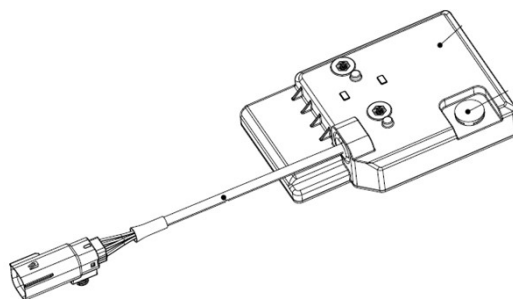


TCU H-D MY21

Telematics Control Unit



Description

The Advanced Communications Business Unit of Ficosa International develops telematic systems with integrated antennas based on fractal technology. Telematic modules allow internal and external communications within the vehicle integrating various telecommunication technologies, such as mobile telephony, GNSS,... in a single unit.

Supported Services

- FOTA
- Vehicle Status.
- Ride Data.
- UDS Data.
- UDS Diagnostics.
- Real Time Location.
- Analytics
- Stolen Vehicle Tracking (SVT)

Features

- TCU MY21:
- GSM/WCDMA/ LTE data communication.
 - Telephony integrated antennas.
 - GNSS Internal antenna.
 - Cost-effective and compact design.
 - Automotive Qualified.

TCU H-D MY21

Telematics Control Unit

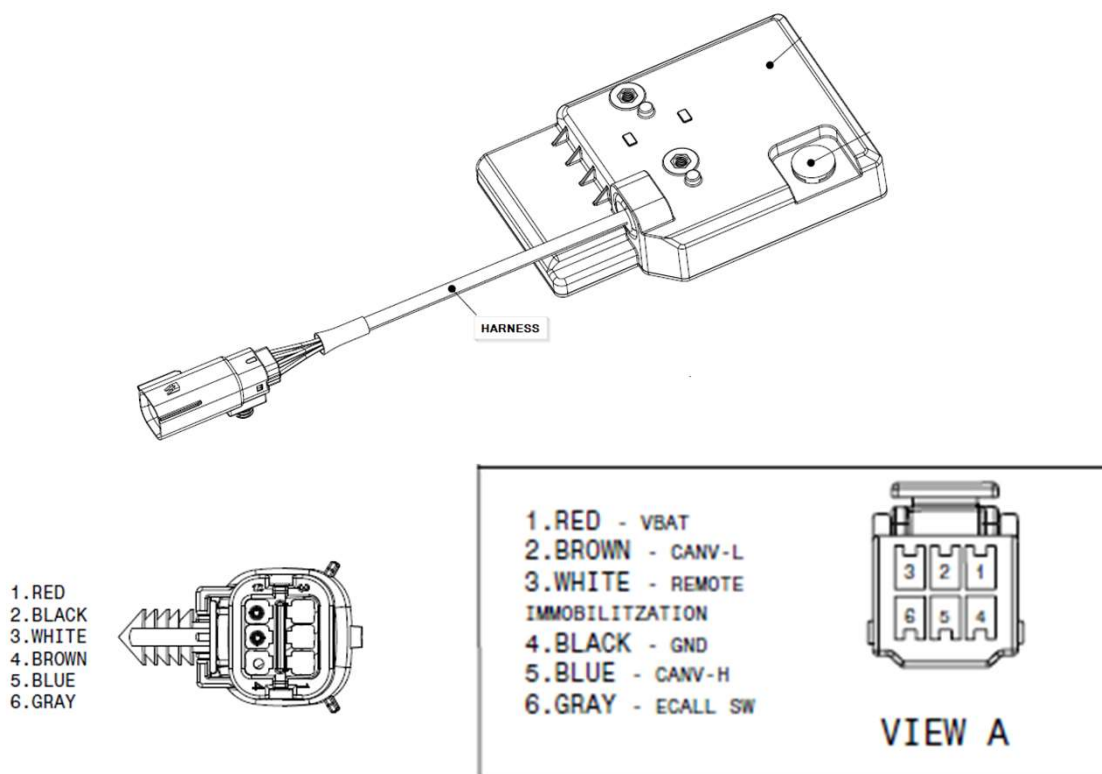
Connections

TCU connections

TCU shall be connected to the vehicle using the connector detailed below which contains all the pinout that serves as an interface for power and communication purposes.

TCU is designed to be powered through a electrical protection circuitry that provides a nominal voltage of 12.8V.

This product is designed for building-in installation.



TCU H-D MY21

Telematics Control Unit

Mounting instructions

TCU Fixation

1. Bracket and TCU shall be mounted as shown in figure 1.
2. As detailed in figure 2, pokayokes from TCU shall be matched with bracket holes in order to have screw holes aligned.
3. Screws (red in figure 3) shall be fastened to the TCU Cover applying a torque of 80-90 in-lbs (9 – 10.2 Nm)

This TCU fixation is done in-vehicle and once mounted the part will not be reachable.



Figure 1. Bracket and TCU assembly



Figure 2. Bracket and TCU alignment

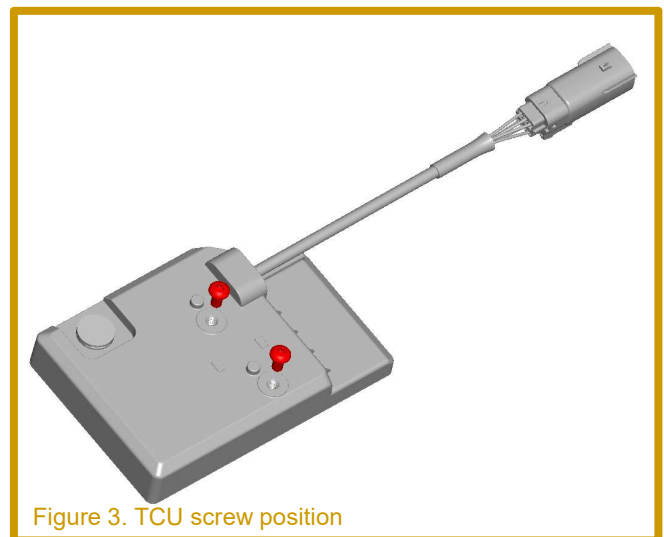


Figure 3. TCU screw position

TCU H-D MY21

Telematics Control Unit

Recommendations of use

RECOMENDATION

I.- TRANSPORT-STORAGE

RISK

Do not expose the containers to bad weather conditions	Pollution of the systems, degradation of the aspect, or functional damages
Do not apply weight over the packing	Breaking or deformation of a part of the delivery
Keep the containers in horizontal position	Displacements of parts within container. Parts might be damaged

II.- HANDLING-CONDITIONING

Do not to apply violent efforts on the product Do not hold the units using a delicate part (i.e. connectors) Use firm and rigid parts for holding the units (i.e. box) Do not pile them, ones on the others Parts should not be exposed to shocks, falls at the time of handling. In case of falling, THE PART MUST BE DISCARDED. Take out of the conditioning the systems at the time of their use. Do not use of sharp or aggressive instruments in contact with the system. Protection measures against ESD (Electro Static Discharges) are advisable, even though the part is protected against ESD of a reasonable magnitude Avoid touching the connectors with the fingers or metallic objects	Functional internal elements may be damaged, due to efforts applied from the outside. Internal components may be damaged, even though the external appearance is still OK Functional elements of the order can be twisted, broken, or folded, and generate dysfunctions. Strange particles may enter inside the unit, causing different damages Deterioration of the internal electronic components. Even with the unit completely closed (i.e. ESD may cause damages through the external pins)
---	--

III.- PREPARATION AND ASSEMBLY

Handling of the electronic components (Kanban) with care Electrical integration test should check that connector pinout of the vehicle matches with the TCU pinout There should not be the same kind of connectors in other vehicle devices near the TCU unit. If this is not possible, they should be clearly identified.	Connections between different parts may be deteriorated and ESD may damage the electronic components In case of any change, the TCU or the vehicle might have an unexpected behaviour In case of having the same type of connectors, the operator might wrongly connect them (specially if they are not clearly identified), leading to an unpredictable behaviour
---	---

IV.- MAINTENANCE

The antenna should not be covered (or painted) by any metallic material during its operation No maintenance operations can be performed on the unit. In case battery useful life is exhausted, whole telematic unit shall be replaced. Unit should not be open. The following warning is indicated in product label: TCU BATTERY MUST BE CHARGED BY WEEK W/W OF YYYY. SEE THE SERVICE INFORMATION PORTAL (SIP) OR THE SERVICE MANUAL FOR MORE INFORMATION Parts with batteries should not be left without connection during a long period of time. Battery shall be fully charged before the date specified in product label, and then at least every 6 months. If storage temperature exceeds a certain value, then these maximum time periods will be shorter.	The performance of the antenna may be affected Risk of damaging sensitive electronic components in case of manipulation of unit interior electronics Batteries might go into a deep discharged state, causing battery degrading, affecting battery performance.
---	--

TCU H-D MY21

Telematics Control Unit

Recommendations of use

The maximum date for charging the battery is indicated in product label. This date has been calculated considering the following temperature profile, containing the worst expected conditions for storage and transportation:

- Road transport: up to 10 days up to 60°C during day, and up to 40°C during night
- Air transport: no impact on battery during normal air transport (temperature below 25°C), as battery charge does not decrease at low temperatures
- Storage: up to 40°C during day and below 30°C during night, for the 3 months of summer
- Rest of the time, below 30°C
- Sea transport shall be avoided, unless a maximum temperature of 30°C can be assured

If TCU temperature is above this profile, then the date indicated in the label is no longer valid, and battery should be charged before the indicated date, in order to avoid a deep discharge which would decrease battery performance.

After-sales

V.- DANGEROUS MATERIALS

Certain variants contain a **rechargeable battery (NiMH)**. Handling and storage of such batteries imply certain risks that have to be considered:

Health Hazard (Acute and Chronic) / Toxicological information

In case of electrolyte leakage, avoid skin contact.

First Aid Procedures

If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately.

If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.

If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.

Unusual Fire and Explosion Hazards

Do not dispose of battery in fire

Do not short-circuit battery

Extinguishing Media

Carbon Dioxide, Dry Chemical or Foam extinguishers can be used for battery BUT water extinguisher is not suitable.

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leakage should be handled with rubber gloves.

Avoid direct contact with electrolyte.

Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus (SCBA).

Safe handling and storage advice

Batteries should be handled and stored carefully to avoid short circuits.

Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries.

Never disassemble a battery.

Do not breathe cell vapors or touch internal material with bare hands.

Skin will be itchy when contaminated with electrolyte. In contact with electrolyte can cause severe irritation and chemical burns. Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.

Battery may explode.

Battery may cause burns.

TCU H-D MY21

Telematics Control Unit

Recommendations of use

The cells and batteries shall not be stored in high temperature.
Otherwise the cells may be leakage and can result in shortened cycle life.

For further information, related to battery risks, here are manufacturer contact details:
GPI International Ltd. (GP Batteries)
8/F GP Building, 30 Kwai Wing Road, Kwai Chung, N.T. Hong Kong
Telephone Number: 852-2484-3333

TCU H-D MY21

Telematics Control Unit

IFCC/ISED Regulatory Notices

Modification Statement

Advanced Automotive Antennas has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Advanced Automotive Antennas n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

Interference Statement

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Wireless Notice

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF) Exposure rules. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The antenna should be installed and operated with minimum distance of 3.5 cm between the radiator and your body.

Le présent appareil est conforme à l'exposition aux radiations FCC / ISED définies pour un environnement non contrôlé et répond aux directives d'exposition de la fréquence de la FCC radiofréquence (RF) et RSS-102 de la fréquence radio (RF) ISED règles d'exposition. L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur. L'antenne doit être installée de façon à garder une distance minimale de 3.5 centimètres entre la source de rayonnements et votre corps.

TCU H-D MY21

Telematics Control Unit

IFCC/ISED Regulatory Notices

FCC Class B Digital Device Notice

This equipment 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 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 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.

CAN ICES-3 (B) / NMB-3 (B)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe B est conforme à la norme canadienne ICES-003.

List of Applicable FCC Rules

The list of applicable FCC rules are 22H, 24E and 27.

Summary of the Specific Operational Use Conditions

Advanced Automotive Antennas, S.L., have integrated the UMC-9628FHN (FCC ID: NKRUMC-9628FHN; IC:4441A-UMC9628FHN) in a Telematic Control Unit model HD MY21 NA (host device) to be used in portable conditions (to be used at a distance less than 20 cm from human body).

For this, SAR have been demonstrated in this specific host device.

Limited Module Procedures

For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

TCU H-D MY21

Telematics Control Unit

IFCC/ISED Regulatory Notices

Trace Antenna Designs

Antennas

This radio transmitter has been approved by FCC and ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio a été approuvé par ISDE pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Main Telephony antenna specifications				
Antenna type: Printed monopole				
Band	Peak Gain (dBi)		Frequency (MHz)	Peak Gain (dBi)
1	1,9		12	0,2
2	1,6		17	0,2
3	2,5		18	0,8
4	2,5		19	0,8
5	0,8		26	0,8
6	0,8		28	0,2
7	1,4		38	1,8
8	0,9		40	1,7
9	2,0		41	1,2

TCU H-D MY21

Telematics Control Unit

IFCC/ISED Regulatory Notices

Additional Testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed. The end product with an embedded module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15.

TCU H-D MY21

Telematics Control Unit

Specifications

Mechanical and Electrical specifications	
Dimensions	145 x 100 x 40 mm (excluding bracket)
Operating Temp	-20°C to +85°C
Weight	<300gr
Casing	Polybutylene terephthalate (PBT)
Connectors	GJM Pigtail 6P
Power supply	12.8 VDC (Nominal)
Current consumption	1 A
Telephony specifications	
Telephony Frequencies	NA: LTE: B2,B4, B5, B7, B12, B17 WCDMA: B2, B5 GSM: 850, 1900 ROW: LTE: B1,B2,B3,B4, B5, B7,B8,B9,B18,B19,B26,B28,B38,B40,B41 WCDMA: B1,B5,B6,B8,B19 GSM: 850, 900,1800,1900 EU: LTE: B1,B3,B7,B8,B20 WCDMA: B1, B8 GSM: 900, 1800
Telephony Maximum Output Power	LTE: 23 dBm WCDMA: 24 dBm GSM: 33 dBm
SIM	eSIM
Telephony Antenna	Main Antenna Integrated + Vertical Antenna for diversity.
GNSS Specifications	
Frequencies	GPS: 1575.42 ± 20 MHz Glonass: 1598 – 1606 MHz
GNSS Antenna	Internal