

# FMB630 CAN adapters

[Main Page](#) > [EOL Products](#) > [FMB630](#) > [FMB630 Manual](#) > **FMB630 CAN adapters**

Easy steps to install and configure following CAN adapters on FMB630 device:

- [LV-CAN200](#)
- [ALL-CAN300](#)
- [CAN-CONTROL](#)
- [ECAN02](#)

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## Contents

- [1 Installing CAN adapter with FMB630 device](#)
  - [1.1 Installing LV-CAN200/ALL-CAN300/CAN-CONTROL](#)
    - [1.1.1 Tools needed for installation](#)
    - [1.1.2 Installation steps](#)
  - [1.2 Installing LV-CAN200/ALL-CAN300 + ECAN02](#)
    - [1.2.1 Tools needed for installation](#)
    - [1.2.2 Installation steps](#)
- [2 CAN Adapter Configuration](#)
  - [2.1 CAN Adapter program number selection](#)
    - [2.1.1 Entering via SMS command](#)
    - [2.1.2 Entering via Teltonika Configurator](#)
    - [2.1.3 Entering manually](#)
      - [2.1.3.1 Send data with 0, if ignition is off](#)
    - [2.1.4 SMS Configuration](#)
      - [2.1.4.1 SMS/GPRS Commands](#)
  - [2.2 CAN Adapter State Flags](#)
- [3 LV-CAN200/ALL-CAN300 Important Information](#)
  - [3.1 Program Number logic change](#)
  - [3.2 Example](#)

## Installing CAN adapter with FMB630 device

### Installing LV-CAN200/ALL-CAN300/CAN-CONTROL

You can watch [LV-CAN200/ALL-CAN300](#) installation video in our YouTube channel [here](#) or follow connection instructions below.

#### Tools needed for installation

- [LV-CAN200/ALL-CAN300/CAN-CONTROL](#)
- Connection scheme (Please contact Teltonika Sales Representative and provide information about **vehicle manufacturer, model** and **year**.)
- FMB630 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 connection scheme.
3. Connect CAN adapter with FMB630:
  1. Connect CAN adapter's MINI USB to USB of FMB630.
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 vehicle.**

5. Connect CAN adapter **positive** and **ground** wires to the vehicle power supply lines or near FMB630 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/ALL-CAN300 connection example. This is not a connection diagram for your vehicle. Every vehicle has a specific scheme.



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

## Installing LV-CAN200/ALL-CAN300 + ECAN02

### Tools needed for installation

- [LV-CAN200/ALL-CAN300](#)
- 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.)
- FMB630 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/ALL-CAN300/CAN-CONTROL 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 FMB630 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

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CAN Adapter must be set to 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 program number in adapter **Software date of CAN adapter must be newer than 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 correct Program No. may vary depending on the Software and manufacture date of your CAN Adapter:

- [LV-CAN200 adapter changes](#)
- [ALL-CAN300 adapter changes](#)

## Entering via SMS command

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Required conditions:

- CAN adapter properly connected to FMB630 device

CAN adapter program number can be set remotely, using SMS command. Send following **SMS command** to FMB630 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 command: `lvcansetprog X`

Command example: `lvcansetprog 11434`

SMS response: `LVCAN ProgNum: 11434`

If during SMS command FMB630 was in following Sleep mode:

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

## Entering via Teltonika Configurator

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Required conditions:

- CAN adapter properly connected to FMB630 device

CAN adapter program number can be set via [Teltonika Configurator](#) → **LVCAN** → **Program Number**. When program number is entered press  **Save to device** button that saves the entered program number into FMB630.

Teltonika.Configurator v1.5.5.29406

Load from device
Save to device
Update firmware
Reset configuration

Load from file
Save to file
Reboot device

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
LVCAN
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 FMB630 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, ALL-CAN300 back

