https://wiki.teltonika-gps.com/view/FMM230_CAN_adapters

FMM230 CAN adapters

Easy steps to install and configure following CAN adapters on FMM230 device:

- LV-CAN200
- ALL-CAN300
- CAN-CONTROL
- ECAN01
- ECAN02

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Installing CAN adapter with FMM230 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**.
- FMM230 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 (may be different) according to connection scheme.
3. Connect CAN adapter with FMM230:
    1. Connect CAN adapter **PIN 6 (Rx)** to **INPUT 6** of FMM230.
    2. Connect CAN adapter **PIN 5 (Tx)** to **INPUT 5** of FMM230.
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 FMM230 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, **two ECAN02's** must be used.)
- FMM230 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 vehicle.

3. Fasten ECAN02 **between 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 FMM230 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 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

Required conditions:

- CAN adapter properly connected to FMM230 device

CAN adapter program number can be set remotely, using SMS command. Send following **SMS command** to FMM230 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 FMM230 was in following Sleep mode:

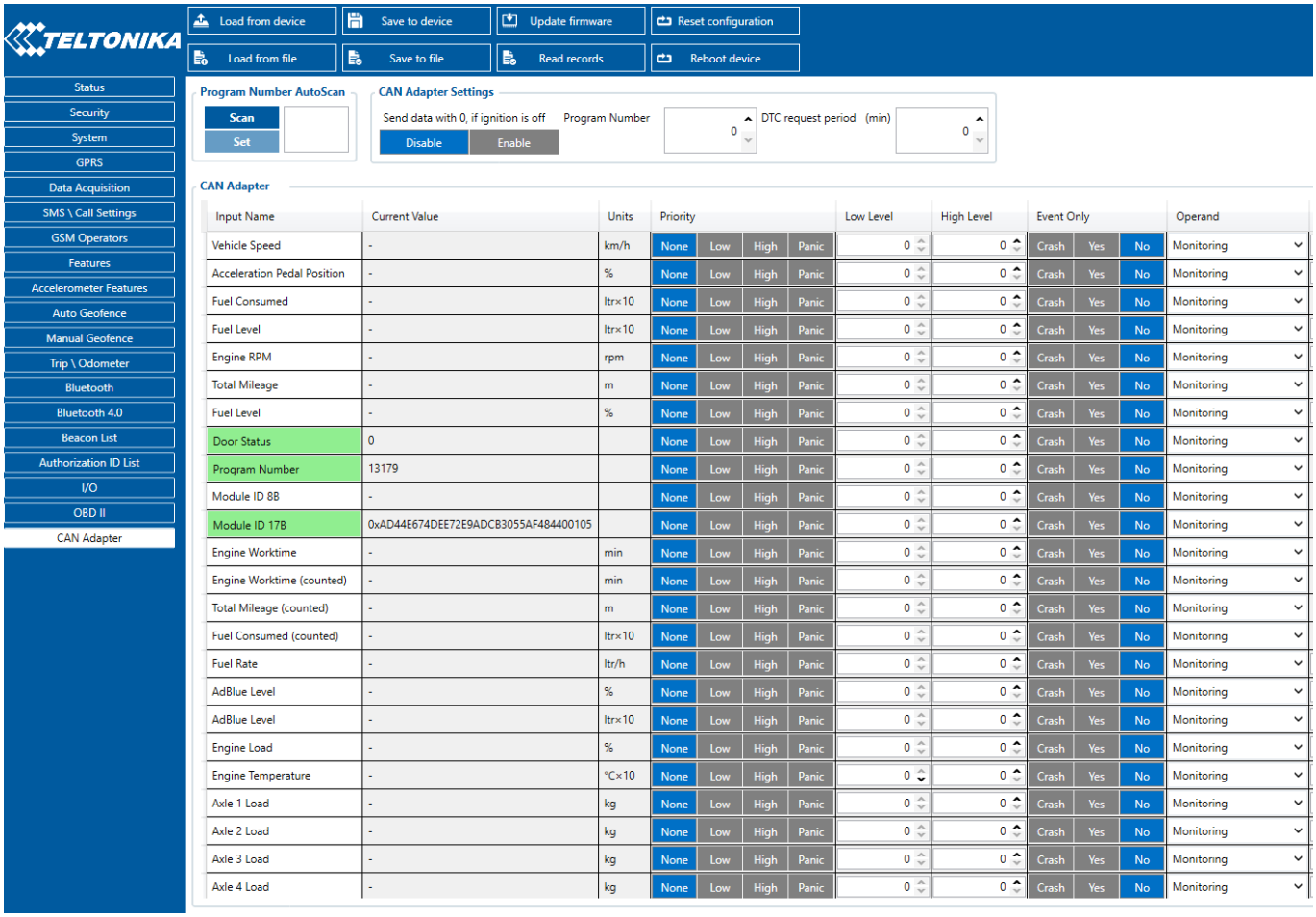
- GPS Sleep - Program No. will be set immediately.
- Deep Sleep - Program No. will be set after device wake up.
- Online Deep Sleep - Program No. will be set immediately.
- Ultra Deep Sleep - Program No. will be set after device wake up.

