

# FMA204 General description

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FMA204 is a terminal with GPS and GSM connectivity, which is able to determine the object's coordinates and transfer them via the GSM network. This device is perfectly suitable for applications, which need location acquirement of remote objects. It is important to mention that FMA204 has additional inputs and outputs, which let you control and monitor other devices on remote objects. FMA204 also has a USB port for device status log output and entering configurations.

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## Package contents

The FMA204 device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FMA204 device with case and wires;
- USB cable (optional);
- Integrated Li-ion battery 3,7V, 1800 mA, for FMA204 device;

## Basic characteristics

### GSM / GPRS features:

- Teltonika TM2500 quad band module (GSM 850 / 900 / 1800 / 1900 MHz);
- GPRS class 12;
- SMS (text, data).
- Integrated GNSS receiver.
- Up to -162 dBm GNSS receiver sensitivity.

### GNSS features:

- Tracking: 33/ 99 acquisition channels;
- Up to -165 dBm sensitivity;
- Hot start < 1s;
- Warm start < 25s;

- Cold start < 35s;
- NMEA -183 protocol;
- GPS, GLONASS, GALILEO, BEIDOU, SBAS, QZSS, DGPS, AGPS;
- Accuracy < 3m.

#### **Hardware features:**

- Cortex®-M3 processor;
- 1 MB internal Flash memory ;
- Built-in movement sensor;
- Integrated Li-ion battery 3.7V, 1800mAh for FMA204;
- Internal High Gain GSM antenna;
- Internal High Gain GNSS antenna ;

#### **Interface features:**

- Power supply: 6 ... 30V;
- USB port;
- 3 digital inputs;
- 1 analog input;
- 2 open collector digital outputs (connecting external relays, LED's, buzzers etc.);
- 1Wire® temperature sensor;
- 1Wire® iButton;
- 2 LED's indicating device status.

#### **Special features:**

- High Quality track even in high density urban canyon;
- Ready for harsh environment;
- Any element event triggers (external sensor, input, speed, temperature, etc.);
- Highly configurable data acquisition and sending;
- Multiple Geo-fence areas;
- Sleep mode;
- Deep sleep mode;
- Configurable scenarios available;
- Real-time process monitoring;
- Authorized number list for remote access;
- Firmware update over GPRS or USB port;
- Configuration update over GPRS, SMS or USB port;
- TCP/IP or UDP/IP protocol support;
- 3500 record storing;
- Overvoltage protection.

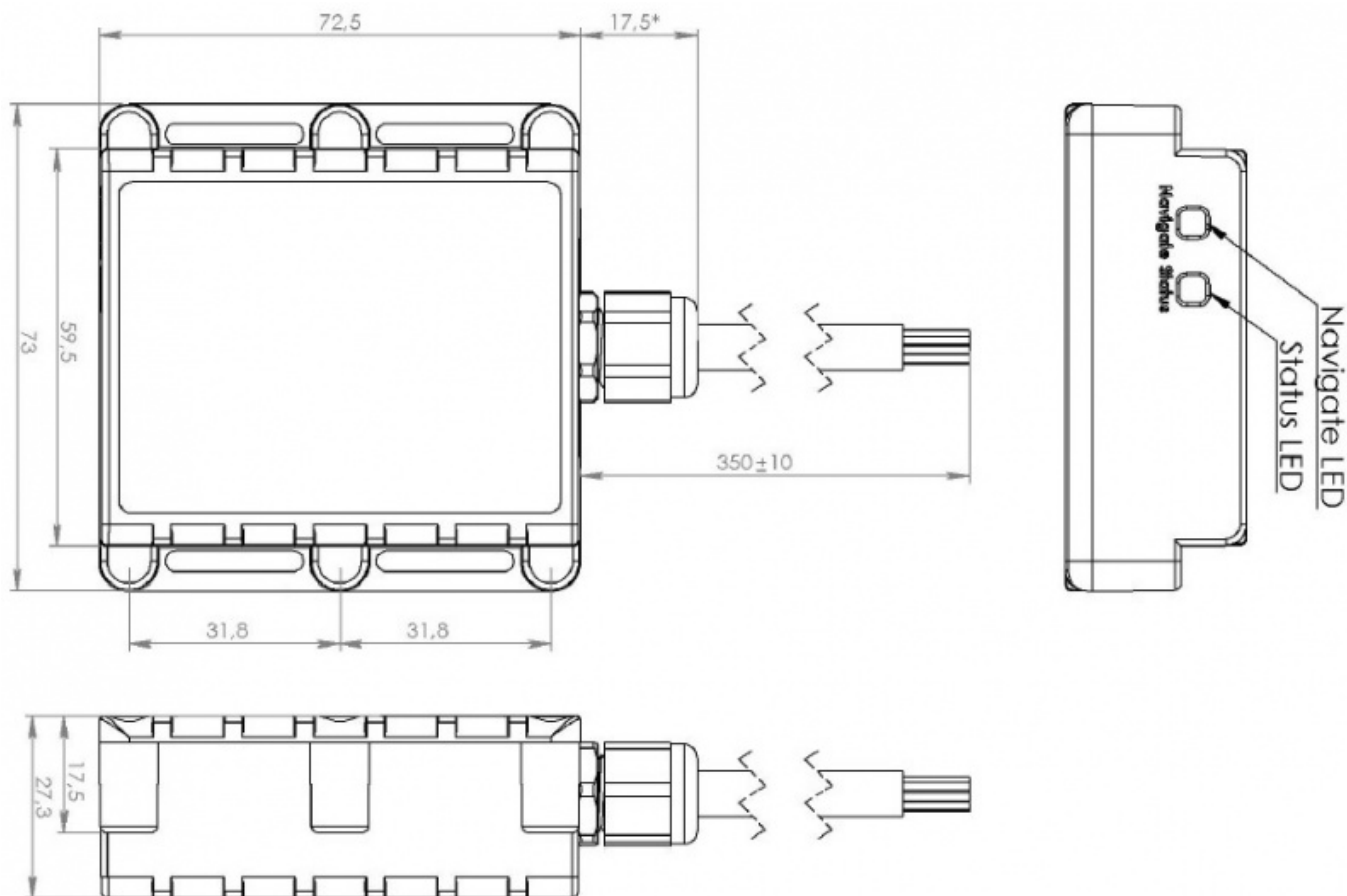
<b>Description</b>	<b>Voltage</b>	<b>Duration</b>
Normal operation	+6 ... +30 V	Unlimited
Protection turns on, device turns off	34 V	Unlimited
Maximum voltage	< 70 V	Unlimited
Maximum voltage impulse	90 V	5 ms

