

# Teltonika DSM testing instructions

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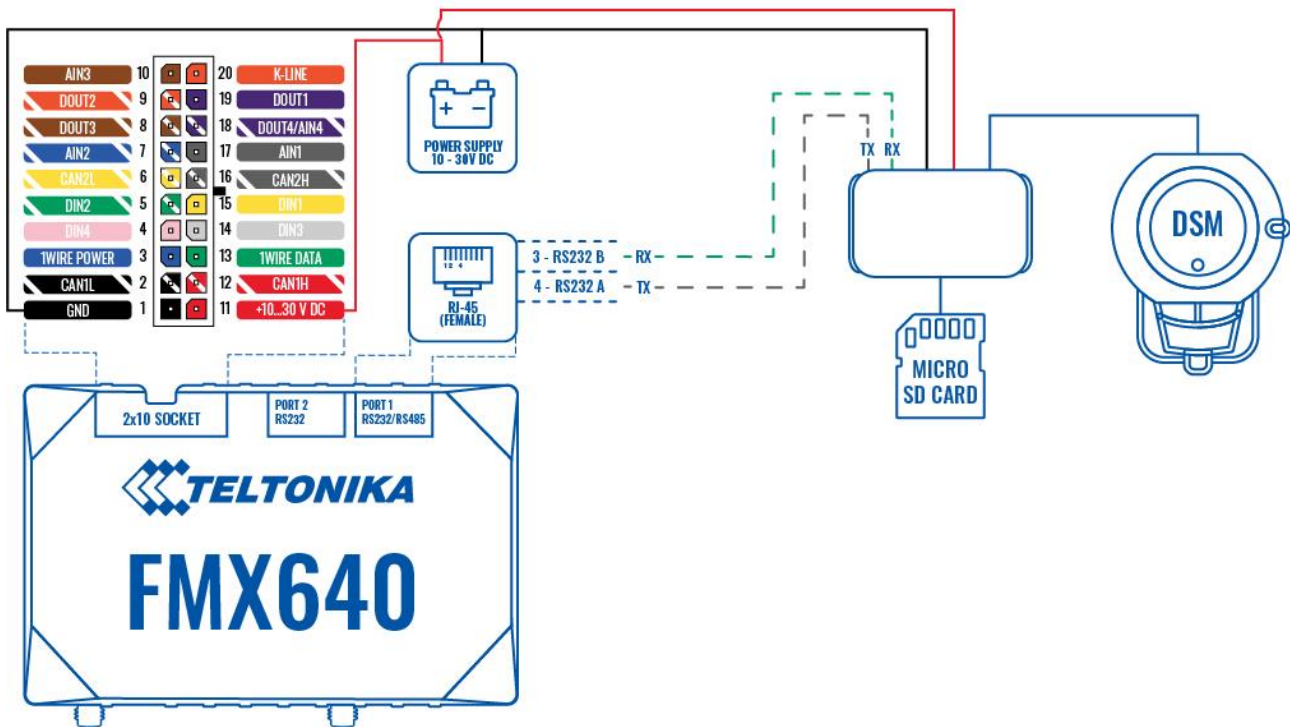
## 1. DSM Calibration

If it is the first DSM start, initial calibration is required to ensure the correct DSM working with the FMX64 device.

To complete initial calibration, please refer to the following page, where DSM calibration is described in detail: [DSM Calibration](#)

