Telematics Platform 1 (TP1)
Installation and User Manual

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1. Component Overview
2. FCC, IC and CE Compliance Statements
3. Installation Planning
4. Mounting Options

Component Overview

Telematics Platform 1 (TP1) Characteristics

Requirements	Conditions
Operating Temperature	-30° C to 70° C (-35° F to 158° F)
Operating Voltage	12 or 24 Volts DC
Operating Current	500mA max @ 12V
	250mA max @ 24V
Sleep current	10mA max @ 12V

Connector Pinouts

12-pin Main Connector DT13-12PA

Pin #	Function	Pin #	Function
1	VBATT	**7**	CAN1_H
2	DIGITAL IN	**8**	CAN1_L
3	CAN2_H	**9**	CHASSIS GROUND
4	CAN2_L	**10**	DIGITAL OUT
5	CHASSIS GROUND	**11**	CHASSIS GROUND
6	IGNITION SENSE	**12**	GROUND

4-pin Ethernet connector 43-01229

Pin #	Function
1	ENET_TX1_P
2	ENET_RX1_P
3	ENET_TX1_N
4	ENET_RX1_N

The TP1 system has no user-serviceable parts. The TP1 contains a permanent lithium coin cell for maintaining the real time clock; proper recycling or disposal per local law is required for all components of the TP1.

FCC Compliance Statement

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 equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in an industrial installation. This equipment generates, uses and can radiate 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 28cm between the radiator & your body.

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must be fixed to US operation channels only.

IC Compliance Statement

This device complies with ISED's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the E.I.R.P. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Avertissement:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) lorsqu'il y a lieu, les types d'antennes (s'il y en a plusieurs), les numéros de modèle de l'antenne et les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la P.I.R.E. applicable au masque d'élévation, énoncée à la section 6.2.2.3, doivent être clairement indiqués

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated with greater than 28cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 28 cm entre le radiateur et votre corps.

CE Compliance Statement

This device complies with ***Directive 2014/53/EU*** issued by the Commission of the European Community.

A minimum separation distance of **28 cm** must be maintained between the user's body and the device, including the antenna during body-worn operation to comply with the RF exposure requirements in Europe.

- **Frequency bands and Powers**
  a. Frequency band(s) in which the radio equipment operates:

Cellular:

Region Variant	2G	HSPA+	LTE FDD
LE910C1-NA	2, 3, 5, 8	1, 2, 4, 5, 8	2, 4, 12

Wifi:

2.4 GHz – IEEE 802.11b/g/n					
20 MHz Channels			40 MHz Channels		
Channel	Frequency	Unit	Channel	Frequency	Unit
1	2412	MHz	1-5	2422	MHz
2	2417	MHz	2-6	2427	MHz
3	2422	MHz	3-7	2432	MHz
4	2427	MHz	4-8	2437	MHz
5	2432	MHz	5-9	2442	MHz
6	2437	MHz	6-10	2447	MHz
7	2442	MHz	7-11	2452	MHz
8	2447	MHz			
9	2452	MHz			
10	2457	MHz			
11	2462	MHz			
12	2467	MHz			
13	2472	MHz			

5 GHz – IEEE 802.11a/n					
20 MHz Channels			40 MHz Channels		
Channel	Frequency	Unit	Channel	Frequency	Unit
36	5 180	MHz	36-40	5 190	MHz
40	5 200	MHz	44-48	5 230	MHz
44	5 220	MHz	52-56	5 270	MHz
48	5 240	MHz	60-64	5 310	MHz
52	5 260	MHz			
56	5 280	MHz			
60	5 300	MHz			
64	5 320	MHz			
100	5 500	MHz	100-104	5 510	MHz
104	5 520	MHz	108-112	5 550	MHz
108	5 540	MHz	116-120	5 590	MHz
112	5 560	MHz	124-128	5 630	MHz
116	5 580	MHz	132-136	5 670	MHz
120	5 600	MHz			
124	5 620	MHz			
128	5 640	MHz			
132	5 660	MHz			
136	5 680	MHz			
140	5 700	MHz			

5 GHz – IEEE 802.11a/n					
20 MHz Channels			40 MHz Channels		
Channel	Frequency	Unit	Channel	Frequency	Unit
149	5 745	MHz	149-153	5 755	MHz
153	5 765	MHz	157-161	5 795	MHz
157	5 785	MHz			
161	5 805	MHz			
165	5 825	MHz			

b. Maximum radio-frequency power transmitted in the frequency band(s) in which the radio equipment operates

Cellular:

Typical values for Max output level are as follow:

- **2G:**
  - LB: 33dBm
  - HB: 30dBm
- **3G/TD-SCDMA:** 24dBm
- **4G (FDD & TDD):** 23dBm @1RB.

