

EZmoto V4.3

Product description

Rev. 4 – March/2022



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1. Overview

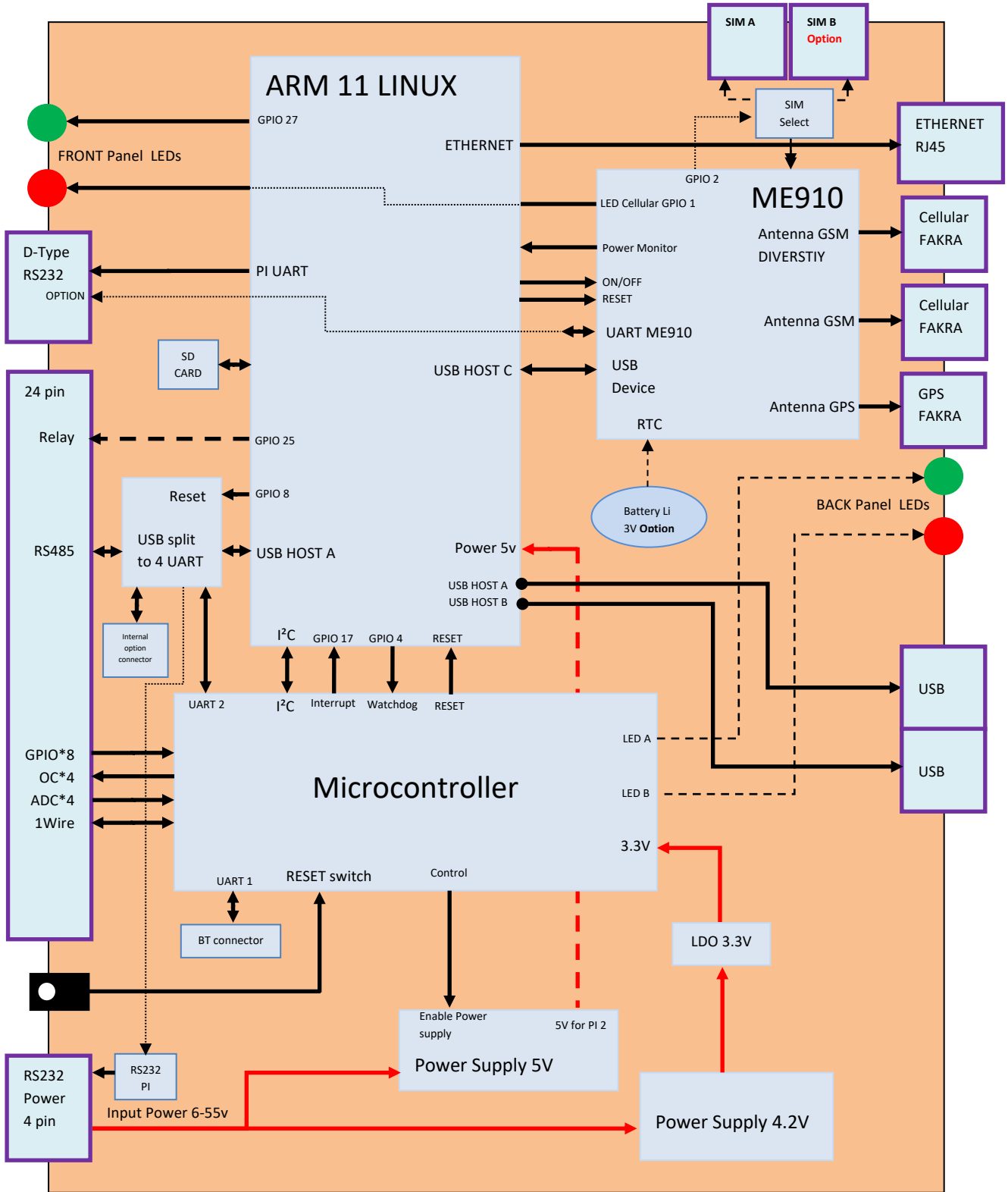
The EZmoto is a 4G/CatM (with fallback 2G) Cellular Router solution (with GPS) connected to PI B+ or PI 2.

