FM2200 EXtended

functionality description

V.0.1

(DRAFT)

Contents:

About

About document

This document describes extended FM2200 firmware functionality. Before using this document, you should have some basic understanding of FM2200 operational principals.

This document describes difference between base and extended versions of fimrware of FM2200 only.

Related documents

- **FM2200** User Manual
- FM4100 FM2100 and **FM2200** Protocols

Hardware and Firmware

Hardware versions	FM2200
Firmware versions	08.02.XX
Configurator versions	1.8.2.XX

Online resources

Latest versions of configurator and firmware are available from:

http://avl1.teltonika.lt/downloads/fm22ext

Basic description (Extensions)

FM2200 Extended firmware version allows to have much more flexible configuration than it was before. New functionalities are available in FM2200 Extended version:

GSM provider code based behaviour

This functionality allows to have different AVL records acquire and send parameters values in Home, Roaming partners' and Unknown networks.

### *Moving based behaviour*

This functionality allows to have different AVL records acquire and send parameters values when object is moving or stand still.

Both, *GSM provider code based* and *Object moving based* behaviours are working in the same time. As result, FM2200 allows to have 6 different modes. Operational logic is shown **1 figure.**
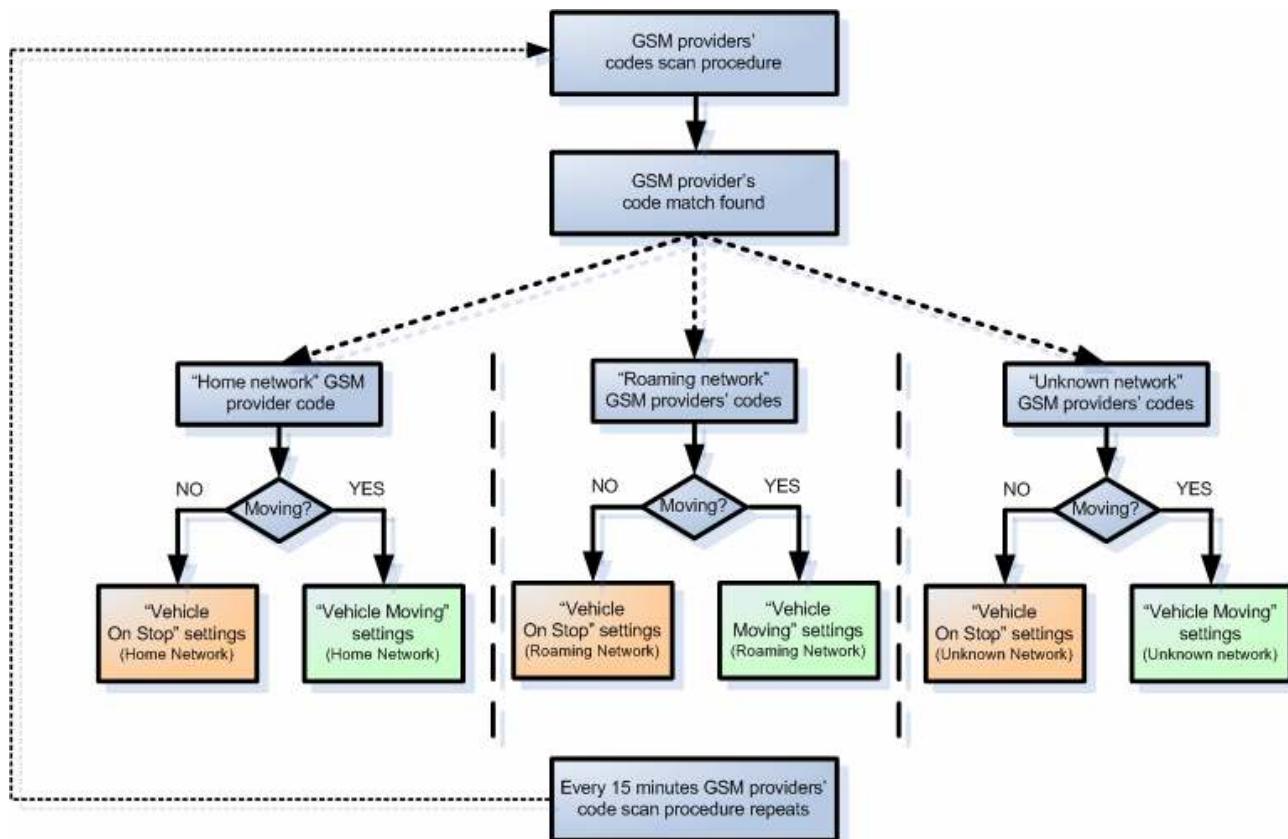

