Tank Monitor Interface

CAUTION	The FMU upper cabinet door must be opened to replace the LCD. Exercise caution to prevent moisture (rain, snow) from entering FMU.

FuelMaster FMUs (Fuel Management Units) may interface a Tank Monitor Unit (TMU) to obtain Tank Monitor quantity data through the Central Controller. TMU interface components for a Master FMU are available in kit form from Syntech Systems, Inc. See Figure 1. The existing Central Controller software allows for the extraction of TMU data from the Master FMU.
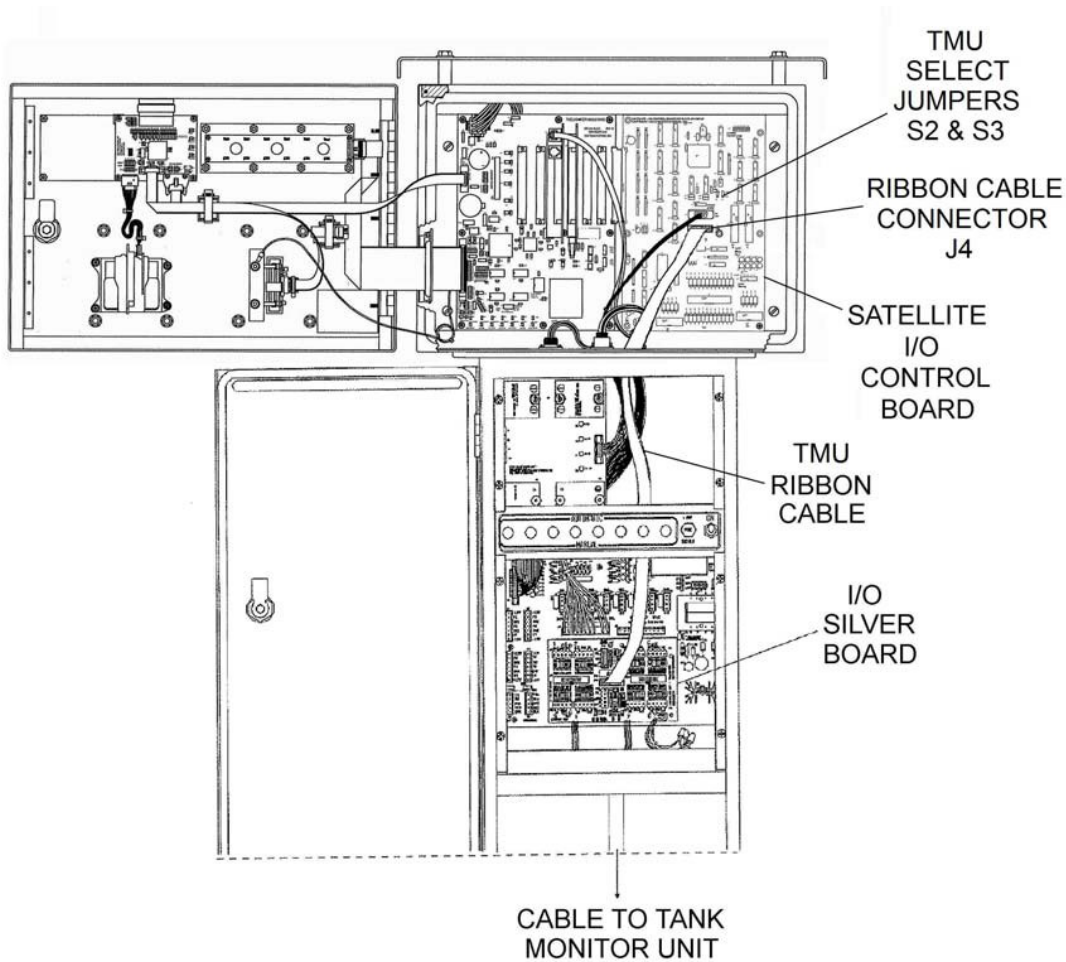

Figure 1.ank Monitor Interface Kit Installed in FMU

The interface is not always active. Tank monitor reports are acquired when a command is sent from the software to the FMU. The FMU passes the command to the tank monitor. Tank monitor alarms show on reports but not as they occur.

