FMC13A General description

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±2dBm

Class 1 for GSM1800/1900: 20±2dBm

Class 3 for LTE-TDD: 23±2.7dBm

Class 3 for LTE-FDD: 23±2.7dBm

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.

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.