



# LT1 FIELD QUICK START GUIDE FOR ALL LT1 CELLULAR AND SATELLITE VARIANTS

This guide is meant as a ready reference to set up an LT1 station in the field. Details of station setup can be found on the FTS Support website (<http://support.ftsinc.com/>) in the following manuals:

- LT1 Operator's Manual (700-LT1- Man).
- FTS360 and FTS360 Config App User Manual (700-FTS360- Man)

**IMPORTANT! Prior to proceeding to the field the following MUST be completed**

**THE FTS 360 ADMINISTRATOR MUST:**

- ☐ Initialize (<https://360.ftsinc.com/signup>) or login to FTS360
- ☐ Create a Technician account for the field technician
- ☐ Ensure any SDI-12 sensors to be added in the field exist in the sensor library (either default or custom sensor)

**THE FIELD TECHNICIAN MUST:**

- ☐ Be invited to join FTS360 by administrator
- ☐ Download the FTS360 Config App onto the device that will be used in the field (iOS, Android or Windows)<sup>2</sup>
- ☐ CELL only: Provision the SIM card and test the LT1. Ensure the APN for the SIM card is entered (Go to the FTS Config App's dashboard and select "Cellular")
- ☐ GOES: Bring satellite assignment information ( NESDIS ID, channel, baud rate, transmission time)
- ☐ Log onto the FTS360 Config App, synchronize with FTS360 (section B step 4). **DO NOT LOG OUT**
- ☐ Ensure the SD Card is inserted.
- ☐ Ensure any SDI-12 sensors to be added in the field exist in the sensor library

1 - Refer to the LT1 Operator's Manual (700-LT1 Man) for details on testing the LT1

2 -Download at



**Cellular APNs**

- FTS provided SIM
- Bell APN (Canada): **wrmstatic.bell.ca.ioe**
  - Verizon APN (USA): **we01.vzwstatic**
  - Rogers (Canada/USA): **m2minternet.apn**
  - Bell International (International): **wrstat.bell.ca**

Customer Provided SIM: \_\_\_\_\_

**LT1 PARTS**

Terminal Blocks

- Data →
- Power →

Cell/Satellite  
GPS

Status  
Indicators

Port Access

- SD card
- Micro-B USB

SIM Card  
Port Access  
(Cell only)

Also included:

- FTS approved industrial 4G SD card (inserted)
- 3/32" (2.4mm) slot screwdriver
- GPS/Cellular antenna (CELL only)
- GPS antenna for LT1-GOES (if LT1-GOES-GPS-BNDL ordered)
- SMA male to N female adaptor (GOES only)

Optional Items:

- Activated SIM card (inserted) if FTS cellular plan has been purchased
- SDI-12 wiring adapter

**A. INSTALLING THE LT1**

**1. You will need:**

- Combined GPS/cellular antenna or GPS and satellite antennas
- Antenna mounts (GPS/Cellular/Satellite)
- Weatherproof (IP66) enclosure with 35mm x 7.5mm DIN rail and grounding lug
- 12VDC sealed lead acid battery
- Earth-ground system
- 16 AWG - 28 AWG copper wire (for earth-ground system)
- 2 spools 16-28 AWG wire (for positive and negative power connections)
- Wire cutters and strippers
- Tools/hardware to mount enclosure and antenna

**2. Connect telemetry**

- a) Mount the antenna(s) in the desired position
- b) Connect the antenna leads to their respective connectors on the LT1 (use SMA to N adapter as required)

**3. Mount the LT1**

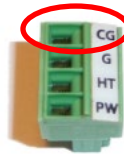
**IMPORTANT!** The LT1 **MUST** be mounted in a weatherproof enclosure. Exposure to rain greater than 1mm per hour or spray may cause the unit to fail.

- Mount the LT1 onto the 35mm x 7.5mm DIN rail

**4. Ground the system**

FTS recommends that you consult a qualified professional to ensure adequate earth ground protection is installed for the site and that all local regulations and requirements are met.

Connect a 16 to 28 AWG wire to the CG pin and attach the running end to the enclosure's grounding lug. Complete the earth ground system in accordance with its design.



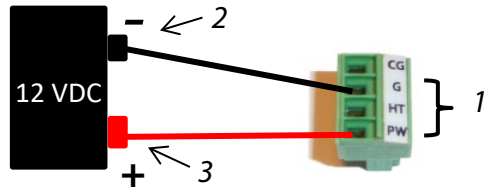
CG	Chassis Ground
G	Power Ground
HT	High Current Power In (for use with FT742 heated anemometer)
PW	Positive

**5. Connect power**

**IMPORTANT!** If using a solar panel and regulator, follow the manufacturer's directions to prevent system damage.

**Direct to Battery:** Follow the connection sequence to prevent damage to the system.

- Connect the Positive wire to the PW pin and the negative wire to the G pin.
- Then connect the Power Ground (G) wire to the negative pole (ground) of the battery.
- Finally, connect the Positive (PW) wire to the positive pole of the battery.



### 6. Connect sensors

Sensors are connected via the 8-pin terminal block. Refer to the following pin layout and the sensor's instructions to identify the leads.

#### Note:

- If more than one SDI-12 sensors are being connected, they must have their wires spliced and use the same pins. An optional wiring adapter is available from FTS.
- Additionally, if more than two sensors are being connected, a ground terminal (either G or GD) will have to be shared.

#### Sensor Pin Layout

B	RS485/NMEA negative
A	RS485/NMEA positive
G	Signal ground
SD	SDI-12 data
SP	SDI-12 power out
GD	Power ground
RN	Discrete counter in (Rain Gauge)
P	RS485/NMEA power out

### 7. Finalize connections and test

Insert the terminal blocks into the LT1 and wait for the status lights to display:

	System Status	Blinking (every second)
	Telemetry Status	Solid On
	BLE Status	Blinking (every second)
	GPS Status	Solid On

Note that three minutes after disconnecting from FTS360 Config App (FCA), the LT1 will enter low power mode. All lights will be off except System Status which will blink once every 10 seconds.

### B. CONFIGURING THE STATION

- Open the FTS 360 Config App. Select Scan if station is not automatically discovered.
- Select "Connect" to display the Station Dashboard (the BLE status light will become solid on when connectivity established).

#### 1. Add and configure sensors

Select NMEA, Rain Gauge or Add Sensor (to add SDI-12 sensor). Edit fields as necessary. Save.

#### 2. Test the sensor(s)

On the Configure Sensor screen, select the Test Sensor bar. This will trigger a reading by the sensor and the data point(s) will be displayed.

**NOTE:** New sensors should always be tested prior to leaving the site to ensure they are operating as intended.

#### 3. Configure GOES Telemetry/Message

- Select the GOES line and fill in the assigned GOES settings.
- Set up Scheduled transmissions.

- Select the Configure Transmitted Bar and select the data format type.
- Press the Add Fields button and select the desired fields to be included in the message.

#### c. Set up Random Transmissions and Alerts

Random transmissions are transmissions that are made outside of the scheduled transmission window and are sent when an alert condition is detected. BLM messages do not support this.

- Select Random Transmission and input the parameters.
- Select Configure Message Transmission button
- Select Add an Alert Condition
- Use the drop-down menus to define the condition, the Data Format type, and desired fields to be included in the message.

#### d. Confirm Message format Show Configured Message

Select "Show Configured Message". A simulated message will be displayed to confirm message format.

#### e. Confirm satellite network and antenna power

- Select "Test GOES Transmission."
- Enter your assigned test channel and select "Fixed."

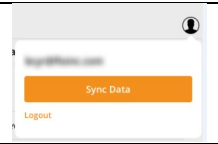
#### 4. Save Changes and Disconnect

Save changes and select the blue "Station Disconnect" button on the main dashboard.

**NOTE:** You should always manually disconnect from a station to minimize disruption to scheduled data collection.

#### 5. Synchronize the FTS360 Config App with FTS360

Once you enter an area where you can access the Internet either via Wi-Fi or cellular, open the FTS360 Config App and Sync Data.



**IMPORTANT!** Changes made to a station working offline using the FTS360 Config App will not be reflected in FTS360 until the field device is synchronized with FTS360.