

FMM650 CAN adapters

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FMM650 supports CAN adapters over RS232 connection. **CAN adapter support is added from 02.02.11.Rev.00 firmware**

Easy steps to install and configure following CAN adapters on FMM650 device:

- [LV-CAN200](#)
- [ECAN02](#)



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Installing CAN adapter with FMM650 device

Installing LV-CAN200

You can watch [LV-CAN200](#) installation video in our YouTube channel [here](#) or follow connection instructions below.

Tools needed for installation

- [LV-CAN200](#)
- Connection scheme (Please contact Teltonika Sales Representative and provide information about **vehicle manufacturer**, **model** and **year**.)
- FMM650 device
- Pliers
- Quick splice connectors (If vehicle CAN bus wires are very thin CAN adapter wires should be connected directly)

- Plastic pry tool
- Zip ties

Installation steps


1. Be ready with a vehicle **connection scheme** that you have received from a Teltonika Sales Representative.
2. **Check the scheme** for the current vehicle connection. Look for connectors matching **PINs numbers** and colors (maybe different) according to the connection scheme.
3. Connect CAN adapter with FMM650:
 1. Connect CAN adapter's RS232 to RJ45 of FMM650.
4. Connect CAN adapter **CAN wires (CAN L, CAN H)** as specified in connection scheme.

 **Do not swap CAN L and CAN H lines.**
Not all CAN adapter wires may be used in the vehicle.

5. Connect CAN adapter **positive** and **ground** wires to the vehicle power supply lines or near FMM650 power wires.

 **Do not swap power supply lines.**
Make sure that voltage does not exceed 30V.

6. Switch vehicle **ignition to ACC** position. CAN adapter **LED diode** on the back should start **blinking**.
7. Configure CAN adapter to read CAN bus data or control vehicle by setting its **program number** - [CAN Adapter configuration](#)

 LV-CAN200 connection example. This is not a connection diagram for your vehicle. Every vehicle has a specific scheme.

Installing LV-CAN200 + ECAN02

Tools needed for installation

- [LV-CAN200](#)
- Connection scheme (Please contact Teltonika Sales Representative and provide information about **vehicle manufacturer, model** and **year**.)
- [ECAN02](#) (Used for contactless connection. If **two CAN lines** need to be connected, **ECAN02** must be used.)
- FMM650 device
- Pliers
- Quick splice connectors (If vehicle CAN bus wires are very thin CAN adapter wires should be connected directly)
- Plastic pry tool
- Zip ties

Installation steps

1. Follow the same **1, 2, 3** installation steps as with [LV-CAN200 installation](#).
2. Connect the appropriate CAN bus pair of wires between the CAN adapter and [ECAN02](#):

If **CAN1 line** need to be connected as specified in the connection scheme:

1. Connect CAN adapter **CAN1 L** to **CAN L** of [ECAN02](#).
2. Connect CAN adapter **CAN1 H** to **CAN H** of [ECAN02](#).

If **CAN2 line** need to be connected as specified in the connection scheme:

1. Connect CAN adapter **CAN2 L** to **CAN L** of [ECAN02](#).
2. Connect CAN adapter **CAN2 H** to **CAN H** of [ECAN02](#).

 **Do not swap CAN L and CAN H lines.**
Not all CAN adapter wires may be used in the vehicle.

3. Fasten [ECAN02](#) on vehicle CAN bus wires according to the connection scheme. **Make sure CAN H and CAN L of vehicle corresponds to CAN H, CAN L markings on [ECAN02](#) PCB.**
4. Connect CAN adapter **positive** and **ground** wires to the vehicle power supply lines or near FMM650 power wires.

 **Do not swap power supply lines.**
Make sure that voltage does not exceed 30V.

5. Configure CAN adapter to read CAN bus data by setting its **program number** - [CAN Adapter configuration](#)

CAN Adapter Configuration

CAN Adapter program number selection

CAN Adapter must be set to the program number which depends on the vehicle model. **Needed program number is always written on CAN Adapter mounting scheme.** In order to be able to enter the program number in the adapter **Software date of the CAN adapter must be newer than the connection scheme date.** CAN adapter Software date can be checked:

- Via [Teltonika Configurator→Status→CAN Adapter](#)
- Via SMS command - [lvcangetinfo](#)

The number of digits required to enter the correct Program No. may vary depending on the Software

and manufacture date of your CAN Adapter:

- [LV-CAN200 adapter changes](#)

Entering via SMS command

Required conditions:

- CAN adapter properly connected to FMM650 device

CAN adapter program number can be set remotely, using an SMS command. Send following **SMS command** to FMM650 device:

- If you have set SMS login and password: `login pass lvcansetprog X`
- If SMS login and password are not set leave two spaces before the command:
`lvcansetprog X`

Command example: `lvcansetprog 11434`

SMS response: `LVCAN ProgNum: 11434`


If during SMS command FMM650 was in the following Sleep mode:

- [GPS Sleep](#) - Program No. will be set immediately.
- [Deep Sleep](#) - Program No. will be set after the device wakes up.
- [Online Deep Sleep](#) - Program No. will be set immediately.

Entering via Teltonika Configurator

Required conditions:

- CAN adapter properly connected to FMM650 device

CAN adapter program number can be set via [Teltonika Configurator](#) → **LVCAN** → **Program Number**. When the program number is entered press  **Save to device** button that saves the entered program number into FMM650.

