

FMC13A General description

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FMC13A 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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Package contents

The FMC13A device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FMC13A device;
- Input and output power supply cable with 2x6 connection pins;
- Micro USB cable;
- 3.7 V 170 mAh rechargeable Li-ion battery.

Basic characteristics

GSM / GPRS / GNSS features:

- FMC13A-QBIB0: Quectel EG91-NA with Teltonika TM2500;
- Technology LTE(CAT1)/UMTS/GNSS/BLUETOOTH
- SMS (text, data);
- Integrated GNSS receiver;
- Up to -165 dBm GNSS receiver sensitivity.

CELLULAR:

Technology	Supported bands
3G bands	WCDMA: B2/B4/B5
4G bands	LTE FDD: B2/B4/B5/B12/B13
Data transfer	WCDMA: Max 384Kbps (DL)/Max 384 Kbps (UL)
	LTE FDD: Max 10Mbps (DL)/Max 5Mbps (UL)

Transmit power:

Class 4 for GSM850/900: 23 ± 2 dBm

Class 1 for GSM1800/1900: 20 ± 2 dBm

Class 3 for LTE-TDD: 23 ± 2.7 dBm

Class 3 for LTE-FDD: 23 ± 2.7 dBm

Hardware features:

- Built-in movement sensor;
- Built-in Bluetooth 4.0 LE;
- Internal High Gain GNSS antenna;
- Internal High Gain GSM antenna;
- Internal flash memory 128MB (422 400 Records);
- 170 mAh Li-ion rechargeable 3.7 V battery (0.63 Wh).

Interface features:

- Power supply: +10...+30 V;
- 3 digital inputs;
- 1 negative inputs (DIN2);
- 2 impulse inputs (DIN1, DIN2);
- 2 analog input;
- 3 digital outputs (connecting external relays, LED, buzzers etc);
- 1-Wire temperature sensor;
- 1-Wire iButton;
- LVCAN RX (INPUT 5);
- LVCAN TX (INPUT 6);
- 2 LEDs indicating device status.

Special features:

- Fast position fix (Outdoor areas);
- High Quality track even in high density urban canyon;
- Ultra small case;
- Ready for harsh environment;
- Easy to mount in limited access areas;
- Firmly fasten;
- 2 LED status indication;
- Real time tracking;
- Smart data acquisition based on:
 - Time;
 - Speed;
 - Angle;
 - Distance;
 - Ignition or any other I/O event;
- Sending acquired data via GPRS;
- GPRS and SMS I/O events;
- Virtual odometer;
- Jamming detection;
- Configurable using Secured SMS Commands;

- 1x micro SIM card; 1x eSIM;
- Overvoltage protection;

Description	Voltage	Duration
Normal operation	+10 ... +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
Socket	Soldered inner socket
USB	Micro USB socket
GNSS	Internal GNSS antenna
GSM	Internal GSM antenna

Technical details

2 W max. Current consumption (Power supply 10...30 V DC)	• At 12V < 3 mA (Ultra Deep Sleep) • At 12V < 5 mA (Deep Sleep) • At 12V < 16 mA (Online Deep Sleep) • At 12V < 18 mA (GPS Sleep) • At 12V < 33 mA (nominal with no load) • At 12V < 2A Max. (with full Load / Peak)
Battery charge current	Average 140 mA
Operating temperature (without battery)	-40..+85 °C
Storage temperature (without battery)	-20..+85 °C
Operating temperature (with battery)	-20..+40 °C
Storage temperature (with battery)	-20..+40 °C
Operating humidity	5% to 95% non-condensing
Ingress Protection Rating	IP41

Device + case + battery weight	55 g
Internal fuse	3A, 125V

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.

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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)	+10		+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)		400	600 mΩ
Digital Input:			
Input resistance (DIN1)	47		kΩ
Input resistance (DIN2)	38.45		kΩ
Input resistance (DIN3)	150		kΩ
Input voltage (Recommended Operating Conditions)	0	Supply voltage	V
Input Voltage threshold (DIN1)		7.5	V

Input Voltage threshold (DIN2)	2.5	V
Input Voltage threshold (DIN3)	2.5	V
Analog Input:		
Input voltage (Recommended Operating Conditions), Range 1	0	+10 V
Input resistance, Range 1	38.45	kΩ
Measurement error on 12V, Range 1	0.9	%
Additional error on 12 V, Range 1	108	mV
Measurement error on 30 V, Range 1	0.33	%
Additional error on 30 V, Range 1	88	mV
Input Voltage (Recommended Operating Conditions), Range 2	0	+30 V
Input resistance, Range 2	150	kΩ
Measurement error on 12V, Range 2	0.9	%
Additional error on 12 V, Range 2	108	mV
Measurement error on 30 V, Range 2	0.33	%
Additional error on 30 V, Range 2	88	mV
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
Ground sense:		
Input resistance	38.45	kΩ
Input voltage (Recommended operating conditions)	0	Supply voltage V
Input voltage threshold	0.5	V
Sink current	180	nA
CAN interface:		
Internal terminal resistor CAN bus (no internal termination resistor)	-	- Ω
Differential input resistance	19	30 52 kΩ
Recessive output voltage	2	2.5 3 V
Differential receiver threshold Voltage	0.5	0.7 0.9 V
Common mode input voltage	-30	- 30 V

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