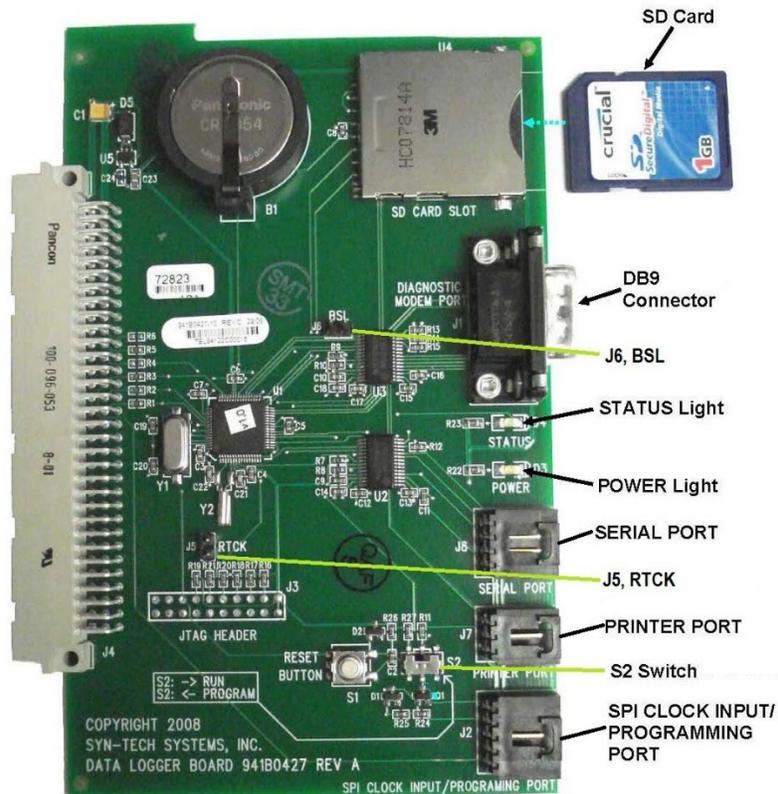

Figure 1 Data Logger Components

1. Ensure a formatted SD card is inserted into the SD card slot of the Data Logger.

2. Verify the Data Logger S2 switch is switched to the right to the RUN position.

3. Unlock and open the FMU pedestal door, and ensure the FMU Power Switch is OFF.

4. Unlock and open the FMU upper cabinet door.

5. Loosen the two screws securing the Board Retainer, move the Board Retainer up, and insert the Data Logger into one of the six expansion slots of the FMU mainboard. The receptacle on the Data Logger is keyed to correctly fit the expansion slot.

6. Move the Board Retainer down over the Data Logger, and tighten the two Board Retainer screws.

7. If applicable, disconnect the DB9 connector of the FMU internal cable from the **J3 - On Site Printer - receptacle**.

8. Install the 941B0432 cable; one end plugs into **J3 - ON SITE PRINTER** on the Satellite I/O Control Board, and the other end plugs into the **PRINTER PORT** of the Data Logger.

NOTE   (Use with Transaction Printer) The Data Logger may be used in combination with a transaction printer. If desired, a 941B0432A cable must be used. This cable installs the same as the 941B0432 cable in step 8 but has an added leg to connect the DB9 of the part number 200077 FMU internal phone/printer cable. When connected, the print signal is sent both to the Data Logger and to a transaction printer.

> On FMU's with revision F or older mainboards, the Data Logger will capture print text without the installation of the 941B0431 adapter cable and 941B0434 cable but will not transfer print files to the Central Controller without these cables installed. Print text must be viewed by removing the SD card and reading it in an SD card reader if the 941B0431 adapter cable and 941B0434 cable are not installed.

9. Check the revision level of the mainboard (behind the Board Retainer). If the mainboard revision level is F or older, a 941B0434 cable and 941B0431 cable adapter must be installed.

10. (Rev F or older) If revision level is F or older, move the tie wrap back and disconnect the ribbon cable from the Prokee® Board. Otherwise, skip to Step 15.

11. (Rev F or older) Insert the female end of the short 941B0431 adapter cable fully into the receptacle of the Prokee® Board. Reinstall a tie wrap over the hinged "doglegs" to secure the cable in the receptacle.

12. (Rev F or older) Insert the female end of the 941F0206 ribbon cable into the male receptacle of the 941B0431 adapter cable closest to the Prokee® Board.

13. (Rev F or older) Insert the female end of the 941B0434 cable into the remaining male receptacle of the 941B0431 adapter cable.

