Ruptela
Transport Telematics

FM-Pro4 / Pro4 3G / Pro4 BT

Data Sheet v1.16
2017-10-11

- Up to 10 LLS on RS485
- More 1-Wire accessories at same time
- Low power consumption
- Internal power supply
- Min. 30000 records on internal storage

Physical properties

Dimensions	111L x 75W x 25H (mm)
Weight	134g ± 10g
Connector	12 pin & 14 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

T. +370 5 272 65 70
M. info@ruptela.com
W. ruptela.com

Electrical specification

Power supply
12/24 V DC (range: 10 - 32 V DC supplied from SELV Limited Power Source)

Absolute maximum ratings	50 V @ 60 s 72 V @ 0,1 s

[1]Power consumption @ 12 V	FM-Pro4	FM-Pro4 BT	FM-Pro4 3G
Idle mode, mA	50	60	70
Sending records, mA	180	210	150
Deep sleep mode, mA	22	22	22
Internal power supply	Li-Po 3,7 V 1050 mAh		

Storage

Internal storage	4 MB (min. 30000 records)
External SD card	Up to 32 GB

Protections
Short circuit protection
Reverse polarity protection
Electrostatic discharge protection on USB
Electrostatic discharge protection on 1-wire data
Over-current protection on 1-Wire power
[2]EOD on SIM card slot
[3]Charging protection

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 and Ignition lock
1 x Eco-Drive panel

Available on Ports A and/or B
Up to 2 LLS, CANlog, RFID, Garmin, Transparent channel, Spreader, Alcohol sensor, Magnetic card reader

Available on Ports C
Up to 10 LLS, J1708, Transparent channel

Available on CAN interface
Vehicle CANbus (FMS) information reading, MobilEye, DXP CAN, HCV CAN

Environmental data, reliability

Temperature range for device (without battery)	
Storage temperature, ºC	-40 ~ +70
Operating temperature, ºC	-35 ~ +70
[3]Temperature range for battery	
Charge, ºC	0 ~ +45
Discharge (operating), ºC	-20 ~ +60
Storage, ºC	-20 ~ +70

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

Certification

	FM-Pro4	FM- Pro4 BT	FM- Pro4 3G
E-mark	✓		✓
CE 1304	✓		✓
RoHS	✓	✓	✓
FCC Part 15			✓

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
Horizontal position accuracy	2,5 meters
GPS antenna	External
Frequency	1575,42 ± 3 MHz
GSM modem	Quectel M95
Internal 850/900/1800/1900 MHz @ GSM	
GSM antenna	Internal, Quad band
[4]**GSM/UMTS modem**	Quectel UG96
Internal 800/850/900/1900/2100 MHz @ UMTS 850/900/1800/1900 MHz @ GSM	
GSM/UMTS antenna	Internal, Quad band
Accelerometer	3-axis; Up to 4g
Gyroscope	On demand
[5]**Bluetooth**	
Bluetooth LOW Energy 4.0	

[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 170 mA.
[2] Not soldered in standard version. Can be ordered.
[3] If temp is >45C, charging is disabled, if >60C battery is disconnected from the system at all.
[4] Only for FM-Pro4 3G device.
[5] Only for FM-Pro4 BT device. Feature is currently under development.

Physical properties

Dimensions	111L x 75W x 25H (mm)
Weight	134g ± 10g
Connector	12 pin & 14 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
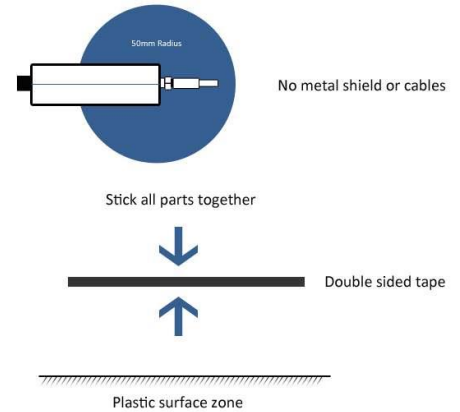- FM-Tco4 HCV / HCV 3G / HCV BT

I\O Characteristics	
4 x DIN	**Digital inputs**
Threshold	4V
2 x DOUT	**Digital outputs**
Max. output	Open collector 32 V, 1 A max
2 x AIN	**Analog inputs**
Range	0 – 30 V
Resolution	12 bit
1 – Wire	**1-Wire peripherals**
5 V power output	200 mA @ 5 V
2 x RS232	
PortA	PortA-232 RX; PortA-232 TX
PortB	PortB-232 RX; PortB-232 TX
1 x RS485	
PortC	PortC-485 A; PortC-485 B
2 x CAN interfaces	
CAN1	CAN1 L; CAN1 H
CAN2	CAN2 L; CAN2 H
3,5 mm TRRS	Microphone connection
Mini USB	Configuration interface

Pin out - IO 14pin	
Yellow	PortB-232 RX
Black	Ground
Orange	PortB-232 TX
Red	1-Wire power +5 V
Purple	PortA-232 RX
Green with yellow stripe	1-Wire data
Pink	PortA-232 TX
White	CAN1 H
Green	L line
Blue	CAN1 L
Brown	K line
Black	Ground
White with red stripe	PortC-485 A
Yellow with brown stripe	PortC-485 B

Pin out - IO 12pin	
Red	Power supply
Black	Ground
Purple	DOUT1
Orange	DOUT2
White with red stripe	CAN2 H
Blue with red stripe	CAN2 L
Gray	AIN1
Green	AIN2
Yellow	DIN4
Pink	DIN1
White	DIN3
Blue	DIN2

Optional features

Gyroscope is an optional feature. For inquiry please contact manufacturer (Ruptela) or your manager directly.

Explanations

Deep sleep mode – Power saving mode when GNSS and GSM modules and all peripheral devices are disabled, except DINs and DOUTs. Device wakes up on state change of any Digital Input (DIN).
Device can be installed within 45° angle in any axis, but its top surface must be facing up. Device should be installed tightly, it should not move or shake.

Warning!

All internal components including battery must be replaced only by manufacturer! Any self-willed attempt to open device cases will void any warranty.

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 used batteries according to the environmental requirements.

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.

FM-Pro4 / Pro4 3G / Pro4 BT

Data Sheet v1.16
2017-10-11

Physical properties

Dimensions	111L x 75W x 25H (mm)
Weight	134g ± 10g
Connector	12 pin & 14 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

T. +370 5 272 65 70
M. info@ruptela.com
W. ruptela.com

Device installation

When installing device into vehicle please obey these instructions otherwise your device may not work properly.

● Device should not be seen or easily reached. It must be installed in service access area (e.g. under dashboard, behind fuse box).
● Device should be firmly fixed to a flat surface. Please avoid mounting it near the metal surfaces or cables (see the picture below).
● Device cannot be fixed to heat emitting or moving parts.
● Device has built in accelerometer, therefore it is sensitive to movement. It is recommended to choose a stable installation position, where it is not subjected to vibrations and/or oscillations.
● Device can be fitted with double sided stick tape or zip-ties.
● Wrong device mounting may cause malfunction.
● SIM card should be inserted in the device while the connector is plugged off (while device has no power).
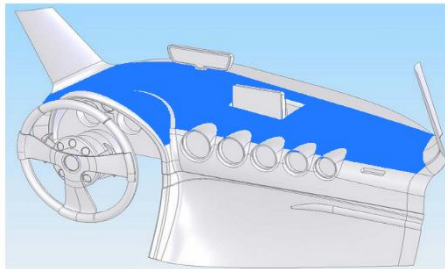

FM-Pro4 BT device

FM-Pro4 BT device contains Bluetooth module. Choose installation location carefully. Approximate Bluetooth module position within the device is marked in the picture on the right. To ensure the best possible connectivity between Bluetooth devices follow these steps:

● FM-Pro4 BT device with Bluetooth module should be installed facing up.
● Please avoid mounting it near metal surfaces or cables.

Antenna installation

It is recommended to place GPS/GLONASS antenna behind the dashboard as close to the window as possible. It must be uncovered, installed heads up (*see picture*).

Document application

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

Legal information