

# FM6320 General description

[Main Page](#) > [EOL Products](#) > [FM6320](#) > [FM6320 Manual](#) > **FM6320 General description**

FM6320 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.

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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

Usually the FM6320 device sample is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FM6320 device;
- 4 screws for assembling device
- GPS/GLONASS antenna
- GSM antenna
- USB cable
- Port 1/2 cable
- Port 3 cable
- Ni-MH Rechargeable battery, 8.4V, 550 mA.
- Input and output power supply cable with 2x10 connection pins.

## Basic characteristics

GSM/GPRS/3G features:

- Telit HE910-GL 5-band module (GSM 850 / 900 / 1700 / 1900 / 2100 MHz);
- EGPRS class 33;
- SMS (text, data).

GNSS TG3300 Module features:

- Navigation Systems; GPS/GLONASS;
- Protocol NMEA-0183: GGA, GGL, GSA, GSV, RMC, VTG;
- Up to -162 dBm sensitivity.

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Hardware features:

- STM32 processor;
- 1MB internal Flash memory;
- External memory card slot;
- Built-in accelerometer;
- Internal backup battery included;

Interface:

- Power supply: 10 ÷ 30V;
- USB port;
- 4 digital inputs;
- 3 analog inputs;
- 4 open collector digital outputs;
- 1Wire® interface;
- LEDs indicating device status;
- K-Line interface for online Tachograph Vehicle Data transfer;
- 2xRS232 port;
- RS485 port;
- J1708 interface;
- CAN messages 2.0 A, B Active support. Speed up to 1 Mbit/s;
- Roaming enabling/disabling;
- Offline working mode;
- Records importing using USB/microSD card;
- Remote logs reading via SMS/GPRS;

Description	Voltage	Duration
<b>Normal operation</b>	+10... +30 V	Unlimited
<b>Protection turns on, device turns off</b>	34 V	Unlimited
<b>Maximum voltage</b>	< 70 V	Unlimited
<b>Maximum voltage impulse</b>	90 V	5 ms

## Technical features

Part name	Physical specification
<b>Navigation indication</b>	LED
<b>Modem indication</b>	LED
<b>Socket</b>	Soldered inner socket
<b>USB</b>	Mini USB socket
<b>GNSS</b>	External GNSS antenna
<b>GSM</b>	External GSM antenna

### Technical details

<b>2 W max.</b>	GPRS: average 120 mA rms
<b>Current consumption at 12 V</b>	Nominal: average 65 rms
	GNSS sleep: average 28 mA
	Deep Sleep: average less than 7 mA
<b>Battery charge current</b>	Average 100 mA
<b>Operating temperature</b>	-25..+55 °C
<b>Storage temperature</b>	-40..+70 °C
<b>Storage relative humidity</b>	5..95% (no condensation)

Dimension drawing:



## Technical information about internal battery

<b>Internal back-up battery</b>	<b>Battery voltage (V)</b>	<b>Nominal Capacity (mAh)</b>	<b>Charging temperature (°C)</b>
Ni-MH rechargeable battery	8.4□10.0	550	0 - 45

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

<b>Characteristic description</b>	<b>Value</b>		<b>Unit</b>
	<b>Min.</b>	<b>Typ. Max.</b>	
Supply Voltage:			
Supply Voltage (Recommended Operating Conditions)	+10	+30	V
Digital Output (Open Drain grade):			
Drain current (Digital Output OFF)		120	μA
Drain current (Digital Output ON, Recommended Operating Conditions)		0.5	A
Static Drain-Source resistance (Digital Output ON)	400	300	mΩ
Digital Input:			
Input resistance (DIN1)	15		kΩ
Input resistance (DIN2)	15		kΩ
Input resistance (DIN3)	15		kΩ

Input voltage (Recommended Operating Conditions)	0		Supply voltage	V
Input Voltage threshold (DIN1)		7.5		V
Input Voltage threshold (DIN2, DIN3, DIN4)		2.5		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		147		kΩ
Output Supply Voltage 1-Wire:				
Supply voltage	+4.5		+4.7	V
Output inner resistance		7		Ω
Output current ( $U_{out} > 3.0$ V)		30		mA
Short circuit current ( $U_{out} = 0$ )		75		mA
CAN Interface:				
Internal terminal resistors CAN bus		120		Ω
Differential input resistance	19	30	52	kΩ
Recessive output voltage	2	2.5	3	V
Differential input resistance	0.5	0.7	0.9	V
Common mode input voltage	-30		30	V
Power supply current (Hardware version with internal battery):				
Deep Sleep, average, $I_{cc.ds}$	2.5	4		mA
Sleep, average, $I_{cc.ds}$ , $V_{cc}=10V$	45			mA
Sleep, average, $I_{cc.ds}$ , $V_{cc}=30V$	25			mA
$U_{cc}=12.6V$ , all modules fully working, internal battery is charging, $I_{cc1}$			350	mA
$U_{cc}=12.6V$ , all modules fully working, internal battery is charging, $I_{cc2}$			300	mA
$U_{cc}=25.2V$ , all modules fully working, internal battery is charging, $I_{cc3}$			195	mA
$U_{cc}=25.2V$ , all modules fully working, internal battery is charging, $I_{cc4}$			140	mA
RS232/RS485 Input Voltage:				
RS485 input voltage range on A or B pin (common-mode voltage)	-7		+12	V
RS232 input voltage range (common-mode voltage)	-15		+15	V

**✘ 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), ( $I_{\text{drain}} = 2 \text{ mA}$ )			+36 V
Digital Input Voltage (Absolute Maximum Ratings)	-32		+32 V
Analog Input Voltage (Absolute Maximum Ratings)	-32		+32 V
RS232 Input Voltage (Absolute Maximum Ratings)	-25		+25 V