14. (Rev F or older) Insert the black 5-pin connector of the 941B0434 cable into the SPI CLOCK INPUT/PROGRAMMING PORT of the Data Logger.
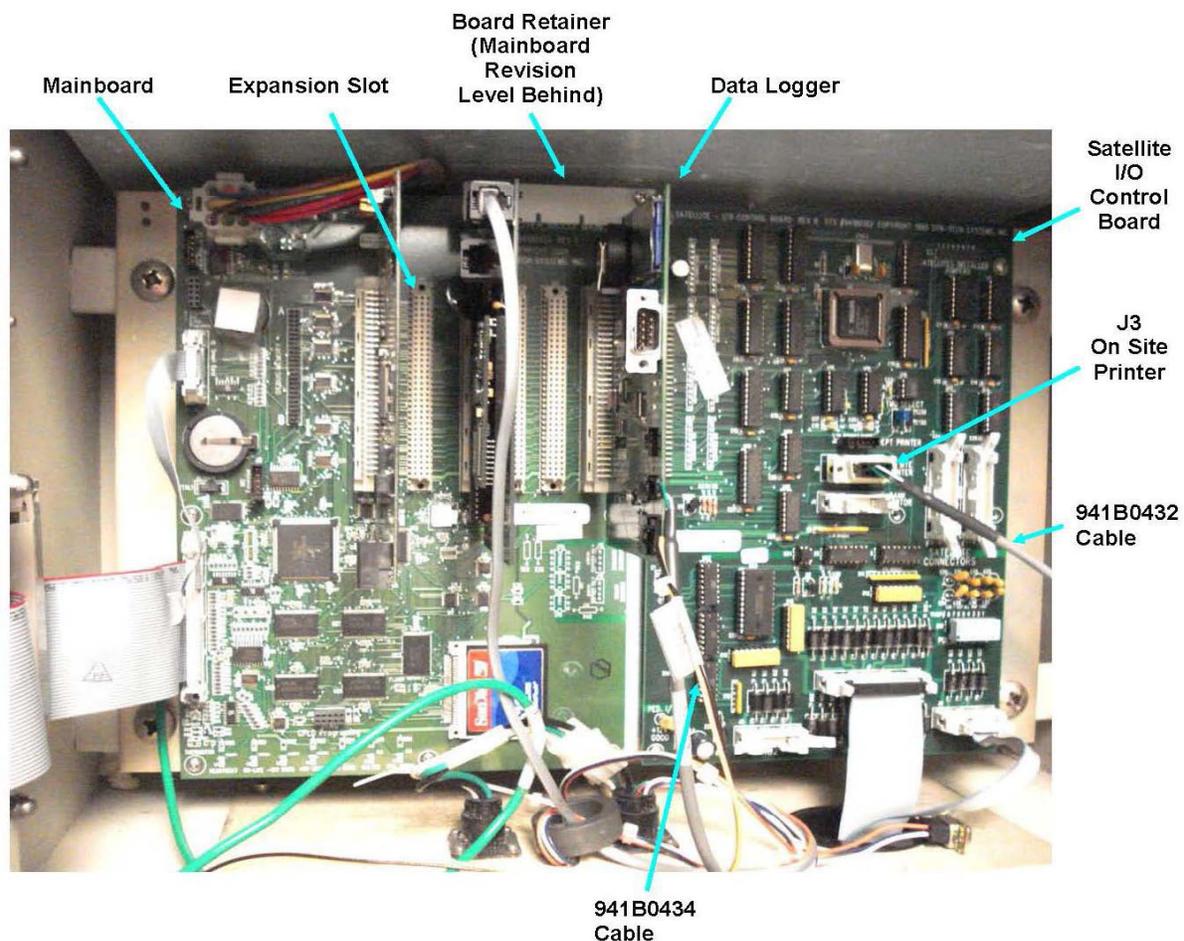

Figure 2 Data Logger Installation

15. Turn the FMU Power Switch ON. The Data Logger STATUS LED will flash, and the POWER LED will illuminate and remain on.

> **NOTE** Step 17 is required only when a Data Logger is installed in the field. Data Loggers installed in FMUs at the FuelMaster factory have this step performed prior to shipment.