Entering via Teltonika Configurator

Required conditions:

- CAN adapter properly connected to FMM230 device

CAN adapter program number can be set via **Teltonika Configurator → (1) CAN Adapter → (2) Program Number**. When program number is entered press **(3) Save to device** button that saves the entered program number into FMM230.



Entering manually

Required conditions:

- CAN adapter properly connected to FMM230 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

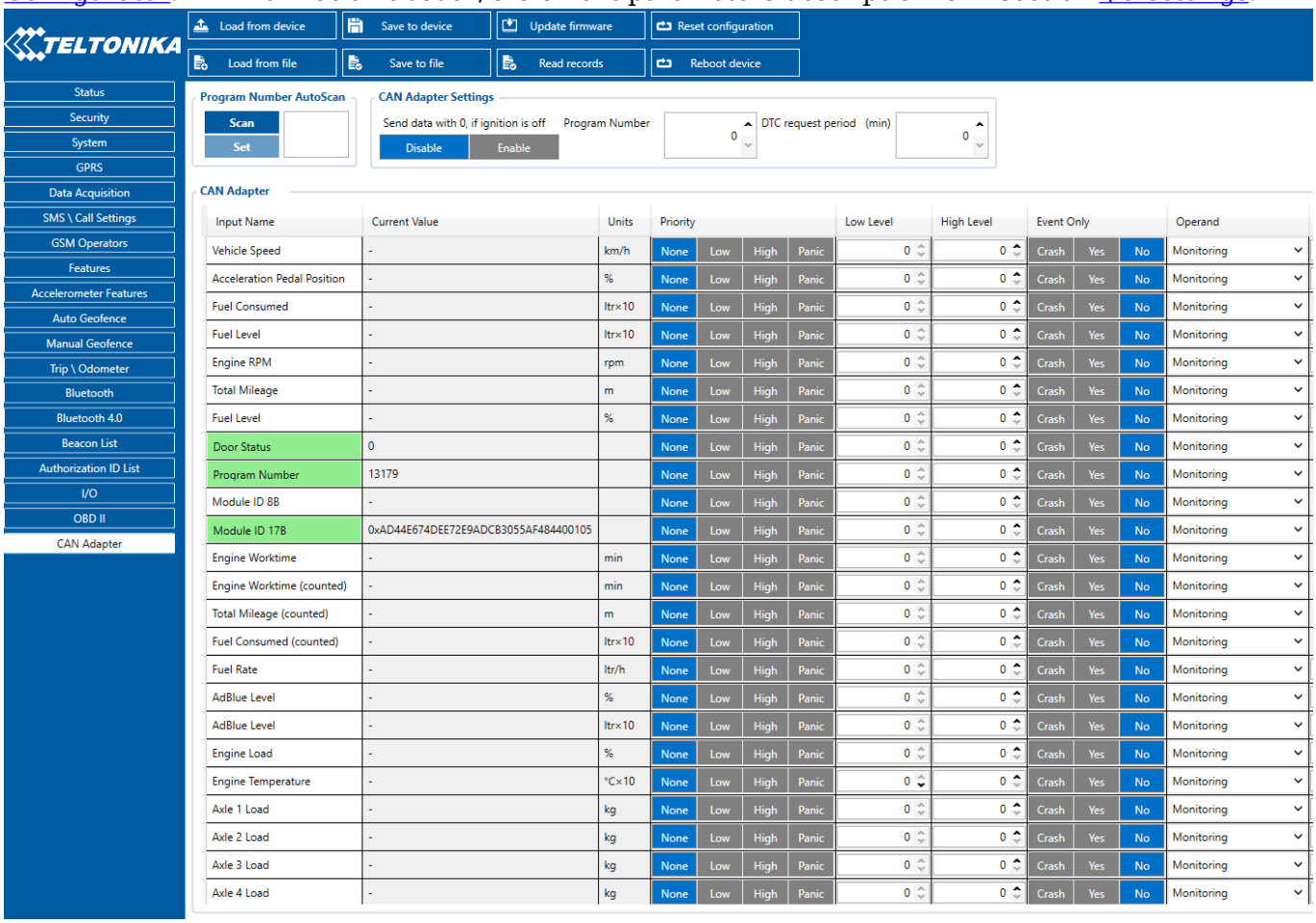
For ALL-CAN300 LV-CAN200 3 digit	For ALL-CAN300 LV-CAN200 4 digit	For LV-CAN200 CAN-CONTROL 5 digit	1. Hold SWITCH down until LED stars blinking.
			2. Release the SWITCH.
			3. Then LED starts blinking and counting first digit of program number (one blink means digit 1, two blinks mean digit 2 etc).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

