Installation of the Citel Surge Protection Device

> *CAUTION* This procedure should NOT be attempted in a rainy environment!

For many years, the I/O Silver Board has served as the surge protection device between the FuelMaster® Unit (*FMU*) and devices such as tank monitors, satellite units, or electronic pump controller equipment. We have identified the Citel DLAS-12D3 (RS232) and DLA2-12D3 (RS422) Surge Protection Devices (*SPD*) to be more effective means of limiting damage due to surges.

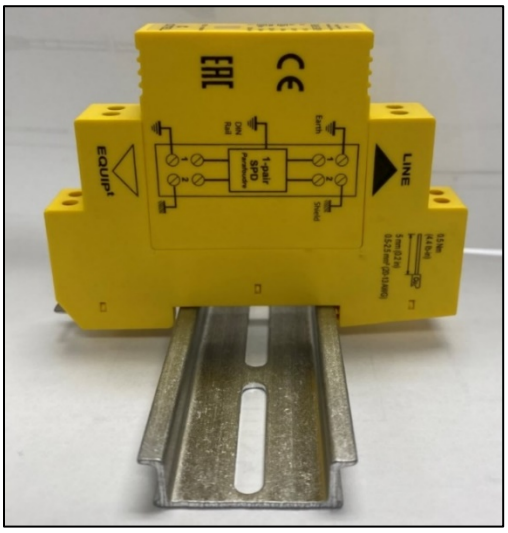

Figure 1 Citel Protector Mounted on DIN Rail

Installing the SPD

1. Attach the DIN Rail to the interface plate or FMU backplate with the screws provided.
2. Attach the SPD to the DIN Rail, oriented so that the screen-printed wiring diagram faces toward you (if mounted on interface plate) or so that the EQUIP side faces left (if mounted on FMU backplate).
   a. Hook the SPD onto the DIN Rail.
   b. Utilize a flat head screwdriver to open the spring-loaded interlock.
   c. Push the SPD toward the DIN Rail until in place; then, release the interlock to catch the rail.
3. Connect the 10-pin 191F0234-10 cable. The FMU cable attachment location differs between Legacy and FM*Live* units.

a. If Legacy, connect the 10-pin 191F0234-10 cable to the J4 connector of the Sat I/O board (Figure 2).

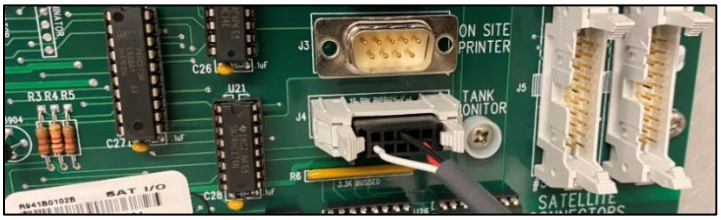

Figure 2 Cable to Sat I/O Connection

b. If FM*Live*, connect the 10-pin 191F0234-10 cable to the grey Tank Monitor connector at the top of the EAPro (Figure 3). If utilizing an RS232 connection, ensure the slider below the connector is to the right; if using an RS422 connection, ensure the slider below the connector is to the left.

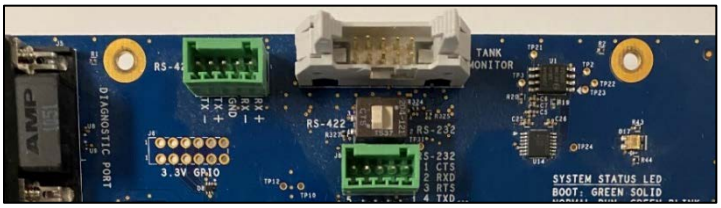

Figure 3 EAPro Connector

4. Connect the SPD. There are two sides to the SPD: LINE and EQUIP. The LINE side connects to the external serial device (e.g., the TMU). The EQUIP side connects to the FMU.

a. (RS232) Insert the black conductor to the terminal with the shield symbol, the white conductor to the 1b terminal, and the red conductor to the 2b terminal (Figure 4).

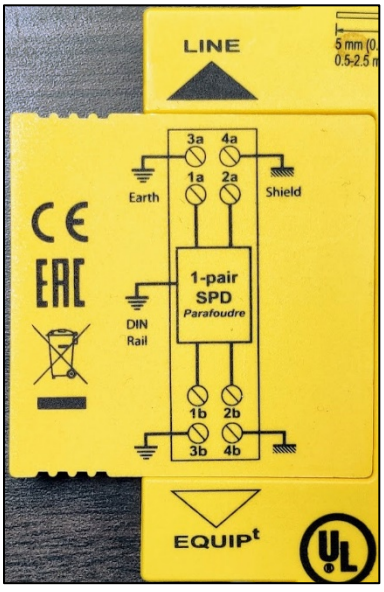

Figure 4 Wiring Diagram on the RS232 SPD

b. (RS422) Insert the black conductor to the terminal with the shield symbol (5b), the white conductor to the 1b (or 2) terminal, the green conductor to the 2b (or 6) terminal, the orange conductor to the 4b (or 12) terminal, and the red conductor to the 3b (or 8) terminal, as seen in Figure 5.