16. When the FMU finishes initializing, make a laptop connection in accordance with Product Bulletin 111, and perform the following:

    a. Enter Procomm command 72,2. The following menu will appear:

    ```
    TES>72,2
                        Welcome to the Data Logger File System Shell

                            The Shell Commands are as Follows:


        CAT         -Display Contents of a File      DEL         -Delete a File

        DIR         -List Files on Logger            FTP         -FTP: Logger to PC

        HELP        -This Menu Screen                LS          -List Files on Logger

        QUIT        -Quit this Shell                 REN         -Rename a file

        RM          -Delete a File                   ZGET        -ZModem: Logger to PC

    LOGGER_SHELL>:
    ```

    b. At the LOGGER _SHELL>: prompt, type in the command SYNC. This procedure will synchronize the Data Logger date to the FMU date. If successful, the FMU will display:

    Successfully synchronized date and time.

    c. Exit the laptop connection in accordance with Product Bulletin 111, and disconnect the hardware. The Data Logger is synchronized to the FMU.

17. Insert a Supervisor Prokee® or smartcard. The Data Logger STATUS light should flash, indicating the Data Logger is receiving print text inputs. Exit the Supervisor Menu.

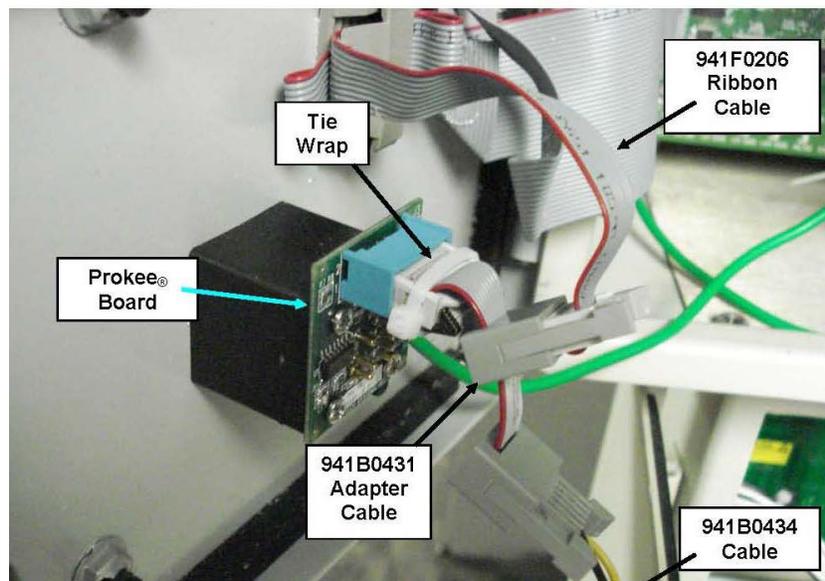18. Close and lock the FMU pedestal and upper cabinet doors.

Figure 3 941B0434 Cable Installation

If any questions arise, please contact Syntech Systems, Inc.'s Customer Satisfaction Center at 1-800-888-9136, ext. 2 or email support@myfuelmaster.com.

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Software Configuration for FMPlus v5.2.3.16.0

> **NOTE**   This procedure is not applicable when using FuelMaster Central Controller software prior to version 5.2.3.10.

1. Select **Main menu > Online icon.** A Go Online with FMUs window will open. Select the **Misc**. tab (Figure 4).
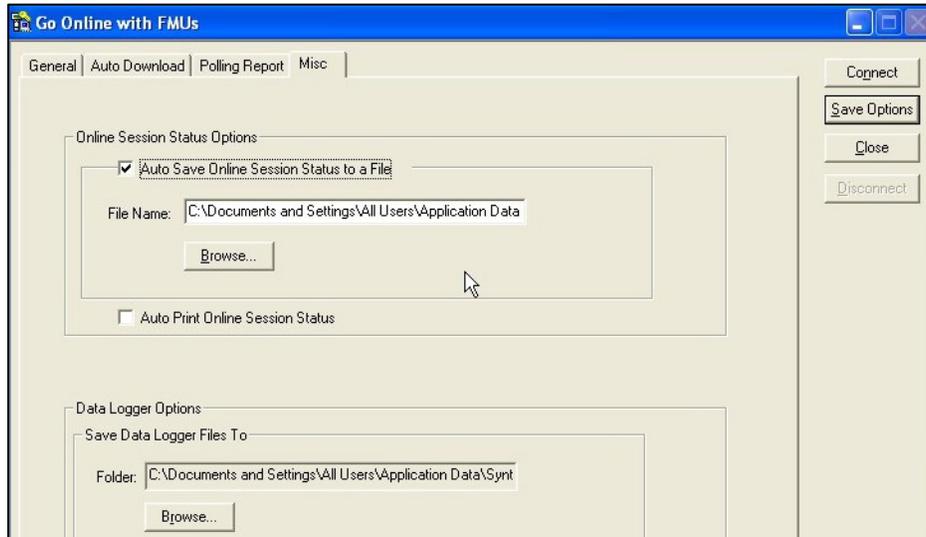

Figure 4 Go Online with FMUs > Misc.