FMM230 CAN Adapter parameters configuration

Teltonika Configurator

CAN Adapter configuration can be performed using Teltonika Configurator via **Micro-USB cable** or **Bluetooth connection** when CAN Adapter is connected to the vehicle.
When FMM230 is connected to the CAN Adapter, user can see all information that is received from the vehicle in Teltonika Configurator → **Status** → **CAN Adapter** tab or Teltonika Configurator →

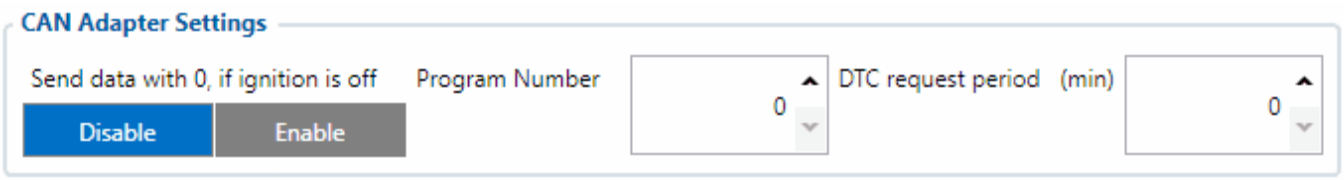
CAN Adapter section. In **Status → CAN Adapter** tab you can see information about the CAN adapter and its readable parameters. In **CAN Adapter** section you can configure CAN Adapter and see incoming CAN bus data highlighted by **green** background color. Incoming data in both sections is automatically refreshed every 5 seconds. CAN bus data which should be readable from your vehicle is provided in the "CAN Adapter supported vehicles list", which you can get from Teltonika Sales Representative.
The CAN Adapter I/O element can be configured like any other I/O element in Teltonika Configurator. All information about I/O element parameters description is in section I/O settings.



When using the offline configuration method user can select which CAN data (according to vehicle) will be sent directly to the server without connection to adapter.

Send data with 0, if ignition is off

Depending on CAN Adapter I/O parameters and ignition status, FMM230 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
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 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 FMM230. # - three digit number that identity vehicle.	Yes
lvcansimpletacho #	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 FMM230.	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
allcanmode	Turn on ALL-CAN300 mode.	Yes
lvcanmode	Turn on LV-CAN200 mode.	Yes
lvcanfaultcodes	Read DTC fault codes	Yes
Added from version 03.25.16.Rev.280		
lvcancheck	Get status of CAN line connections. Outputs all available CAN line connection status.	Yes
lvcanreset	Reset external CAN adapter using serial commands or internal CAN chip	Yes
lvcanrefresh	Connect to FOTA WEB and update CAN information	Yes
CAN-CONTROL specific commands		
lvcanopenalldoors	Open [unlock] all doors	Yes
lvcanclosealldoors	Close [lock] all doors	Yes
lvcanopentrunk	Open [unlock] trunk	Yes
lvcanblockengine	Block vehicle engine (*if command is **not** supported, please, visit FAQ*)	Yes
lvcanunblockengine	Unblock vehicle engine (*if command is **not** supported, please, visit FAQ*)	Yes
lvcanturninglights	One flash of all turn lights ordered trough accidental / blinking turn light switch	Yes

CAN Adapter software update Over The Air

The software of CAN adapters LV-CAN200, ALL-CAN300 and CAN-CONTROL can now be updated Over The Air by using FOTA WEB. The feature is also supported by our fresh FMB140 device which has a built-in CAN-bus reading adapter. Upgrading the software of a CAN adapter will add more program numbers, thus, more vehicle models will be supported.

Please note, that only the newer version of LV-CAN200 and ALL-CAN300 CAN adapters support this feature. The version of the CAN adapter can be checked by sending an SMS command lvcangetinfo. If, in the response message, **"SWRev:"** is **145**, the CAN adapter is older and if it is

245, the adapter is newer. It does not apply to CAN-CONTROL - all CAN-CONTROL adapters support firmware updates over the air.

