AXIS

# AX-TB

TRAILER ASSET TRACKING DEVICE – WITH *SELF SUSTAINED SOLAR POWER*

## SUMMARY

AX-TB is a waterproof trailer asset tracking device which has a primary power by wire. All it takes is a 60-minute plug-n-play installation will get you setup.

## WARRANTY

During License Term

## REQUIREMENTS

Requires License and plug-n-play self-installation. Please visit www.axistms.com for pricing details. License includes cellular data connectivity, cloud software, mobile apps, ongoing firmware updates, maintenance, and support. Available in 1, 3, and month to month terms.

## HIGHLIGHTS

- Wired Option to Power
  - Updates every 60 minutes
  - GPS Location Updates to Axis Trailer Monitor
- Solar Option to Power
  - Updates every 60 minutes
  - GPS Location Updates to Axis Trailer Monitor
  - Solar power charges battery source during 8 hours of direct sunlight (varies upon weather condition, environmental temperature)
  - Battery power kicks in for rest of 16 hours of day, until sunlight is available to charge battery again for 8 hours of day.
  - Requires purchase of solar panel
- Over-the-air Updates
- G-sensor for motion detection

AXIS

## TECHNICAL SPECS

### CELLULAR

| | |
|---|---|
| Global | WCDMA / HSPA |
| | 800/850/900/1700/1900/2100MHz |
| | GSM 850 / 900 / 1800 / 1900MHz |
| | GSM 850 / 900 / 1800 / 1900MHz |
| Data Support | UDP / IP, TCP / IP, SMS |
| Antenna | Embedded cellular antenna |

### GPS

| | |
|---|---|
| Receiver Type | 66 channel engine |
| Location Technology | GPS |
| SBAS Support | QZSS, WAAS, EGNOS, MSAS |
| Tracking Sensitivity | -165dBm |
| Acquisition Sensitivity | -148dBm |
| Location Accuracy | 3.0m CEP 50% |
| Antenna | Internal – AS3P |
| | External – AS3B |

### INPUTS/OUTPUTS

| | |
|---|---|
| Digital Ignition Input | 1 Positive Input |
| Digital Inputs | Up to 3 (Configurable) |
| Digital Outputs | Up to 2 (Configurable) |

### ELECTRICAL

| | |
|---|---|
| Operating Voltage | Vehicle 12V / 24V system |
| Current Consumption | Operating: 70mA @ 12V |
| | Deep Sleep: 4mA @ 12V |
| Backup Battery | 3.7V 3800mAh |

### MEMORY

| | |
|---|---|
| Internal Flash Memory | 16 Megabit |
| | Up to 16,000 logs |
| | Up to 9,000 queues |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temperature | −20 to +60 °C (with battery) |
| IP Rating | IP67 |

### PHYSICAL

| | |
|---|---|
| Dimension | 120 mm x 80 mm x 32 mm |
| | (4.72" x 3.15" x 1.26") |
| Weight | 210g (0.67 lb) |
| Enclosure | Flame Retardant ABS+PC |
| Mounting Method | Screw Mount, Magnet Mount |

| | |
|---|---|
| | Max. sink current 300mA |
| Analog Inputs | Up to 1 (Configurable) |
| | DC 3~40V (12bits resolution) |
| 1-Wire® Interface | 1 (Driver ID, Temperature sensors) |
| LED Indicators | 3 LEDs (Power, GPS, Cellular) |

## SENSORS

| | |
|---|---|
| Accelerometer | 3-axis ±16g |

## CONNECTORS

| | |
|---|---|
| Connection Type | Circular 6 Pin Connector |
| SIM Card Socket | Internal Mini SIM (2FF) |
| Configuration Interface | RS232 Port |

## DEVICE MANAGEMENT

| | |
|---|---|
| Configuration | ADM, SMS, RS232 Cable |
| Firmware Update | ADM, FOTA, RS232 Cable |

