ROOTCLOUD LN1526-DC-T-BAT-GL VBOX Gateway Device Owner's Manual

ROOTCLOUD

V-BOX Device
Product manual
Model LN1526-DC-T-BAT-GL

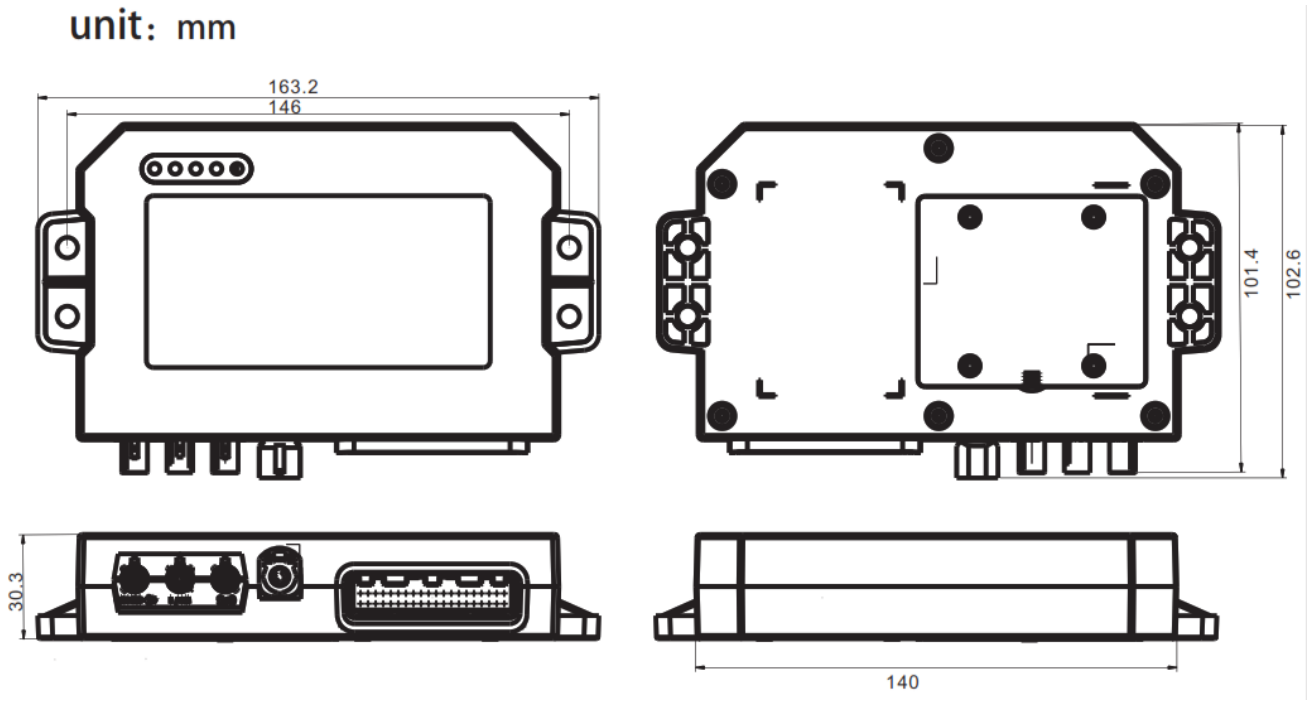
Contents

Description

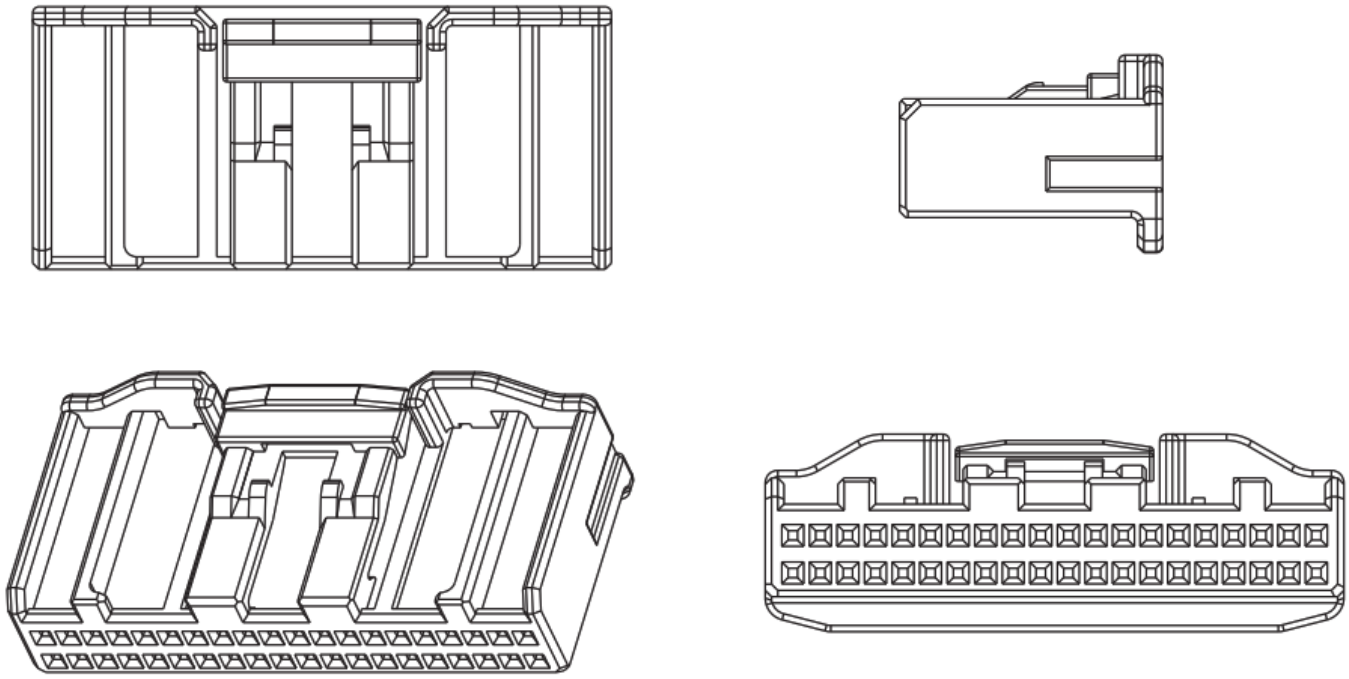
This product is a high-protection, low-power consumption and multifunctional vehicle-mounted VBOX platform designed for current construction machinery, transportation fleets, and equipment rental for the sharing economy, as well as for mobile devices and discrete industrial nodes.