1 fig. Operational Logic

1 Table Modes, Submodes and Parameters

	Vehicle on stop	Vehicle Moving
"Home Network" GSM provider code	Min.Period00 Min.Records00 SendPeriod00 SendWeekTime00	Min.Period01 Min.Distance01 Min.Angle01 Min.Records01 SendPeriod01 SendWeekTime01
"Roaming Network" GSM providers' codes	Min.Period10 Min.Records10 SendPeriod10 SendWeekTime10	Min.Period11 Min.Distance11 Min.Angle11 Min.Records11 SendPeriod11 SendWeekTime11
"Unknown Network" GSM providers' code or no GSM signal	Min.Period20 Min.Records20 SendPeriod20 SendWeekTime20	Min.Period21 Min.Distance21 Min.Angle21 Min.Records21 SendPeriod21 SendWeekTime21

According to **1 figure** FM2200 performs GSM providers codes scan procedure every 15 minutes. Depending on GSM provider codes enetered in configuration (see **2 figure**), it chooses one of 3 modes: Home Network, Roaming or Unknown network.
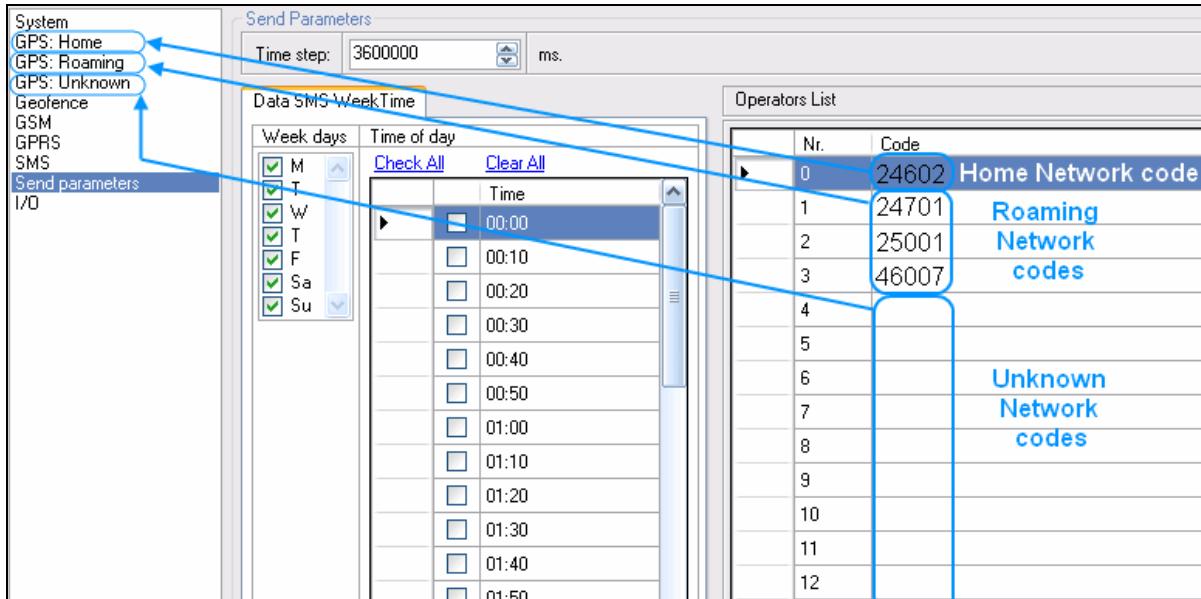
2 fig. GSM Provider codes and configuration