## CERTIFICATIONS

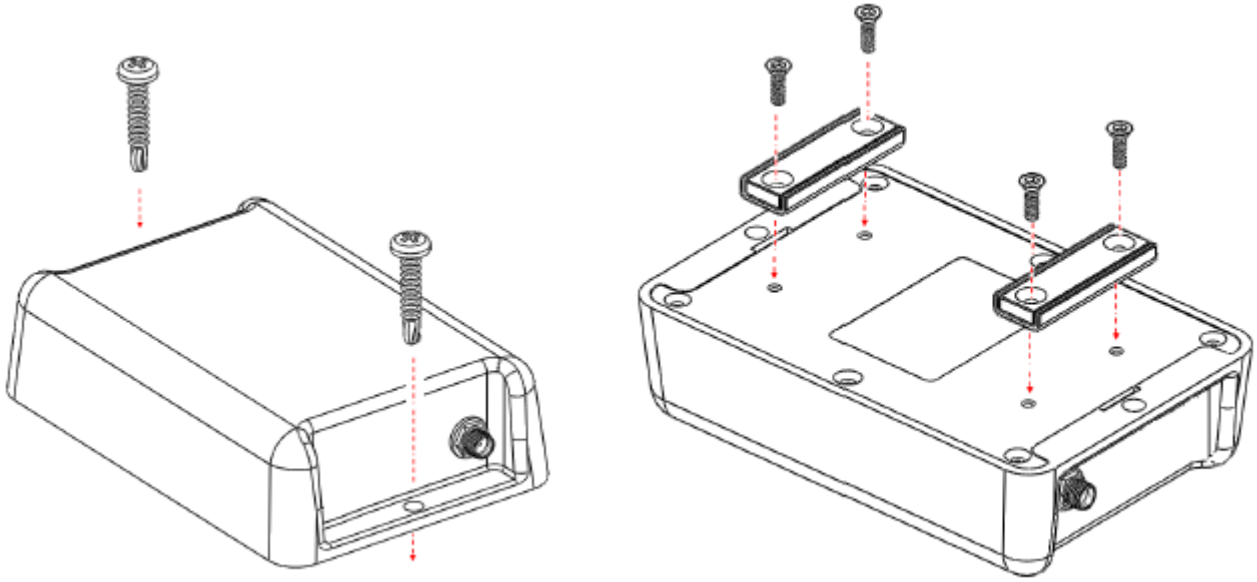
| | |
|---|---|
| Standards | CE, FCC, TELEC, JATE, NCC |

## INSTALLATION WITHOUT SOLAR POWER OPTION

The AX TB can be installed on most trailers and assets in just minutes, simply place on metal surface and the device will mount using the magnetic strips.

Here's what's included out of the box:

- AX TB Device
- 1x Power I/O Cable
- 2x Magnet Mounts and Screws
- 2x Screws for Direct Surface Mounting



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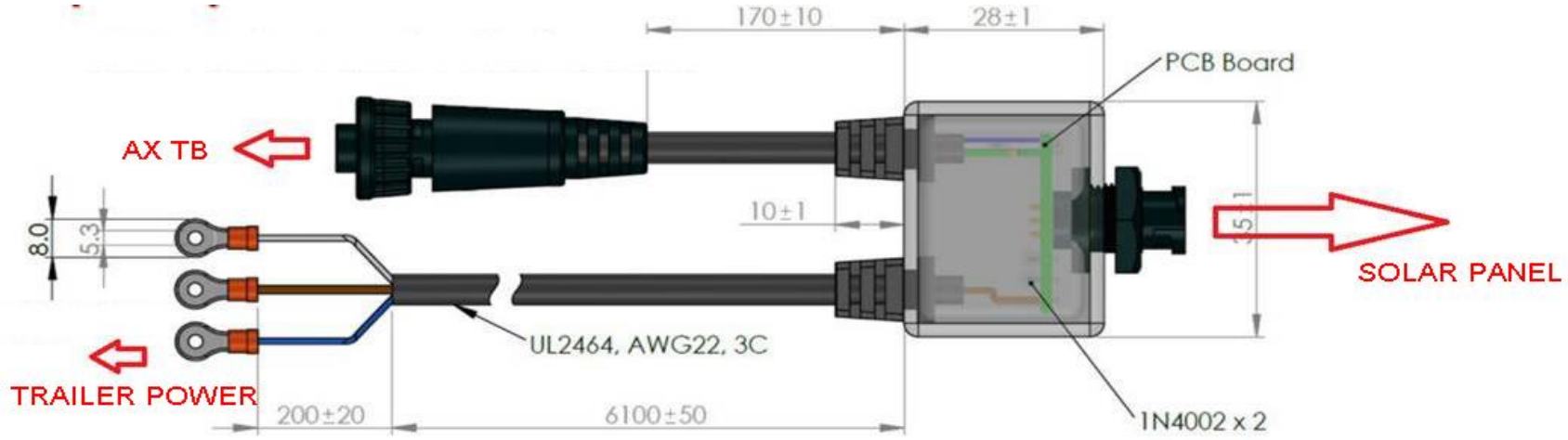
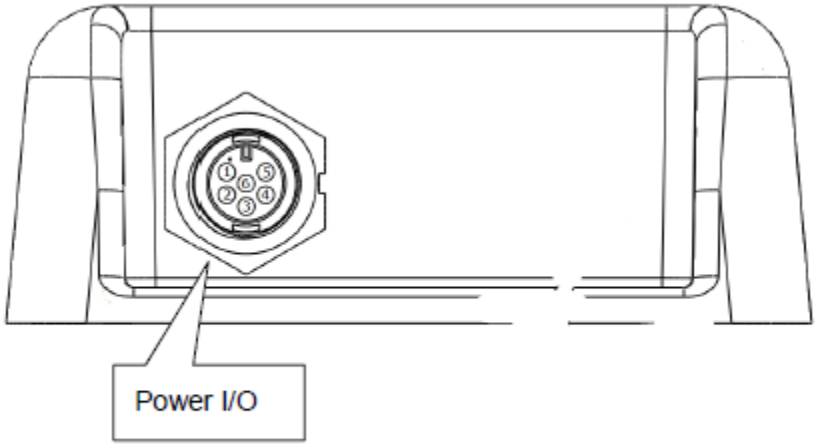
- 2x Magnet Mounts and Screws
- 2x Screws for Direct Surface Mounting
- Solar Panel
- Diodes Adapter Cable (Allowing to connect Trailer Power and Solar Panel)



