

Quick Start Guide

ACT400-m

Amber Covert T400-m

Advanced LTE Terminal

1
Install
Your device

2
Download
Amber Connect
App

3
Activate
the device



Know your device

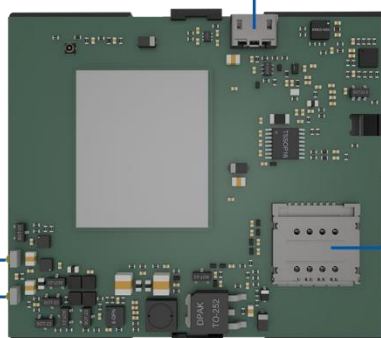
Top view

2x6 socket



Bottom view
(without cover)

Micro-USB Micro SIM slot



Top view
(without cover)

Battery socket



Navigate LED Status LED

ACT 400-m Device view

Pinout

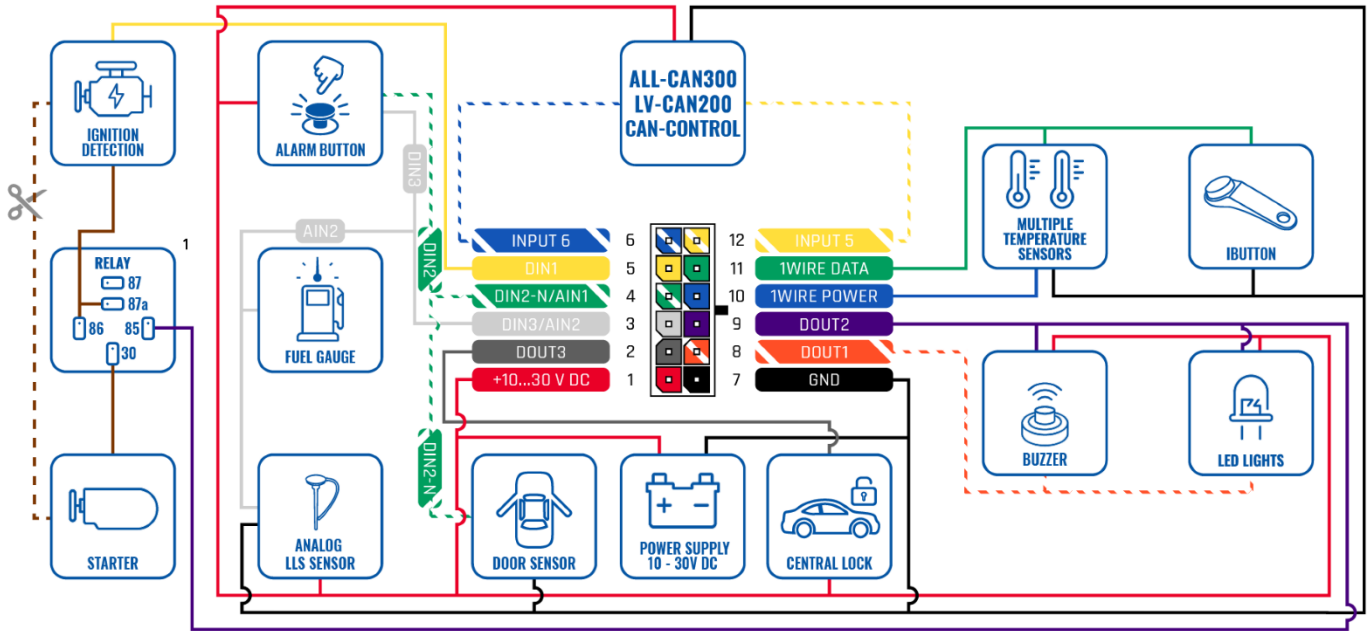


ACT 400-m 2x6 socket pinout

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 (ground sense), Analog input, channel 1, Input range: 0-30 VDC.
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).