The Tank Monitor Interface Kit (TMIK) includes an I/O Silver Board (see Figure 2). If the TMIK is being purchased and installed in an FMU already possessing an I/O Silver Board, let Syntech know the application. The TMIK I/O Silver Board may be sent with the additional components installed on the board to cover both applications.
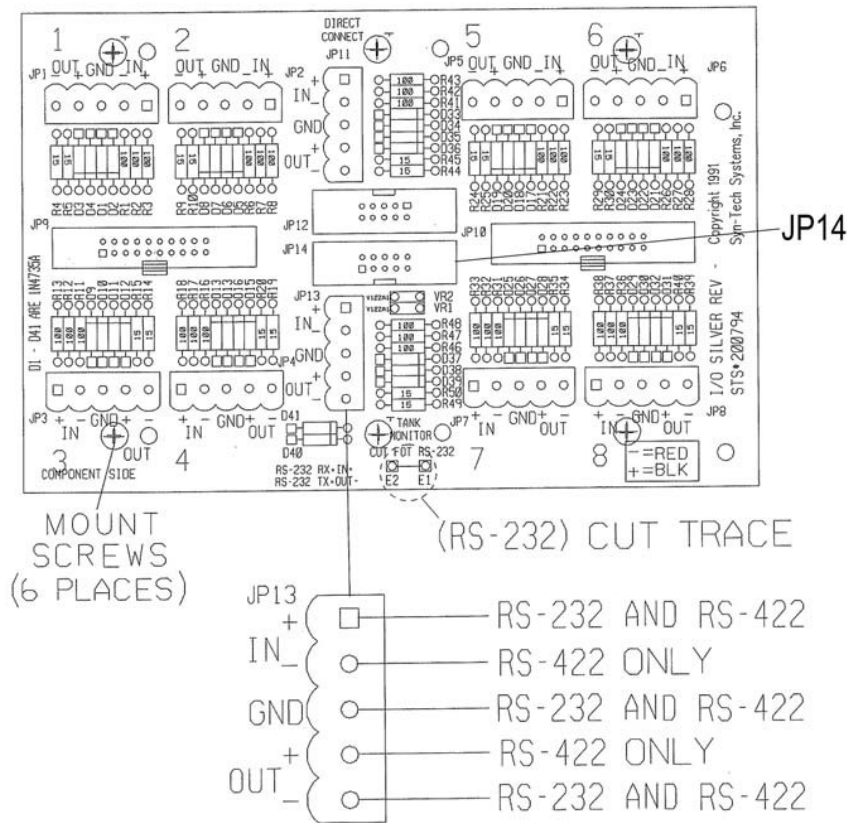

Figure 2. I/O Silver Board for Tank Monitor Interface Kit

A wireless connection between the FMU and tank monitor may be configured using a Zlinx wireless modem. The application is covered in Product Bulletin 133. If using a cable connection, an RS-232 or RS-422 cable must be routed from the FMU to the TMU control box. The FMU will accept either RS-232 or RS-422 connections. RS-232 cable lengths should not exceed the TMU manufacturer's recommendations. RS-422 cable lengths should not exceed 2000 feet. If the TMU control box requires an RS-232 cable connection, and the distance between the FMU and TMU exceeds the manufacturer's recommendation, an RS-422 cable may be stepped down to RS-232 through the use of an RS-232/422 converter at the TMU control box. One such RS-232/422 converter is the Patton Electronics 222N with a 25-pin tank monitor connector. Syntech carries it with part number 219517. Patton Electronics (http://www.patton.com/) carries these converters with other connectors (DB9, RJ11, RJ45).

Install Tank Monitor Interface Kit

> *NOTE* To confirm the TMU will interface with FMU, contact Syntech's CSC.

1. Shut off AC power to the FMU and all connected dispensers at the circuit breaker.

2. Unlock and open the FMU cabinet and pedestal doors, and remove the upper and lower electrical access covers from the pedestal electrical access panel.

3. As required, pull RS-232 or RS-422 cable through rigid explosion-proof conduit from the TMU control box to the FMU electrical access panel.

> *NOTE* If the FMU was previously configured with an I/O Silver Board for another purpose, the previous I/O Silver Board must be removed and replaced with the new I/O Silver Board. The new I/O Silver Board may be ordered with the additional components necessary to also support the previous configuration.

4. If applicable, remove the previously used I/O Silver Board mounted over the Pedestal I/O Board on six standoffs:

    a. Note location and disconnect all ribbon cables and plugs from I/O Silver Board.

    b. Remove I/O Silver Board from standoffs (6 screws).

5. If there is no previous I/O Silver Board, remove six screws from the Pedestal I/O Board (above and below TB1, TB2, and TB3), and thread six standoffs into the screw holes.

6. Position the new I/O Silver Board over Pedestal I/O Board, and attach to standoffs with 6 screws.

7. If applicable, reconnect any pre-existing cables and plugs.

> *NOTE* RS-422 cable contains 4 conductors and a drain. The drain is usually a bare, uninsulated stranded wire. The drain should be connected to FMU GND (ground) on one end, and bent over and taped to the cable at the other end without connecting to ground. If the cable has two drain wires, twist the two drains together and connect to FMU GND (ground) on one end, and bend over and tape on the other end.

8. Make the following cable connections:

    - **FMU JP13** is the 5-pin connector on the I/O Silver Board.