CAN-CONTROL back

<p>For ALL-CAN300 LV-CAN200 3 digit</p>	<p>For ALL-CAN300 LV-CAN200 4 digit</p>	<p>For LV-CAN200 CAN-CONTROL 5 digit</p>	<p>1. Hold SWITCH down until LED starts blinking.</p> <p>2. Release the SWITCH.</p> <p>3. Then LED starts blinking and counting first digit of program number (one blink means digit 1, two blinks mean digit 2 etc). To stop counter, push SWITCH.</p> <p>4. Release the SWITCH, then LED starts blinking and counting second digit of program number. To stop counter, push SWITCH.</p> <p>5. Release the SWITCH, then LED starts blinking and counting third digit on program number. To stop counter, push SWITCH.</p> <p>6. Release the SWITCH, then LED starts blinking and counting fourth digit on program number. To stop counter, push SWITCH.</p> <p>7. Release the SWITCH, then LED starts blinking and counting fifth digit on program number. To stop counter, push SWITCH.</p>
<p>All Devices</p>			<p>8. Release SWITCH, if programming is successful LED will blink 10 times.</p>

Send data with 0, if ignition is off

Depending on CAN Adapter I/O parameters and ignition status, FMB630 can send locked (last known) CAN Adapter I/O and active (real time) parameters values or reset values to 0. When ignition is off, CAN Adapter I/O parameters values sent to server are:

CAN Adapter I/O element	Status
Vehicle Speed	reset

<b>Accelerator pedal position</b>	reset
<b>Total fuel used</b>	lock
<b>Fuel level (liters)</b>	lock
<b>Engine RPM</b>	reset
<b>Total mileage</b>	lock
<b>Fuel level (%)</b>	lock
<b>Program number</b>	lock
<b>Module ID</b>	lock
<b>Engine Work Time</b>	lock
<b>Engine Work Time (counted)</b>	lock
<b>Total Mileage (counted)</b>	lock
<b>Fuel Consumed (counted)</b>	lock
<b>Fuel Rate</b>	reset
<b>Program number</b>	lock
<b>AdBlue Level (%)</b>	lock
<b>AdBlue Level (liters)</b>	lock
<b>Engine Load</b>	reset
<b>Engine Temperature</b>	active
<b>Axle 1 Load</b>	lock
<b>Axle 2 Load</b>	lock
<b>Axle 3 Load</b>	lock
<b>Axle 4 Load</b>	lock
<b>Axle 5 Load</b>	lock
<b>Control State Flags</b>	active
<b>Agricultural Machinery Flags</b>	active
<b>Harvesting Time</b>	lock
<b>Area of Harvest</b>	reset
<b>Mowing Efficiency</b>	active
<b>Grain Mown Volume</b>	active
<b>Grain Moisture</b>	active
<b>Harvesting Drum RPM</b>	reset
<b>Gap Under Harvesting Drum</b>	active
<b>Security State Flags</b>	active
<b>Tachograph Total Vehicle Distance</b>	lock
<b>Trip Distance</b>	reset
<b>Tachograph Vehicle Speed</b>	reset

<b>Tachograph Driver Card Presence</b>	active
<b>Driver1 States</b>	active
<b>Driver2 States</b>	active
<b>Driver1 Continuous Driving Time</b>	active
<b>Driver2 Continuous Driving Time</b>	active
<b>Driver1 Cumulative Break Time</b>	active
<b>Driver2 Cumulative Break Time</b>	active
<b>Driver1 Selected Activity Duration</b>	active
<b>Driver2 Selected Activity Duration</b>	active
<b>Driver1 Cumulative Driving Time</b>	active
<b>Driver2 Cumulative Driving Time</b>	active

## SMS Configuration

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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 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 FMB630. # - three digit number that identity vehicle.	Yes



lvcanimpletacho #	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 FMB630.	Yes
<a href="#">lvcangetinfo</a>	Get information about connected CAN Adapter	Yes
<a href="#">lvcanclear #</a>	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
<a href="#">lvcanfaultcodes</a>	Read DTC fault codes	Yes
<b>CAN-CONTROL specific commands</b>		
lvcanopenalldoors	Open [unlock] all doors	Yes
lvcanclosealldoors	Close [lock] all doors	Yes
lvcanopentrunk	Open [unlock] trunk	Yes
lvcanturninglights	One flash of all turn lights ordered trough accidental / blinking turn light switch	Yes

## CAN Adapter State Flags

CAN Adapters receive data about the states of various systems within the vehicle, and send them as flags to FMB630. FMB630 device stores these flags in hexadecimal format, as one variable. Below is a list of kept flags and how to retrieve them.

