amber connect
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Quick Start Guide

APT300
Amber Power T300
Multifunctional GPS Tracker

1 Install Your device

2 Download Amber Connect App

3 Activate the device

1. Characteristic

MODULE

Name	APT 300
Technology	3G(UMTS/HSPA)/2G(GSM/GPRS)/GNSS/BLUETOOTH

GNSS

GNSS	GPS, GLONASS, GALILEO, BEIDOU, SBAS, QZSS, DGPS, AGPS
Receiver	33 channel
Tracking sensitivity	-165 dBM
Accuracy	< 3 m
Hot start	< 1 s
Warm start	< 25 s
Cold start	< 35 s

Cellular

Technology	GSM
2G bands	UC15-A: B5/B8/B3/B2 UC15-T: B5/B8/B3/B2 UG96: B5/B8/B3/B2
3G bands	UC15-A: B5/B2 UC15-T: B5/B1 UG: B6/B5/B8/B2/B1
Data transfer	UC15: HSDPA: Max. 3.6Mbps(DL) UMTS: Max. 384Kbps (DL)/Max.384Kbps(UL) GPRS: Max. 85.6Kbps (DL)/Max. 85.6Kbps (UL) UG96: HSUPA: Max. 5.76Mbps UMTS: Max. 384Kbps (DL)/Max.384Kbps (UL) GPRS: Max. 107Kbps (DL)/Max.85.6Kbps (UL)
Data support	SMS (text/data)

POWER

Input voltage range	10-30 V DC with overvoltage protection
Back-up battery	170 mAh Li-Ion battery 3.7 V (0.63 Wh)
Power consumption	At 12V < 6 mA (Ultra Deep Sleep)
	At 12V < 6.5 mA (Deep Sleep)
	At 12V < 7 mA (Online Sleep)
	At 12V < 12 mA (GPS Sleep)
	At 12V < 38 mA (nominal)

BLUETOOTH

Specification	4.0 + LE
Supported peripherals	Temperature and Humidity sensor, Headset, OBDII dongle, Inateck Barcode Scanner, Universal BLE sensors support

INTERFACE

Digital Inputs	3
Negative Inputs 1	1 (Digital Input 2)
Impulse Inputs	2 (Digital Input 1, Digital Input 2)
Digital Outputs	3
Analog Inputs	2
CAN Adapter inputs	1
1-Wire	1
GNSS antenna	Internal High Gain
GSM antenna	Internal High Gain
USB	2.0 Micro-USB
LED indication	2 status LED lights
Memory	128MB internal flash memory

PHYSICAL SPECIFICATION

Dimensions	65 x 56,6 x 20,6 mm (L x W x H)
Weight	55 g

OPERATING ENVIRONMENT

Operating temperature (without battery)	-40 °C to +85 °C
Storage temperature (without battery)	-40 °C to +85 °C
Operating humidity	5% to 95% non-condensing
Ingress Protection Rating	IP41
Battery charge temperature	0 °C to +45 °C
Battery discharge temperature	-20 °C to +60 °C
Battery storage temperature	-20 °C to +45 °C for 1 month
	-20 °C to +35 °C for 6 months

FEATURES

Sensors	Accelerometer
Scenarios	Green Driving, Over Speeding detection, Jamming detection, GNSS Fuel Counter, DOUT Control Via Call, Excessive Idling detection, Immobilizer, iButton Read Notification, Unplug detection, Towing detection, Crash detection, Auto Geofence, Manual Geo fence, Trip, Ground Sense
Sleep modes	GPS Sleep, Online Deep Sleep, Deep Sleep, Ultra Deep Sleep
SMS	Configuration, Events, DOUT control, Debug
GPRS commands	Configuration, DOUT control, Debug
Time Synchronization	GPS, NITZ, NTP
Fuel monitoring	LLS (Analog), LV-CAN200, ALL-CAN300, OBDII dongle, CAN-CONTROL
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage, Engine RPM (CAN Adapters, OBDII dongle)