Wifi:

802.11b 2.4GHz 20MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power				+16		dBm

802.11g 2.4GHz 20MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	6 Mbps ~ 36 Mbps			+16		dBm
	48 Mbps ~ 54 Mbps			+15		dBm

802.11n 2.4GHz 20MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	MCS0 ~ MCS2			+15		dBm
	MCS3 ~ MCS4			+15		dBm
	MCS5 ~ MCS7			+14		dBm

802.11n 2.4GHz 40MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	MCS0 ~ MCS2			+14		dBm
	MCS3 ~ MCS4			+14		dBm
	MCS5 ~ MCS7			+13		dBm

802.11n 5GHz 20MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	MCS0 ~ MCS2			+15		dBm
	MCS3 ~ MCS4			+15		dBm
	MCS5 ~ MCS7			+14		dBm

802.11n 5GHz 40MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	MCS0 ~ MCS2			+14		dBm
	MCS3 ~ MCS4			+14		dBm
	MCS5 ~ MCS7			+13		dBm

802.11ac 5GHz 20MHz BW

Parameter		Condition	Min.	Typ.	Max.	Units
Transmit output power	6 Mbps ~ 36 Mbps			+16		dBm
	48 Mbps ~ 54 Mbps			+15		dBm

- **WLAN 5GHz:**

  Operations in the 5.15-5.35GHz band are restricted to indoor usage for all countries.

- **For single module:**

  In all cases assessment of the final product must be mass against the Essential requirements of the ***Directive 2014/53/EU*** Articles 3.1(a) and (b), safety and EMC respectively, as well as any relevant Article 3.2 requirements.

The maximum antenna gain for frequency 850 MHz is 0.65 dBi; for frequency 1900 MHz is 2.68 dBi.

Installation Planning

Safety, Reliability, and Accessibility

- Use eye protection when using a drill/performing work that may be hazardous to the eyes.
- Use ear protection in noisy work areas.
- Wear appropriate clothing/uniforms and safety shoes.
- Maintain three points of contact when climbing in and out of cab.
- Make sure you know what is behind the area before you drill.
- Install equipment so it will not cause damage to the vehicle or work loose over time.
- Make sure there are no loose components/cables and no unsecured components.
- Use solid mounting surfaces.
- Route all cables away from hot or abrasive areas.
- Choose installation locations where components can be easily serviced.
- Choose installation locations where components are safe from tampering and damage

IMPORTANT SAFETY INFORMATION

WARNING

Do not locate the product where it obstructs the driver's field of vision, distracts the driver from the driving task, interferes with the driver's operation of controls or displays, or creates a safety hazard. Follow all laws and regulations governing the placement of equipment and mounts.

DO locate the product where:

- it can be safely installed on a secured bracket that is robust enough to minimize any vibration and sustain the weight of the product.
- the mounting surface is strong enough to support the mounting hardware.
- the mounting surface is flat.
- it does not block the view of the road or mirrors.
- the surrounding area is clear of dash controls and gauges.
- it is not mounted in constant, direct sunlight.

- it does not limit a passenger's leg room or block access to any other compartments.
- it does not interfere with anyone entering or exiting the vehicle cab.
- it is not likely to impact the driver or passenger in case of an accident or collision.

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

DO NOT locate the Product where it:

- obstructs the driver's field of vision.
- distracts the driver from the driving task.
- interferes with the driver's operation of controls or shifting.
- obstructs moving parts of the vehicle, if any.
- blocks the deployment of an airbag.

Additional information for selecting an installation location:

- Installations should not obstruct the driver's field of vision while operating the vehicle, and should comply with all applicable federal and state laws and regulations regarding
- appropriate installation locations (including restrictions against the mounting of objects on a vehicle's windshield) and driver distraction.
- Consider the owner's preference in selecting the installation location and whether there is a team or a single driver.
- Once a suitable location is selected, verify that there is nothing behind the mounting surface that might be damaged by drilling holes.