2. Under Data Logger Options, Save Data Logger Files To, select **Browse** to select a Folder for the Data Logger files to be saved in.

3. After a **Folder** selection has been made, select the **General** tab. A Go Online with FMUs > General window will open (Figure 5).
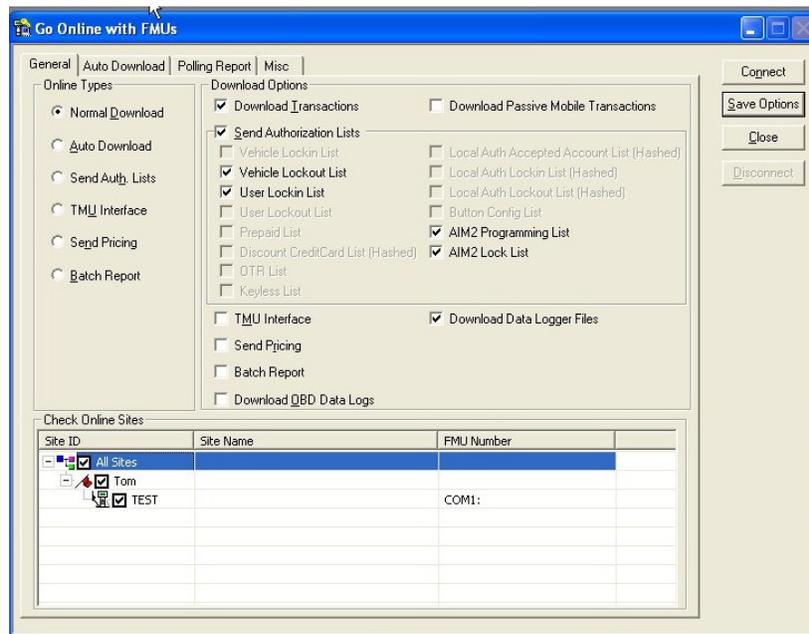
Figure 5 Go Online with FMUs > Misc.

Near the middle of the window is a **Download Data Logger Files** option which only appears in software v5.2.3.10 and later. If the user who signed into the software does not have permission to make changes to this option, the option will be checked and greyed out. If the user has permission to make changes to this option, the option will be as shown in Figure 9, and may be checked or unchecked.

4. Select **Main Menu > System > Operator Options > List Maintenance** (Figure 6). An Operator List will open.

Figure 6 List Maintenance

5. Select the **Operator Name** that needs the permission change followed by **Open** (Figure 7). A new window will open with the heading **Operator Name:** and the name of the selected operator.
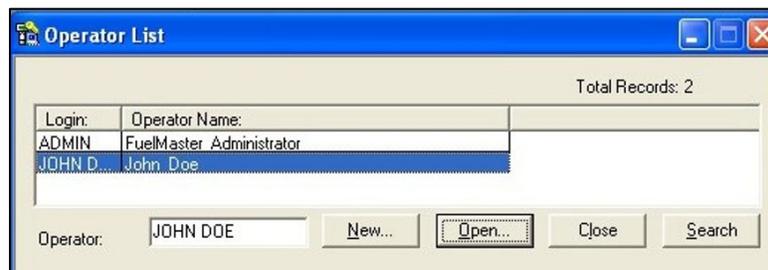

Figure 7 Operator List

NOTE   Changes made to permissions will not take effect until after the software program is logged off, then logged back in.
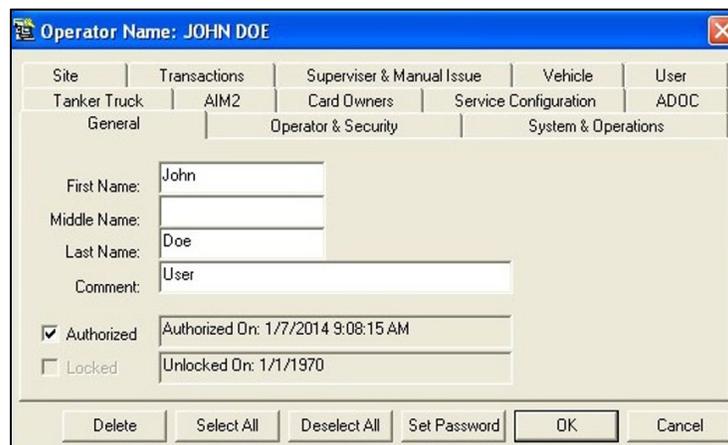