ACCESSORIES

Bluetooth and analog fuel sensor
RFID reader
Temperature sensor

- Bluetooth fuel sensor

- Analog fuel sensor

- RFID reader

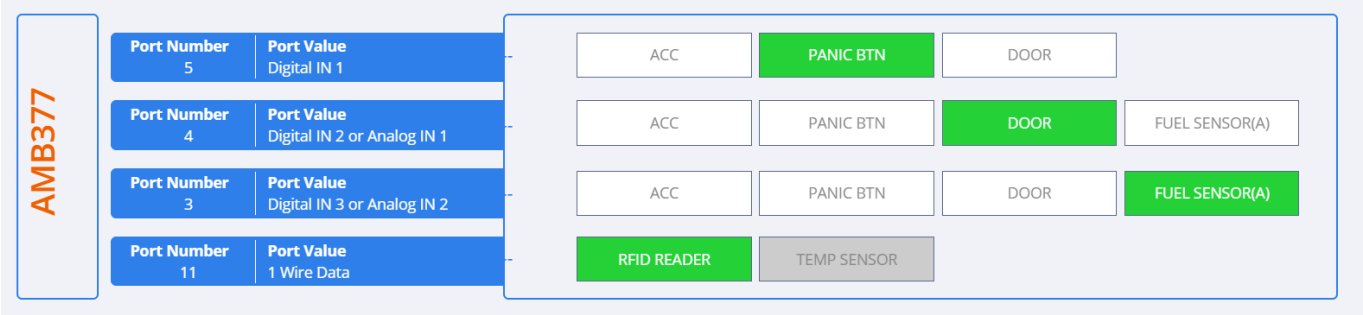
- Bluetooth temperature sensor

2. Electrical characteristics

CHARACTERISTIC DESCRIPTION	VALUE			
	MIN.	TYP.	MAX.	UNIT
SUPPLY VOLTAGE				
Supply Voltage (Recommended Operating Conditions)	+10		+30	V
DIGITAL OUTPUT (OPEN DRAINGRADE)				
Drain current (Digital Output OFF)			120	µA
Drain current (Digital Output ON, Recommended Operating Conditions)		0.1	0.5	A
Static Drain-Source resistance (Digital Output ON)		400	600	mΩ
DIGITAL INPUT				
Input resistance (DIN1)	47			kΩ
Input resistance (DIN2)	38.45			kΩ
Input resistance (DIN3)	150			kΩ
Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input Voltage threshold (DIN1)		7.5		V
Input Voltage threshold (DIN2)		2.5		V
Input Voltage threshold (DIN3)		2.5		V
ANALOG INPUT				
Input voltage (Recommended Operating Conditions), Range 1	0		+10	V
Input resistance, Range 1		38.45		kΩ
Measurement error on 12V, Range 1		0.9		%
Additional error on 12 V, Range 1		108		mV
Measurement error on 30 V, Range 1		0.33		%
Additional error on 30 V, Range 1		88		mV
Input Voltage (Recommended Operating Conditions), Range 2	0		+30	V
Input resistance, Range 2		150		kΩ
Measurement error on 12 V, Range 2		0.9		%
Additional error on 12 V, Range 2		108		mV
Measurement error on 30 V, Range 2		0.33		%
Additional error on 30 V, Range 2		88		mV
OUTPUT SUPPLY VOLTAGE 1-WIRE				
Supply voltage	+4.5		+4.7	V
Output inner resistance		7		Ω
Output current (U_{out} > 3.0 V)		30		mA
Short circuit current (U_{out} = 0)		75		mA