When one of mode is selected, FM2200 check if vehicle is moving or not. In case if no movement detected, „Vehicle on stop" submode is being selected. In case of movement detected „Vehicle Moving" submode is being selected (see **3 figure**).
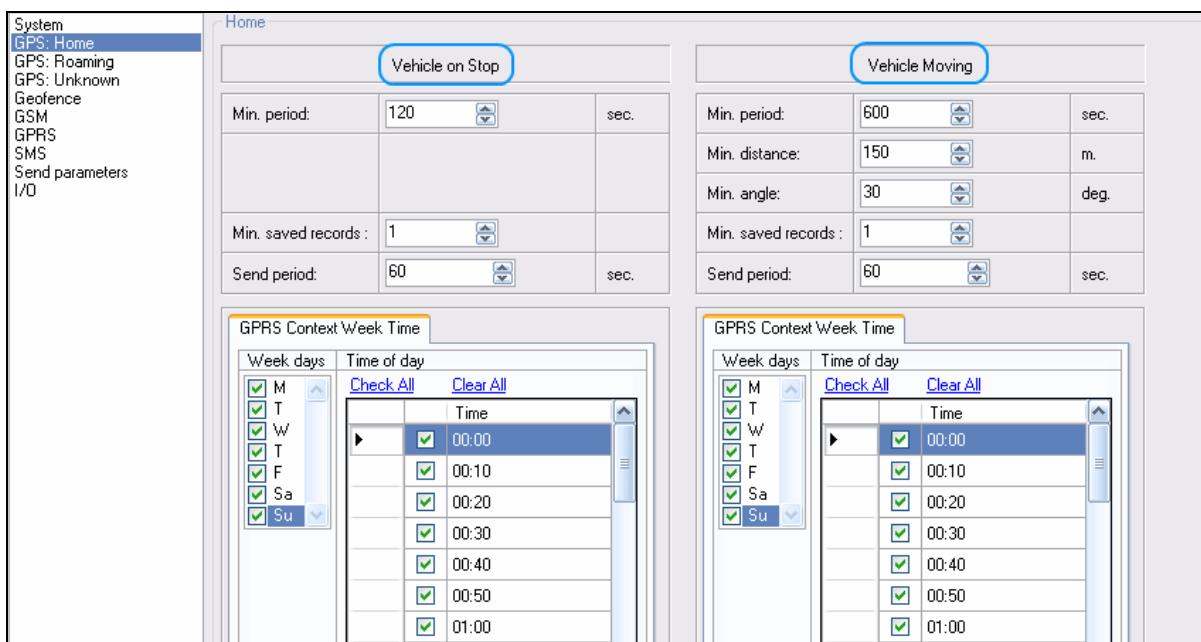
3 fig. Vehicle on stop and Vehicle Moving settings

After 15 minutes GSM provider code scan procedure repeats. „Vehicle on Stop" or „Vehicle Moving" is detecting by movement sensor or ignition connected to DIN1. Movement source could be selected in Global parameters menu. (see **4 figure**).
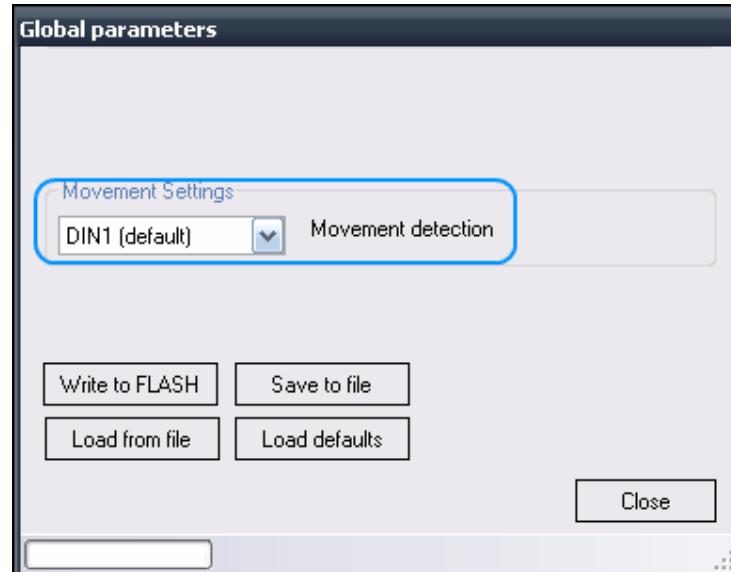
4 fig. Moving detection source selector

