



# Mounting procedure TCU 1.2

Ref : C3140690010  
Version : A4




Diffusion : Internal  External   
Status : Confidential  Limited  Extended

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# Mounting procedure TCU 1.2

Reference : C3140690010

Version A4

Internal Approval			
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Date	11/03/2019	26/04/2019	21/05/2019
Signature			

COMPANY	NAME	DATE	SIGNATURE

**MODIFCATION LIST:**

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A0	22/12/2016	All	Creation	D.LUCE
A1	03/05/2017	§4 §5 §6 §7 & §9	New Bracket and warranty conditions	D.LUCE
A2	20/10/2017	§2;§3;§4;§6;§8;§9; §10	Warning on installation consequences; maximum operational temp. change	D.LUCE
A3	22/05/2018	§8	<i>Add locating recommendations for autolocalization.</i>	D.LUCE
A4	11/03/2019	<i>Page 17</i>	<i>Add warning on coatings usage</i>	D.LUCE

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## 1. PURPOSE

This document is the Mounting procedure of the TCU 1.2. TCU 1.2 is a part of a Tire Pressure Monitoring System. The Telematics Control Unit (TCU) collects information on the vehicle and transmits it over the GSM network to a back-end server. It can capture datae from CAN, GPS, TPMS or other wireless sensors.

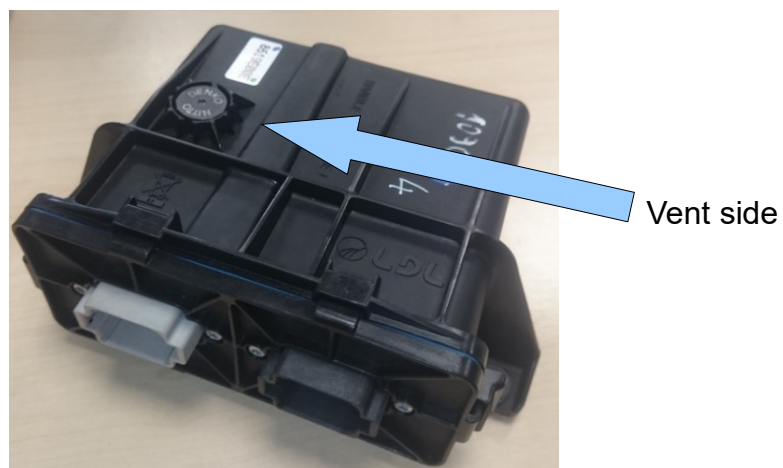
## 2. TCU 1.2 PRODUCT DESCRIPTION.

### 2.1. PART NUMBERS

TCU 1.2 Part Number	Region	Model
TBD	Europe Middle East Africa (EMEA)	TBD
TBD	Europe Middle East Africa (EMEA)	TBD
TBD	Europe Middle East Africa (EMEA)	TBD
TBD	North America (NA)	TBD
TBD	North America (NA)	TBD

### 2.2. EXTERNAL DESCRIPTION

Part	Material	Characteristics
TCU	all electronic parts	-
1 Housing	Thermoplastic	Black
1 Cover	Thermoplastic	Black
1 or 2 DT 06 connector	Thermoplastic	Black and / or Grey
8 Screws	Stainless Steel	Autoforming type
3 Silent-blocks	EPDM	Black
3 Spacers	Stainless steel	Up to M6 screw
1 Nitto Vent	NA (assembly)	Black - IP69K



### 3. MAIN FEATURES

#### 3.1. ELECTRONIC FEATURES

Power supply (5A fuse protected)	7 to 32 VDC
Operating current	1 A
Integrated Battery Power Supply (park mode)	3,65 VDC
Temperature operating range	<b>-40°C to 80°C</b>
Storage temperature range	0 to 30°C
Legal Regulations	FCC/IC PTCRB E marking RED
Antennas (GSM, GPS and RF)	Internal

#### 3.2. MECHANICAL FEATURES

Total Mass	490 g
Dimensions (L x W x H)	160 x 180 x 75 mm
1 or 2 Connector(s) (8 Ways)	Deutsch DT06 serie
Tightness	IP 68 & IP69K
Mounting	LDL Brackets (see §4)
Wiring	LDL harnesses (see §6)

#### 3.3. CONNECTOR PIN OUT

**WARNING / See Product/System Specification**

### 4. TCU1.2 MOUNTING INTERFACE

The TCU 1.2 is mounted on a plane surface fixed on the vehicle frame. The TCU 1.2 has 3 mounting points equipped with silent blocks. The TCU 1.2 must be fixed on a support (available on demand). This support ("TCU 1.2 interface", also called "Bracket base") is defined in the appendix.