Figure 8 Operator Name for Permissions

6. Select the **System & Operations** tab. In the middle of the window will be a column listing **Online** options (Figure 9).
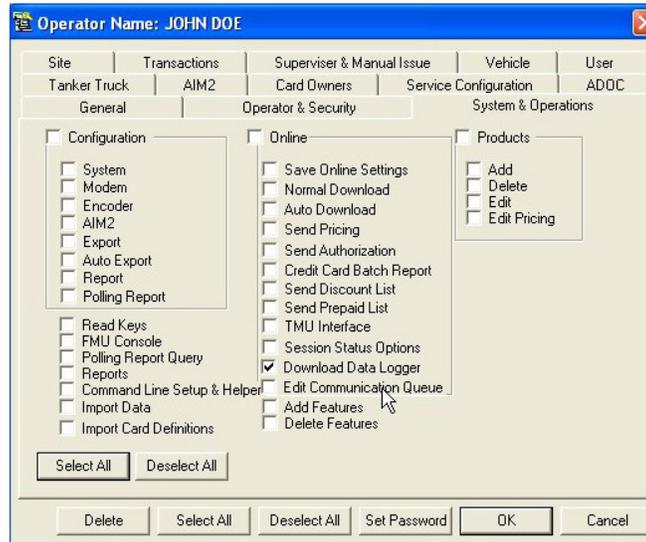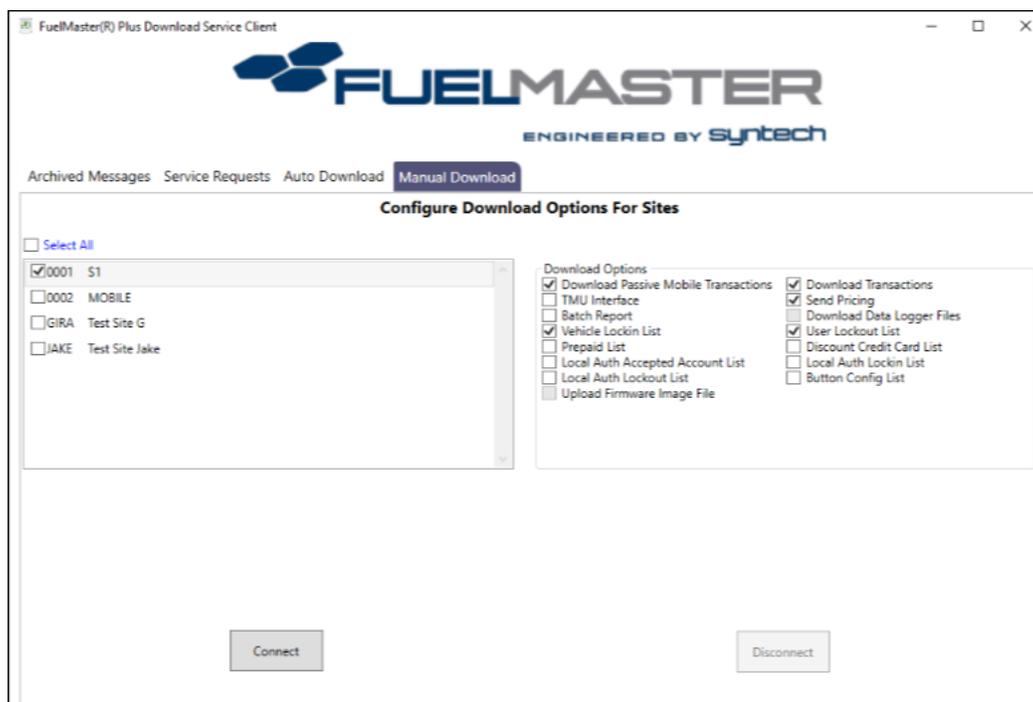
Figure 9 System & Operations

7. Select Download **Data Logger** checkbox to give this operator the choice of turning on or turning off Data Logger downloads.

8. Select **OK**. The window will close. Permission has been set. When the FMU is downloaded and the option to download Data Logger files has been turned on, a text file is sent to the folder location identified in Figure 4.

9. Exit the FuelMaster software.

Software Configuration for 5.3.3.0 - 5.32.3.0

The above process remains up until 5.2.3.16.; however, it should be noted that when accessing the Download Services Client, Manual Download tab in v5.3.3.0, the following screen appears, which allows for site download option selection prior to downloading.

If any questions arise, please contact Syntech Systems, Inc.'s Customer Satisfaction Center at 1-800-888-9136, ext. 2 or email support@myfuelmaster.com.