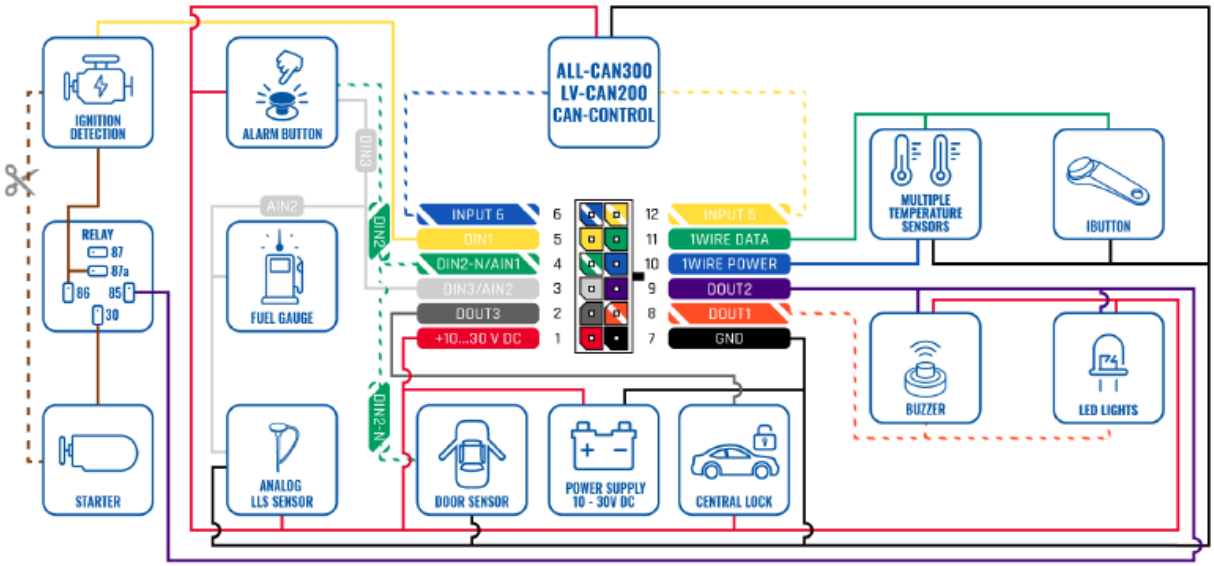
3. Pinout

PIN NUMBER	PIN NAME	DESCRIPTION
1	VCC (10-30) V DC (+)	Power supply (+10-30 V DC).
2	DOUT 3	Digital output, channel 3, Open collector output. Max 0,5 A DC..
3	DIN 3 / AIN 2	Analog input, channel 2. Input range: 0-30 V DC / Digital input, channel 3.
4	DIN 2 -N / AIN 1	Digital input, channel 2, Negative input, Analog input, channel 1, Input range: 0- 30 V DC.
5	DIN 1	Digital input, channel 1.
6	INPUT 6	TX EXT (LVCAN – TX).
7	GND (-)	Ground pin. (10-30) V DC (—)
8	DOUT 1	Digital output, channel 1. Open collector output. Max. 0,5 A DC
9	DOUT 2	Digital output, channel 2. Open collector output. Max. 0,5 A DC
10	1WIRE POWER	+3,8 V output for 1–Wire devices.
11	1WIRE DATA	Data for 1–Wire devices.
12	INPUT 5	RX EXT (LVCAN - RX).



Warning: These settings should exactly match with the actual accessories connected to the device ports during the installation. If you make any changes on this will result in data reception from accessories to the device. So Kindly make sure you are changing this with proper understanding of which accessory connected to which wire during the installation.

Wiring Scheme



Accessories Connection Possibilities

- **3 IN ports/pin**
  - 1 Digital
  - 2 Digital or Analog
- **3 OUT ports/pins**
  - 3 Digital (for future use)
- **1 One-wire connection**

Installation team must follow the below Accessory connection for efficient working. If installation has to be done with different patterns then please contact your immediate tech support for the possibilities. You can configure these accessories settings in our amber connect fleet management platform.
Fleet Portal > Settings > Vehicle > Safety > Device Input Configuration
[This setting available Only to specific device models that supports the accessories]

Warning: These settings should exactly match with the actual accessories connected to the device ports during the installation. If you make any changes on this will result in data reception from accessories to the device. So Kindly make sure you are changing this with proper understanding of which accessory connected to which wire during the installation.