Specifications

2.1 Dimensions

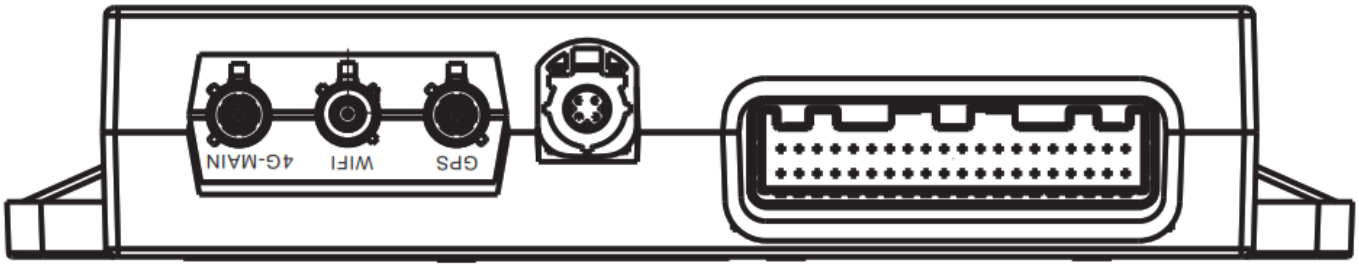


2.2 Connector (Optional



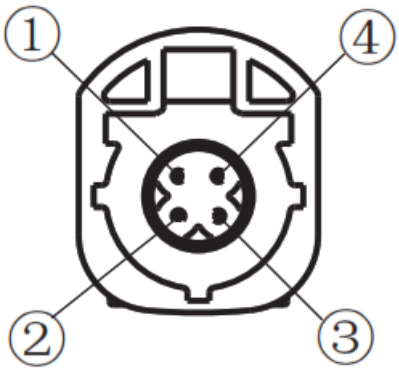
Interface

3.1 Interface diagram



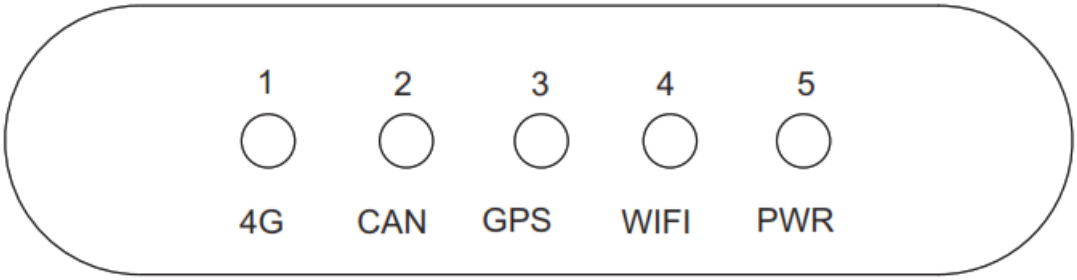
3.2 Interface description

3.2.1 USB interface