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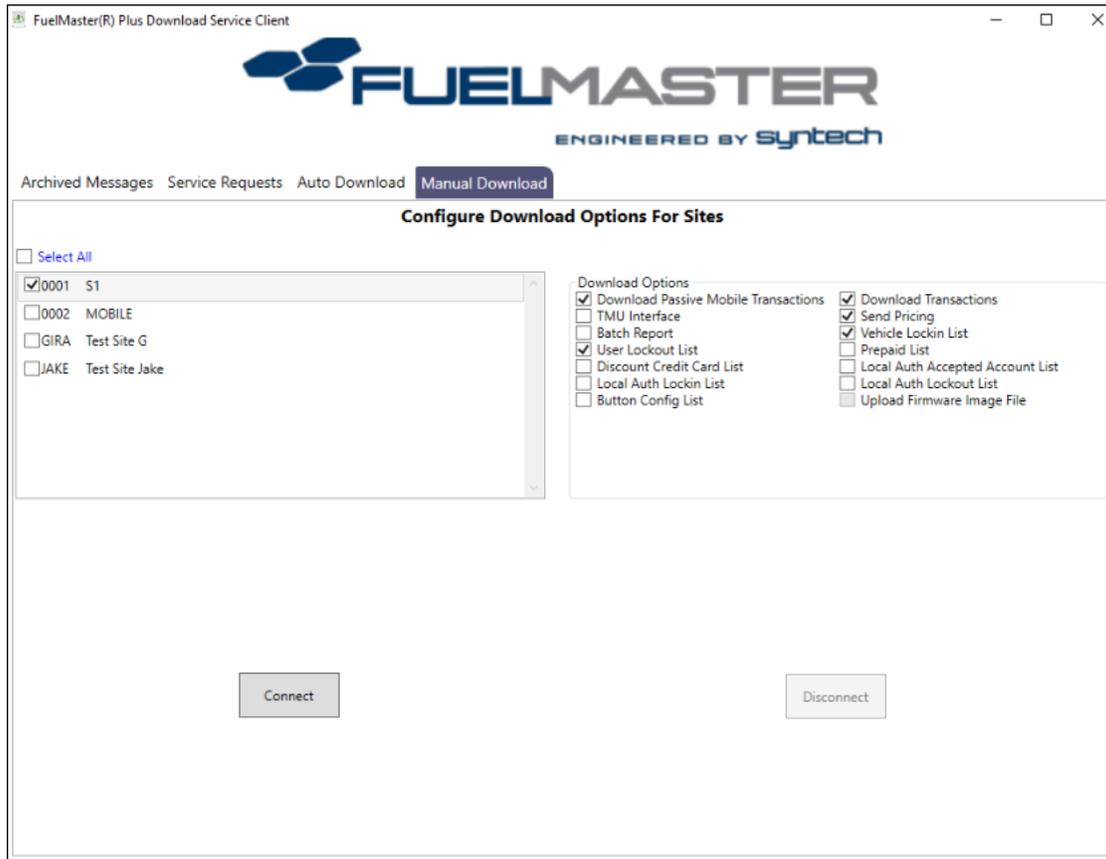# Software Configuration for FMPlus 5.34.3.0 and greater

The above process remains for FMPlus v5.33.3.0; however, it should be noted that when accessing the Configuration modal in v5.34.3.0, the Download Service tab contents have been updated. This is necessary as the Download Datalogger checkbox in the online general user interface has been removed. Downloading the datalogger in FMPlus 5.34.3.0 and greater now occurs automatically with each download session.
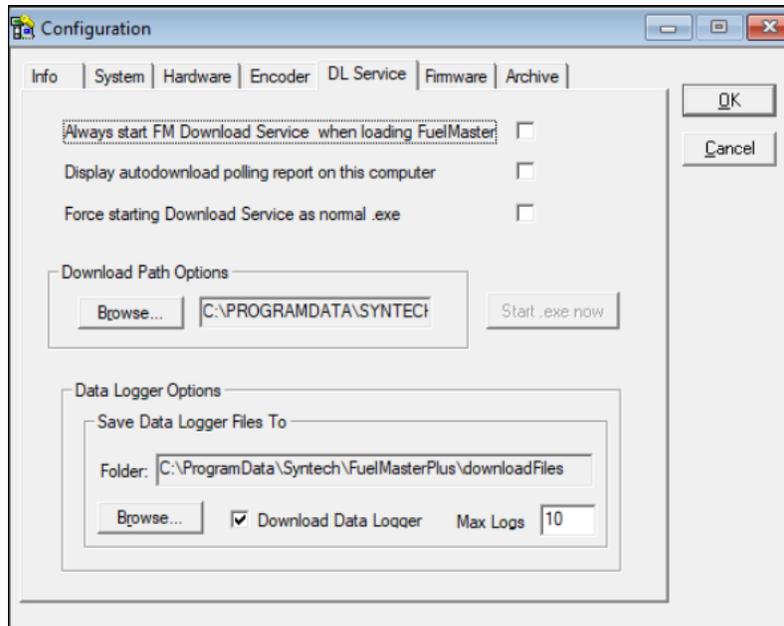
The new Download Data logger checkbox, appearing at the bottom of the Configuration modal, is enabled/turned on by default. However, any operator with Online Session Option permissions can disable the setting. The Max Logs field identifies how many data logger files should be downloaded on a per site basis. This comes into play if the data logger has not been downloaded recently and there are lots of files. The default value is 10 files per site per online session. This value should be set at an integer between 1 and 1000 (inclusive); though, the current recommendation is between 5 and 20.