WARNING

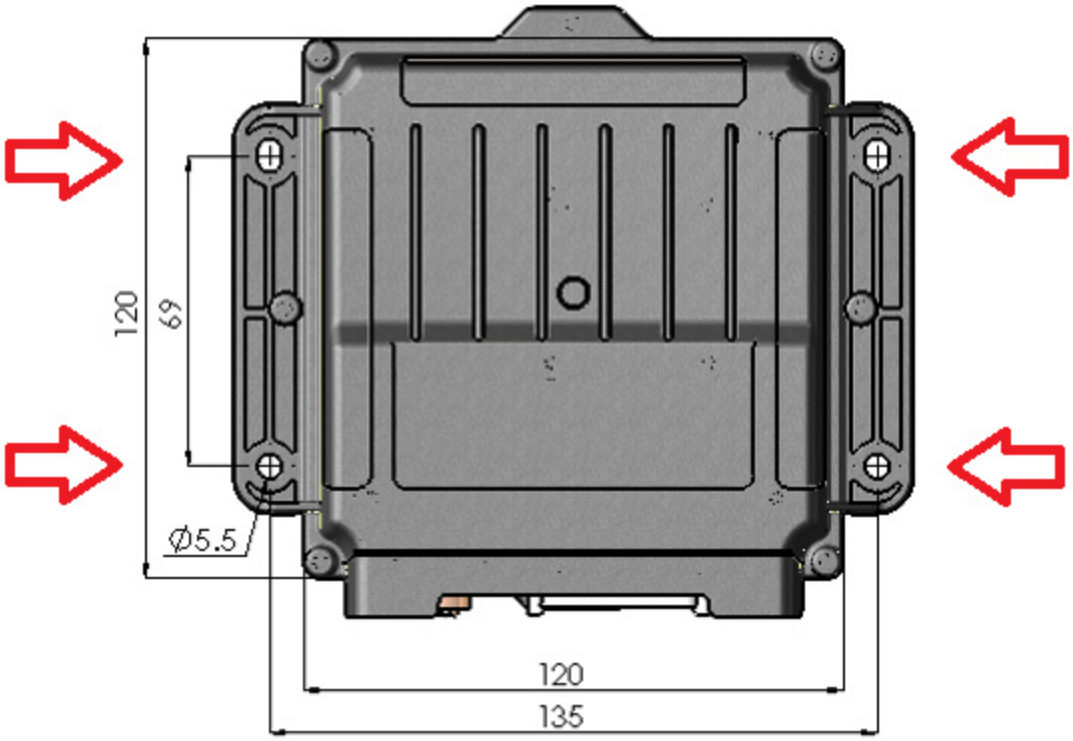
Excess cable can be a tripping hazard. Ensure cable is not draped where it will interfere with either the driver or passenger as they move within the cab.

Mounting Options:

Option 1: Mounting without Bracket

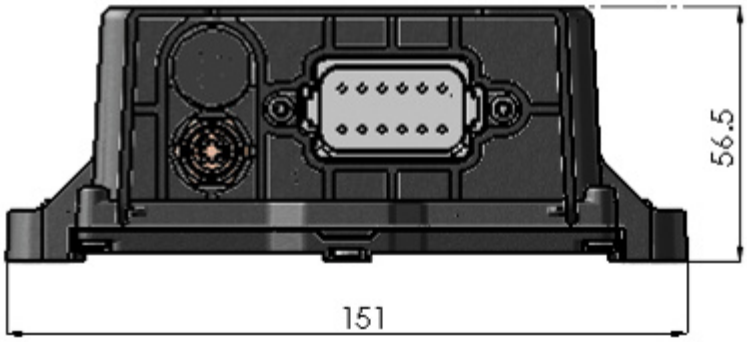
Mounting Screw Locations.

There are a total of 4 mounting screw holes, one at each corner, as pointed to by the red arrows below. Two of the holes are slightly elongated for tolerance purpose.



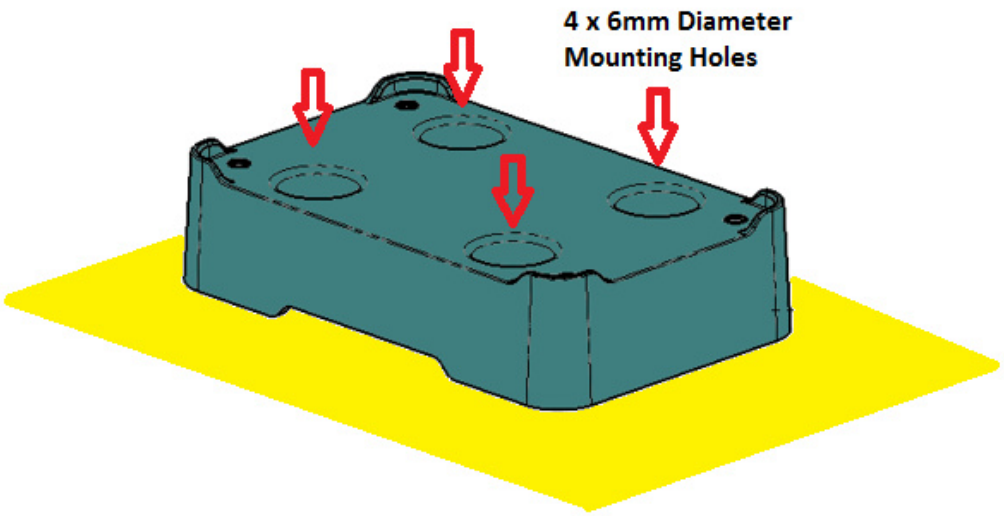
Fastening screws (M5 bolts) and washer are provided

Units are in millimeters.