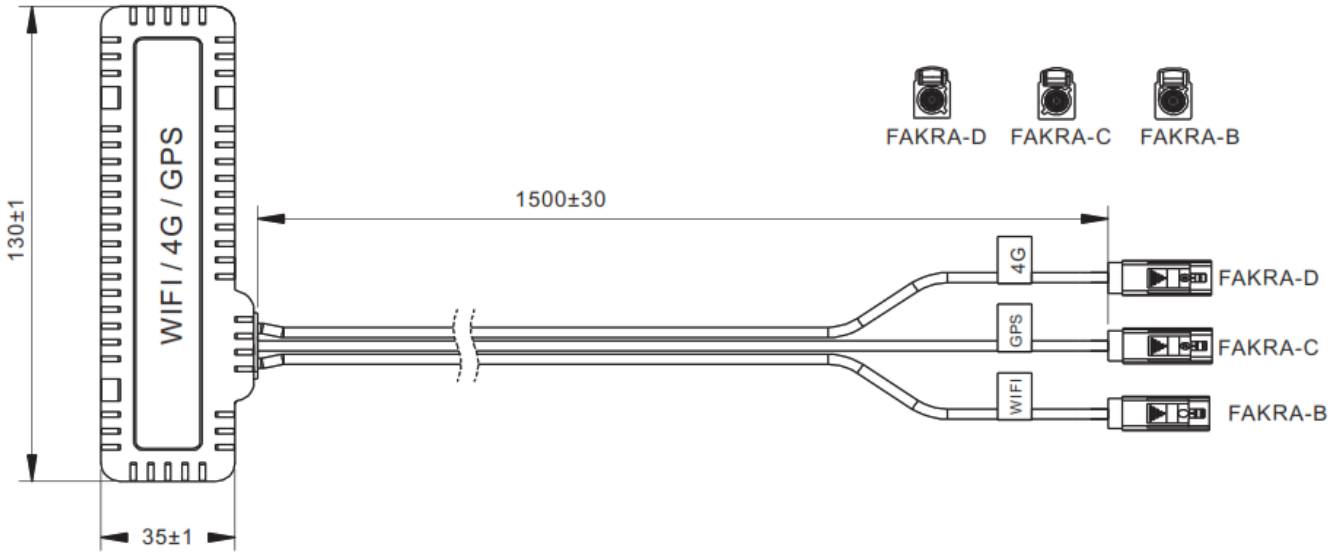
NUM	DEFINE
1	D-
2	GND
3	D+
4	+5V

3.2.2 Indicator light



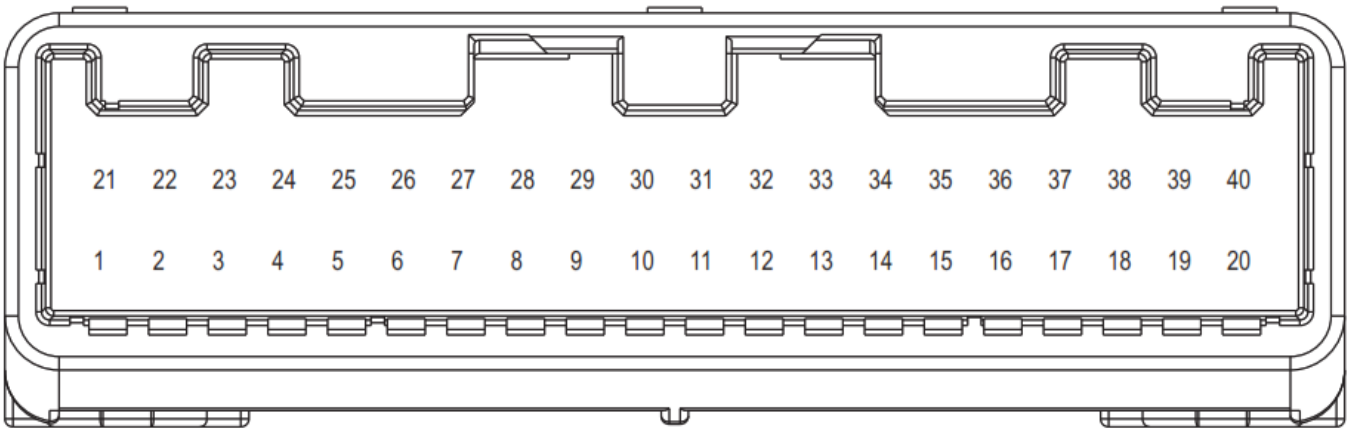
Number	Item	Explanation
1	Antenna	Active GPS, 4G, and WIFI triple antenna in one
2	Length	1.5m (standard)/3m/5m
3	Gain	GPS (28±3dB); 4G (-0.95 2.84dBi)
4	Impedance	50Ω