## Technical features

Part name	Physical specification
Navigation indication	LED
Modem indication	LED
USB	Mini USB socket

Technical details	
Power supply 6...30V DC 2 W Max	GPRS: average 25.9 mA r.m.s; Nominal: average 21.1 mA r.m.s;
Energy consumption:	GPS Sleep: average 15.7 mA; Deep Sleep: average 2.6 mA;
FMA204 Battery charge current	max. 207 mA
Operating temperature (without battery)	-40...+85 °C
Storage temperature (without battery)	-40...+85 °C
Storage relative humidity	5...95% (no condensation)

Dimension drawing:





## Technical information about internal battery

Li-ion battery details.				
Internal back-up battery	Battery voltage (V)	Nominal capacity (mAh)	Power (Wh)	Charging temperature (°C)
Li-ion rechargeable battery	3.75 □ 3.90	1800	6.75 - 7.02	0 - 50
Battery charging ranges.				

System voltage (V)	Charging range (V)
6	6.05-8
12	12.1-16
24	24.2-32

FMA204 internal battery is used for detecting external voltage disconnection.

	CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
	Battery should not be disposed of with general household waste.
	Bring damaged or worn-out batteries to your local recycling center or dispose them to battery recycle bin found in stores.

**Warranty: batteries are covered by 6 months warranty support.**

## Electrical characteristics

Characteristic description	Value			
	Min.	Typ.	Max.	Unit
Supply Voltage:				
Supply Voltage (Recommended Operating Conditions)	6		30	V
Digital Output (Open Drain grade):				
Drain current (Digital Output OFF)			120	μA
Drain current (Digital Output ON, Recommended Operating Conditions)	0.1		0.5	A
Static Drain-Source resistance (Digital Output ON)			120	mΩ
Digital Input:				
Input resistance (DIN1)		59.9		kΩ
Input resistance (DIN2, DIN3)		67.5		kΩ
Input voltage (Recommended Operating Conditions)	0		60	V
Input Voltage threshold (DIN1)	4	4	8	V
Input Voltage threshold (DIN2, DIN3)	2.5	2.7	3	V
Analog Input:				
Input voltage (Recommended Operating Conditions), Range 1	0		10	V
Input resistance, Range 1		120		kΩ
Input voltage (Recommended Operating Conditions), Range 2	0		30	V
Input resistance, Range 2		146.7		kΩ
Output Supply Voltage 1-Wire:				
Supply voltage		3.8		V
Output inner resistance	450		600	mΩ

Output current ( $U_{out} > 3.0\text{ V}$ )	75	mA
Short circuit current ( $U_{out} = 0$ )	75	mA

 **Analog Input error margin can increase if temperature varies.**

## Absolute maximum ratings

Characteristic description	Value		
	Min.	Typ.	Max. Unit
Supply Voltage (Absolute Maximum Ratings)	-32		+32 V
Drain-Source clamp threshold voltage (Absolute Maximum Ratings), ( $I_{drain} = 2\text{ mA}$ )			+36 V
Digital Input Voltage (Absolute Maximum Ratings)	-32		+32 V
Analog Input Voltage (Absolute Maximum Ratings)	-32		+32 V