The full list of state flags is stored only by:

- [ALL-CAN300](#)

Only **security state flags** are stored by:

- [CAN-CONTROL](#)

Property name	Size, bytes	Value bitmasks
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<b>Control state flags</b>	4	<p>Byte0 (LSB):</p> <ul style="list-style-type: none"> <li>0x01 - STOP</li> <li>0x02 - Oil pressure / level</li> <li>0x04 - Coolant liquid temperature / level</li> <li>0x08 - Handbrake system</li> <li>0x10 - Battery not charging</li> <li>0x20 - AIRBAG</li> <li>0x40 - EPS (Electric power steering)</li> <li>0x80 - ESP (Electronic Stability Program)</li> </ul> <p>Byte1:</p> <ul style="list-style-type: none"> <li>0x01 - CHECK ENGINE</li> <li>0x02 - Lights failure</li> <li>0x04 - Low tire pressure</li> <li>0x08 - Wear of brake pads</li> <li>0x10 - Warning</li> <li>0x20 - ABS</li> <li>0x40 - Low Fuel</li> <li>0x80 - Maintenance required</li> </ul> <p>Byte2:</p> <ul style="list-style-type: none"> <li>0x01 - ESP</li> <li>0x02 - Glow plug indicator</li> <li>0x04 - FAP</li> <li>0x08 - Electronics pressure control</li> <li>0x10 - Parking lights</li> <li>0x20 - Dipped headlights</li> <li>0x40 - Full beam headlights</li> <li>0x80 - Front foglights</li> </ul> <p>Byte3:</p> <ul style="list-style-type: none"> <li>0x01 - Ready to drive</li> <li>0x02 - Cruise control</li> <li>0x04 - Automatic Retarder</li> <li>0x08 - Manual retarder</li> <li>0x10 - Air Conditioning</li> <li>0x20 - Rear foglights</li> <li>0x40 - Passenger's seat belt</li> <li>0x80 - Driver's seat belt</li> </ul>
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Byte0 (LSB):

0x01 - Mowing  
0x02 - Grain release from hopper  
0x04 - First front hydraulic turned on  
0x08 - Rear Power Take-Off turned on

Byte1:

0x01 - Excessive play under the threshing drum  
0x02 - Grain tank is open  
0x04 - 100% of Grain tank  
0x08 - 70% of Grain tank  
0x10 - Drain filter in hydraulic system of drive cylinders is plugged  
0x20 - Pressure filter of drive cylinders hydraulic system is plugged  
0x40 - Alarm oil level in oil tank  
0x80 - Pressure filter of brakes hydraulic system is plugged

Byte2:

0x01 - Oil filter of engine is plugged  
0x02 - Fuel filter is plugged  
0x04 - Air filter is plugged  
0x08 - Alarm oil temperature in hydraulic system of chassis  
0x10 - Alarm oil temperature in hydraulic system of drive cylinders  
0x20 - Alarm oil pressure in engine  
0x40 - Alarm coolant level  
0x80 - Overflow chamber of hydraulic unit

Byte3:

0x01 - Unloader drive is ON. Unloading tube pivot is in idle position  
0x02 - No operator!  
0x04 - Straw walker is plugged  
0x08 - Water in fuel  
0x10 - Cleaning fan RPM  
0x20 - Trashing drum RPM  
0x40 - Pouring chemicals turned on  
0x80 - Conveyor belt turned on

Byte4:

0x01 - Salt spreaders drive wheel turned on  
0x02 - Low water level in the tank  
0x04 - First rear hydraulic turned on  
0x08 - Standalone engine working  
0x10 - Right joystick moved right  
0x20 - Right joystick moved left  
0x40 - Right joystick moved front  
0x80 - Right joystick moved back

Byte5:

0x01 - Brushes turned on  
0x02 - Water supply turned on  
0x04 - Vacuum cleaner  
0x08 - Unloading from the hopper  
0x10 - High Pressure washer (Karcher)  
0x20 - Salt (sand) disperser ON  
0x40 - Low salt (sand) level

Byte6:

0x01 - Second front hydraulic turned on  
0x02 - Third front hydraulic turned on  
0x04 - Fourth front hydraulic turned on  
0x08 - Second rear hydraulic turned on  
0x10 - Third rear hydraulic turned on  
0x20 - Fourth rear hydraulic turned on  
0x40 - Front three-point Hitch turned on  
0x80 - Rear three-point Hitch turned on