    - **RS-232 TMU DB25** are the connections you make to the DB25 connector on the TMU when running RS-232 from the FMU to the TMU. With RS-232, only the IN+, GND, and OUT- pins on JP13 are used.

    - **RS-232/422 Converter** has the connections you make on the Patton converter before plugging it into the TMU DB25.

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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FMU	RS-232	RS-232/422
JP13	TMU DB25	Converter
IN+	2 (TX)	XMT-
IN-		XMT+
GND	7 (GND)	Do Not Connect
OUT+		RCV-
OUT-	3 (RX)	RCV+

CAUTION   Do not cut the trace between E1 and E2 if using RS-422 cable!

9. For RS-232, cut the trace between E1 and E2 at the bottom center of the I/O Silver Board.

10. Connect one end of the new ribbon cable into **JP14**. Route the other end of the new ribbon cable up to the FMU upper cabinet, and plug into **J4** of the Satellite I/O Control Board.

11. On the Satellite I/O Control Board, set the **S2** and **S3 TMU SELECT** jumpers for correct cable type: two upper pins for RS-232, or two lower pins for RS-422.

12. Refer to the TMU Operator's Manual or applicable manufacturer's technical support staff, and program the TMU for correct emulation. Where available, use Veeder Root TLS-250 or TLS-350 emulation.

13. Enable the installation of the Tank Monitor Interface Kit in both the FMU and Central Controller software.

    a. Configure tank monitors with specific communications parameters where applicable. Determine the communications parameters set in the tank monitor, and make those settings in the FMU. In the Tank Monitor Control Box, determine the baud rate, data bits, stop bits, and parity configured for the TMU. Note additional settings required for the tank monitor where applicable when making an RS-232 communications connection.

NOTE   The only setting that may be changed with a Supervisor Prokee/Smartcard is the baud rate to communicate between the FMU and tank monitor. For this reason, set FMU communications settings with a laptop connection or via Syntech's Customer Satisfaction Center (CSC).

b. With a Supervisor Prokee/Smartcard, view tank monitor settings.

1. Insert a Supervisor Prokee/Smartcard. The following menu will appear:

```
SUPV: 1=SYSTEM, 2=PM, 3=ODOM, 4=AIM *

A=CONFIG, B=ISSUES, C=TANKS, D=EXIT *
```

2. Select **A=CONFIG**. The following menu will appear:

```
CONFIGURATION:  13:05:24 06/17/14 TUE.

A=MODIFY, B=TESTS, C=TIME/DATE, D=EXIT
```

3. Select **A=MODIFY**. The following menu will appear:

```
CONFIG MENU:  1=COMM, 2=TOTALIZERS A=PUMPS,

B=SYSTEM, C=SHOW OPTIONS, D=EXIT
```

4. Select **C=SHOW OPTIONS.** Depending upon the software version, the option numbers may vary, but the options will show if TANK MONITOR INTERFACE: ENABLED, TMU INTERFACE TYPE: (7,E,1 or 7,O,1 or 8,N,1), and TMU BAUD RATE. If the TANK MONITOR INTERFACE is not ENABLED, or if the communications parameters do not match the tank monitor communication parameters, go to step c and configure the FMU with a laptop or CSC connection.

c. Configure the FMU via laptop connection (or with the assistance of Syntech's CSC):

1. Reapply AC power to the master FMU configured with the TMIK.

2. If applicable, make a laptop connection in accordance with Product Bulletin 111.

3. Using a **5a** command:

a. ENABLE the TANK MONITOR INTERFACE by pressing the space bar when the flashing cursor follows the TANK MONITOR INTERFACE: DISABLED prompt.

b. Set the TMU DATA FORMAT to correspond with the data bits, parity, and stop bits of the tank monitor. Choices are 7,E,1; 8,N,1; 7,O,1.

c. Set the TMU BAUDRATE to correspond with the baud rate setting in the tank monitor. Choices are 300, 1200, 2400, 4800, 9600, and 19200.

d. If desired, ENABLE the DAILY TMU INVENTORY. The DAILY TMU INVENTORY option, when enabled, will automatically

generate a command at midnight to obtain an inventory report from the tank monitor.

> **NOTE** The TMU MANUFACTURER option is tied to DAILY TMU INVENTORY. A TMU inventory report is normally generated by the FMPlus. When DAILY TMU INVENTORY is selected, the command is generated from the FMU. When this option is turned on, the TMU MANUFACTURER must be selected to know which command must be sent from the FMU to the tank monitor. Choices are VR TLS-300, VR TLS-350, and VR TLS-350R. These commands may also work with other tank monitors.

   4. If applicable, disconnect the laptop connection in accordance with Product Bulletin 111.

d. Configure the software:

   1. Access the software and the site and master FMU where the TMIK was installed.

> **NOTE** The tank monitor selection must be made before the **Configure** button is selected. The **Configure** button permits the selection of various reports that may be obtained from the selected tank monitor. The available reports are dependent upon the tank monitor selected.