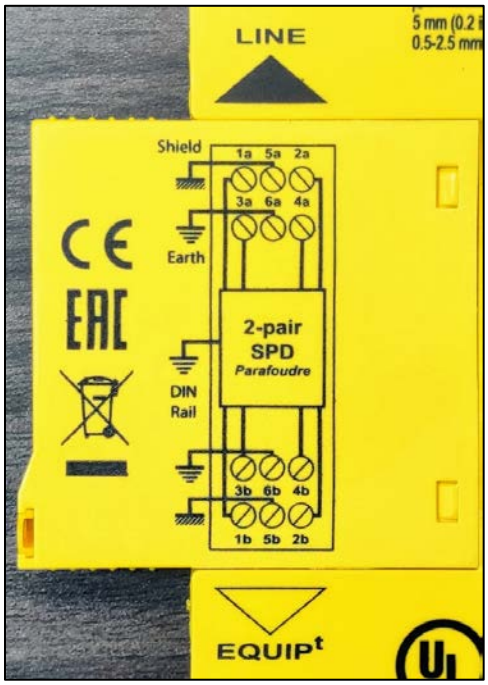

Figure 5 Wiring Diagram on the RS422 SPD

5. Connect the incoming cable to the LINE side of the SPD. Citel recommends using #20-13 AWG cabling stripped no more than .2" (5mm).
   a. (RS232) Attach the ground signal to the terminal with the shield symbol, the TMU TX signal to the 1a terminal, and the TMU RX signal to the 2a terminal (Figure 4).
   b. (RS422) Attach the ground signal to the terminal with the shield symbol (5a), the TMU TX+ signal to the 1a (or 1) terminal, the TMU TX- signal to the 2a (or 5) terminal, the TMU RX+ signal to the 3a (or 7) terminal, and the TMU RX- signal to the 4a (or 11) terminal. See Figure 5 for more information regarding wiring.
6. Tighten the set screws on all conductors as necessary until tight.

Troubleshooting the SPD

- The RS232 SPD features a red replacement popper on top (Figure 8). If either version fails, only the module needs to be replaced. Order a replacement using the chart in the Parts Listing Section. Pull the failed module up and swap in the new module to replace (Figure 9).

Figure 6 The Failure Popper

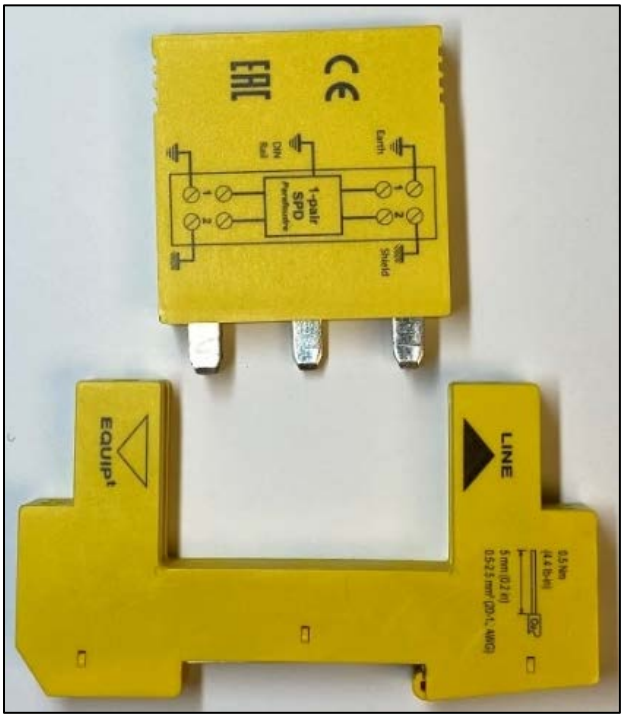

Figure 7 Swapping the Module

- Communication can be tested via a loopback test, which can be run by inserting a jumper wire or paper clip alongside the wires:
  - (RS232) between inserts 1a and 2a.
  - (RS422) between inserts 1a (or 1) and 3a (or 7), as well as inserts 2a (or 5) and 4a (or 11) (Figure 10).

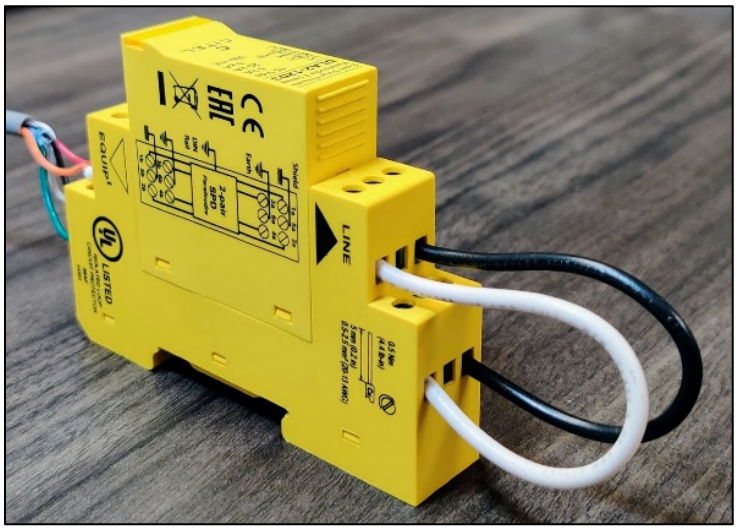

Figure 8 Loopback Wiring on the RS422 SPD

- Have a technician log into the FMU. Attempt to communicate with the device.
  - If this works, attempt the same test on the other end of the cable run.
    - If this works, there is a communication issue with the remote device.
    - If this does not work, there may be an issue with the cable between the FMU and the remote device.
  - If not, attempt the same test on the EQUIP side of the SPD.

Parts Listing

Part Number	Part Description
191F0235-10	Wired TMU Interface Kit, RS232
191F0235-20	Wired TMU Interface Kit, RS422
266736	Surge Protector Replacement Module, RS232/RS485
267189	Surge Protector Replacement Module, RS422
191F0234-10	RS232 Surge-to-Board TMU Interface Cable
191F0234-20	RS422 Surge-to-Board TMU Interface Cable

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

Change History

Date	Description
08/16/2022	Originally published.
07/07/2023	Added information pertinent to the RS422 version.