Sleep mode IO event

      Sleep mode IO event added in FM2200 Extended firmware version. This IO allows to know status of device: Sleep or Normal operational mode (see **5 figure**).

Status	Value
Sleep mode	0
Normal mode	1

Property information

Property ID	Property Name	Bytes	Description
1	Sleep event	250	Logic: 0 / 1
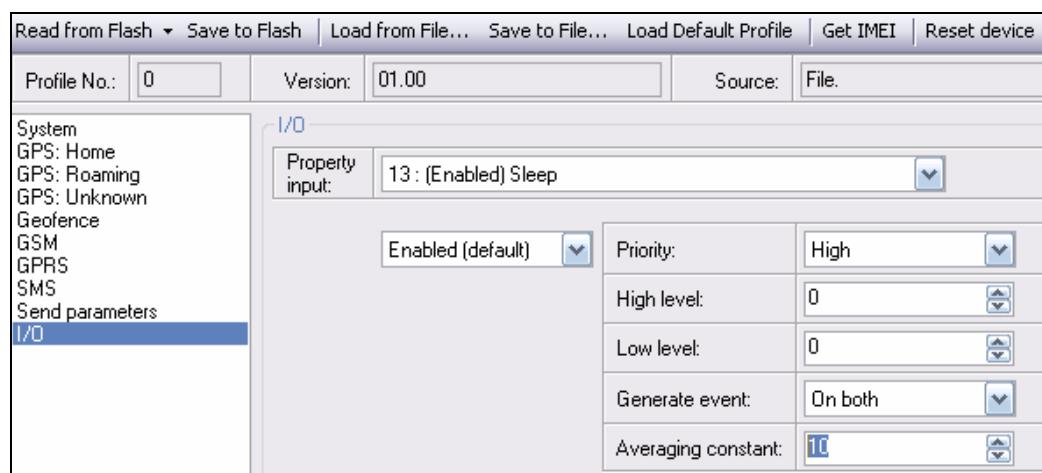
5 fig. Sleep IO parameter configuration

Min.Period independent Sleep mode parameter

In base versions of FM2200 sleep mode was switched on after Min.Period time interval without movement. Such behaviour could limit some FM2200 usage scenarios. In order to solve this issue, Sleep timeout parameter was added and Sleep mode is no longer depends on Min.Period (See. **6 figure**).
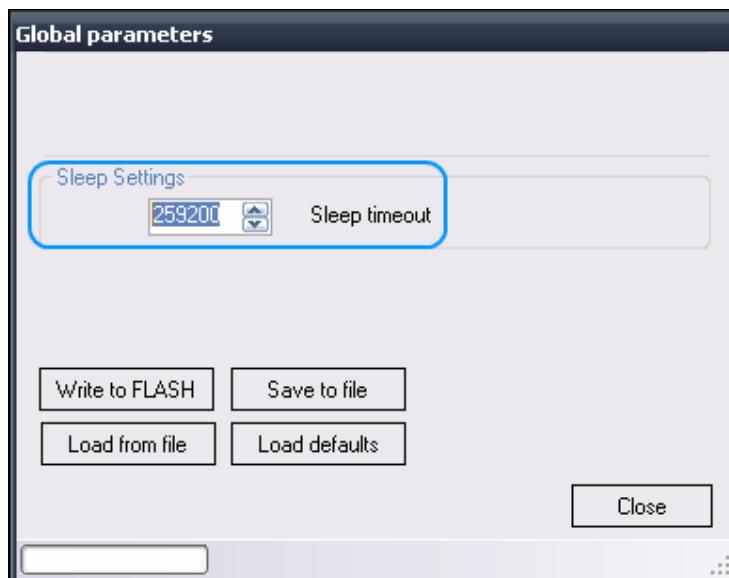
6 fig. Sleep timeout parameter configuration