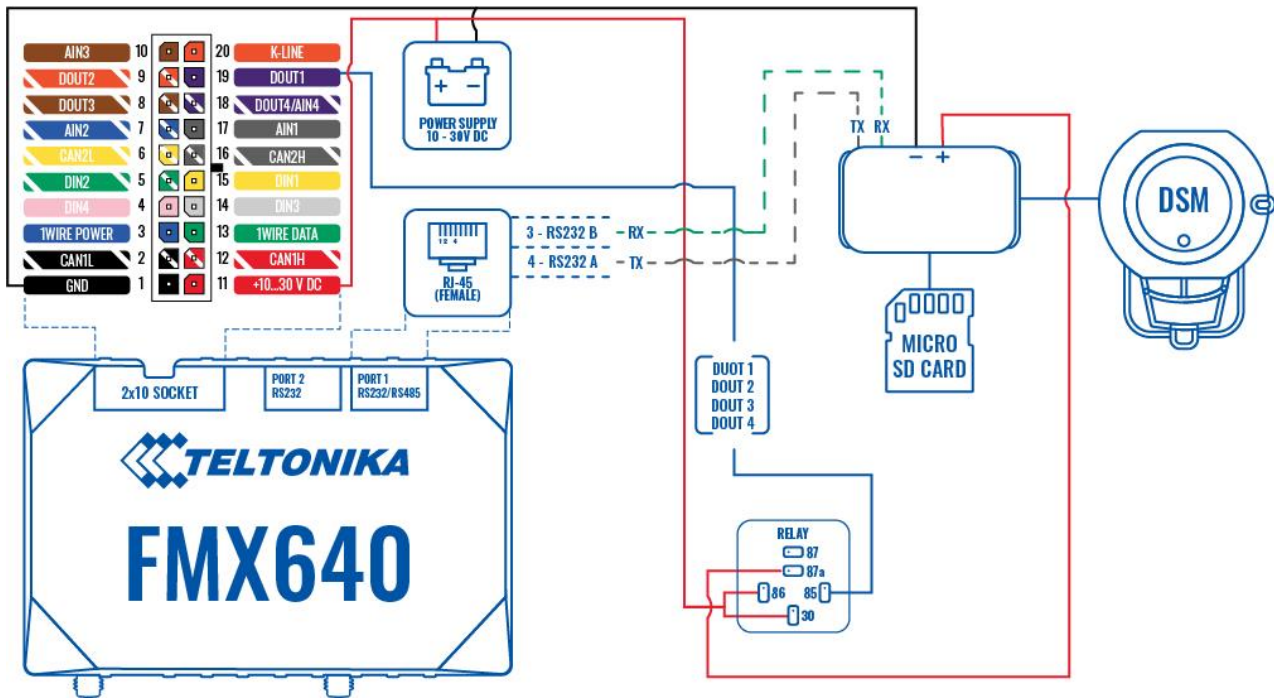
## 2. Wiring connection

Connection of Teltonika DSM to the FMX640 should be done with transmitter connected as a bridge between FMX64 and DSM camera. These wires include Power & Ground wires which are connected directly to the power supply and Tx and Rx wires which should be connected to FMX64 with help of RJ-45 connector. Important to note DSM RX wire should be connected with Tx cable of the FMX64 device and Tx cable should be connected to the Rx input. **When testing the devices on the table, please connect power and ground cables directly to power supply.** The difference of connection between tests on table and connection to vehicle is explained further below.



Picture 1 - DSM connection to power supply and FMX640

Important to note is that DSM is not connected directly to the vehicle's battery, it has to be connected through the relay of the vehicle for in order to control DSM state with the ignition of the vehicle. If it will be connected directly to the battery, there will be a possibility for the battery to be depleted within a day or two. Therefore, it is essential to notify clients about the connection as clearly as possible in order to evade possible issues occurring, below is a picture depicting a connection to the vehicle through a relay.



Picture 1 - DSM connection to vehicle and FMX640 through a relay

Once the DSM camera is fully connected to a power supply and FMX640 device, open the configurator and check the following IO parameter for any error codes. This section is meant for showing errors due to which the camera might not be working and different error codes are there to show what could potentially be the issue.

#### A list of possible error codes with their respective definitions (values received in hex):

- 0x00 (0) – no error
- 0x01 (1) – camera failure
- 0x02 (2) – GPS failure
- 0x04 (4) – CAN failure
- 0x10 (16) – camera blocked

DSM I/O		None	Low	High	Panic
CAN \ Tachograph		None	Low	High	Panic
Error code		None	Low	High	Panic

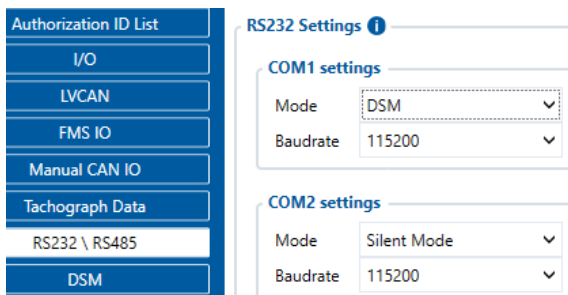
## 3. Configuration

### 3.1 System Tab

It is important to turn on codec 8E at the start of the configuration in the „System“ tab as it is required for the extra information of AVL ID's that are being transferred by the device. This setting can be found under System tab in the Teltonika Configurator.