Download Data Logs Manually with the Download Service Client

1. With the *Manual Download* tab selected, select the **Sites** and **Download Options** you would like to apply to the download job (FMPlus 5.34.3.0 and greater).

2. Select **Connect**. The Download job will complete.

If any questions arise, please contact Syntech Systems, Inc.'s Customer Satisfaction Center at
1-800-888-9136, ext. 2 or email support@myfuelmaster.com.

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Download Data Logs Automatically with the Download Service Client

1. With the *Auto Download* tab selected, select the **Sites** and **Download Options** you would like to apply to the download job (FMPlus 5.34.3.0 and greater).

2. Using the *Schedule Auto Download* section, configure the **Frequency, Start Date** and **Start Time** for the download job.

3. Select **Schedule**. The download will complete as scheduled.

File Format

Files generated by the Data Logger will appear differently depending upon how and when they are recovered. If the SD card is removed from the Data Logger and read in an SD card reader, it will have a file named as follows:

_131841P.TXT.

The underscore indicates the file has not been downloaded to the Central Controller. If the underscore is absent, the file has been downloaded. In the example, the 131841 indicates the time: 13 hours, 18 minutes, 41 seconds. The P indicates the file was pulled from the Data Logger PRINTER PORT. Files pulled from the Data Logger SERIAL PORT will have an S suffix. If a card is pulled and read before the end of the day, any new information for that day will be added to the same TXT file by appending the existing file. Data will remain on the SD card until specifically deleted.

When a file is downloaded to the Central Controller, he file name will be modified to include a site name and date code in the following format: SITEXXXX_YYMMDDHHMMSSP.TXT Example: SITETEST_140107131841P.TXT, where Site Name = TEST, Year = 14, Month = 01, Day =07, Time = 13:18:41, File Type = P (printer). The underscore in files downloaded to the Central Controller is there only to separate the site name from the date.

View Captured Text

If software and firmware modifications are not complete to support downloading Data Logger text to the Central Controller, captured text must be viewed by removing the SD card and reading the text with an SD card reader. Some customers may consider having spare SD cards available so a replacement card may be reinstalled in the Data Logger when another card is removed for viewing.

1. Unlock and open the FMU pedestal and upper cabinet doors.

2. Turn the FMU Power Switch **OFF**.

NOTE   If a replacement SD card is not available and continuing data logging is desired, the FMU must remain off until the SD card may be reinstalled.

3. Remove the SD card from the Data Logger. As desired, reinstall another formatted SD card, turn the FMU Power Switch **ON**, and lock the FMU pedestal and upper cabinet doors.