On Level Generate event type

New Generate event type is added. This type used when it is need to generate event NOT on High and Low level CROSSING, but being IO value on already LEVEL. It is mostly used in cases when need to detect event after device start.
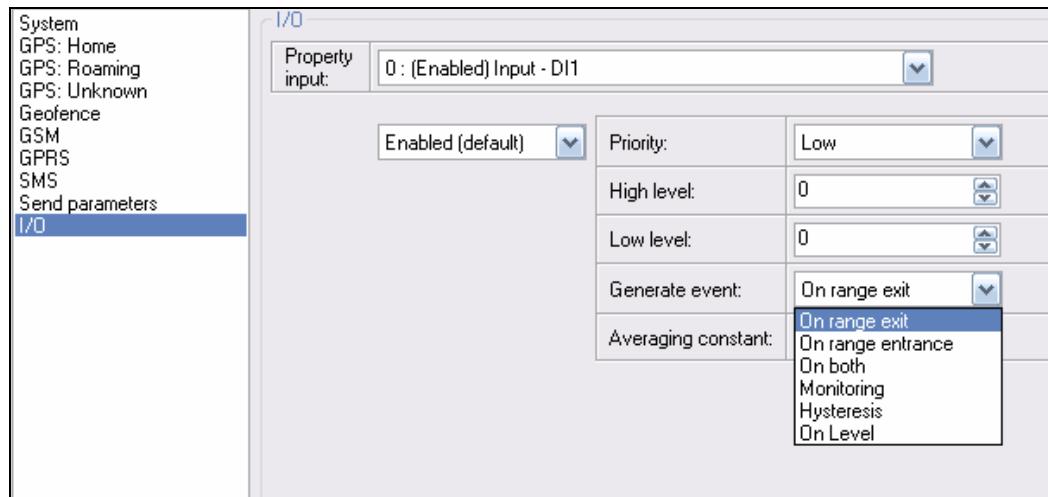
7 fig. IO Generate event types

Parameters

Deprecated parameters:

Parameter	ID	Values	Units	Size	Comment
Min.Period	11	1-9999999	Seconds	4 Bytes	
Min.Distance	12	1-65535	Meters	2 Bytes	
Min.Angle	13	0-180	Degrees	4 Bytes	
Min.Records	232	1-30	Number of records in packet	1 Byte	
SendPeriod	270	0-65535	Seconds	2 Bytes	
SendWTime	273		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

New parameters

Global Parameters:

Parameter	ID	Values	Units	Size	Comment
Sleep timeout	200	0-260000	Seconds	4 Bytes	
Movement	201	0 and 1	-	1 Byte	

detection					

Profile parameters:

Home Network GSM operator code "Vehicle on stop" parameters

Parameter	ID	Values	Units	Size	Comment
Min.Period00	280	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Records00	281	1-30	Number of records in packet	1 Byte	
SendPeriod00	282	0-65535	Seconds		
SendWTime00	283		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

Home Network GSM operator code "Vehicle moving" parameters

Parameter	ID	Values	Units	Size	Comment
Min.Period01	284	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Distance01	285	0-65535	Meters	2 Bytes	0 value disables data acquire by Min.Distance
Min.Angle01	289	0-180	Degrees	4 Bytes	0 value disables data acquire by Min.Angle
MinRecords01	286	1-30	Number of	1 Byte	

			records in packet		
SendPeriod01	287	0-65535	Seconds	2 Bytes	
SendWTime01	288		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

Roaming Network GSM operator code "Vehicle on stop" parameters

Parameter	ID	Values	Units	Size	Comment
Min.Period10	290	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Records10	291	1-30	Number of records in packet	1 Byte	
SendPeriod10	292	0-65535	Seconds	2 Bytes	
SendWTime10	293		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