ACT 400-m 2x6 socket pinout

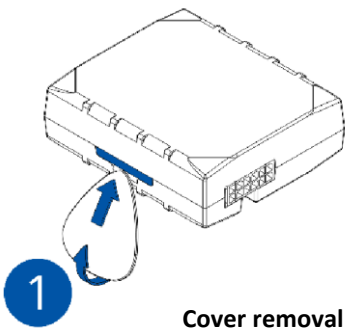
Wiring scheme



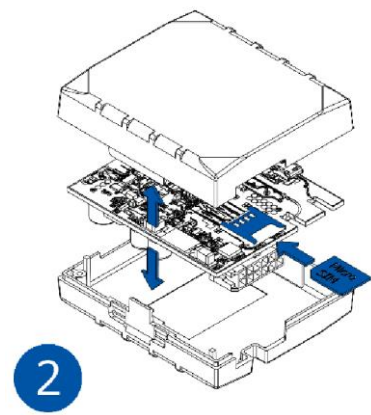
ACT 400-m Wiring scheme

Set up your device

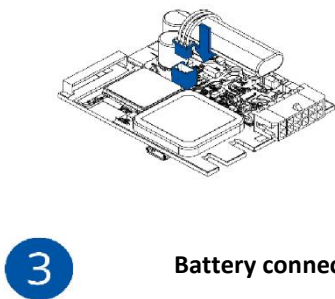
How to insert Micro-SIM card and connect the battery



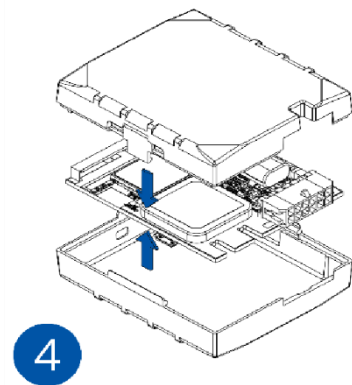
1 Cover removal



2 Micro-SIM card insert



3 Battery connection



4 Attaching cover back

1. Gently remove ACT 400-m cover using plastic pry tool from both sides.
2. Insert **Micro-SIM** card as shown with **PIN request disabled** or read our **Wiki** how to enter it later in **Amber Configurator**. Make sure that Micro-SIM card **cut-off corner** is pointing forward to slot.
3. Connect **battery** as shown to device. Position the battery in place where it does not obstruct other components.
4. After **configuration**, see “**PC Connection (Windows)**”, attach device **cover** back.

Mounting recommendations

• Connecting wires

1. Wires should be connected while the module is not plugged in.
2. 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.
3. There should be no exposed wires. If factory isolation was removed while connecting the wires, the isolation material should be applied.
4. 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.
5. Wires cannot be connected to the board computers or control units.

• Connecting power source

1. 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.
2. When the module is connected, measure the voltage again to make sure it did not decrease.
3. It is recommended to connect to the main power cable in the fuse box.
4. 3 A, 125 V external fuse shall be used.

• Connecting ignition wire

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

• Connecting ground wire

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

LED indications

Navigation 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

Status LED indications

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

Characteristics

Basic characteristics

Module	
Name	ACT 400-m
Technology	LTE CAT M1/NB-IoT/GSM/GPRS/GNSS/BLUETOOTH

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

Cellular	
Technology	LTE CAT M1/NB-IoT/GSM
2G bands	BG95: B2/B3/B5/B8 BG96: B2/B3/B5/B8
4G bands	BG95: LTE-FDD (CAT M1): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/ B28/B66/B85 LTE-FDD (CAT NB2): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/ B71/B85 GSM: 850/900/1800/1900 BG96: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B28 LTE TDD: B39 (for CAT M1 only)
Data transfer	BG95: LTE: Max. 588Kbps (DL)/Max.1119Kbps (UL) GPRS: Max. 107Kbps (DL)/Max. 85.6Kbps (UL) BG96: LTE: Max. 375Kbps (DL)/Max.375Kbps (UL) GPRS: Max. 107Kbps (DL)/Max. 85.6Kbps (UL)
Transmit power	Class 4 for GSM850/900: 23±2dBm Class 1 for GSM1800/1900: 20±2dBm Class 3 for LTE-TDD: 23±2.7dBm Class 3 for LTE-FDD: 23±2.7dBm
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)
Internal fuse	3 A, 125 V
Power consumption	At 12V < 3 mA (Ultra Deep Sleep) At 12V < 5 mA (Deep Sleep) At 12V < 11 mA (Online Deep Sleep)