3.2.3 antenna



Number	Item	Explanation
1	Antenna	Active GPS, 4G, and WIFI triple antenna in one
2	Length	1.5m (standard)/3m/5m
3	Gain	GPS (28+3dB), 4G (-0.95–2.84dBi)
4	Impedance	500

3.2.4 main interface



NUM	Define	Terminal Connection	Description
1	BUS_ACC	ON power	Turn-on switch
2	DI IN 01	Charging wake-up	High level effective (Prohibition of starting auto charging)
3	GND	Ground	Car constant power supply negative
4	DI_IN_02	Switch 2	
5	DO_24V_PWM_02	Drive output 2/PWM1, DC24V current 0.5A	
6	DO 24V PWM 03	Drive output 3/PWM2, DC24V current 0.5A	
7	DI_IN_03	Switch 3	
8	AIV_ADC_07	Analog input 7 (temperature sensor)	
9	DO 24V 04	Drive output 4, DC24V current 0.5A	
10	AIV_ADC_08	Analog input 8 (temperature sensor)	
11	DI PWM 04	Switch 4/Pulse capture, Forward and reverse speed, External sensor speed foot, Compatible with DI input	
12	DI IN 05	Switch 5	
13	DO_24V_05	Drive output 5, DC24V current 0.5A	
14	RS232_RX1	RS232_RX	RS232_RX
15	MX2 N	Ethernet terminal pin 6	
16	MX1_N	Ethernet terminal pin 2	
17	CAN3 H –	CAN3, Complies with CAN2.0B specification, Optional CAN wake-up	
18	CAN2 _L	ICAN-L	CAN2, Complies with CAN2.0B specification, Optional CAN wake-up
19	CAN1 _H	PCAN-H	CAN1, Complies with CAN2.0B specification, Optional CAN wake-up
20	VBAT+	Constant electric power	Car constant power supply positive

21	AIV_ADC_01	Analog input 1 (temperature sensor)	
22	DI_WKUP_06	Switch 6, Charging signal, High wake-up	
23	DI_IN_07	Lock 1	Switch 7
24	GND	ADC ground	
25	AIV_ADC_02	Analog input 2 (temperature sensor)	
26	AIV_ADC_03	Analog input 3 (temperature sensor)	
27	AIV_ADC_04	Analog input 4 (temperature sensor)	
28	AIV_ADC_05	Analog input 5 (temperature sensor)	
29	AIV_ADC_06	Analog input 6 (temperature sensor)	
30	DI_IN_08	Cylinder release feedback	Switch 8
31	DI_PWM_09	Connector in place feedback	Switch 9/Pulse capture, Forward and reverse signal, External sensor signal foot, Compatible with DI input
32	DI_IN_10	Switch 10	
33	DO_24V_06	VC40	12V/24V controllable output
34	RS232_TX1	RS232_TX	RS232_TX
35	MX2_P	Ethernet terminal pin 3	
36	MX1_P	Ethernet terminal pin 1	
37	CAN3_L	CAN3, Complies with CAN2.0B specification, Optional CAN wake-up	
38	CAN2_H	ICAN-H	CAN2, Complies with CAN2.0B specification, Optional CAN wake-up
39	CAN1_L	PCAN-L	CAN1, Complies with CAN2.0B specification, Optional CAN wake-up
40	VBAT-	GND	Car constant power supply negative

Feature list

Function	Identifier	Description
Time and Date	Time and Date	Provide local time and date of the vehicle (accurate up to milliseconds) .
	Automatic Calibration	Can automatically calibrate the time, ensuring that the time error is within A:5S within 24 hours.
	Time synchronization	Obtains time from cloud platform and synchronizes it.
		Can synchronize time with ECU through CAN network (requires support for factory protocol).
. Location S ervice	GNSS	Support GPS/BDS, first positioning time sa2S, positioning accuracy C2.5m (CEP50).
	Antenna Detection	Supports GPS antenna disconnection detection and antenna protectio n.
	Locating Accuracy	Horizontal positioning accuracy: <2.5m CEP50.
	Running Track	Filter algorithm removes invalid and poor data to ensure accurate runni ng track.
Communic ation	Network Communication	LTE FDD: B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/813/ 818/ B19/ B20/ B25/ B 26/ B28 LTE TDD: B38/ B39/ B40/ B41 WCDMA: Bl/ B2/ B4/ B5/ B8/ B6/ B19 GSM: 850/900/1800/1900MHz Supports global communication.
	SIM Card	Surface-mount M2M SIM card.
	Multi-Center Access	Can simultaneously connect to more than two platforms (maximum of 4 platforms).
	Supports sending different data content to different platforms.	
	Wi-Fi	2.4GHz Wi-Fi. Supports IEEE 802.11b/g/n standards. AP/STA work mode.
	Ethernet (optional)	One 100 Mbps Ethernet RJ45 interface.

Data Acquis it ion	CAN	Two channels (250Kbps/500Kbps) are standard, with a maximum support of three high-speed CAN communication interfaces.
	RS232	Supports one RS232 channel for data exchange.
	RS485 (optional)	Supports one RS485 channel for data exchange.
	Digital Input	Collection of 10 DI inputs.
	Digital Output	Six DO outputs, DC24V current 0.5A.
	Voltage Collection	Can collect and report the voltage of the vehicle’s battery and backup battery.
	Analog Input	Supports 8 ADC inputs, such as temperature sensor applications.

Data processng	Real-time data storage	Expands EMMC storage capacity, default 32GB, expandable.
	Data Upload	Bidirectional authentication for data upload and download.
	Data Download	Supports remote data/command download control.
	Data Redelivery	Supports breakpoint continuation. In case of communication abnormalities, the device stores the collected real-time data in local storage media and waits for communication to resume before redelivering real-time data.
	Data Encryption (optional)	Supports common encryption algorithms such as ECC/RSA/3DES/AES/SHA/SM1/SM2/SM3/SM4/SM9. Information with security level requirements will be encrypted during transmission or storage. Complies with HJ1239 information security requirements.
	Data Exchange	CAN interaction: Supports interaction with the vehicle through the CAN bus.
		RS232 interaction: Supports parameter configuration via RS232 serial port (optional).
Power Management	Input Voltage	DC 9~36V
	Rated Power	Normal operation: <100mA@24V Standby: <10mA@24V (supports ACC, CAN, RTC wake- up) Sleep Mode (optional): <20uA@24V (Only supports ACC, RTC wake-up)
	Work mode	The device has at least two work modes: work mode and standby mode. Sleep mode can be optional based on customer requirements.
	Independent Operation	The device can still operate independently after external power is disconnected abnormally. The data before the external power is disconnected must be uploaded to the enterprise platform, and the data after the external power is disconnected should be uploaded to the enterprise platform for at least 10 minutes.
Terminal Management	OTA	Support firmware upgrading for other ECUs in the vehicle. The specific scheme needs to be confirmed with the ECU manufacturer.
	OPENVPN	Supports remote PLC programming (only applicable for versions with Ethernet port).
	Terminal Control	The device supports remote/local program upgrading, parameter setting, and parameter query functions.
	Remote Unlocking Machine	Supports remote vehicle unlocking/locking via cellular network.
	Device Anti- tamper	The device can exchange handshake protocols with the controller through the CAN protocol to achieve protocol anti-tampering.

	Self-Check	The device will automatically detect the GPS, NET, and other statuses and display status information through indicator lights during booting and use.
Battery Swap		Based on Wi-Fi, completing the interaction between VBOX and the battery swap station to realize the vehicle's intelligent battery swap function.

Software

1. Support the data acquisition of vehicle controller based on CAN2.0B.
2. Support the instruction distribution of controller through cloud platform.
3. Support data transmission, continuous transmission, local data storage.
4. Support remote OTA upgrade, local USB disk upgrade.
5. Support GPS position information collection.
6. Support Driving behavior analysis.

Element

Name	Quantity	Unit	Note
V-BOX mainframe	1	set	Standard
Terminal power & signal connection terminal wire	1	piece	Optional
LTE+GPS+WIFI Antenna	1	piece	Three-in-one
Package box	1	set	Standard

Certificate

ISEDC RSS warning
This device complies with Innovation, Science and Economic Development 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.
ISEDC Radiation Exposure Statement:
This equipment complies with ISEDC RF radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
(1) 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.

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

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

ROOTCLOUD

Documents / Resources

	ROOTCLOUD LN1526-DC-T-BAT-GL VBOX Gateway Device [pdf] Owner's Manual LN1526-DC-T-BAT-GL VBOX Gateway Device, LN1526-DC-T-BAT-GL, VBOX Gateway Device, Gateway Device, Device