In order to update your device‘s firmware please follow a quick and simple step-by-step guide which is below. The procedure is the same for all devices.

- FMM230 device, which is connected to the CAN adapter (or FMB140 which has an internal CAN adapter), must be registered in FOTA WEB – device‘s model, firmware version, serial number, and other information must be shown.
- FMM230 device must have a correct firmware version uploaded. Currently, this feature is supported with base firmware since version **03.25.15.Rev.143**. Once a device with the correct firmware version connects to FOTA WEB on the next scheduled connection (or instant connection, initiated by an SMS command *web_connect*), a small, blue, CAN adapter logo will appear before to the device‘s IMEI:

- A current version of the CAN adapter software can be checked by pressing on the device information row. Detailed information will be shown on the right side of fleet management device details. All available details of the FMM230 device are listed in one window:

- If the software is not up-to-date it can be updated. A check-box needs to be ticked.

- Then the **Create task** button pressed:

- Finally, **Update CAN adapter** selected:

- Once the software update task has been assigned, it can be seen in the main window. Please note, that uploading will start after the next scheduled connection to FOTA WEB (or instant connection, initiated by an SMS command *web_connect*):

- When the update is finished, a new software version can be seen in the details window after the next scheduled connection to FOTA WEB (or instant connection, initiated by an SMS command *web_connect*):

CAN Adapter State Flags

CAN Adapters receive data about the states of various systems within the vehicle, and send them as flags to FMM230. FMM230 device stores these flags in hexadecimal format, as one variable. **Note!** To retrieve all flags, Firmware version **03.27.07.Rev.00** or newer must be used. Below are the tables of flags that are kept by LV-CAN200, ALL-CAN300, CAN-CONTROL and information how to retrieve them:

Security state Flags P2

Byte	Bit	Value bitmasks	LVCAN	ALLCAN	CAN-CONTROL
0	0	0x00 - CAN1 not connected, connection not required, 0x01 – CAN1 connected, currently no data is received 0x02 – CAN1 not connected, needs connection 0x03 – CAN1 connected, currently data is received	☐	☐	☐
0	2	0x00 - CAN2 not connected, connection not required, 0x01 – CAN2 connected, currently no data is received 0x02 – CAN2 not connected, needs connection 0x03 – CAN2 connected, currently data is received	☐	☐	☐
0	4	0x00 - CAN3 not connected, connection not required, 0x01 – CAN3 connected, currently no data is received 0x02 – CAN3 not connected, needs connection 0x03 – CAN3 connected, currently data is received	☐	☐	☐
1	8	0x01 - request to lock the engine (activation after attemplt to restart the engine)		☐	☐
1	9	0x02 – status of the hazard warning lights switch active		☐	☐
1	10	0x04 - factory armed			☐
2	17	0x02 – electric engine is working (information available only when the ignition is on)		☐	☐
2	18	0x04 – battery charging is on (from 03.25.15.Rev.142)		☐	☐
2	19	0x08 – charging wire is plugged (from 03.25.15.Rev.142)		☐	☐
2	20	0x10 – vehicle working mode, 1- business mode, 0 - private mode		☐	
2	21	0x20 – bit appears when any operate button in car was put. This bit is reset if the button is released		☐	
2	22	0x40 – bit appears when immobilizer is in service mode		☐	
2	23	0x80 – immobilizer, bit appears during introduction of a programmed sequence of keys in the car		☐	
3	24	0x01 – the key is in ignition lock		☐	☐
3	25	0x02 – ignition on	☐	☐	☐
3	26	0x04 – dynamic ignition on		☐	
3	27	0x08 – webasto		☐	
3	28	0x10 – car is closed		☐	☐
3	29	0x20 – car is closed by factory's remote control or module command		☐	☐
3	30	0x40 – factory installed alarm system is actuated (is in panic mode)		☐	☐
3	31	0x80 – factory installed alarm system is emulated by module		☐	☐
4	32	0x01 – parking activated (automatic gearbox)		☐	☐

