External Temperature Sensor and Refrigerated Trailer Installation Guide

Solar Powered Trailer and Asset Tracker
Pre-Installation
Please refer to the Getting Started Guide to understand basic device functionality and comprehensive device installation instructions.

Enabled external temperature sensing
Email the list of TT603 Serial Numbers that need to be activated for temperature sensing capabilities to support@flex-iat.zendesk.com to enable external temperature sensing on the units.

Arranging temperature sensor according to zones
If installing multiple temperature sensors on the same trailer (e.g., 3 zone reefer), locate the serial numbers on the temperature sensor cables. Sort them based on ascending order of the serial numbers and assign the smallest number to Zone 1 and the largest number to Zone 3.

For example for 3 serial numbers below, zone assignment should be as follows:

» 2832A7EE0A0000C9: Zone 1
» 28D471990900005A: Zone 2
» 28FF38D3017035A: Zone 3

Note that serial numbers are in hexadecimal where D is greater than 3 and F is greater than D. (Hexadecimal goes from 0 to 9 then A to F.) Start with the left most number and move right until there is a different digit.

Label the cables with the assigned zone numbers to streamline installation.

Recommended Tools and Supplies

**Tools**
- Electric Drill
- Digital Multi Meter (DMM)
- Wire Strippers
- Crimping Tool
- 7mm Nut Driver Bit
- ¾” Step Drill Bit

**Supplies**
- Drill and drill bit:
  - 3/32 or 2mm drill bit for pre-drilling for sheet metal screws (pre-drilling optional)
  - 5/32 or 4mm drill bit when using included bolts
- Weatherproof silicone such as GE Silicone II (clear) or Loctite 207 (clear) with at least -40°C to 85°C (40°F to 185°F) temperature range
- Cable Zip-Ties
- Isopropyl Alcohol
- Clean rag
- 4 sheet metal screws or 4 bolts and nuts or 4 rivets (not included)

Mounting The Solar Powered Trailer and Asset Tracker
The recommended mounting location for the TT603 is high on the nose of the trailer, away from the corner, and just below the top rail with the GPS antenna pointing up. Install the device per the instructions included in the box for the TT603.

Connecting 12/24 Volt Power
Unscrew the protective cover from the din cable connection on the TT603 and connect the Power cable. Make sure to seat the din cable securely in the TT603 and screw it in completely. Making sure not to bend in sharp angles, route the cable away from the TT603 towards the reefer control board box. Secure the cable with metal cable clamps.

**Power Connection Cable**
You will need to run the TT603 cable into the reefer control box. You may gain access through an existing wire grommet or if one is not readily available, drilling a hole is acceptable. Once inside, make
your constant 12/24 Volt power (Red wire) and chassis ground (Blk wire) connections on the reefer control board. Always use a DMM to test for power and ground before making your connections. Use ring terminals for a secure connection. Figures 1 and 2 are for reference only.

Temperature Sensor Mounting

» Zone 1 (Front)
Remove bulkhead and all protective covering. Once completed, mount the temperature sensor just below the reefer sensor. (Fig. 3)

» Zone 2 (Middle Evaporator)
Remove all protective covering to gain access to evaporator fan. Mount temperature sensor in the middle fan sensor location. (Fig. 4) Tie up and secure about 12” of sensor wire.

» Zone 3 (Rear Evaporator)
See Zone 2.

Temperature Sensor Wire Routing

» Zone 1
Follow the reefer wire looms and attach the temperature sensor wire to it with the cable zip-ties. Space zip-ties approximately 4 to 6” apart or wherever wire is loose. (Fig. 3)

» Zone 2 and 3
Remove the roof channel cover. (Fig. 5) Use this channel to route zone 3 temperature sensor wire to zone 2. Be sure that the zone 3 wire cannot fall into zone 2’s evaporator moving parts. Continue down the channel with both zone 2 and 3 wires. (Fig. 6)

Drilling Access Hole
After running zone 1, 2 and 3 temperature sensor wires, a ¾” access hole will need to be drilled through the wall. The wires will need to pass through this hole so that they can be connected to the data input wire of the TT603 located in the reefer control box. The location of this hole is ultimately up to the discretion of the installer. Supplied pictures are for reference only. Once drilled and wires are passed through, make sure to silicone the hole on both sides of the wall.
Wiring Temperature Sensors to TT603

The final step to complete the installation of your TT603 is the connection of the temperature sensor wires. Route the wires from the drilled access hole into the reefer control box using the same path used for the TT603’s power cable. It is important that you secure the wires with cable zip-ties making sure to keep away from any moving parts. With the wires in the control box combine the 3 data wires (Fig. 7) and then connect them to the TT603’s Yellow (data) wire through the following steps.

1. Strip 3 data wires (Fig. 7) jacket to 35mm and inner 1-wire wire to 7mm.

2. Insert the whole stripped wire into splice and crimp it with tools (suggest using Crimp Hand Fixer KY-8161 as following image shows).

3. Insert crimped splice into heat tube as follows.

4. Do the same on the TT603’s Yellow (data) wire (Fig. 8).

5. Move the heat tube to cover the whole splice.

6. Heat the tube using a blower or lighter until the tube is shrunk, suggested temperature is about 350 °C (662 °F).

7. Repeat the above steps for combining the 3 ground wires (Fig. 7) and connecting them to the TT603’s Black (chassis ground) wire (Fig. 8).