Roaming Network GSM operator code "Vehicle moving" parameters

Parameter	ID	Values	Units	Size	Comment
Min.Period11	294	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Distance11	295	0-65535	Meters	2 Bytes	0 value disables data acquire by Min.Distance
Min.Angle11	299	0-180	Degrees	4 Bytes	0 value

Parameter	ID	Values	Units	Size	Comment
					disables data acquire by Min.Angle
Min.Records11	296	1-30	Number of records in packet	1 Byte	
SendPeriod11	297	0-65535	Seconds	2 Bytes	
SendWTime11	298		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

Unknown Network GSM operator code "Vehicle on stop" parameters

Parameter	ID	Values	Units	Size	Comment
Min.Period20	600	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Records20	601	1-30	Number of records in packet	1 Byte	
SendPeriod20	602	0-65535	Seconds	2 Bytes	
SendWTime20	603		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

*Unknown Network GSM operator code "Vehicle moving" parameters*

Parameter	ID	Values	Units	Size	Comment
Min.Period21	604	0-9999999	Seconds	4 Bytes	0 value disables data acquire by Min.Period
Min.Distance21	605	0-65535	Meters	2 Bytes	0 value disables data

					acquire by Min.Distance
Min.Angle21	609	0-180	Degrees	4 Bytes	0 value disables data acquire by Min.Angle
Min.Records21	606	1-30	Number of records in packet	1 Byte	
SendPeriod21	607	0-65535	Seconds	2 Bytes	
SendWTime21	608		Minutes (special format)	1 Byte x20	See details in FM2200 User Manual

Debug mode

FM2200 is able to transmit its current state when connected to PC using PORT1 cable. It is used to detect errors and provide information to possible solutions when operating as unexpected. Download Terminal from: http://avl1.teltonika.lt/Downloads/Software/Terminal.rar.

After launching it choose baud rate 115200 and hardware control – none. Click on 'Start Log' button and save a new file. Then click 'Connect' to start receiving messages from FM2200.
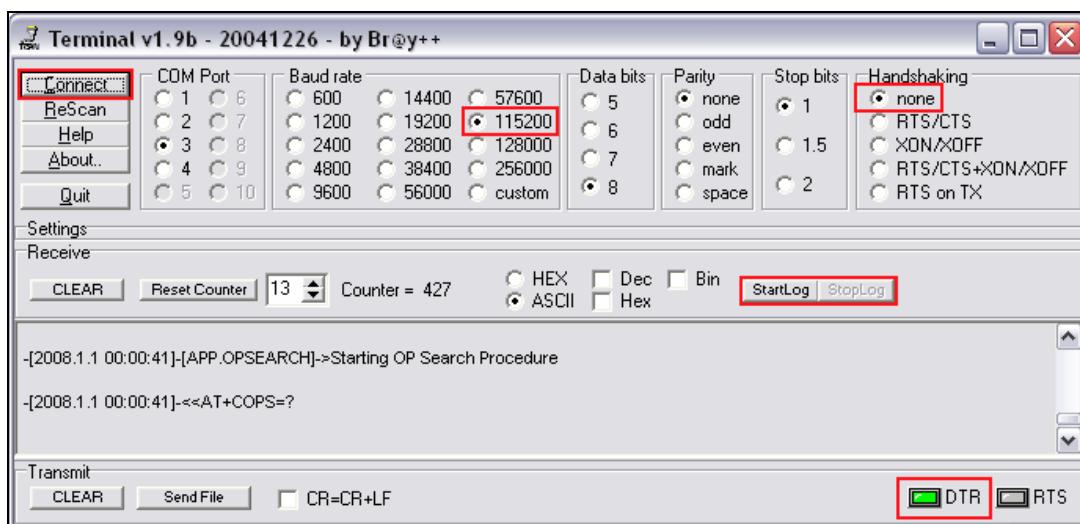
8 fig. Terminal window

Change log

Nr.	Date	Version	Comments
1	091026	0.1	Preliminary draft release.
2			