	At 12V < 18 mA (GPS Sleep) At 12V < 34 mA (nominal with no load) At 12V < 2A Max. (with full Load / Peak)
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 (Digital input 2)
Digital Outputs	3
Analog Inputs	2
CAN interfaces	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
SIM	Micro-SIM + eSIM
Memory	128MB internal flash memory
Physical specification	
Dimensions	65 x 56 x 20,6 mm (L x W x H)
Weight	55 g

Operating environment	
Operating temperature (without battery)	-20 °C to +85 °C
Storage temperature (without battery)	-20 °C to +85 °C
Operating temperature (with battery)	-20 °C to +40 °C
Storage temperature (with battery)	-20 °C to +45 °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
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 Geofence, Trip, Ground Sense
Sleep modes	GPS Sleep, Online Deep Sleep, Deep Sleep, Ultra Deep Sleep
Configuration and firmware update	FOTA Web, FOTA, Amber Configurator (USB, Bluetooth), FMBT mobile application (Configuration)
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, CAN-CONTROL, CAN-CONTROL, OBDII dongle
Ignition detection	Digital Input 1, Accelerometer, External Power Voltage, Engine RPM (CAN Adapters, OBDII dongle)

Electrical characteristics

Characteristic description	Value			
	Min.	Typ.	Max.	Unit
Supply Voltage				
Supply Voltage (Recommended Operating Conditions)	+10		+30	V
Digital Output (Open Drain grade)				
Drain current (Digital Output OFF)			120	μ A
Drain current (Digital Output ON, Recommended Operating Conditions)		0.1	0.5	A
Static Drain-Source resistance (Digital Output ON)		400	600	m Ω
Digital Input				
Input resistance (DIN1)	47			k Ω
Input resistance (DIN2)	38.45			k Ω
Input resistance (DIN3)	150			k Ω
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		k Ω
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		k Ω
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 ($U_{out} > 3.0 \text{ V}$)		30		mA
Short circuit current ($U_{out} = 0$)		75		mA

NEGATIVE INPUT				
Input resistance	38.45			k Ω
Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input voltage threshold		0.5		V
Sink current			180	nA

Safety information

This message contains information on how to operate ACT 400-m 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 60950-1 standard. The device ACT 400-m 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.

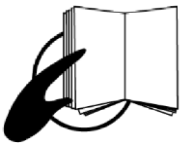


Battery should not be disposed of with general household waste. Bring damaged or worn-out batteries to your local recycling center or dispose them to battery recycle bin found in stores.



Certification and Approvals

- ACT 400-m EAC
- ACT 400-m REACH
- ACT 400-m Declaration of IMEI assignment
- ACT 400-m CE / RED
- ACT 400-m E-Mark
- ACT 400-m RoHS
- ACT 400-m Declaration of device operation temperature



This sign on the package means that it is necessary to read the User's Manual before your start using the device. Full User's Manual version can be found in our [Wiki](#).



This sign on the package means that all used electronic and electric equipment should not be mixed with general household waste.



Hereby, Amber declare under our sole responsibility that the above described product is in conformity with the relevant Community harmonization: European Directive 2014/53/EU (RED).

Warranty

Amber guarantees its products to be free of any manufacturing defects for a period of **24 months**. With additional agreement we can agree on a different warranty period, for more detailed information please contact our sales manager.

All batteries carry a reduced 6 month warranty period.

If a product should fail within this specific warranty time, the product can be:

- Repaired
- Replaced with a new product
- Replaced with an equivalent repaired product fulfilling the same functionality
- Amber can also repair products that are out of warranty at an agreed cost.

Warranty Disclaimer

Amber products are intended to be used by persons with training and experience. Any other use renders the limited warranties expressed herein and all implied warranties null and void and same are

hereby excluded. also excluded from this limited warranty are any and all incidental or consequential damages including but not limited to, loss of use or revenue, loss of time, inconvenience or any other economic loss.



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.



Scan this QR code to download your App



Amber Connect

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