Byte7:

0x01 - Left joystick moved right  
0x02 - Left joystick moved left  
0x04 - Left joystick moved front  
0x08 - Left joystick moved back  
0x10 - Front Power Take-Off turned on  
0x20 - Liquid pump turned on  
0x40 - Light signal turned on

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**Security state flags** 8

Byte0 (LSB):

0x01 - CAN1 not connected, require connection  
0x02 - CAN1 not connected, require connection  
0x03 - CAN1 connected  
0x04 - CAN2 not connected, require connection  
0x08 - CAN2 not connected, require connection  
0x0C - CAN2 connected  
0x10 - CAN3 not connected, require connection  
0x20 - CAN3 not connected, require connection  
0x30 - CAN3 connected

Byte2:

0x04 - Battery charging  
0x08 - Charging cable connected  
0x10 - Vehicle working mode, 1- business mode, 0 - private mode  
0x20 - Bit appears when any operate button in car was put. This bit is reset if the button is released  
0x40 - Bit appears when immobilizer is in service mode  
0x80 - Immobiliser, bit appears during introduction of a programmed sequence of keys in the car

Byte3:

0x01 - The key is in ignition lock  
0x02 - Ignition on  
0x04 - Dynamic ignition on  
0x08 - Webasto  
0x10 - Car closed  
0x20 - Car closed by factory's remote control  
0x40 - Factory-installed alarm system is actuated (is in panic mode)  
0x80 - Factory-installed alarm system is emulated by module

Byte4:

0x01 - Parking activated (automatic gearbox)  
0x10 - Handbrake is actuated (information available only with ignition on)  
0x20 - Footbrake is actuated (information available only with ignition on)  
0x40 - Engine is working (information available only when the ignition on)  
0x80 - Reverse is on

Byte5:

0x01 - Front left door opened  
0x02 - Front right door opened  
0x04 - Rear left door opened  
0x08 - Rear right door opened  
0x10 - Engine cover opened  
0x20 - Trunk door opened

Byte6:

- Low nibble (mask 0x0F value)  
0x01 - Car was closed by the factory's remote control  
0x02 - Car was opened by the factory's remote control  
0x03 - Trunk cover was opened by the factory's remote control  
0x04 - Module has sent a rearming signal  
0x05 - Car was closed three times by the factory's remote control  
- High nibble (mask 0xF0 bit)  
0x80 - CAN module goes to sleep mode

**Tachograph driver card presence**

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0x00 - No driver card  
0x01 - Driver1 card presence  
0x02 - Driver2 card presence  
0x03 - Driver1 and driver2 cards present

<b>Driver 1 states</b>	1	0xX0 - Break/rest
		0xX1 - Availability
		0xX2 - Work
		0xX3 - Driving
		0x0X - No time-related warning detected
		0x1X - Limit #1: 15 min before 4 1/2 h
<b>Driver 2 states</b>	1	0x2X - Limit #2: 4 1/2 h reached (continuous driving time exceeded)
		0x3X - Limit #3: 15 minutes before optional warning 1
		0x4X - Limit #4: optional warning 1 reached
		0x5X - Limit #5: 15 min before optional warning
		0x6X - Limit #6: optional warning 2 reached

## LV-CAN200/ALL-CAN300 Important Information

### Program Number logic change

Due to the growing number of supported cars, program numbers have exceeded "999". In order to maintain one number format, we are moving from 3-digit to 4-digit program numbers.

In new LV-CAN200/ALL-CAN300 firmware (from 2017-09-01) all program numbers that were up to 999 are changed to start from 1000. So that further program numbers would continue the counting with 4-digit numbers.

However, all existing program numbers stay the same, but "1" is added to the front. The device still understands the entered 3-digit program number (via SMS/GPRS), it will automatically add "1" before it. If you enter "247" - device number will turn into "1247". In Bootloader only 4-digit format is available, just add "1" to the front of the needed program number.

### Example

When using older connection schemes where the program number displayed as 3-digit program number:



Using LV-CAN200/ALL-CAN300 Bootloader from soft version 2017-09-27 it is necessary to add "1" to the front of the program number:

