Ruptela
Transport Telematics

FM-Eco4 light 3G / light+ 3G
FM-Eco4 light / light+

Data Sheet v1.6
2018-01-25

- Small size: 64,5L x 61W x 22H (mm)
- Low power consumption
- 1-wire interface
- Internal antennas

Physical properties

Dimensions	64,5L x 61W x 22H (mm)
Weight	70g ± 10g
Connector	12 pin
Indication	3 LEDs
Housing	Plastic

Product family

- FM-Basic
- FM-Plug4 / 4+
- FM-Eco4 / 4+
- **FM-Eco4 light / light+**
- **FM-Eco4 light 3G / light+ 3G**
- FM-Pro4 / Pro4 3G / Pro4 BT
- FM-Tco4 LCV / LCV 3G / LCV BT
- FM-Tco4 HCV / HCV 3G / HCV BT

Contacts

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Electrical specification

Power supply	12/24 V DC (range: 10 - 32 V DC)

[1]Power consumption @ 12 V	FM-Eco4 light	FM-Eco4 light 3G	FM-Eco4 light+	FM-Eco4 light+ 3G
Idle mode, mA	33	32	36	35
Sending records, mA	300	90	310	100
Deep sleep mode, mA	11	14	12	14
Internal power supply	-		LiPo 3,7 V 190 mAh	

Storage
Internal storage	4 MB (min. 30000 records)

Protections
Short circuit protection
Reverse polarity protection
Unit provides internal protection F2 (1 A slow-blow 63 V fuse)

I\O Characteristics
4 x DIN	Digital inputs
Threshold	4V
2 x AIN	Analog inputs
Range	0 – 30 V
Resolution	12 bit
2 x DOUT	Digital outputs
Max. load	Open collector 32 V, 1 A
1 – Wire data	1-Wire peripherals
1 – Wire power output	80 mA @ 4,1 V
1 - Wire max. cable capacity	4 nF (~35 m)
Mini USB	Configuration interface

[1] *Firmware dependent; given values are valid when there are no peripheral devices attached. If battery is in charging mode, then power consumption in each mode will be higher within 100 mA.*
[2] *Only for FM-Eco4 light 3G and FM-Eco4 light+ 3G devices.*

Environmental data, reliability
Storage temperature, ⁰C	-40 ~ +65
Operating temperature, ⁰C	-30 ~ +60

Temperature range for battery
Charge, ⁰C	0 ~ +45
Discharge (operating), ⁰C	-20 ~ +60
Storage, ⁰C	-20 ~ +60

Humidity range
All cases	0 % ~ 95% Non-condensing

Certification
	FM-Eco4 light FM-Eco4 light+	FM-Eco4 light 3G FM-Eco4 light+ 3G
E mark	✓	✓
CE	✓	✓

Telecommunication, Positioning
GPS\GLONASS module	Ublox EVA-M8M Internal 72 channel
Sensitivity	-163 dBm (GPS) -164 dBm (GLONASS&GPS)
Cold start	30 s
Aided start	3 s
GPS antenna	Internal
Frequency	1575,0 ± 3 MHz
GSM modem	Quectel M95 Internal 850/900/1800/1900 MHz @ GSM
GSM antenna	Internal, Quad band
[2]GSM/UMTS modem	Quectel UG96 Internal 800/850/900/1900/2100 MHz @ UMTS 850/900/1800/1900 MHz @ GSM
GSM antenna	Internal, Quad band
Accelerometer	3-axis; Up to 4g

Peripherals
Available on 1 - Wire
4 x Temperature sensors DS18B20/DS18S20
1 x iButton DS1990, DS1971 with passive socket
Available on digital outputs
1 x Buzzer\LED
1 x Eco-Drive panel

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Pin out (view from cable wires):

1	3	5	7	9	11
2	4	6	8	10	12

Pin no	Wire colour	Description
1	Black	GND
2	Red	Power supply 12/24 V, range: 10-32 V
3	Green/Yellow	1-wire data
4	White/Red	1-wire power
5	Orange	DOUT2
6	Purple	DOUT1
7	Green	AIN2
8	Gray	AIN1
9	Yellow	DIN4
10	White	DIN3
11	Blue	DIN2
12	Pink	DIN1

Physical properties

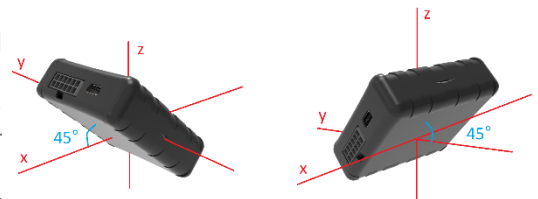|	
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Explanations

SIM card can only be inserted after opening the case.
Deep sleep mode – Power saving mode when GNSS and GSM modules and all peripheral devices are disabled, except DINs, AINs and DOUTs. Device wake up on state change of any Digital Input (DIN), Analog Input (AIN) or movement sensor.
Device can be installed within 45° angle in any axis but top surface facing up. Device should be installed tightly, does not move or shake.

Warning!

All internal components must be replaced only by manufacturer! Any self-willed attempt to repair or change any components will void any warranty.
Device must be installed in service access area (e.g. under dashboard, behind fuse box).

Caution! Devices are shipped to the users with partially charged batteries. After the first power up, the device must not be left to operate from the battery. It must be connected to an external power source, until the battery is fully charged. Once charging is complete, the device can begin its normal operation.

Caution! There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of the used batteries according to your local environmental regulations. Recycling bins in shops or other recycling points can be used. If in doubt, contact local recycling agencies when possible.

This crossed-out wheelie bin symbol means that waste equipment should not be disposed of with your other household waste. The product must be taken to separate collection points at the product`s end-of life.

Document application

Given parameter values and various characteristics contained within this document applies only to the most recent device hardware version.

Legal notice