## POWER I/O CONNECTION

The following image describes where the Power I/O connection is located:

**WARNING**: Connecting of the input wires can be hazardous to both the installer and your vehicle's electrical system if done by an inexperienced installer. This document assumes you are aware of the inherent dangers of working in and around a vehicle and have qualified understanding of electrical behaviors.



## POWER I/O CONNECTION CONTINUED

The following table describes the function of each bare wire:

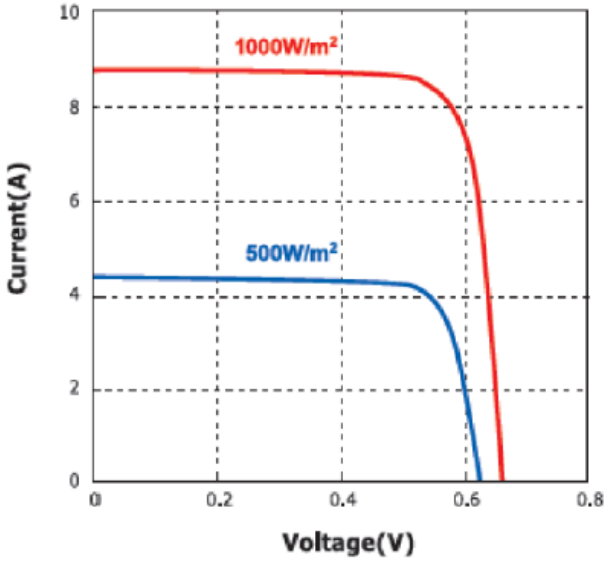
| Power I/O Connector | | | | |
|---|---|---|---|---|
| **Pin#** | **Function** | **Color** | **Designation** | **Note** |
| 1 | Main power input | Red | PWR | DC 9V~40V input |
| 2 | ACC Input | Yellow | ACC | Ignition status positive trigger input |
| 3** | General Input2 (Default)<br>Analog Input1<br>1-Wire Protocol Input *<br>RS232 Transmit data | Green | IO1 | Positive trigger input<br>Analog input (DC3V~40V)<br>1-Wire Data input |
| 4** | General Input1<br>General Output1 (Default) | Blue | IO2 | Negative trigger input<br>Open collector output (Max.300mA) |
| 5** | General Input3<br>General Output2 (Default)<br>RS232 Receive data | White | IO3 | Negative trigger input<br>Open collector output (Max.300mA) |
| 6 | Power ground | Black | GND | |

## SOLAR PANEL (OPTIONAL)

The following table describes the function the solar power:

### I-V Curves

Cell Efficiency: 19.0%

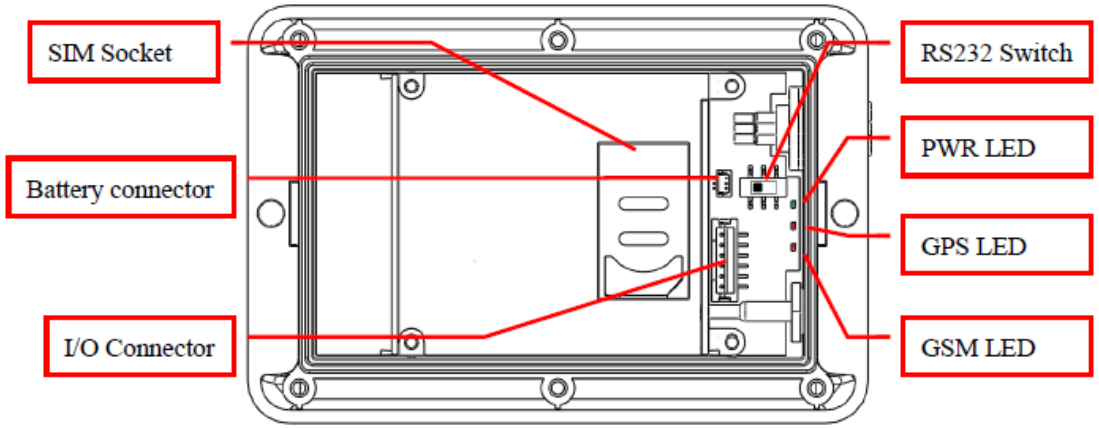


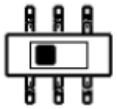

| | |
|---|---|
| Voc | 13.14V |
| Isc | 0.284A |
| Vmp | 10.512V |
| Imp | 0.246A |
| Pmp | 2.59W |
| Temperature | -40°C ~ 85°C |

- The cell of Solar Panel made of monocrystalline silicon,
- EVA encapsulated, corners will not loosen with the increase and decrease in temperature
- Rugged extruded anodized aluminum frame
- Magnetic foot will mount to any metal surface, integrated Neodymium Magnets, easy for installation
- Sealed for protection from harsh environments
- 5-year solar cell output 90%

## LED INDICATORS

The following figure shows the LED statuses




| Mode | Switch setup | Description |
|---|---|---|
| RS232 Mode |  | Pin#3(Green) and Pin#5(White) are acting as RS232 Tx and Rx.<br>This is manufactory default mode. |
| I/O Mode |  | Pin#3(Green) and Pin#5(White) are acting as general I/Os. |