4	34	0x04 – neutral activated (automatic gearbox)		☐	☐
4	35	0x08 – drive activated (automatic gearbox)		☐	☐
4	36	0x10 – handbrake is actuated (information available only with ignition on)		☐	☐
4	37	0x20 – footbrake is actuated (information available only with ignition on)		☐	☐
4	38	0x40 – Engine is working (information available only when the ignition on)		☐	☐
4	39	0x80 – reverse is on		☐	☐
5	40	0x01 – front left door opened	☐	☐	☐
5	41	0x02 – front right door opened	☐	☐	☐
5	42	0x04 – rear left door opened	☐	☐	☐
5	43	0x08 – rear right door opened	☐	☐	☐
5	44	0x10 – engine cover opened	☐	☐	☐
5	45	0x20 – trunk door opened	☐	☐	☐
5	46	0x40 - roof opened	☐	☐	☐
6	48	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		☐	☐
6	52	High nibble (mask 0xF0 bit)0x80 – CAN module goes to sleep mode	☐	☐	☐

Security State Flags P4

Byte	Bit	Value bitmasks	LVCAN	ALLCAN	CAN-CONTROL
0	0	0x00 – CAN1 connected, currently no data is received 0x01 – CAN1 connected, currently data is received 0x02 – CAN1 not connected, needs connection 0x03 – CAN1 not connected does not need connection	☐	☐	☐
0	2	0x00 – CAN2 connected, currently no data is received 0x01 – CAN2 connected, currently data is received 0x02 – CAN2 not connected, needs connection 0x03 – CAN2 not connected does not need connection	☐	☐	☐
0	4	0x00 – CAN3 connected, currently no data is received 0x01 – CAN3 connected, currently data is received 0x02 – CAN3 not connected, needs connection 0x03 – CAN3 not connected does not need connection			☐
1	8	0x01 – ignition on	☐	☐	☐
1	9	0x02 – key in ignition lock		☐	☐
1	10	0x04 – webasto		☐	
1	11	0x08 – engine is working		☐	☐
1	12	0x10 – standalone engine		☐	
1	13	0x20 – ready to drive		☐	☐
1	14	0x40 – engine is working on CNG	☐	☐	☐
1	15	0x80 – work mode (0 – private, 1 – company)		☐	

2	16	0x01 – operator is present		✓	
2	17	0x02 – interlock active		✓	
2	18	0x04 – handbrake is active		✓	✓
2	19	0x08 – footbrake is active		✓	✓
2	20	0x10 – clutch is pushed		✓	
2	21	0x20 – status of the hazard warning lights switch active		✓	✓
2	22	0x40 – front left door opened	✓	✓	✓
2	23	0x80 – front right door opened	✓	✓	✓
3	24	0x01 – rear left door opened	✓	✓	✓
3	25	0x02 – rear right door opened	✓	✓	✓
3	26	0x04 – trunk door opened	✓	✓	✓
3	27	0x08 – engine cover opened	✓	✓	✓
3	28	0x10 – charging wire is plugged		✓	✓
3	29	0x20 – battery charging on		✓	✓
3	30	0x40 – electric engine is working		✓	✓
3	31	0x80 – car is closed with factory remote control		✓	✓
4	32	0x01 – car is closed		✓	✓
4	33	0x02 – factory installed alarm is active		✓	✓
4	34	0x04 – emulated alarm is active		✓	✓
4	35	0x08 – signal of closing with factory remote control was sent		✓	✓
4	36	0x10 – signal of opening with factory remote control was sent		✓	✓
4	37	0x20 – rearm signal was sent		✓	✓
4	38	0x40 – trunk was opened with remote control		✓	✓
4	39	0x80 – CAN module is in SLEEP mode	✓	✓	✓
5	40	0x01 – signal of closing with factory remote control was sent 3 times		✓	
5	41	0x02 – parking is active		✓	✓
5	42	0x04 – reverse is active		✓	✓
5	43	0x08 – neutral is active		✓	✓
5	44	0x10 – drive is active		✓	✓
5	45	0x20 – engine lock active			✓
5	46	0x40 – request to lock the engine (activation after attempt to restart the engine)			✓
5	47	0x80 – factory armed			✓
6	48	0x01 - roof opened	✓	✓	✓

