ROOTCLOUD

T-AMS物联终端

产品型号：LI1520-DC-T-GL PRO

产品手册

制造商：树根互联股份有限公司

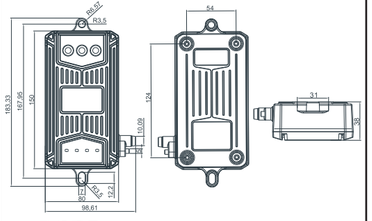
地址:广州市海珠区琶洲大道东路3号303-309房

一、产品概述

本产品专为工程机械设备设计，主要功能为：设备运行数据采集、指令下发、定位及云端通信。

二、整机规格

2.1 外壳尺寸

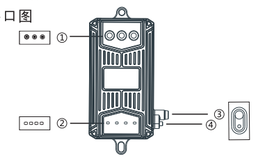


2.2 整机重量

在包含USB线束和接插件的情况下，整机重量为455g。

三、产品接口

3.1 接口图

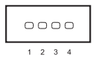


3.2 接口说明

3.2.1 接口图中序号①为天线接口区：

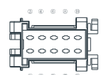
1.备用天线
2.GPS天线
3.4G主天线

3.2.2 接口图中序号②为指示灯区：



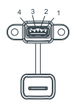
1.电源指示灯。红色常亮：正常上电。
2.在线状态灯。绿色常亮：设备在线。
3.定位状态灯。绿色常亮：定位正常。
4.数据通信灯。绿色闪烁：数据交互。

3.2.3 接口图中序号③处外接接插件：



1.GND	6.CAN3_L
2.CAN3_H	7.CAN1_L
3.CAN1_H	8.CAN2_L
4.CAN2_H	9.BUS_ACC
5.V+	10.BUS_IG

3.2.4 接口图中序号④处外接带防水胶盖的USB接口:



1.VBUS
2.D-
3.D+
4.GND

四、硬件参数

电源	直流9~36V
电流	平均电流110ma ；待机电流< 1ma
接口端子	TE 929505-4
负载突降	汽车行业标准
环境温度	-40℃~85℃
散热方式	被动散热
相对湿度	10~95% RH @ 40℃，不结露
网络制式	LTE FDD:B1/B2/B3/B4/B5/B7/B8/B12/B13/ B25/B26/B18/B19/B20/B28 LTE TDD:B38/B39/B40/B41 WCDMA:B1/B2/B4/B5/B8/B6/B19 GSM: 850/900/1800/1900MHz
发射功率	Class 4 (33dBm±2dB)for GSM850 Class 4 (33dBm±2dB)for EGSM900 Class 1 (30dBm±2dB)for DCS1800 Class 1 (30dBm±2dB)for PCS1900 Class 3 (24dBm + 1/- 3dB)for WCDMA bands Class 3 (23dBm±2dB)for LTE-FDD bands Class 3 (23dBm±2dB)for LTE-TDD bands
SIM卡	SIM芯片
通信模块	WIFI 2.4G 16.5dBm;BLE 5.0 1.5dBm;4G LTE
定位模块	GPS 水平精度＜2.5米，速度精度＜0.1m/s，加速度精度＜0.1m/s²
CAN口	3路CAN总线 3xISO 11898-2/-5
CAN连接端子	TE 929505-4
处理器	主控168MHZ+模块1.3GHZ
存储	可选4GB/8GB/16GB/32GB/64GB
固件升级方式	4G Network / USB port
机械	Shock 400m/S² IEC60068-2-27
防护等级	IP67
天线类型	外置
天线接口	3 x SMA

指示灯	1 Power；3 RG
EMC	CISPR25 ISO 11452-2
CAN总线终端匹配电阻	设备内部三路CAN总线均不包含终端匹配电阻

五、软件规格

5.1 支持基于CAN2.0B的车载控制器工况数据采集。
5.2 支持通过根云平台进行车载控制器指令下发。
5.3 支持数据传输断电续传。
5.4 支持OTA远程升级。
5.5 支持GPS位置信息采集。

六、随机附件

6.1 天线
6.2 安装螺丝

七、认证

ROOTCLOUD

T-AMS

Product model：LI1520-DC-T-GL PRO

Product Manual

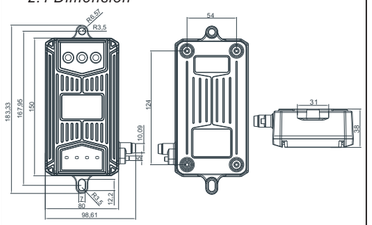
Manufacturer : Rootcloud Technology co., Ltd
Address : Room 303-309, No. 3, Pazhou Avenue East, Haizhu District, Guangzhou

1.Product introduction

This product is designed for construction machinery.
Main function include: Equipment operation data collection, GPS location and Irootech cloud communication. Control parameter download.

2.Product specification

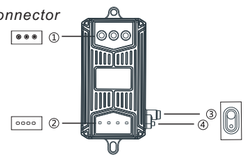
2.1 Dimension



2.2 Product weight:455g;
(with USB port and connector in packing box)

3.Product connector

3.1 Connector

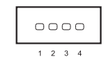


3.2 Connector instruction

3.2.1 Area① : Antenna Area

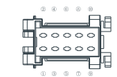
1.Spare antenna
2.GPS antenna
3.4G Main antenna

3.2.2 Area② : LEDs Area



1.Power light.Red:Normal working.
2.Online or Offline light.
Green:Normal 4G connection.
3.GPS light.
Green:Normal position.
4.Data light.
Green twinkle:Data processing.