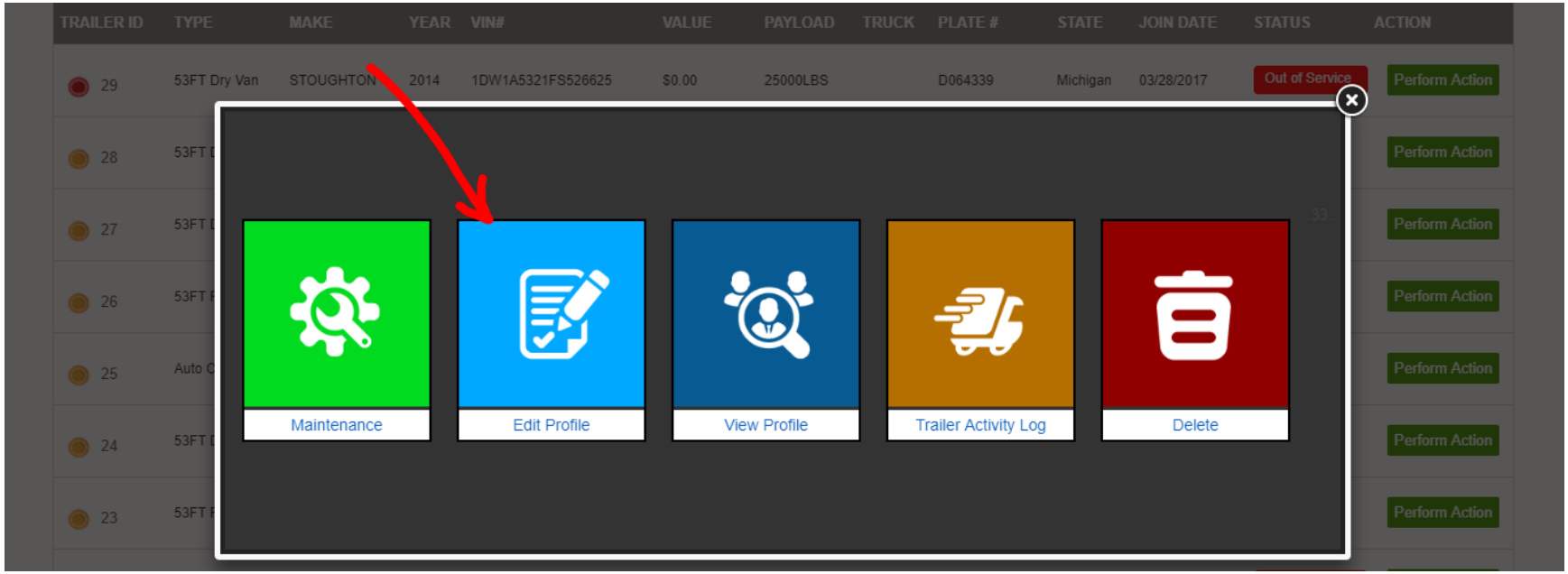
## LED INDICATORS CONTINUED

The following figure shows the LED statuses definition table:

| LED | Indication | Description |
|---|---|---|
| PWR (Green) | Solid On | In full operation mode |
| | 1 blink (0.1 sec.) in every 10 sec. | In sleep mode |
| | 1 sec. On, 1 sec. Off | GPS module off, External power lost, running on backup battery |
| GPS (Red) | 0.7 sec. On, 0.7 sec. Off | Searching for GPS signal |
| | Solid On | Position get fixed |
| GSM (Red) | Off | GSM module off |
| | 0.7 sec. On, 0.7 sec. Off | Searching for GSM signal |
| | 0.2 sec. On, 2 sec. Off | Registered on GSM network |
| | 2 blinks in every 2 sec. | Connected to GPRS network |
| | Continuous blinking | SIM PIN Error |

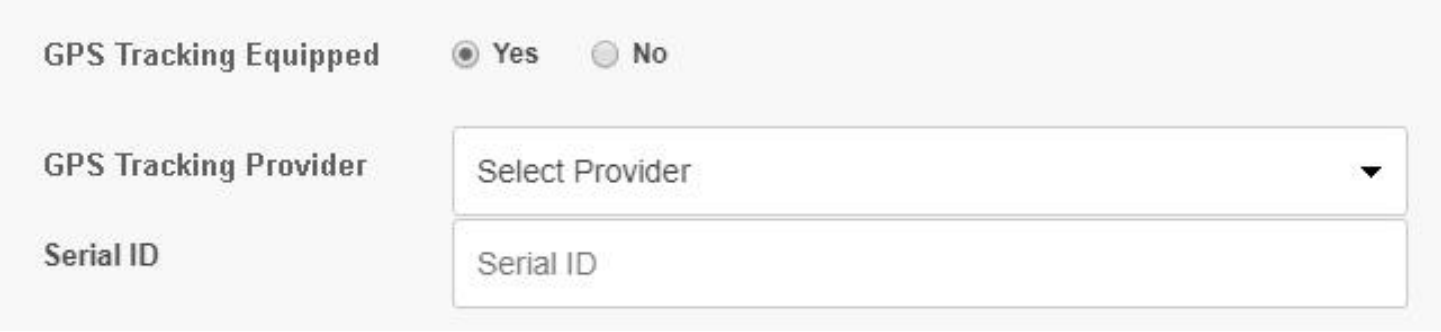
## CONFIGURATION – STEP 1

**STEP 1.** The AX TB can be configured in the trailer profile by clicking Perform Action and selecting Edit Profile.



## CONFIGURATION - STEP 2

**STEP 2.** Select GPS Tracking Equipped and set it to Yes. Then under GPS Tracking Provider please select Axis TMS. Then Enter your IMEI ID in serial ID field from step 3 below.



## CONFIGURATION – STEP 3

**STEP 3.** Then enter the IMEI ID from the back of the device into Device ID field as seen on point 2 above.

## NOTICE

### FCC REGULATIONS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## NOTICE

**RF EXPOSURE INFORMATION**

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

## NOTICE

### COPYRIGHT