Control State Flags P2 & P4

Control State Flags P2					
Byte	Bit	Value bitmasks	LVCAN	ALLCAN	CAN-CONTROL
0	0	0x01 STOP		☐	
0	1	0x02 oil pressure / level	☐	☐	☐
0	2	0x04 coolant liquid temperature / level		☐	
0	3	0x08 handbrake system		☐	
0	4	0x10 battery not charging		☐	
0	5	0x20 AIRBAG		☐	
0	6	0x40 EPS (electic power steering)		☐	
0	7	0x80 ESP (electronic stability program)		☐	
1	8	0x01 CHECK ENGINE (MIL)		☐	
1	9	0x02 lights failure		☐	
1	10	0x04 low tire pressure		☐	
1	11	0x08 wear of brake pads		☐	
1	12	0x10 warning		☐	
1	13	0x20 ABS		☐	
1	14	0x40 low fuel		☐	
1	15	0x80 maintenance required		☐	
2	16	0x01 ESP indicator		☐	
2	17	0x02 glow plug indicator		☐	
2	18	0x04 FAP		☐	
2	19	0x08 electronics power control		☐	
2	20	0x10 parking lights		☐	☐
2	21	0x20 dipped headlights		☐	☐
2	22	0x40 full beam headlights		☐	☐
2	23	0x80 front foglights		☐	☐
3	24	0x01 ready to drive		☐	
3	25	0x02 cruise control		☐	
3	26	0x04 automatic retarder		☐	
3	27	0x08 manual retarder		☐	
3	28	0x10 air conditioning		☐	
3	29	0x20 rear foglights		☐	☐
3	30	0x40 passenger's seat belt		☐	
3	31	0x80 driver's seat belt		☐	

Control State Flags P4					
Byte	Bit	Value bitmasks	LVCAN	ALLCAN	CAN-CONTROL
0	0	0x01 - parking lights turned on		☐	☐
0	1	0x02 - dipped headlights turned on		☐	☐
0	2	0x04 - full beam headlights turned on		☐	☐
0	3	0x08 - rear fog lights turned on		☐	☐
0	4	0x10 - front fog lights turned on		☐	☐
0	5	0x20 - additional front lights turned on		☐	
0	6	0x40 - additional rear lights turned on		☐	
0	7	0x80 - light signal turned on		☐	
1	8	0x01 - air conditioning turned on		☐	
1	9	0x02 - cruise control turned on		☐	
1	10	0x04 - automatic retarder turned on		☐	
1	11	0x08 - manual retarder turned on		☐	
1	12	0x10 - driver's seatbelt fastened		☐	
1	13	0x20 - front passenger's seatbelt fastened		☐	
1	14	0x40 - rear left passenger's seatbelt fastened		☐	
1	15	0x80 - rear right passenger's seatbelt fastened		☐	
2	16	0x01 - rear centre passenger's seatbelt fastened		☐	
2	17	0x02 - front passenger is present		☐	
2	18	0x04 - PTO is on		☐	
2	19	0x08 - front differential locked		☐	
2	20	0x10 - rear differential locked		☐	
2	21	0x20 - central differential (4HI) locked		☐	
2	22	0x40 - central differential with reductor (4LO) locked		☐	
2	23	0x80 - trailer axle 1 lift active		☐	
3	24	0x01 - trailer axle 2 lift active		☐	

Indicator State Flags P4

Byte	Bit	Value bitmasks	LVCAN	ALLCAN	CAN-CONTROL
0	0	0x01 - CHECK ENGINE (MIL) indicator turned on		☐	
0	1	0x02 - ABS indicator turned on		☐	
0	2	0x04 - ESP indicator turned on		☐	
0	3	0x08 - ESP is turned off		☐	
0	4	0x10 - STOP indicator turned on		☐	
0	5	0x20 - oil pressure / level indicator turned on		☐	☐
0	6	0x40 - coolant liquid temperature / level indicator turned on		☐	
0	7	0x80 - battery not charging indicator turned on		☐	

1	8	0x01 - handbrake system indicator turned on		
1	9	0x02 - AIRBAG indicator turned on		
1	10	0x04 - EPS (Electric Power Steering) indicator turned on		
1	11	0x08 - warning indicator turned on		
1	12	0x10 - lights failure indicator turned on		
1	13	0x20 - low tire pressure indicator turned on		
1	14	0x40 - wear of brake pads indicator turned on		
1	15	0x80 - low fuel level indicator turned on		
2	16	0x01 - maintenance required indicator turned on		
2	17	0x02 - glow plug indicator turned on		
2	18	0x04 - FAP indicator turned on		
2	19	0x08 - EPC (Electronic Power Control) indicator turned on		
2	20	0x10 - engine oil filter plugged indicator turned on		
2	21	0x20 - low engine oil pressure indicator turned on		
2	22	0x40 - too high engine oil temperature indicator turned on		
2	23	0x80 - low coolant level indicator turned on		
3	24	0x01 - hydraulic system oil filter plugged indicator turned on		
3	25	0x02 - hydraulic system low pressure indicator turned on		
3	26	0x04 - hydraulic oil low level indicator turned on		
3	27	0x08 - hydraulic system high temperature indicator turned on		
3	28	0x10 - oil overflow in hydraulic chamber indicator turned on		
3	29	0x20 - air filter is plugged indicator turned on		
3	30	0x40 - fuel filter is plugged indicator turned on		
3	31	0x80 - water in fuel indicator turned on		
4	32	0x01 - Clogged brake system filter indicator turned on		
4	33	0x02 -low washer fluid level indicator turned on		
4	34	0x04 - low AdBlue level indicator turned on		
4	35	0x08 - low trailer tyre pressure indicator turned on		
4	36	0x10 - wear of trailer brake lining indicator turned on		
4	37	0x20 - high trailer brake temperature indicator turned on		
4	38	0x40 - incorrect trailer pneumatic supply indicator turned on		
4	39	0x80 - low CNG level indicator turned on		