4. Mounting Recommendations

1) Connecting wires

a) Wires should be connected while the module is not plugged in.
b) Wires should be fastened to stable wires or other non-moving parts. Any heat emitting and/or moving objects should be kept away from the wires.
c) There should be no exposed wires. If factory isolation was removed while connecting the wires, the isolation material should be applied.
d) If the wires are placed in the exterior or in places where they can be damaged or exposed to heat, humidity, dirt, etc., additional isolation should be applied and the wires should not be loose.
e) Wires cannot be connected to the board computers or control units.

2) Connecting power source

a) Be sure that after the car computer goes to sleep mode, power might be still available on the power wires. Depending on the car model, this may happen in 5 to 30 minutes period.
b) When the module is connected, measure the voltage again to make sure it did not decrease.
c) It is recommended to connect to the main power cable in the fuse box.
d) 3 A, 125 V external fuse shall be used.

3) Connecting ignition wire

a) Be sure to check if it is a real ignition wire i. e. power does not disappear after starting the engine.
b) Check if this is not an ACC wire (when key is in the first position, most of the vehicle electronics are available).
c) Check if power is still available when you turn off any of vehicles devices.
d) Ignition is connected to the ignition relay output. As alternative, any other relay, which has power output when ignition is on, may be chosen.

4) Connecting ground wire

a) Ground wire is connected to the vehicle frame or metal parts that are fixed to the frame.
b) If the wire is fixed with the bolt, the loop must be connected to the end of the wire.
c) For better contact scrub paint from the spot where loop is going to be connected.

5. LED Indications

BEHAVIOUR	MEANING
Permanently switched on	GNSS signal is not received
Blinking every second	Normal mode, GNSS is working
Off	GNSS is turned off because: Device is not working or Device is in Sleep mode
Blinking fast constantly	Device firmware is being flashed

BEHAVIOUR	MEANING
Blinking every second	Normal mode
Blinking every two seconds	Sleep mode
Blinking fast for a short time	Modem activity
Off	Device is not working or Device is in Boot mode

6. Safety information

This message contains information on how to operate safely. By following these requirements and recommendations, you will avoid dangerous situations. You must read these instructions carefully and follow them strictly before operating the device!

- The device uses SELV limited power source. The nominal voltage is+12 V DC. The allowed voltage range is +10…+30 V DC.

- To avoid mechanical damage, it is advised to transport the device in an impact-proof package. Before usage, the device should be placed so that its LED indicators are visible. They show the status of device operation.

- When connecting the 2x6 connector wires to the vehicle, the appropriate jumpers of the vehicle power supply should be disconnected.

- Before unmounting the device from the vehicle, the 2x6 connector must be disconnected. The device is designed to be mounted in a zone of limited access, which is inaccessible to the operator. All related devices must meet the requirements of EN 62368-1 standard. The device is not designed as a navigational device for boats.

	Do not disassemble the device. If the device is damaged, the power supply cables are not isolated or the isolation is damaged, DO NOT touch the device before unplugging the power supply.
	All wireless data transferring devices produce interference that may affect other devices which are placed nearby.
	The device must be connected only by qualified personnel.
	The device must be firmly fastened in a predefined location.
	The programming must be performed using a PC with autonomic power supply.

	Installation and/or handling during a lightning storm is prohibited.
	The device is susceptible to water and humidity.
	Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
	Battery should not be disposed of with general household waste. Bring damaged or worn-out batteries to your local recycling center or dispose them to battery recycle bin found in stores.

7. Certification and Approvals

- EAC
- REACH
- Declaration of IMEI assignment
- CE / RED
- E-Mark
- RoHS
- Declaration of device operation temperature

	This sign on the package means that it is necessary to read the User Manual before your start using the device.
	This sign on the package means that all used electronic and electric equipment should not be mixed with general household waste.
	Hereby, we declare under our sole responsibility that the above described product is in conformity with the relevant Community harmonization: European Directive 2014/53/EU (RED).

Need help? Contact 24/7 live support!

In App Chat | support@amberconnect.com | Chat via website www.amberconnect.com

Works with Android phones and tablets, iPhone, iPad.
Compatible with Chrome, Mac and PC web browsers.

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