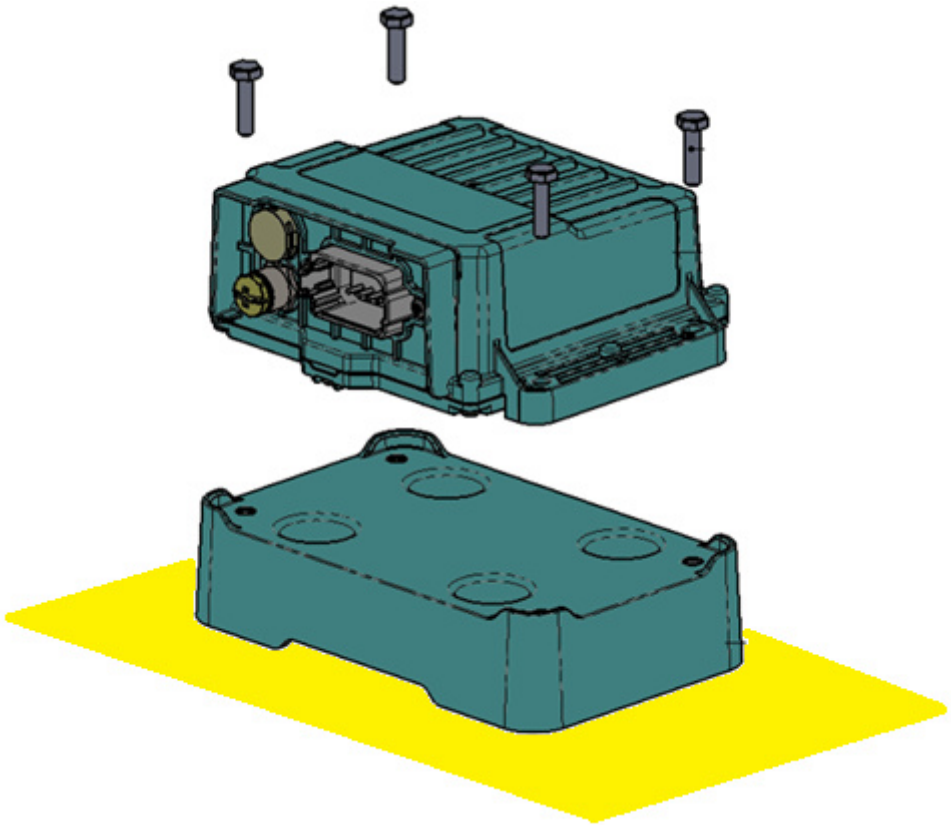


Option 2: Mounting with Plastic Bracket

Step 1: Mount Bracket to Surface First



Step 2: Mount TP1 onto Bracket



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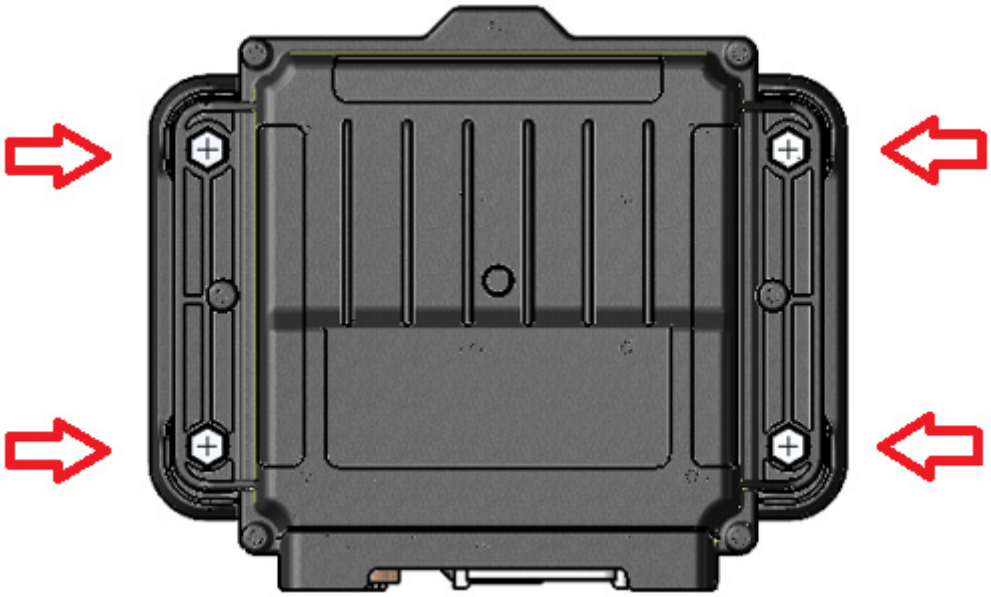

4 x Fastening screws (M5 bolts) and washer are provided

Units are in millimeters.