4. Insert the removed SD card into an SD card reader connected to a PC.

5. Open the captured text file in **WordPad**. Figure 10 is a sample captured text file.

```
MASTER Unit [TEST] Power Failed on 01/13/14, at 16:56:38
Operation restored on 01/14/14, at 08:08:33.

FUELMASTER FMU2500+   v3.82  (11/05/13)

********************************************************************************
* Site:              System Type: VEHICLE KEY       Page   1 *
*  FUELMASTER(R)    Fuels Management System (C),    Syn-Tech Systems, Inc.  *
*------------------------------------------------------------------------------*
*TC Date    Time    Transaction Description      Prod/Hose   Quantity    *
*  Vehicle---Agency---Org----Odometer---Chron1---Chron2---Chron3 Unit Price  *
*  User------Agency---Dept                       Total Cost  *
********************************************************************************
*** 01/14/14  08:13:10 SUPERVISOR ACCESS -> SUPV #00094307 [MASTER]
*** 01/14/14  08:13:13 FMU TEST MENU ENTRY
*** 01/14/14  08:13:43 EXITING SUPERVISOR OPERATIONS. [MASTER]
*** 01/14/14  08:18:15 MASTER Unit [TEST       ] LOGGED ON VIA CONSOLE.
*** 01/14/14  08:20:02 MASTER Unit [TEST       ] CONSOLE LOGGED OFF.
*** 01/14/14  08:25:40 MASTER Unit [TEST       ] LOGGED ON VIA CONSOLE.
*** 01/14/14  08:26:00 MASTER Unit [TEST       ] CONSOLE LOGGED OFF.
  0 01/14/14  10:32:45 Vehicle Key/Card Transaction    2  1      11.50  GL
    0000TEST             -------  -------  -------  -------
    000000001 ------- ------ --------- -------- --------
  0 01/14/14  10:33:25 Vehicle Key/Card Transaction    1  2       0.00  GL
    0000TEST             -------  -------  -------  -------
    000000001 ------- ------ --------- -------- --------

_140114P.TXT[1/14/2014 11:09:36 AM]
```

Figure 10 Sample Captured Text File

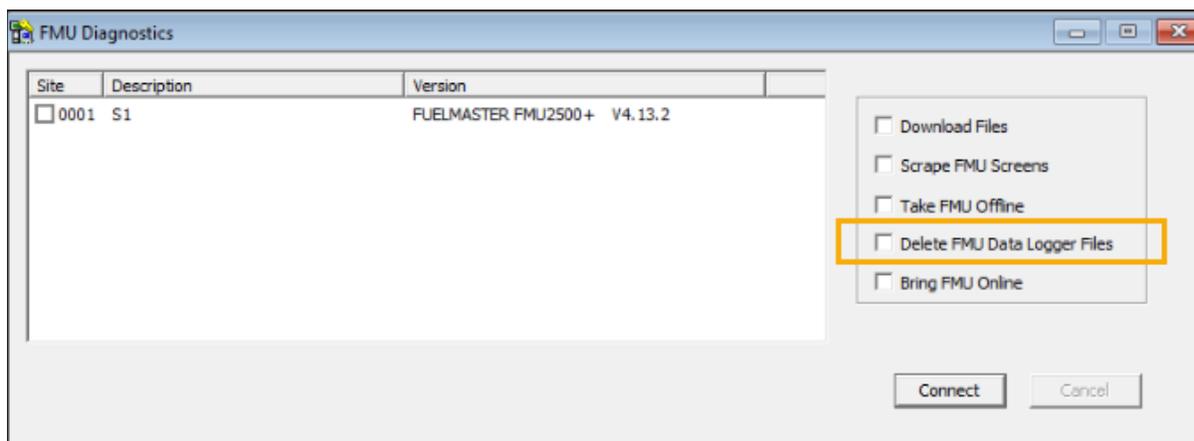| NOTE	If several files are to be downloaded and saved, a file naming convention identifying which site the file is associated with (i.e., Garage 090308P.TXT) may be desired to avoid duplicating or overwriting files.

6. As desired, view/print/save the captured text. Files may be deleted from the SD card, as desired, while being viewed with the card reader.

7. Remove the SD card from the card reader.

8. As required, reinstall the SD card in the Data Logger, turn the FMU Power Switch **ON**, and lock the FMU pedestal and upper cabinet doors.

TIP	If any questions arise, contact Syntech Systems, Inc.'s Customer Satisfaction Center (CSC) at 1-800-888-9136, ext. 2, or email support@myfuelmaster.com.

Remove Captured Text

As of FMPlus 5.34.3.0, you may visit FMU Diagnostics to Delete Datalogger files that are no longer needed.

CAUTION	Removing captured text wipes all contents from record.

If any questions arise, please contact Syntech Systems, Inc.'s Customer Satisfaction Center at 1-800-888-9136, ext. 2 or email support@myfuelmaster.com.

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Change Log

Version	Date	Description
1.0	9/30/2008	Original
2.0	2/7/2014	Added procedures for downloading Data Logger files directly to the FuelMaster software.
3.0	3/18/2016	Added reference to Cactus FAT16 SD cards.
4.0	10/9/2020	Rebranded/Reformatted Content.
5.0	5/12/2021	Edited for conciseness.
6.0	3/4/2025	New or updated topic include: • Software Configuration for 5.3.3.0 - 5.32.3.0 • Software Configuration for FMPlus 5.34.3.0 and greater • Download Data Logs Manually with the Download Service Client • Download Data Logs Automatically with the Download Service Client • Remove Captured Text