

# FM36M1 General description

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FM36M1 is GNSS, LTE CAT M1, NB IoT terminal with backup battery for SPECIAL applications. FM36M1 is designed for light vehicles tracking but also suitable for advanced applications like logistics, delivery services, utility transport and more. It is excellent for refrigerated transport, because this terminal has an extended input/output set and 1-wire interface for temperature monitoring. With Teltonika CAN adapters, FM36M1 can be even used in agriculture or construction & mining. Moreover, FM36M1 supports LTE CAT M1 and NB IoT, with additional GSM backwards compatibility, which makes this device usable with the newest, most cost-efficient and most popular technologies. FM36M1 also has a USB port for device status log output and configuration.

Monitorable basic vehicle parameters depend on vehicle mark and model.

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## Package contents

The FM36M1 device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FM36M1 device;
- Input and output power supply cable with a 2x6 connection pins;
- USB cable;
- Li-Po battery 3.7V, 170mAh.

## Basic characteristics

GSM/GPRS/4G LTE CAT.M1 features:

- FDD-LTE:
  - B1/ B2/ B3/ B4/ B5/ B8/ B12/ B13/ B18/B19/ B20/ B26/ B28
- TDD-LTE:
  - B39 (for Cat.M1 only)
- GSM/GPRS bands:
  - 850/900/1800/1900MHz
  - GPRS and EDGE class 12
  - SMS (text, data)

#### Hardware features:

- Cortex®-M3 processor;
- 8 Mbit internal Flash memory;
- Built-in accelerometer sensor.

#### Interface features:

- Power supply: 10 ÷ 30V;
- 2 digital inputs;
- 2 analog/digital input;
- 2 open collector Digital output;
- 1 Wire interface:
  - Temperature sensor
  - iButton
- Internal backup battery;
- 2 Status LEDs:
  - Navigate
  - Status
- Internal USB port;
- Internal GSM antenna;
- Internal GNSS antenna;
- INPUT 5 and INPUT 6, for LV-CAN200 and ALLCAN300 adapter connection;

#### GNSS features:

- 33 channel GNSS receiver
- -165 dBm sensitivity
- Hot start <1s
- Warm Start < 25s
- Cold start < 35s
- NMEA-183 protocol
- GPS, GLONASS, GALILEO, BEIDOU, SBAS, QZSS, DGPS
- Accuracy < 3m

#### 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;
- Up to 3854 records storing;
- Radio frequency jamming detection.

- Records exporting using USB;
- Offline working mode;

## 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.

## Technical features

Part name	Physical specification
System LED	LED
Navigation LED	LED
Socket 2x6	Tyco Micro MATE-N-LOK™ 4-794628-0 or similar
USB	Micro USB socket

### Technical details

2 W max.	GPRS: average 150 mA rms
Energy consumption at 12 V (Power supply 10...30 V DC)	Nominal: average 50 mA rms GPS sleep: average 18 mA Deep Sleep: average 5 mA
Battery charge current	max. 100 mA
Rated current	max. 250 mA
Operating temperature (without battery)	-40..+85 °C
Storage temperature (without battery)	-40..+85 °C

Storage relative humidity 5..95% (no condensation)  
 Internal fuse 3A, 125V

Dimension drawing:



## Electrical characteristics

Characteristic description	Value			
	Min.	Typ.	Max.	Unit
<b>Supply Voltage:</b>				
<b>Supply Voltage (Recommended Operating Conditions)</b>	10		30	V
<b>Drain current (Digital Output1 OFF)</b>		241.69		µA
<b>Drain current (Digital Output1 ON)</b>	0.1		0.5	A
<b>Drain current (Digital Output2 OFF)</b>		240.26		µA
<b>Drain current (Digital Output2 ON)</b>	0.1		0.5	A
<b>Static Drain-Source resistance (Digital Output ON)</b>			300	mΩ
<b>Digital Input:</b>				
<b>Input resistance (DIN1)</b>	15			kΩ
<b>Input resistance (DIN2, AIN2)</b>	20			kΩ
<b>Input resistance (AIN1)</b>	120			kΩ
<b>Input voltage (Recommended Operating Conditions)</b>	0		Supply voltage	V
<b>Input Voltage threshold (DIN1)</b>		7.5		V
<b>Input Voltage threshold (DIN2)</b>		2.5		V
<b>Input Voltage threshold (AIN1, AIN2)</b>		3.5		V
<b>Analog Input:</b>				
<b>Input voltage (Recommended Operating Conditions), Range 1</b>			10	V
<b>Input resistance, Range 1</b>		120		kΩ
<b>Measurement error</b>		0.47		%
<b>Additional error</b>		±17.3		mV
<b>Input Voltage (Recommended Operating Conditions), Range 2</b>	0		30	V
<b>Input resistance, Range 2</b>		150		kΩ
<b>Measurement error</b>		1.01		%
<b>Additional error</b>		±139	0	mV

Analog Input error margin can increase if temperature varies.