C0 type



D0 type

## 5. TCU 1.2 MOUNTING RECOMMENDATIONS

Screws (not provided by LDL) must be tightened @ 4,5 Nm +/-0,5 Nm. It's recommended to use an elastic washer (Belleville type) between screw head and silent block with spacer. Stainless steel is recommended.

M6 bolts are recommended, the screw for a fixation on a base plate fixation in thickness 1,5mm must have a length equal or higher than 20mm.

**NOTA BENE : The usage of a different bracket; without LDL written approval; would void the warranty of the TCU 1.2.**

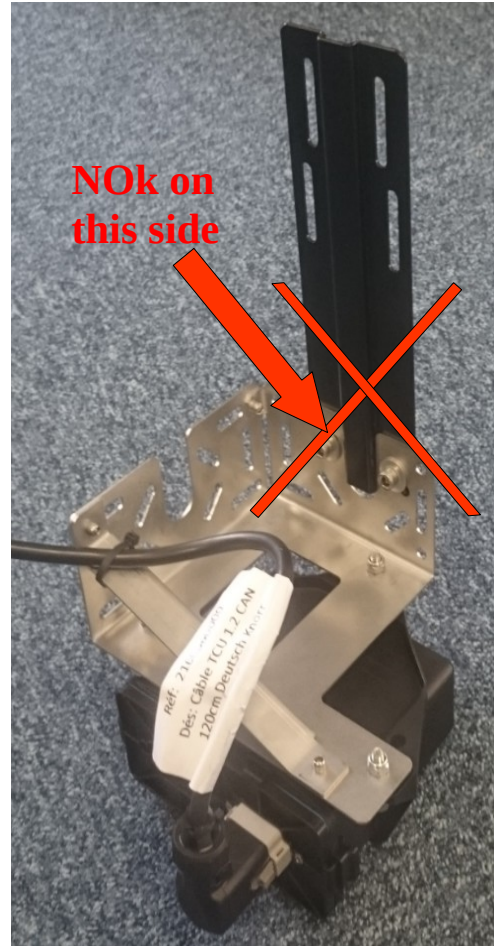
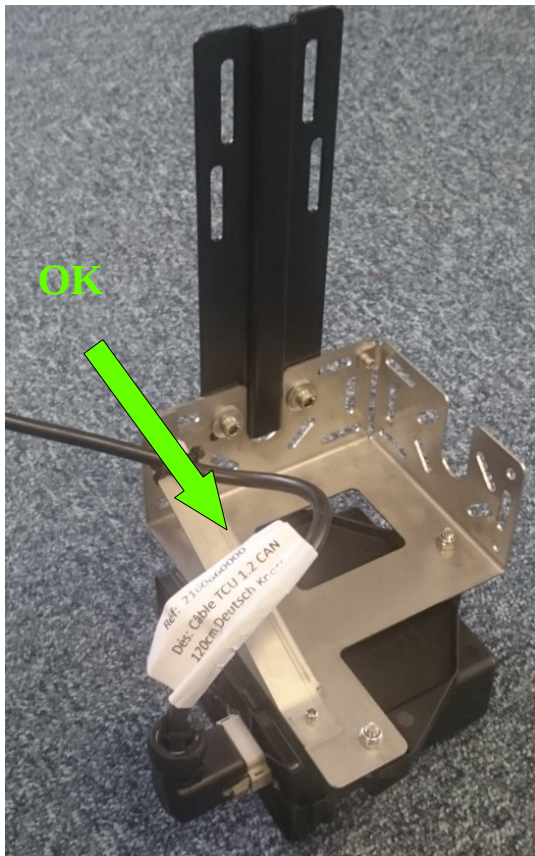
Universal fixation kit can be provided by LDL. It consists of a bracket base and a bracket extension. A combination of these parts is able to fit all vehicle types.



TCU 1.2 onto support

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Note : on some harness, back shell can be mounted on an opposite direction (rotation @ 180° versus pictures shown on this page)

*LDL TCU 1.2 bracket combinations*

To link a bracket base to a bracket extension, 2 bolts minimum are needed, type M6, length 16mm, with 2 M6 washers (1 standard type and 1 Belleville type).

## 6. TCU 1.2 CONNECTION

After its connection onto TCU 1.2, cable must be fastened as close as possible of its TCU 1.2 starting point (end of connector base).

***This cable fastening must be done on a hole of the bracket base*** to minimize the effect of vibration onto the connector assembly, see picture below:

Fastening  
point



From the TCU 1.2 connector base to the fixation point on the bracket base, the cable curvature diameter **must be higher than 100 mm**.

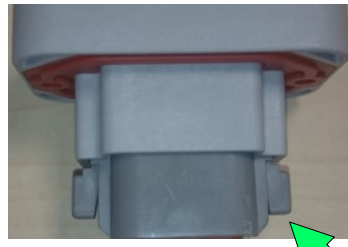
Verify that no tension stress is applied onto the harness between TCU 1.2 and the fixation point onto the vehicle chassis, this check must be done **after** connection of the harness connector onto the TCU 1.2 connector and **after** the fastening of the cable onto the bracket base. Always avoid contact between cable and shape edge of the bracket.

The connector must be secured, means **2 harpoon shapes**, each side of connector, must be locked.





NOK



OK

**Nota Bene : Incorrect wiring should prevent the system to operate properly.**

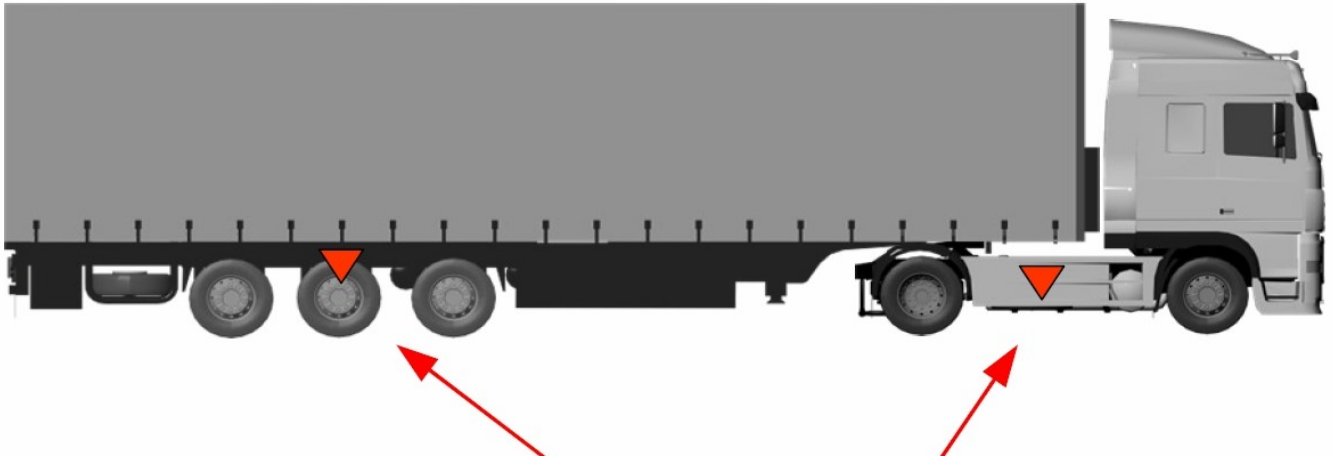
- ✓ TCU 1.2 has to be connected to +12V or +24V through 5A fuse protection.
- ✓ To power supply the TCU 1.2, it has to be connected on KL31 (battery negative) and KL15 (ignition).
- ✓ When TCU 1.2 and ECU or EBS are connected to a same CAN network, **they must share the same ground.**

LDL Technology can provide the wiring harness ;,ask to LDL for details

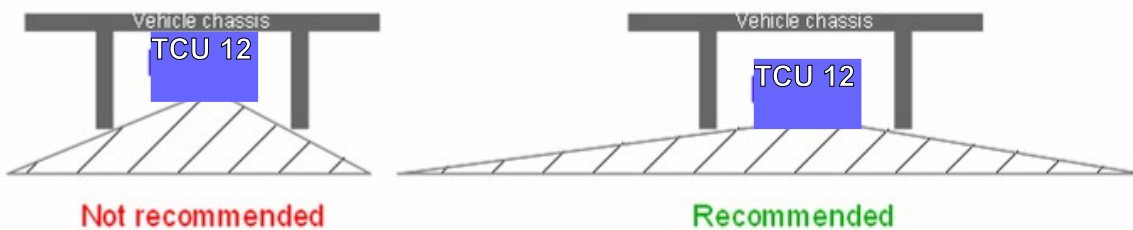
TCU 1.2 connected to LDL harness are IP69K & IP 68.

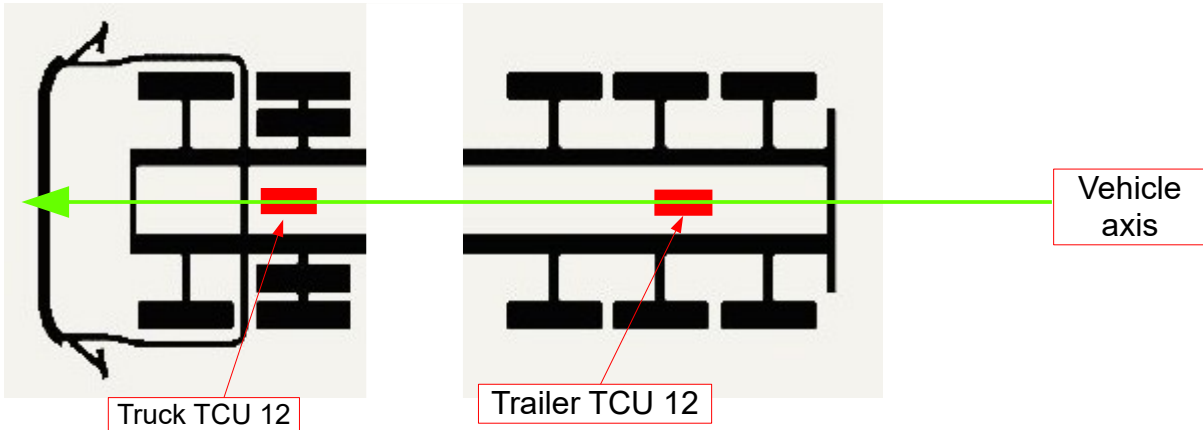
## 7. TCU 1.2 LOCATING RECOMMENDATIONS

The TCU 1.2 must be fixed horizontally and upside down (Vent side facing the ground):



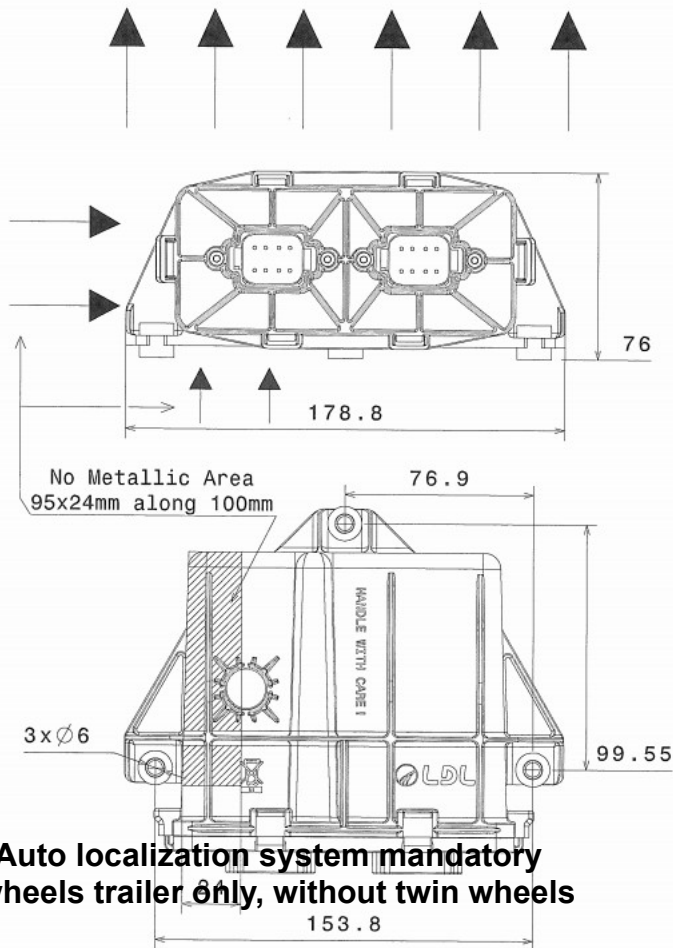
- ✓ The TCU 1.2 must be free from any metallic shield in the Z direction. The antenna should be cleared as possible to optimize RF communication and reduce areas of non-receipt.
- ✓ There must be a **free area of minimum 5cm wide around the TCU in all directions.**
- ✓ TCU 1.2 must not be exposed to direct gritting.
- ✓ Each TCU 1.2 must be at a central point between the wheels that it has to receive, and aligned on the vehicle axis. ***Distance between TCU 1.2 and WUS would not exceed 3 meters.***





**MANDATORY TCU 1.2 location:**

No metallic shield in this direction

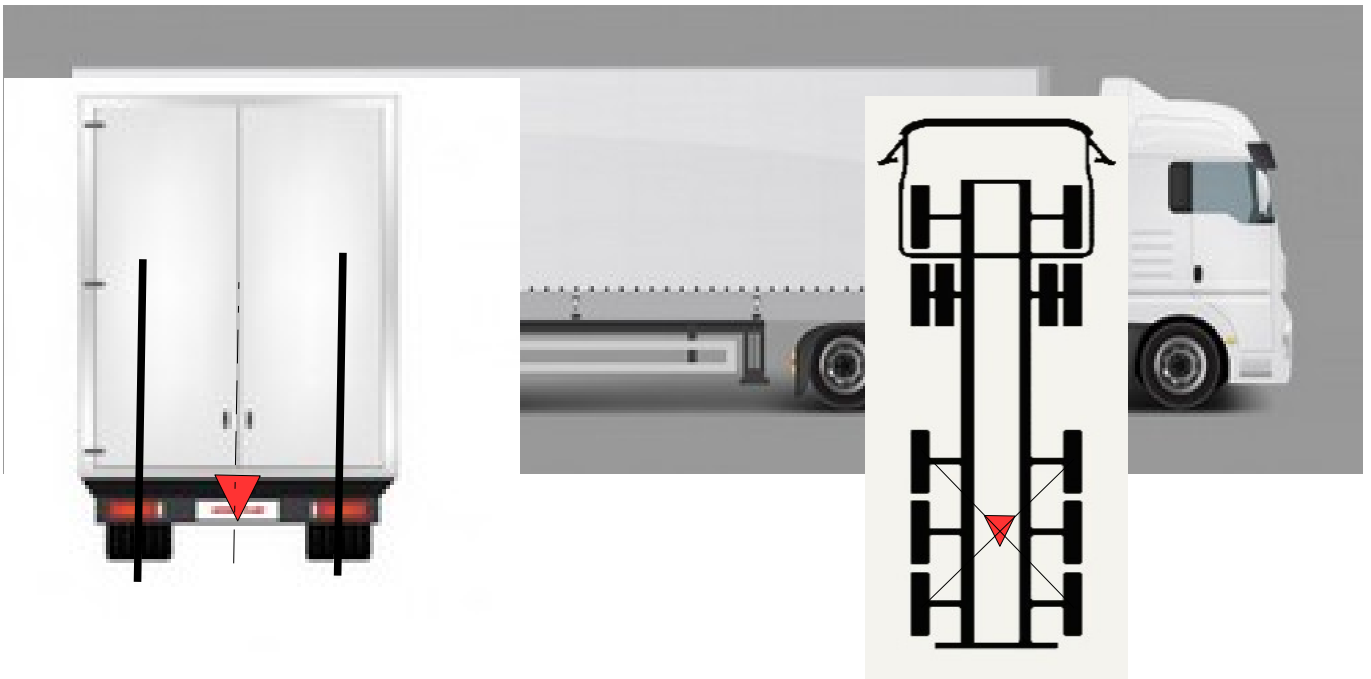


**NOTA BENE : Auto localization system mandatory requests a 6 wheels trailer only, without twin wheels**

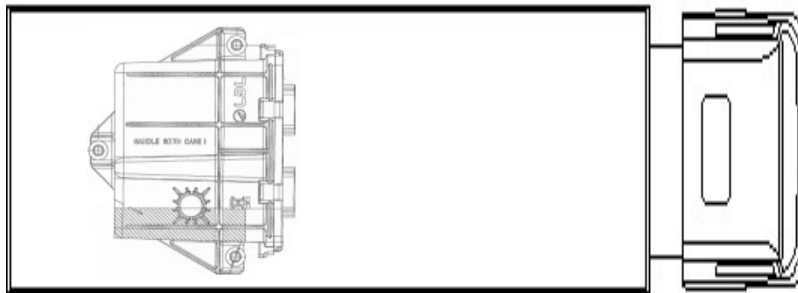
## 8. RECOMMENDATIONS FOR AUTO-LOCALIZATION

The TCU 1.2 must be fixed horizontally and upside down (Vent side facing the ground):

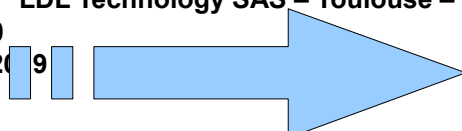
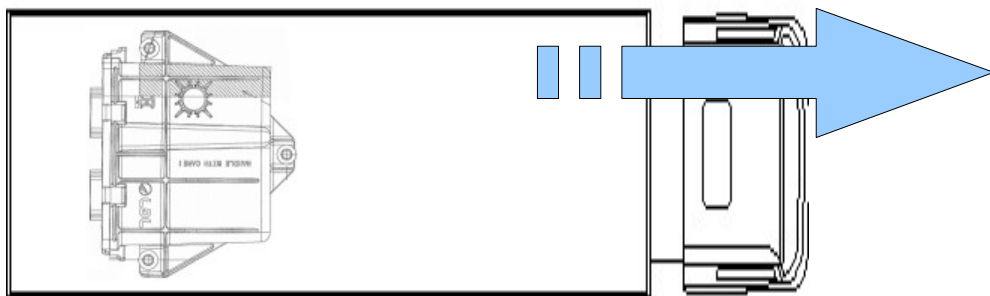
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Also, the TCU 1,2 must be fixed on the geometrical center of the rear axles , as close as possible of the central wheel axis. Locating tolerance is about +/- 20 cm



Orientation of the TCU 1.2 versus driving direction must be in one off the two followings settings :



## 9. FCC/IC REGULATORY NOTICES

### 9.1. MODIFICATION STATEMENT

LDL Technology do not approve any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

*LDL Technology n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peut annuler le droit d'utilisation de l'appareil par l'utilisateur.*

### 9.2. 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.*

### 9.3. RADIATION EXPOSURE STATEMENT

This device complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules. The antenna should be installed and operated with minimum distance of 25 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

*Le présent appareil est conforme à l'exposition aux radiations FCC / IC 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) IC règles d'exposition. L'antenne doit être installée de façon à garder une distance minimale de 25 centimètres entre la source de rayonnements et votre corps. L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec une autre antenne ou un autre émetteur.*



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#### **9.4. 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.

## **10. GENERAL ADVERTISING / CONSIGNES GENERALES**

Lors de l'installation du système:

- **Respecter les consignes de sécurité du constructeur du véhicule.**
- **La zone de travail doit être sécurisée et constituer une aire à accès restreint au seul personnel habilité.**
- **Respecter les consignes de sécurité en vigueur chez le propriétaire du véhicule. En particulier, concernant le port d'équipement de protection individuelle. Particulièrement recommandés: lunettes de protection, gants de protection, chaussures de sécurité, casquette/casque de protection.**
- **Avant l'intervention sur véhicule, prendre toutes les mesures requises, par exemple pour le maintenir à l'arrêt.**
- **La zone de travail doit être propre et suffisamment éclairée.**
- **Les appareils utilisés doivent être propres et en état de marche.**
- **Les composants défectueux ne doivent être remplacés que par des pièces de rechange d'origine. Seules ces pièces garantissent que les exigences en matière de sécurité sont remplies.**
- **Une vérification périodique de l'état d'installation, de fixation et de connexion du matériel.**

- **Ne pas plier les câbles, éviter tout effort de traction sur les câbles lors de leur pose, ne pas les poser sur des arêtes vives, respecter un rayon de courbure supérieur à 15 cm.**
- **Ne pas installer les câbles dans une zone de pièces en rotation, en mouvement et très chaudes.**
- **S'assurer que les fiches, connecteurs de raccordement soient propres, sèches et entièrement verrouillées après le raccordement.**
- **Avant et après chaque raccordement par fiches, fixer le faisceau de câbles concerné, de façon appropriée à une distance maximale de 10cm du raccordement.**

**L'installation doit être effectuée par du personnel qualifié pour des interventions de type Mécanique et/ou Electrique et formé au préalable au montage des équipements concernés.**

*System installation must be done by qualified technicians for Electrical and Mechanical operations. These operators must be trained specifically to operate on LDL products before processing.*

*In general, technicians have to respect :*

- *Safety instructions from vehicle manufacturer*
- *Safety instructions from vehicle owner*
- *Dedicated clothes and protections are recommended as gloves, glasses, reinforced shoes, helmet,...*

*Before processing, vehicle must be secured in a parking position , working zone must be clean and sufficiently enlightened. The work area must be secure and ensure a restricted access layout.*

*If a part of the system is damaged in operation, replace it only with original equipment from the original supplier, this is the way to insure optimal system safety.*

*Periodic check is recommended on system integrity (fixation, connection,...) according to vehicle owner maintenance plan.*

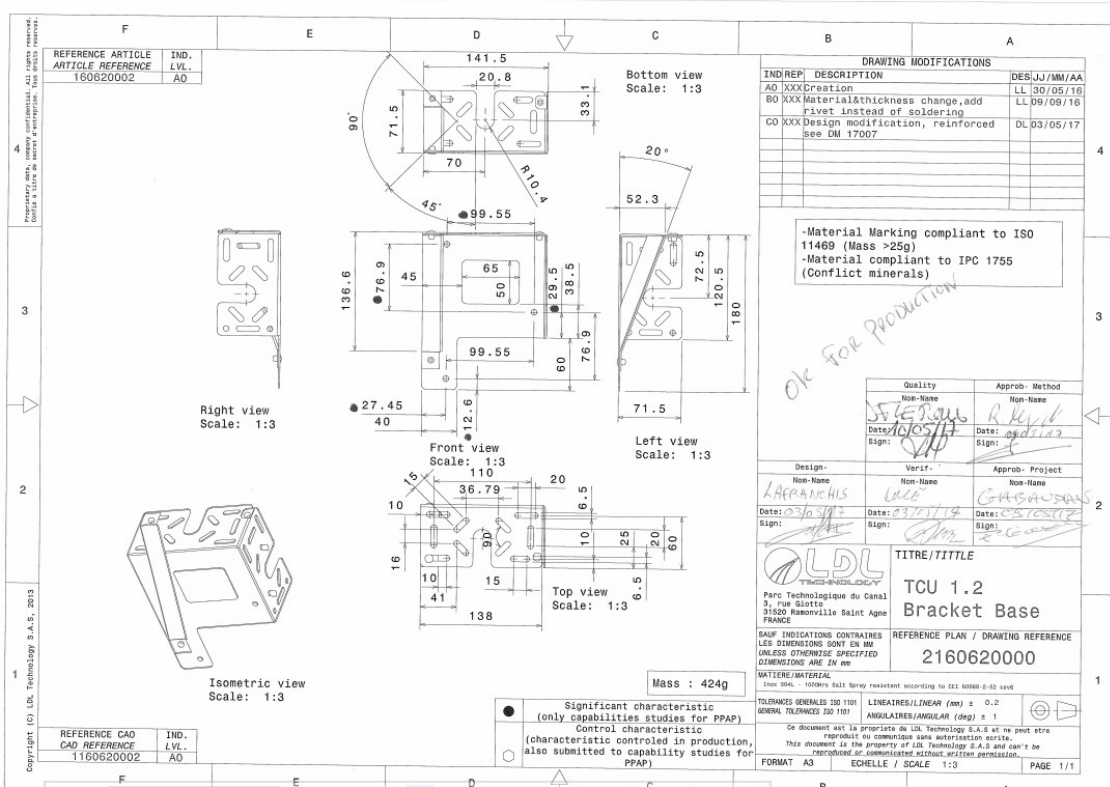
*Respect instructions on electrical skill as :*

- *Put power off before processing*
- *Do not bend cables more than minimum curvature radius: 15 cm*
- *Do not install cables close to warm area (engine,...) or parts in rotation or displacement*
- *Connectors must be clean and dry before assembly, verify the correct lock of the final assembly*
- *Flying harness must be fastened 10 cm around connection zone, and not on sharp edge frame.*



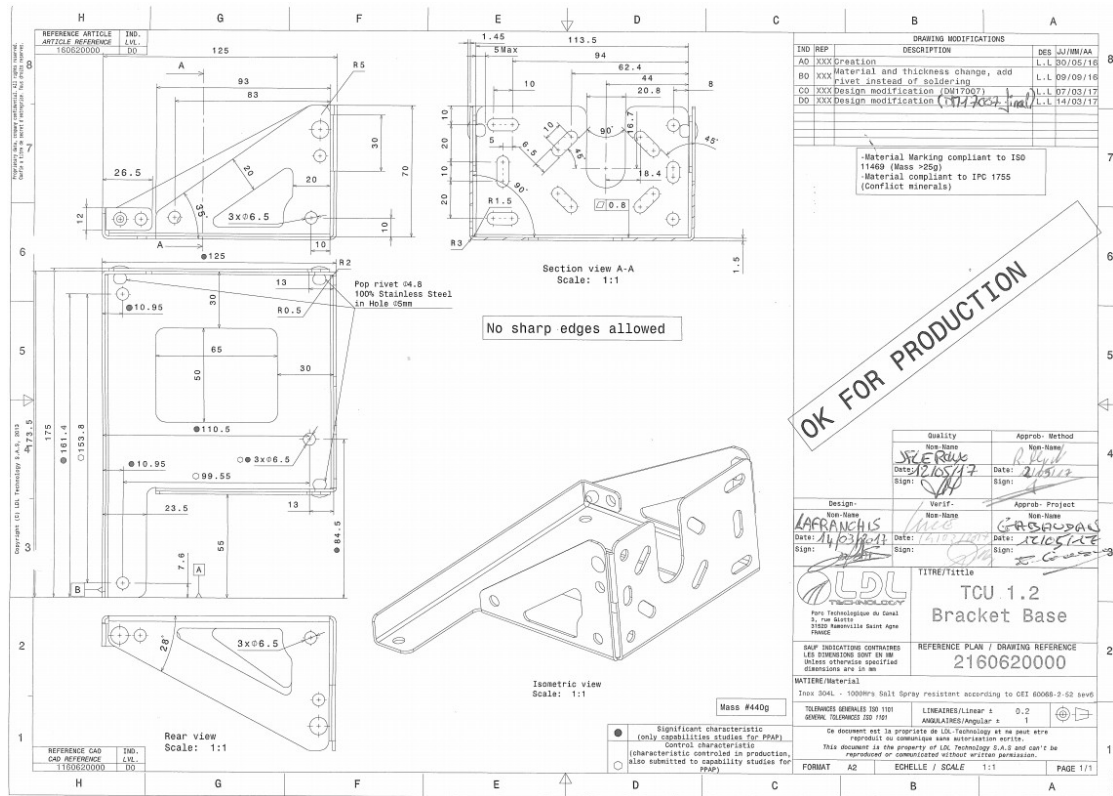
## 11. APPENDIX

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TCU 1.2 interface dimension, see drawing below ref. 2160620000 C0 or D0

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### ATTENTION

**Il est recommandé d'utiliser les perçages disponibles sur le véhicule pour fixer le support. Le châssis du véhicule ne doit pas être percé, seulement certaines zones sont autorisées au perçage:**

- support EBS
- support capteur de débattement
- profilés utilisés par le constructeur pour fixer les équipements de la remorque.

### WARNING

**It is recommended to use holes already available for fixing the bracket. Vehicle chassis must not be drilled, only restricted area are authorized to drill as :**

- EBS support frame
- Suspension Stroke sensor frame
- Other frames dedicated to support accessories

### ATTENTION



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**LE BOITIER NE DOIT PAS ÊTRE RECOUVERT DE PEINTURE, VERNIS OU DE REVÊTEMENT TYPE BLACKSON, CECI AFFECTERAIT LA RESISTANCE MECANIQUE DU BOITIER ET PERTURBERAIT LA QUALITE DE LA TRANSMISSION DES DONNEES;**

**WARNING**

***THIS CONTROL UNIT MUST NOT BE RECOVERED BY PAINTING, VARNISH; OR OTHER COATING AS BLACKSON TYPE. THIS COVERING WILL DECREASE MECHANICAL STRENGTH OF THE HOUSING AND ALSO GENERATE PERTURBATIONS ON DATA TRANSMISSION.***

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