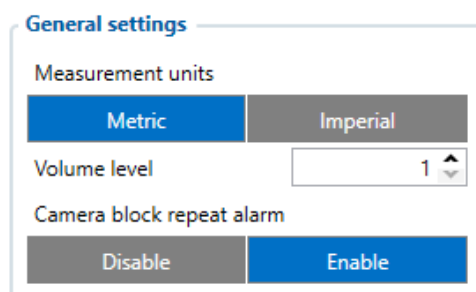


### 3.2 RS232/RS485 Tab



Upon opening the configurator, go to RS232/RS485 tab and under COM1 settings select Mode as DSM and Baudrate as 115200. 2 new tabs will appear in the configurator menu called DSM and DSM I/O.

### 3.3 DSM Tab



Open DSM tab and a new range of functions for the DSM camera will appear. These settings include general camera settings, image/recording settings and settings about different camera functions. For starters, „General settings“ function. these settings include measurement units (metric – suitable for most of the EU, ASIA, MEA, Australia and etc., regions while imperial units can be chosen for countries like UK, America and Canada). There is also a choice for volume level, this can be chosen to the clients liking.

And Camera block repeat alarm stands for repeated alarms if the camera view is blocked resulting in reduced or no functionality at all and a notification system to counter this.

**Image/recording settings**

Voice recording

Overlay text

Mirror display

Video format

Recording ratio 8:1:1

G-sensor sensitivity

**Image/recording settings** - Gives functionality to enable voice recordings during alerts, also an overlay text which will show date and time on the photos. Mirror display basically shows either mirrored photo or the real direction in which the driver is sitting.

Video format can be chosen between NTSC and PAL. This is dependant on the region where the DSM camera is going to be used. **NTSC** is used in the United States, Canada, Japan, South Korea, Mexico, Central America, parts of South America and some other countries. **PAL** is used in Great Britain, most countries in Europe and Africa, Australia, the Middle East, China, India and some other countries. Recording ratio gives a choice of what type of files should

occupy the SD card mostly. 1st number is continuous footage, 2nd one is g-sensor data and 3rd is DSM event footage data. G-sensor sensitivity gives camera has its own sensor to detect crashes and its sensitivity can be adjusted.

**Event settings**

Working speed source

Working speed (global) (km/h)

**Event settings** - Working speed source has Global setting which will set the same speed limit for all of the settings which require speed limit for activation while Individual settings will allow each parameter to have its own configurable speed limit setting for their events.

**Drowsiness**

Function

Sound

Vibration

Sensitivity

Automatic transmit

Working speed (km/h)

**Distraction**

Function

Sound

Vibration

Sensitivity

Automatic transmit

Working speed (km/h)

**Phone**

Function

Sound

Vibration

Sensitivity

Automatic transmit

Working speed (km/h)

**Smoking**

Function

Sound

Vibration

Sensitivity

Automatic transmit

Working speed (km/h)

**Drowsiness, Distraction, Phone and Smoking** have exactly the same settings which work differently internally but the setup is similar. Drowsiness detects a driver who has sleepy eyes and is at risk of falling asleep. Distraction detects the driver who is looking away from the road (sideways) which can also lead to potential accident. Phone function detects a driver who might be talking on a phone or looking into his phone. Smoking prevention functionality is implemented as well..

„**Function**“ can be enabled by pressing enable button, this function can also have its own „**Sound**“ level which can be used to distinguish it between other functions that are turned on.

„**Vibration**“ function can also be activated which will make DSM camera vibrate upon activation. „**Sensitivity**“ level can also be chosen ranking from lowest to highest which will determine camera sensitivity to facial drowsiness expression, or the way driver gets distracted or how they will use their phone, smoke or yawn.

„**Automatic transmit function**“, if not enabled in global settings (described in even settings), upon enabling will transmit images/audio to the server when the event is active. „**Working speed**“ parameter which sets the minimum required speed for the event to become enabled, leave 0 for this setting to be off.

**Yawning**

Function

Sound

Vibration

Sensitivity

Working speed (km/h)

**Yawning** – this function describes itself, driver yawns, camera event turns on by detecting driver yawning. Function enabling/disabling, sound level, vibration activation, function sensitivity and working speed is configured in the same principle as the functions described previously. Please note, this function does not have automatic transmit function and does not support image and audio sending to server upon activation.