Teltonika.Configurator v1.5.5.29406

Load from device
Save to device
Update firmware
Reset configuration
Reboot device

Load from file
Save to file

IMEI 358480081725162
FW 00.03.74
Configuration 4.31.3.0

Status
Security
System
GPRS
Data Acquisition
SMS \ Call Settings
SMS Events
GSM Operators
Features
Accelerometer Features
Auto Geofence
Manual Geofence Settings
Manual Geofence Zones
Trip \ Odometer
Bluetooth
iButton List
I/O
LV CAN
FMS IO
Manual CAN IO
Tachograph Data
RS232 \ RS485

Device Info

Device Name: FMB640
Last Start Time: 11/18/2015 2:00:07 AM
Power Voltage: 13247 mV.
External Storage: Not Present [Format](#)
Battery Voltage: 0 mV.
Firmware Version: 00.03.74
RTC Time: 11/18/2015 2:01:25 AM
Device IMEI: 358480081725162
Device Uptime: 00:01:18
Internal Battery Status: Not Charging 0%

GNSS Info
GSM Info
I/O Info
Tachograph
Maintenance

GNSS Status
Module Status: ON
GNSS Packets: 248
Fix Status: No fix
Fix Time: 00:00:00

Satellites

Visible:		In Use:	
GPS	GLONASS	GPS	GLONASS
0	0	0	0
BeiDou	Galileo	BeiDou	Galileo
0	0	0	0
Total In View: 0		Total In Use: 0	

Location

Latitude/Longitude	Altitude	HDOP
0, 0	0	0
Speed	Angle	PDOP
0 km/h	0°	0

Entering manually

Required conditions:

- CAN adapter properly connected to FMM650 device
- Vehicle ignition must be ON

Depending on the used CAN Adapter, the length of the setup sequence will vary.

Steps to set program number:

LV-CAN200 back

For LV-CAN2 00 3 digit	For LV-CAN2 00 4 digit	For LV-CAN2 00 >5 digit	1. Hold SWITCH down until LED starts blink.
			2. Release the SWITCH.
			3. Then the LED starts blinking and counting the first digit of the program number (one blink means digit 1, two blinks mean digit 2, etc). To stop the counter, push SWITCH.
			4. Release the SWITCH, then the LED starts blinking and counting the second digit of the program number. To stop the counter, push SWITCH.
			5. Release the SWITCH, then the LED starts blinking and counting the third digit on the program number. To stop the counter, push SWITCH.
			6. Release the SWITCH, then the LED starts blinking and counting the fourth digit on the program number. To stop the counter, push SWITCH.
			7. Release the SWITCH, then the LED starts blinking and counting the fifth digit on the program number. To stop the counter, push SWITCH.
			8. Release SWITCH, if programming is successful LED will blink 10 times.
All Devices			

Send data with 0 if the ignition is off

Depending on CAN Adapter I/O parameters and ignition status, FMM650 can send locked (last known) CAN Adapter I/O and active (real-time) parameter values or reset values to 0. When the ignition is off, CAN Adapter I/O parameters values sent to the server are:

CAN Adapter I/O element	Status
Vehicle Speed	reset
Accelerator pedal position	reset
Total fuel used	lock
Fuel level (liters)	lock
Engine RPM	reset
Total mileage	lock
Fuel level (%)	lock
Program number	lock
Module ID	lock
Engine Work Time	lock

Engine Work Time (counted)	lock
Total Mileage (counted)	lock
Fuel Consumed (counted)	lock
Fuel Rate	reset
Program number	lock
AdBlue Level (%)	lock
AdBlue Level (liters)	lock
Engine Load	reset
Engine Temperature	active
Axle 1 Load	lock
Axle 2 Load	lock
Axle 3 Load	lock
Axle 4 Load	lock
Axle 5 Load	lock
Control State Flags	active
Agricultural Machinery Flags	active
Harvesting Time	lock
Area of Harvest	reset
Mowing Efficiency	active
Grain Mown Volume	active
Grain Moisture	active
Harvesting Drum RPM	reset
Gap Under Harvesting Drum	active
Security State Flags	active
Tachograph Total Vehicle Distance	lock
Trip Distance	reset
Tachograph Vehicle Speed	reset
Tachograph Driver Card Presence	active
Driver1 States	active
Driver2 States	active
Driver1 Continuous Driving Time	active
Driver2 Continuous Driving Time	active
Driver1 Cumulative Break Time	active

Driver2 Cumulative Break Time	active
Driver1 Selected Activity Duration	active
Driver2 Selected Activity Duration	active
Driver1 Cumulative Driving Time	active
Driver2 Cumulative Driving Time	active

SMS Configuration

All CAN Adapter IO elements can be configured remotely via SMS commands.

SMS/GPRS Commands

CAN Adapters have several dedicated SMS/GPRS commands.

SMS command structure:

<SMS login><space><SMS password><space><command><space><value>

SMS command [lvcangetinfo](#) example:

- If you have set SMS login and password: login pass lvcangetinfo
- If SMS login and password are not set leave two spaces before the command:
 ⌨ lvcangetinfo

GPRS commands require [Codec 12](#) protocol.

For more SMS commands please see [SMS/GPRS command list](#)

COMMAND	DESCRIPTION	RESPONSE
lvcansetprog #	Set program number to CAN Adapter that is connected to FMM650. # - three digit number that identity vehicle.	Yes
lvkansimpletacho #	Add or remove simpletacho start byte. # - 0 or 1 (0 - don't add start byte, 1 - add start byte).	No
lvcangetprog	Get program number from CAN Adapter that is connected to FMM650.	Yes
lvcangetinfo	Get information about connected CAN Adapter	Yes

lvcanclear #	Clear Total Mileage (counted), Engine Work Time (counted), Fuel Consumed (counted) parameters values. # - parameter (0 - Engine work time (counted), 1 - Fuel Consumed (counted), 2 - Vehicle Mileage (counted)).	Yes
lvcanfaultcodes	Read DTC fault codes	Yes