

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 and 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.

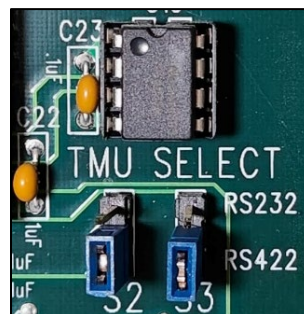
While not tested with this application, the Advantech 485LDRC9 has the advantage of a lower temperature rating: -40°F, as compared to the other Advantech converters' 32°F. If sub-freezing temperatures are expected, utilize the 485LDRC9.

Installation

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. Make a laptop connection to the FMU (see PB-111 - Laptop Connect to FMU).
3. Using command 5A, enable the TMU interface and match the FMU communication parameters to the TMU settings.
4. Using a two-pair shielded communications cable with drain wire, make connections to pins 1 through 5 on the FMU I/O Silver Board's JP13 connector. Use the drain wire for the pin 3 ground connection. Record the color code of the connections to JP13 for reference when connecting to the converter.
5. Verify the trace between E1 and E2 at the bottom of the I/O Silver Board is intact with continuity from E1 to E2.

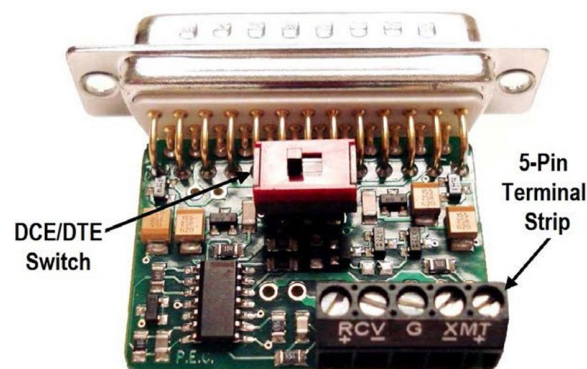


6. On the Satellite I/O Control Board, verify the two TMU SELECT jumpers for S2 and S3 are positioned to the two lower RS422 positions.



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.
3. Refer to the color codes previously recorded. Connect the communications cable to the converter as shown below. Connect the drain to the GND pin on JP-13. 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.

	FMU JP-13	Converter
1	(IN+)	-XMT
2	(IN-)	+XMT
3	(GND)	Tape
4	(OUT+)	-RCV
5	(OUT-)	+RCV

4. Set the DCE/DTE switch to DCE.
5. 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.

1. 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.
 - a. (422PP9TB) As required, connect the power supply positive wire to +12V, and the negative wire to GND.
 - b. (4WSD9TB) Set the dipswitches: 1 to RS-422, 2 to Echo On, 3 to 4-wire, 4 to 4-wire.
2. Refer to the color codes previously recorded. 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.

	FMU JP-13	Converter
1	(IN+)	TD B(+)
2	(IN-)	TD A(-)
3	(GND)	Tape
4	(OUT+)	RD B(+)
5	(OUT-)	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

Perform a TMU Interface Download from the FMPlus Central Controller. If the RS-232/422 converter was correctly installed, a TMU report will be generated.

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.