   2. Select Tank Monitor (See Figure 3 on the following page). Some tank monitors may not be listed. Many tank monitors use Veeder Root emulation, and the applicable Veeder Root tank monitor may be selected.
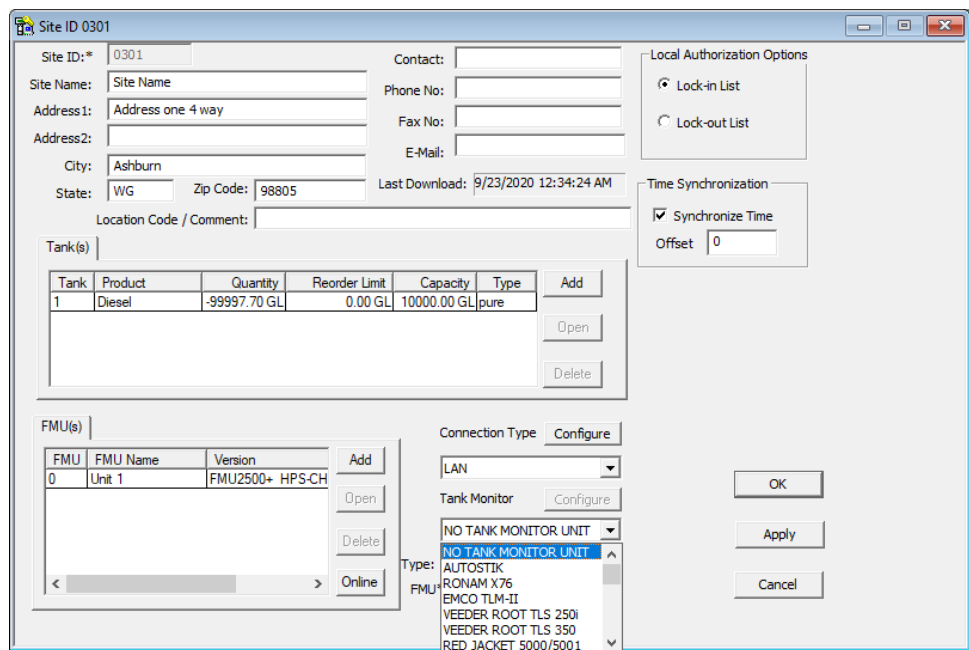

Figure 3. Site ID Window

   3. Select **Configure**. A TMU Monitor window will open and permit the selection of various reports, which may be obtained from the selected tank monitor.

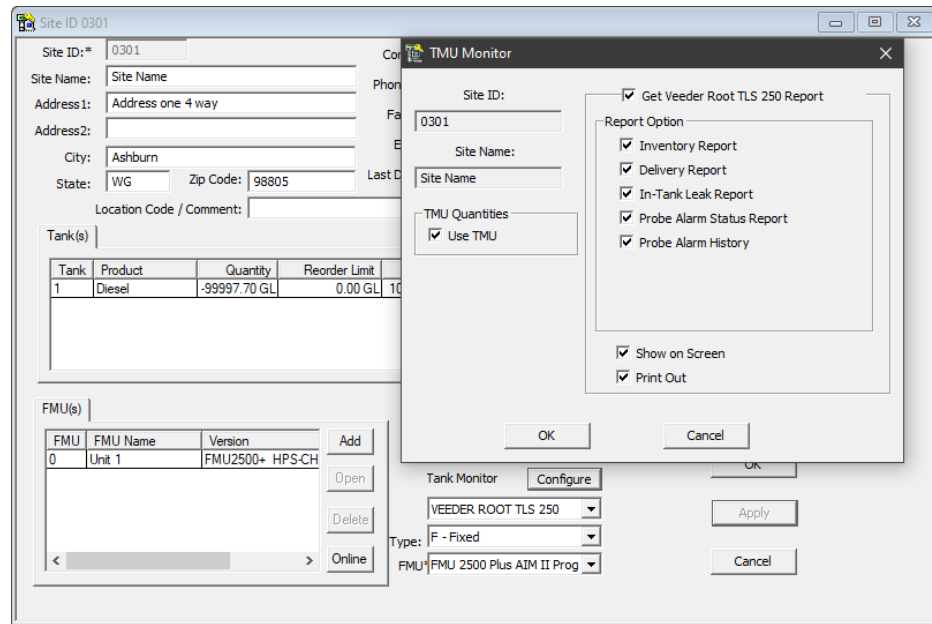4. Select the desired reports.

Figure 4. TMU Monitor window – Reports

5. select **OK**. The TMU Monitor window will close.

NOTE	Selected tank monitor reports may be obtained whenever an Online connection is made from the software to the FMU by selecting Go Online with FMUs > TMU Interface. The tank monitor interface is complete.

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.