

FMLive Tank Monitor Connection with RS-232/422 Converter

Sometimes, distances between a FuelMaster Fuel Management Unit (FMU) and tank monitor (TMU) exceed the 50-foot limit of RS-232 cable, requiring the use of RS-422. This requires a converter on the TMU end to step back down to RS-232. While all converters shown can accomplish this, Syntech only stocks and sells the Patton 222N (STS #: 219517).



Patton 222N



Advantech 4WSD9TB



Advantech 422PP9TB



Advantech 485LDRC9

RS-232 signals may carry from 3-15 VDC. While FMUs and some other applications generate and acknowledge the higher end of that range, others generate and acknowledge the lower end of that range. Some applications have a DB9 connector, like the Advantech 4WSD9TB (BB-SMI6B-12V-P230C1 power supply) and the Advantech 422PP9TB (BB-SMI6B-12-V-ST power supply) and require a converter with a power supply for their RS-232 signal to be acknowledged by the FMU. The Patton 222N works well for DB25 connections, which needs no power supply. Syntech has tested all these options. If the TMU recommends jumpers on the RS-232 connector, these are unnecessary, as they are built into the converter interface.

While not tested with this application, the Advantech 485LDRC9 has the advantage of a lower temperature rating: -40°F, as compared to the other Advantech converters' 32°F. If sub-freezing temperatures are expected, utilize the 485LDRC9.

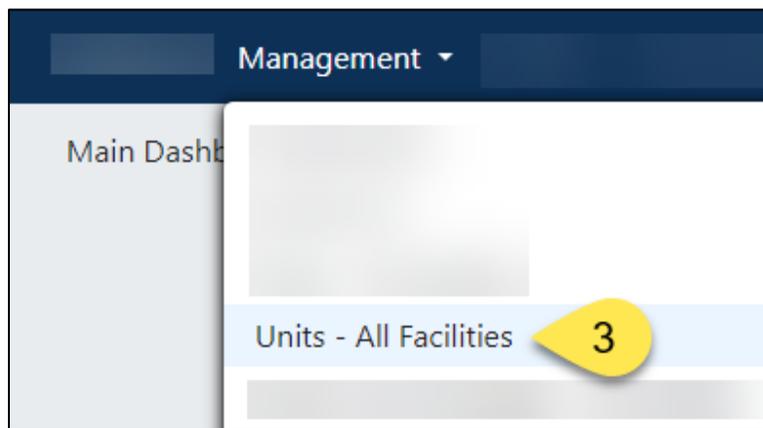
Installation

Assumptions

This tutorial assumes

- You have knowledge of and/or access to the TMU data settings.
- You have the Facility Manager or Admin role.

1. Determine the TMU's baud rate, data bits, stop bits, and parity. Consult the TMU's operation manual for steps specific to your make and model.
2. Log in to the FMLive application.
3. Select the **Units - All Facilities** selection in the *Management* menu.

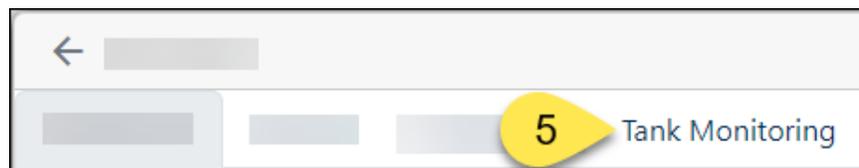


4. Select the unit in question.

Units		
Name and Status	Positions	Capabilities
10.x CSC Level 1 CSC Level 1 ✓ Connected and synchronized	E E	
1 / 1 item		

A yellow callout bubble with the number '4' points to the '10.x CSC Level 1' unit name.

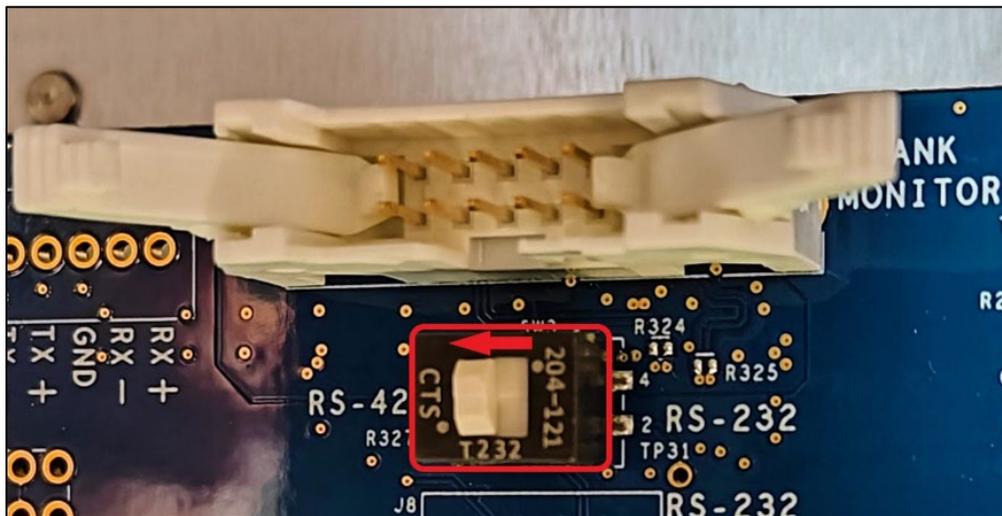
5. Select the **Tank Monitoring** tab.



- Match the Model of your TMU to the TMU Models available in the dropdown, or set as Veeder-Root to utilize the Veeder-Root protocol.
- Match the Baud Rate, Data Bit, Stop Bit, and Parity settings to those on your TMU.

Tank Monitoring	
TMU Model	Veeder-Root TLS 350
Baud Rate	9600
Data Bit	8
Stop Bit	1
Parity	None

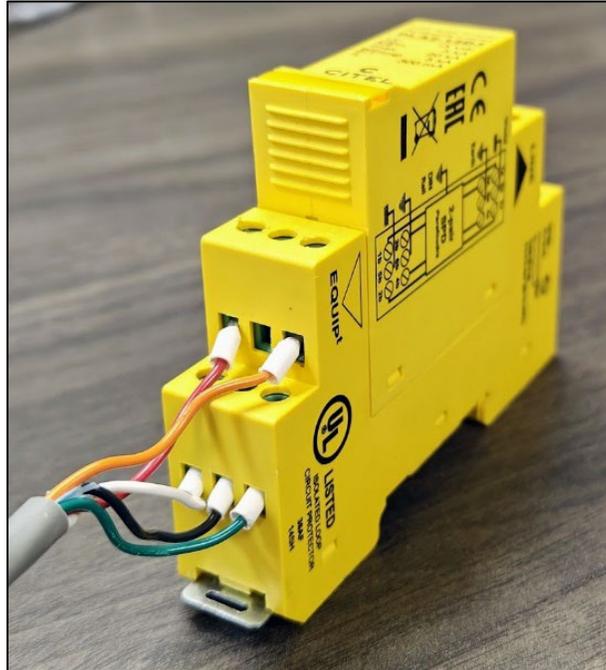
- Ensure the protocol slider points to RS-422 (to the left):



- Connect the 191F0234-20 cable to the Tank Monitor connector above the slider.

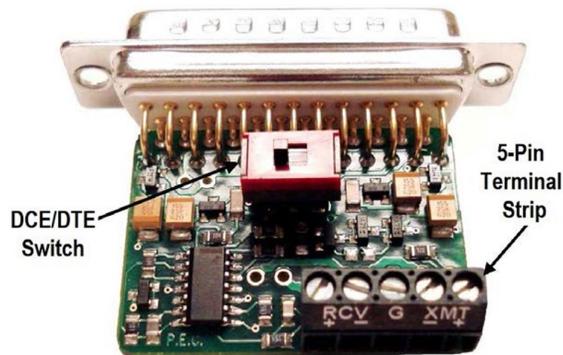
10. Connect to the EQUIP end of the Citel as follows:

Wire Color	Citel Port	Direction/Polarity
White	1b	FMU RX+
Green	2b	FMU RX-
Red	3b	FMU TX+
Orange/Brown	4b	FMU TX-
Black	5b	Ground



Patton 222N

1. Remove the outer plastic covers from the converter exposing the 5-pin terminal strip (see figure below).



2. Loosen the +RCV, -RCV, -XTM, and +XMT screws on the 5-pin terminal strip.

- Connect the communications cable to the converter as shown below. Connect the drain to the GND port on the Citel. On the converter end, bend it back and tape to the cable.

NOTE Connections normally should be + to +, and - to -, but the converter will only work when installed as directed below.

Citel Port	Converter
1a	-XMT
2a	+XMT
5a	Tape
3a	-RCV
4a	+RCV

- Set the DCE/DTE switch to DCE.
- Reinstall the plastic cover and connect to the TMU 25-pin receptacle. Use the two security screws to secure the converter to the TMU receptacle.

Advantech Converters

Always have a compatible power supply available. The 4WSD9TB utilizes a plug insert; however, the 422PP9TB hardwires into the terminal strip.

CAUTION Do not apply power to the power supply until all connections are complete.

- Loosen the TD B(+), TD A(-), RD B(+), RD A(-), and GND screws on the converter's 5-pin terminal strip. If using the 422PP9TB, also loosen the +12V and GND screws.
 - (422PP9TB) As required, connect the power supply positive wire to +12V, and the negative wire to GND.
 - (4WSD9TB) Set the dipswitches: 1 to RS-422, 2 to Echo On, 3 to 4-wire, 4 to 4-wire.
- Connect the communications cable to the converter as shown below. Do not connect the drain/ground to the converter. Bend it back and tape to the cable.