ALL-CAN300 Agricultural State Flags

Agricultural State Flags are only stored by ALL-CAN300 :

Agricultural State Flags P2			
Byte	Bit	Value bitmasks	ALLCAN
0	0	0x01 – Mowing	
0	1	0x02 – Grain relese from hopper	
0	2	0x04 – First front hydraulic turned on	
0	3	0x08 – Rear Power Take-Off turned on	
1	8	0x01 – Excessive play under the threshing drum	
1	9	0x02 – Grain tank is open	
1	10	0x04 – 100% of Grain tank	
1	11	0x08 – 70% of Grain tank	
1	12	0x10 – Drain filter in hydraulic system of drive cylinders is plugged	
1	13	0x20 – Pressure filter of drive cylinders hydraulic system is plugged	
1	14	0x40 – Alarm oil level in oil tank	
1	15	0x80 – Pressure filter of brakes hydraulic system is plugged	
2	16	0x01 – Oil filter of engine is plugged	
2	17	0x02 – Fuel filter is plugged	
2	18	0x04 – Air filter is plugged	
2	19	0x08 – Alarm oil temperature in hydraulic system of chasis	
2	20	0x10 – Alarm oil temperature in hydraulic system of drive cylinders	
2	21	0x20 – Alarm oil pressure in engine	
2	22	0x40 – Alarm coolant level	
2	23	0x80 – Overflow chamber of hydraulic unit	
3	24	0x01 – Unloader drive is ON. Unloading tube pivot is in idle position	
3	25	0x02 – No operator!	
3	26	0x04 – Straw walker is plugged	
3	27	0x08 – Water in fuel	
3	28	0x10 – Cleaning fan RPM	
3	29	0x20 – Trashing drum RPM	
4	33	0x02 - Low water level in the tank	
4	34	0x04 - First rear hydraulic turned on	
4	35	0x08 - Standalone engine working	
4	36	0x10 - Right joystick moved right	
4	37	0x20 - Right joystick moved left	
4	38	0x40 - Right joystick moved front	
4	39	0x80 - Right joystick moved back	
5	40	0x01 - Brushes turned on	
5	41	0x02 - Water supply turned on	
5	42	0x04 - Vacuum cleaner	
5	43	0x08 - Unloading from the hopper	
5	44	0x10 - High Pressure washer (Karcher)	
5	45	0x20 - Salt (sand) disperser ON	
5	46	0x40 - Low salt (sand) level	
6	48	0x01 - Second front hydraulic turned on	
6	49	0x02 - Third front hydraulic turned on	
6	50	0x04 - Fourth front hydraulic turned on	
6	51	0x08 - Second rear hydraulic turned on	
6	52	0x10 - Third rear hydraulic turned on	
6	53	0x20 - Fourth rear hydraulic turned on	
6	54	0x40 - Front three-point Hitch turned on	
6	55	0x80 - Rear three-point Hitch turned on	
7	56	0x01 - Left joystick moved right	
7	57	0x02 - Left joystick moved left	
7	58	0x04 - Left joystick moved front	
7	59	0x08 - Left joystick moved back	
7	60	0x10 - Front Power Take-Off turned on	