**Seatbelt**

Function

Sound

Drivers position

**Seatbelt** – has the function enabling and disabling parameters, adjustable sound level and a selectable driver position which is a useful feature for drivers in countries where they drive on the right side.

**Not listed driver**

Function

**Not listed driver** – This function only has enabling function as driver setup is done during calibration.



### 3.4 DSM I/O

Once everything is setup, open DSM I/O tab and select required parameters on Low priority. This will allow the FMX640 device to send corresponding values to server. Change operands with desired selection in order to activate record sending when the value changes. E.g. Drowsiness, Low & High value – 0, operand – on Exit. So once the value of Drowsiness changes to 1 and exists the limit (0), the record is going to be created and sent to the server. It is also beneficial to keep error code and camera state parameters at low priority so that periodic record sending could report camera state to the server at all times.

DSM I/O

Input Name	Units	Priority				Low Level
Drowsiness		None	Low	High	Panic	0
Distraction		None	Low	High	Panic	0
Yawning		None	Low	High	Panic	0
Phone		None	Low	High	Panic	0
Smoking		None	Low	High	Panic	0
Driver absence		None	Low	High	Panic	0
Mask		None	Low	High	Panic	0
Seatbelt		None	Low	High	Panic	0
G-sensor		None	Low	High	Panic	0
Active driver name		None	Low	High	Panic	
Recording status		None	Low	High	Panic	0
GPS status		None	Low	High	Panic	0
Speed	km/h or mi/h	None	Low	High	Panic	0
Error code		None	Low	High	Panic	0
Camera state		None	Low	High	Panic	0

## 4. Server connection

**File upload settings**

Domain

Port

Periodic image sending

Sending interval (s)

Image sending trigger

DIN1	DIN2
DIN3	DIN4
Crash	Towing
Idling	Geofence
Unplug	Green driving

Once the FMX640 device is setup with the required settings, a server has to be entered in the „GPRS“ tab and „DSM“ tab in order for the device to send required data to the desired server. This can be tested by entering server IP address and port number into the requested fields and activating a trigger or setting up periodic image sending. There are different types of triggers available for selection, such as DINs and safety features like crash, towing, idling and etc.

## 5. SMS/GPRS commands

Command	Arguments	Explanation
dsm_camreq:	<file_type>, <file_source>, <domain>, <port>	Captures appropriate file with the provided details. If the connection to server is opened, then files immediately become available for download. If not, then the connection is tried to be made. <domain> and <port> are optional if the server in the "File upload settings" is set. If <domain> and <port> parameters are included, the device will send footage of the command to that address.
dsm_getinfo	None	Used to get general camera information

### Dsm\_camreq

Command follows these arguments:

#### <file\_type>

2 – Current snapshot;

#### <file\_source>

4 – DSM (hardcoded). 0 is reserved for ADAS; 1, 2 and 3 are reserved for DualCam project;

#### <domain>

Optional – domain to where file has to be sent;

#### <port>

Only required if domain is used.

Examples:

dsm\_camreq:2,0,132.145.51.134,3333 – request current snapshot from camera and upload to 132.145.51.134 server with 3333 port.

### Dsm\_getinfo

The response message structure is as follows:

**Date:**<date>,**FW:**<version>,**Err:**<error\_code>,**Rec:**<rec\_status>,**GPS:**<lat>|<lon>|<gps\_status>,  
**Event:**<active\_event>|<g\_sensor\_event>,**State:**<camera\_state>

#### Explanation:

**<date>** – date and time following format: <YYYY>.<MM>.<DD> <hh>:<mm>:<ss>

**<version>** – camera FW version in the following format: <major>.<minor>.<build>

**<error\_code>** – camera error code

**<rec\_status>** – recording status

**<lat>, <lon>** – GPS coordinates (4 decimal places precision); **<gps\_status>** – GPS status

**<active\_event>** – active event(s) mask detected by the camera; **<g\_sensor\_event>** – g-sensor active flag

**<camera\_state>** – current working state (from the device)

## 6. Credits

If you have any further questions/issues with connection of the DSM and FMX640 device, please contact your direct sales representative OR create a VIP Helpdesk query where a technical support member will be assigned to you.

After completion of the testing, please provide feedback to your direct sales representative, we would appreciate your contribution to improving our services and quality of provided information