3.2.3 Area③ : Connect with a connector



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2.CAN3_H	7.CAN1_L
3.CAN1_H	8.CAN2_L
4.CAN2_H	9.BUS_ACC
5.V+	10.BUS_IG

3.2.4 Area④ : Connect with the USB interface which has waterproof cover

1.VBUS
2.D-
3.D+
4.GND

4.Hardware parameter

Power Supply	9~36V DC
Current	Sleep<1mA Working<100mA
Power Connector	TE 929505-4
Load Dump	Protection automotive Standard
Environment Temperature	-40℃~85℃
Cooling	No active cooling
Relative Humidity	10 ~ 95% RH @ 40° C, non-condensing
Network Access	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/ B25/B26/B18/B19/B20/B28 LTE TDD:B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B8/B6/B19 GSM:850/900/1800/1900MHz
OUTPUT POWER	Class 4 (33dBm±2dB)for GSM850 Class 4 (33dBm±2dB)for EGSM900 Class 1 (30dBm±2dB)for DCS1800 Class 1 (30dBm±2dB)for PCS1900 Class 3 (24dBm + 1/- 3dB)for WCDMA bands Class 3 (23dBm±2dB)for LTE-FDD bands Class 3 (23dBm±2dB)for LTE-TDD bands
SIM	1* SIM Chip
Communication	WIFI 2.4G 16.5dBm;BLE 5.0 1.5dBm;4G LTE
GNSS	GPS Horizontal accuracy <2.5m,Speed precision <0.1m/s Acceleration precision <0.1m/s²
CAN	3*CAN bus 3*ISO 11898-2/-5
CAN Connector	TE 929505-4
CPU	Main controller 168Mhz+Modular 1.3Ghz
Flash	Optional 4GB/8GB/16GB/32GB/64GB
Method to updating software	4G Network / USB port
Mechanical	Shock 400m/S² IEC60068-2-27
IP Class	IP67
Antenna	External
Antenna Connector	3 x SMA

LED Status	1*Power,3*RG
EMC	CISPR25 ISO 11452-2
CAN bus terminal resistor in T-AMS	No terminal resitor on each CAN bus in T-AMS(Three CAN bus in total)

5. Software function:

5.1 Collecting vehicle controller data to ROOTCLOUD.
5.2 Delivering commands from ROOTCLOUD to vehicle controller.
5.3 Saving operation data into flash under offlines situation and uoloading saved data to ROOTCLOUD when network connection is normal.
5.4 Supporting OTA Upgrade.
5.5 Collecting GPS location data.

6.Supplied accessories

6.1 Antenna
6.2 Screw for installation

7.Certification

8.Others

Federal Communication Commission (FCC) Radiation Exposure Statement:
When using the product, maintain a distance of 20cm from the body to ensure compliance with RF exposure requirements.
This product can be used in which EU members, in accordance with Article 10(10).
Hereby, Rootcloud technology CO.,LTD declares that the radio equipment is in compliance with Directive 2014/53/EU.
The full text of the EU declaration DOC is available at the following internet address:
https://en.rootcloud.com/

§15.19 Labeling requirements.
(a) In addition to the requirements in part 2 of this chapter, a device subject to certification or Supplier's Declaration of Conformity shall be labeled as follows:
(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under part 73 of this chapter, land mobile operation under part 90 of this chapter, etc., shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.
(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules for use with cable television service.
(3) All other devices shall bear the following statement in a conspicuous location on the device:
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.
(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.
(5) When the device is so small or for such use that it is impracticable to label it with the statement specified under paragraph (a) of this section in a font that is four-point or larger, and the device does not have a display that can show electronic labeling, then the information required by this paragraph shall be placed in the user manual and must also either be placed on the device packaging or on a removable label attached to the device.
(b)-(c) [Reserved]
(d) Consumer electronics TV receiving devices, including TV receivers, videocassette recorders, and similar devices, that incorporate features intended to be used with cable television service, but do not fully comply with the technical standards for cable ready equipment set forth in §15.118, shall not be marketed with terminology that describes the device as "cable ready" or "cable compatible," or that otherwise conveys the impression that the device is fully compatible with cable service. Factual statements about the various features of a device that are intended for use with cable service or the quality of such features are acceptable so long as such statements do not imply that the device is fully compatible with cable service. Statements relating to product features are generally acceptable where they are limited to one or more specific features of a device, rather than the device as a whole. This requirement applies to consumer TV receivers, videocassette recorders and similar devices manufactured or imported for sale in this country on or after October 31, 1994.
§15.21 Information to user.
The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

8.4 User manual notice
In addition to containing other required statements specified elsewhere in this standard or in the applicable RSS, user manuals for licence-exempt radio apparatus shall contain the following text, or an equivalent notice, that shall be displayed in a conspicuous location, either in the user manual or on the device, or both:
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).
Operation is subject to the following two conditions:
This device may not cause interference.
This device must accept any interference, including interference that may cause undesired operation of the device.

8.4 Avis inséré dans le manuel d'utilisation
Outre les autres dispositions obligatoires établies dans la présente norme ou dans le CNR applicable, le manuel d'utilisation des appareils radio exempts de licence doit contenir l'énoncé qui suit, ou l'équivalent, à un endroit bien en vue dans le manuel d'utilisation ou sur l'appareil, ou encore aux deux endroits :
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
L'appareil ne doit pas produire de brouillage;
L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Declaration d'exposition aux radiations: Cet equipement est conforme aux limites d'exposition aux rayonnements IC etablies pour un environnement non controle. Cet equipement doit etre installe et utilise avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.