

FMC130 General description

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FMC130 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 FMC130 device is supplied to the customer in a cardboard box containing all the equipment that is necessary for operation. The package contains:

- FMC130 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:

- Name MeiG SLM320-E, MeiG SLM320-LA, Quectel EC21-EC, Quectel EC21-AU, Quectel EC21-J, Quectel EC21-KL, Teltonika TM2500;
- Technology LTE(CaT1)/3G(UMTS/HSPA)/2G(GSM/GPRS)/GNSS/BLUETOOTH);
- SMS (text, data);
- Integrated GNSS receiver;
- Up to -165 dBm GNSS receiver sensitivity.

CELLULAR:

Technology	Supported bands
2G bands (SLM320)	FMC130-ME1: GSM: B2/B3/B5/B8
	FMC130-ME3: GSM: B2/B3/B5/B8
	FMC130-ML1: GSM: B2/B3/B5/B8

2G bands (EC21)	EC21-EC: GSM: B3/B8 EC21-AU: GSM: B2/B3/B5/B8
3G bands (EC21)	EC21-EC: WCDMA: B1/B8 EC21-AU: WCDMA: B1/B2/B5/B8 FMC130-ME1: LTE FDD: B1/B3/B5/B7/B8/B20 LTE-TDD: B38/B40/B41
4G bands (SLM320)	FMC130-ME3: LTE FDD: B1/B3/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 FMC130-ML1: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28 LTE-TDD: B40
4G bands (EC21)	EC21-EC: LTE FDD: B1/B3/B7/B8/B20/B28A EC21-AU: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B28/ LTE TDD: B40 EC21-J: LTE FDD: B1/B3/B8/B18/B19/B26 EC21-KL: LTE FDD: B1/B3/B8/B18/B19/B26 LTE: LTE FDD: Max 10Mbps (DL)/Max 5Mbps (UL)
Data transfer (SLM320)	LTE TDD: Max 8Mbps (DL)/Max 2Mbps (UL) GSM: GPRS: Max 85.6Kbps (DL)/Max 85.6Kbps (UL) LTE: LTE FDD: Max 10Mbps (DL)/Max 5Mbps (UL)
Data transfer (EC21)	LTE TDD: Max 8.96Mbps (DL)/Max 3.1Mbps (UL) UMTS: WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL) GSM: GPRS: Max 107Kbps (DL)/Max 85.6Kbps (UL)

Transmit power:

Class 4 for GSM850/900: 23 ± 2 dBm

Class 1 for GSM1800/1900: 20 ± 2 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 6...30 V DC)	<ul style="list-style-type: none">• 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)	-20..+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

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			Unit
	Min.	Typ.	Max.	
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)	51.7			kΩ
Input resistance (DIN3)	47			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		150		kΩ
Measurement error on 12V, Range 1		3		%
Additional error on 12 V, Range 1		360		mV
Measurement error on 30 V, Range 1		3		%
Additional error on 30 V, Range 1		900		mV
Input Voltage (Recommended Operating Conditions), Range 2	0		+30	V
Input resistance, Range 2		150		kΩ
Measurement error on 12V, Range 2		3		%
Additional error on 12 V, Range 2		360		mV
Measurement error on 30 V, Range 2		3		%

Additional error on 30 V, Range 2		900		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			k Ω
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	k Ω
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.

Absolute maximum ratings

Characteristic description	Value			Unit
	Min.	Typ.	Max.	
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