Agricultural State Flags P4			
Byte	Bit	Value bitmasks	ALLCAN
0	0	0x01 - right joystick moved right active	
0	1	0x02 - right joystick moved left active	
0	2	0x04 - right joystick moved forward active	
0	3	0x08 - right joystick moved back active	
0	4	0x10 - left joystick moved right active	
0	5	0x20 - left joystick moved left active	
0	6	0x40 - left joystick moved forward active	
0	7	0x80 - left joystick moved back active	
1	8	0x01 - first rear hydraulic turned on	
1	9	0x02 - second rear hydraulic turned on	
1	10	0x04 - third rear hydraulic turned on	
1	11	0x08 - fourth rear hydraulic turned on	
1	12	0x10 - first front hydraulic turned on	
1	13	0x20 - second front hydraulic turned on	
1	14	0x40 - third front hydraulic turned on	
1	15	0x80 - fourth front hydraulic turned on	
2	16	0x01 - front three-point hitch turned on	
2	17	0x02 - rear three-point hitch turned on	
2	18	0x04 - front power take-off turned on	
2	19	0x08 - rear power take-off turned on	
2	20	0x10 - mowing active	
2	21	0x20 - threshing active	
2	22	0x40 - grain release from hopper turned on	
2	23	0x80 - grain tank is 100%	
3	24	0x01 - grain tank is 70%	
3	25	0x02 - grain tank is opened	
3	26	0x04 - unloader drive is on; unloading tube pivot is in idle position	
3	27	0x08 - cleaning fan control turned off	
3	28	0x10 - threshing drum control turned off	
3	29	0x20 - straw walker is clogged	
3	30	0x40 - excessive clearance under the threshing drum	
3	31	0x80 - low temperature of drive system hydraulics <5 grades	
4	32	0x01 - high temperature of drive system hydraulics >86 grades	
4	33	0x02 - ear auger speed below the norm	
4	34	0x04 - grain auger speed below the norm	
4	35	0x08 - straw chopper speed below the norm	
4	36	0x10 - straw shaker speed below the norm	
4	37	0x20 - feeder speed below the norm	
4	38	0x40 - straw chopper switched on	
4	39	0x80 - corn header connected	
5	40	0x01 - grain header connected	
5	41	0x02 - feeder reverse switched on	
5	42	0x04 - the pressure filter of the hydraulic pump is clogged	

ALL-CAN300 Utility & Cistern State Flags

Utility and Cistern State Flags are only stored by ALL-CAN300.

Utility State Flags P4			
Byte	Bit	Value bitmasks	ALLCAN
0	0	0x01 - salt (sand) disperser is on	
0	1	0x02 - pouring chemicals turned on	
0	2	0x04 - conveyor belt is turned on	
0	3	0x08 - salt spreader's drive wheel turned on	
0	4	0x10 - brushes turned on	
0	5	0x20 - vacuum cleaner turned on	
0	6	0x40 - water supply turned on	
0	7	0x80 - high pressure washer (Karcher) turned on	
1	8	0x01 - liquid pump turned on	
1	9	0x02 - unloading from the hopper turned on	
1	10	0x04 - low salt (sand) level in container indicator turned on	
1	11	0x08 - low water level in container indicator turned on	
1	12	0x10 - chemicals turned on	
1	13	0x20 - compressor turned on	
1	14	0x40 - water valve is opened	
1	15	0x80 - cabin moved up status active	
2	16	0x01 - cabin moved down status active	

Cistern State Flags P4			
Byte	Bit	Value bitmasks	ALLCAN
0	0	0x01 - section 1 - presence of fluid in the downpipe	
0	1	0x02 - section 1 - filled	
0	2	0x04 - section 1 - overfilled	
0	3	0x08 - section 2 - presence of fluid in the downpipe	
0	4	0x10 - section 2 - filled	
0	5	0x20 - section 2 - overfilled	
0	6	0x40 - section 3 - presence of fluid in the downpipe	
0	7	0x80 - section 3 - filled	
1	8	0x01 - section 3 - overfilled	
1	9	0x02 - section 4 - presence of fluid in the downpipe	
1	10	0x04 - section 4 - filled	
1	11	0x08 - section 4 - overfilled	
1	12	0x10 - section 5 - presence of fluid in the downpipe	
1	13	0x20 - section 5 - filled	
1	14	0x40 - section 5 - overfilled	
1	15	0x80 - section 6 - presence of fluid in the downpipe	
2	16	0x01 - section 6 - filled	
2	17	0x02 - section 6 - overfilled	
2	18	0x04 - section 7 - presence of fluid in the downpipe	
2	19	0x08 - section 7 - filled	
2	20	0x10 - section 7 - overfilled	
2	21	0x20 - section 8 - presence of fluid in the downpipe	
2	22	0x40 - section 8 - filled	
2	23	0x80 - section 8 - overfilled	

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 a 4-digit format is available, just add "1" to the front of the needed program number.

Program Number logic change from 2018-01-01

From 2018-01-01 additional digit was added to the program number. Currently, the program number consists of 5 digits. This logic applies to all CAN adapters manufactured after 2018-01-01.

Example

When using older connection schemes where program number displayed as a 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: