



These guidelines are meant to maximize the performance of the unit.

### STEP 1: Determine Installation Type

Depending upon the requirements, the TT1SPSATsolar can be installed in two

**Option1:** TT1SPSATsolar ONLY

**Option2:** TT1SPSATsolar with Input Cable (optional)

- The input cable allows for transmission of up to two input statuses, as well as connecting to a power source
- There are two ways the inputs can be connected
  - Type A:** “Dry Contact” – Input without voltage
  - Type B:** “With Voltage” – Input with voltage.

### STEP 2: Determine Mounting Location

- Device should be mounted face up on a flat horizontal surface that is perpendicular to the sun with a clear view of the sky
- Secure with double-sided adhesive tape and/or screw directly to the asset

**If using double-sided adhesive tape:**

- Surface must be clean, smooth and dry
- Ambient temperature must be above 10C
- Apply at 80lb (350N) force to the asset for a minimum of three seconds to achieve full bonding strength
- Failure to adhere to these instructions could lead to the device becoming detached from the asset in the field

**If using screws:**

- Use existing mounting holes with four #6 machine screws (Pan head recommended). Use 316 grade stainless steel for longevity
- DO NOT** use countersunk screws as this may damage housing
- DO NOT** over-tighten screws (DO NOT exceed 1.2 N.m (10 in.lb) torque)
- Mounting hole diameter = 3.81mm (0.150”)

### STEP 3: Complete Mounting and Wire Connections (if necessary)

#### Option 1: Mounting the device WITHOUT Input Cable

- Mount device as per “Determine Mounting Location” recommendations
- Proceed to “Testing the Device”

#### Option 2: Mounting the device WITH Input Cable

- Connect Input(s) and/or power according to Input Types below  
**IMPORTANT:** The **Input TYPE must be pre-programmed** into the device. If unsure of which method to use, please contact us as incorrect installation may damage the device.

#### INPUT CONNECTIONS

<b>Type A :</b>	<b>“Dry Contact” – Input WITHOUT Voltage</b> <b>IMPORTANT:</b> If device programmed for Dry Contact input(s) then <b>DO NOT CONNECT DIRECTLY TO ANY POWER SOURCE</b> Doing so may void the warranty.	
<b>INPUT1:</b>	<b>White:</b>	Dry Contact 1 (Recommended for Ignition/Engine Status Input)
	<b>Dark Blue:</b>	Ground
<b>INPUT2:</b>	<b>Light Blue:</b>	Dry Contact 2
	<b>Green:</b>	Ground

<b>Type B :</b>	<b>“With Voltage” – Input WITH Voltage</b> <b>IMPORTANT:</b> If device programmed for “With Voltage” Inputs <b>connect to 10 to 48V DCI</b>	
<b>INPUT1:</b>	<b>White:</b>	Ignition/Engine Status Input (+) (10 to 48V DC)
	<b>Dark Blue:</b>	Ground
<b>INPUT2:</b>	<b>Light Blue:</b>	Input 2 (+)
	<b>Green:</b>	Ground

#### POWER CONNECTION

**IMPORTANT:** Connect to 10-48V DC Only

<b>Violet (+):</b>	Line Power + <b>MUST FUSE within 1 foot of source (1 Amp Fuse)</b>
<b>Grey (-):</b>	Line Power-

- Mount device as per “Determine Mounting Location” recommendations
- Connect Input Cable into TT1SPSATsolar
- Tighten Input Cable Connections (Be careful not to over-tighten)
- Proceed to “Testing the Device”

**STEP 4: Testing the Device**

**IMPORTANT:** Always be sure to “test” the device BEFORE sending the asset into the field

**NO Input Cable**

- a) Ensure device is OUTSIDE with a clear view of the sky
- b) Remove Magnetic Grommet
- c) Ensure current location of the device is displayed on your Titan GPS account. (This can take up to 35 minutes)
- d) If successful, leave the Magnetic Grommet removed and store for future use.

**WITH Input Cable**

The input cable can be used for monitoring the status of various inputs. The most common is for asset engine hours. In order to see input status changes, the testing process will need to force packets through. These will contain the input status. Please see the process below for testing an ignition/engine based input. Other inputs will follow a similar process.

- a) Ensure device is OUTSIDE with a clear view of the sky

**Stage 1: Input OFF test**

- b) Ensure asset ignition or input that you want to monitor is OFF (E.g. Ignition is Off)
- d) Ensure input cable wiring is connected to the input wiring (E.g. Ignition)
- e) Remove the Magnetic Grommet from the device
- f) View the device on your Titan GPS account (This may take up to 35 minutes)
- A “Unit Turned On” package will be displayed
- The desired input status should = Off (E.g. Input 1: Off).

Exception: Unit Turned On  
**Status: Stopped**  
**SID/ESN #: 0-499999**  
 Asset Type: Excavator  
 Make: Hitachi  
 Model: 470  
 Asset Unit #: 01  
 Colour: Orange  
 VIN:  
 Last Comms: 5/2/2020 8:43:20 PM  
 Last GPS: 5/2/2020 8:43:36 PM  
 GPS: Valid  
 Location:  
 Direction: 0 deg. (N)  
 In Motion:No  
 Vibrating:No  
 Engine:Off  
**Ignition:Off**

**Stage 2: Input ON test**

- g) Reattach Magnetic Grommet to the device and wait 2 minutes
- h) Turn desired asset input ON (E.g. Ignition)
- i) Remove the Magnetic Grommet from the device
- j) View the device on your Titan GPS account (This may take up to 35 minutes)
- A “Unit Turned On” package will be displayed
- The desired input status should = On (E.g. Input 1: On).
- k) If successful, leave the Magnetic Grommet removed and store for future use.

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 Location:  
 Direction: 0 deg. (N)  
 In Motion:No  
 Vibrating:No  
 Engine:On  
**Ignition:On**

**Troubleshooting** (If the location is not updating on your Titan GPS account;)

- Ensure device has a clear view of the sky
- Try “resetting” the device by turning the device switch OFF, waiting 5 minutes, then turning device switch ON.

**CARE AND USE**

- The clear plastic on the TT1SPSATsolar should be kept free of soil or debris to maximize battery charging capacity
- Solar panels produce the most electricity when they are perpendicular to the sun
- Shading and weather conditions may negatively affect the charging of the batteries from the solar panels
- If the batteries of the TT1SPSATsolar are fully depleted, it is recommended to allow the device to receive a full day (6+ hours) of adequate sunlight to fully charge the batteries
- If the clear plastic panel covering the solar panel becomes cracked, the device should be replaced
- The device should provide up to 10 years of maintenance-free operation based on adequate sun exposure to recharge the battery pack. The internal battery pack is not replaceable.
- If the asset is to be stored indoors for extended periods of time, the TT1SPSATsolar should be shut down by installing the Magnetic Grommet to avoid draining the battery pack. Be careful to store the Magnetic Grommet when removed.
- A fully charged TT1SPSATsolar should remain operational up to 6 months with a clear view of the sky in the absence of sunlight if programmed with two GPS locations per day