Citel Port	Converter
1a	TD B(+)
2a	TD A(-)
5a	Tape
3a	RD B(+)
4a	RD A(-)

- If being used with an OMNTEC TMU, connect the power supply and install a null modem cable or adapter between the converter and TMU receptacle.
- If being used with a Veeder Root TLS-450, attach a power supply and plug the converter into the TMU receptacle.
- If being used with an untested application, always have a power supply and null modem cable or adapter to complete the connection. Plug the converter into the TMU receptacle.

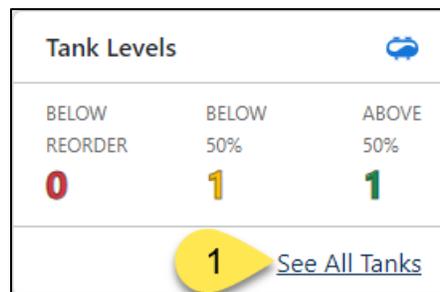
Test the Connection

Assumptions

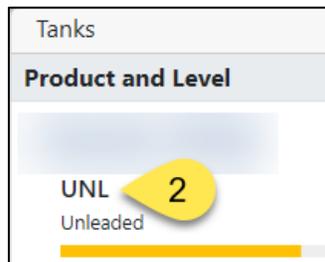
This tutorial assumes

- You are logged in to your FMLive application.
- You have the Facility Manager or Admin role.

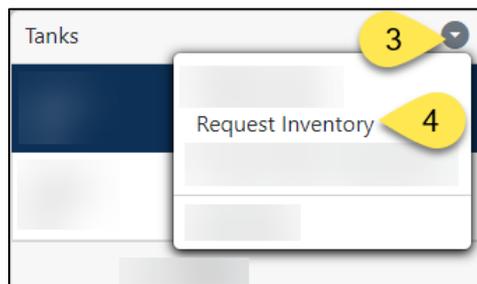
1. In the *Tank Levels* modal on the Main Dashboard, select the **See All Tanks** link.



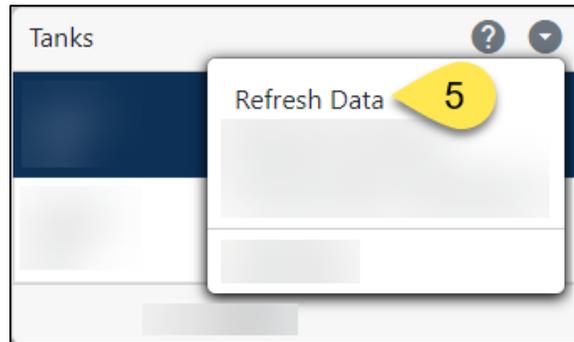
2. Select a tank connected to a TMU with a converter.



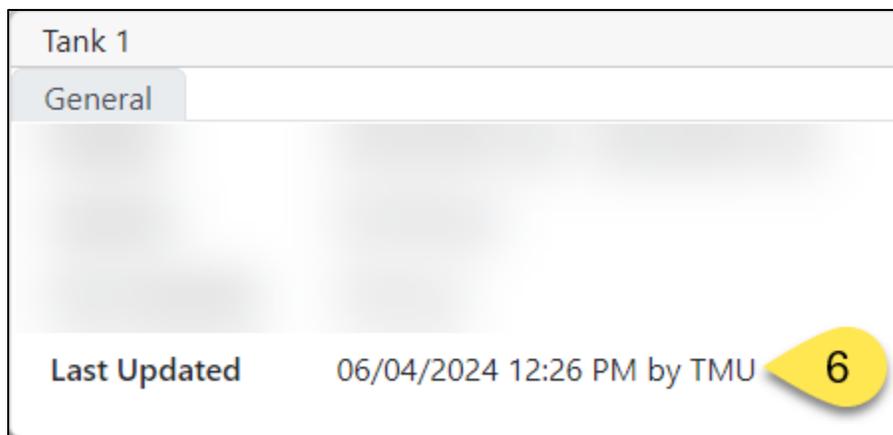
3. In the *Tanks* modal, select the dropdown menu.
4. Select the **Request Inventory** selection.



5. In the *Tanks* modal dropdown menu, select the **Refresh Data** option.



6. Scroll to the bottom of the modal on the right side. If working, the time/date stamp in the Last Updated will match the current time and date.



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.

Change Log

Date	Description
11/18/1999	Original
03/10/2015	<ul style="list-style-type: none"> ▪ Added Advantech 4WSD9TB and 422PP9TB converters with their respective power supplies. ▪ Added NOTE stating we disagree with application of Patton converter. ▪ Added connections for Advantech converters to interface FMU and RS-422 cable.
12/28/2016	<ul style="list-style-type: none"> ▪ Added reference to Advantech 485LDRC9 converter. ▪ Added dipswitch settings (page 3, step c) for Advantech 4WSD9TB.
09/29/2020	Rebranded, formatted, and edited for concision.
08/01/2024	Edited for concision, established version 69a for FMLive configuration.