

FMA120 General description

[Main Page](#) > [EOL Products](#) > [FMA120](#) > [FMA120 Manual](#) > **FMA120 General description**

FMA120 is a tracking terminal with GNSS and GSM connectivity, which is able to collect device coordinates and transfer them via GSM network to a server. This device is perfectly suitable for applications, which require the location acquirement of remote objects. It is important to mention that FMA120 has additional inputs and outputs, which let you control and monitor other devices on remote objects. FMA120 also has a USB port for device status log output and entering configurations.

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Contents

- [1 Package contents](#)
- [2 Basic characteristics](#)
- [3 Technical features](#)
- [4 Technical information about internal battery](#)
- [5 Electrical characteristics](#)
- [6 Absolute Maximum Ratings](#)

Package contents

The FMA120 device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FMA120 device;
- Input and output power supply cable with 2x5 connection pins;
- Micro USB cable;
- 3.7 V 170 mAh rechargeable Li-ion battery.

Basic characteristics

GSM / GPRS features:

- Quad band supported (GSM 850 / 900 / 1800 / 1900 MHz);
- GPRS Multi-Slot Class 12(up to 240 kbps);
- GPRS Mobile Station Class B;
- SMS (text, data).

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 accelerometer.
- 170mAh Li-ion rechargeable 3,7V battery

Interface features:

- Power supply: 10 ÷ 30V;
- USB port;
- 3 digital inputs;
- 1 analog input;
- 2 open collector digital outputs;
- 1Wire® temperature sensor
- 1Wire® iButton
- LEDs indicating device status.

Special features:

- 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.

[Template:FMB1 Supply voltage](#)

Technical features

Part name	Physical specification
Navigation indication	LED
Modem indication	LED
Socket 2x5	Tyco Micro MATE-N-LOK™ 4-794628-0 or similar

USB	Mini USB socket
GNSS	Internal GNSS antenna
GSM	Internal GSM antenna

Technical details

2 W max.	GPRS: average 120 mA rms
Current consumption at 12 V	Nominal: average 65 mA rms
	GNSS sleep: average 28 mA
	Deep Sleep: average 5 mA ²
Battery charge current	Average 115 mA
Operating temperature (without battery)	-40°C..+85 °C
Operating temperature (without battery)	-40°C..+85 °C
Storage relative humidity	5..95% (no condensation)
Internal fuse	3A, 125V

Dimension drawing:



Technical information about internal battery

Internal back-up battery	Battery voltage (V)	Nominal Capacity (mAh)	Power (Wh)	Charge temperature (°C)	Discharge temperature (°C)	Storage temperature (°C)
Li-ion rechargeable battery	3.75□3.90	170	0.64 - 0.66	0 to +45	-20 to +60	-20 to +45 for 1 month -20 to +35 for 6 months

Batteries are covered by 6 month [warranty](#) support.

- ⊗ 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 into general household waste.

- ⊗ Bring damaged or worn-out batteries to your local recycling center or dispose them into a battery recycle bin commonly found in supermarkets.

Electrical characteristics

Characteristic description	Value			
	Min.	Typ.	Max.	Unit
Supply Voltage:				
Supply Voltage (Recommended Operating Conditions)	5		30	V
Digital Input:				
Input resistance (DIN1)	120			kOhm
Input resistance (DIN2, DIN3)	15			kOhm

Input Voltage (Recommended Operating Conditions) 0		Supply voltage	V
Input Voltage threshold (DIN1)	7.5		V
Input Voltage threshold (DIN2, DIN3)	2.6		V
Digital Output (Open Drain grade):			
Drain Current (Digital Output OFF)		120	uA
Drain Current (Digital Output ON, Recommended Operating Conditions)		300	mA
Static Drain-Source Resistance (Digital Output ON)		300	mOhm
Analog Input:			
Input voltage (Recommended Operating Conditions), Range 1		10	V
Input resistance, Range 1	120		kOhm
Measurement error	4.4		%
Additional error	±26		mV
Input Voltage (Recommended Operating Conditions), Range2		30	V
Input resistance, Range2	146.7		kOhm
Measurement error	4		%
Additional error	±40		mV
Output Supply Voltage 1-Wire:³			
Supply voltage	3.3	3.6	V
Output inner resistance	10		Ohm
Output current ($U_{out} > 3.0$ V)	30		mA
Short circuit current ($U_{out} = 0$)	130		mA

Analog Input error margin can increase if temperature varies. If Analog input is not connected FMA120 will still measure certain numbers and it cannot be 0. This measurement is influenced by hardware components.

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), ($I_{drain} = 2$mA)			36	V
Digital Input Voltage (Absolute Maximum Ratings)	-32		32	V
Analog Input Voltage (Absolute Maximum Ratings)	-32		32	V