2. Hardware Interface Description

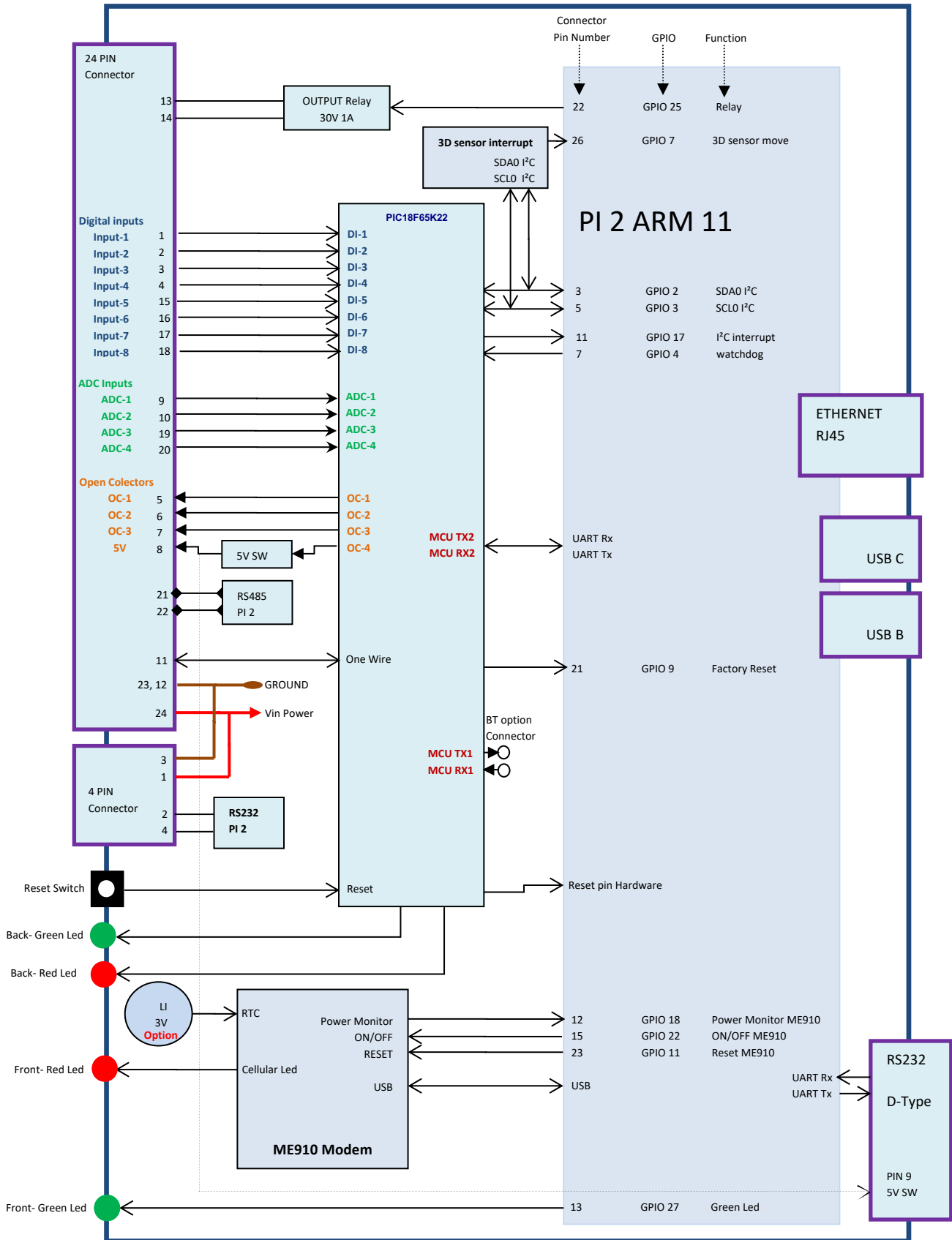
2.1 Main features of the EZmoto

Feature	Implementation
Incorporates Telit ME910 module	The Telit module handles all LTE CatM GPRS
Frequency bands	ME910C1-WW 4G Bands: B1(2100),B2(1900),B3(1800),B4(AWS1700),B5(850), B8(900),B12(700),B13(700),B18(800),B19(800),B20(800), B26(850),B28(700) 2G Bands: B2(1900),B3(1800),B5(850),B8(900)
Incorporates raspberry PI B+ or PI 2	ARM11 with 0.5 or 1Gb SDRAM LINUX operating system, SD card
Power supply	Single supply voltage 8V DC to 55V DC connector 4 pin micro-fit 3mm
Communication	1* Ethernet RJ45 connector 1* RS232 connector D-Type 9 pin Connector 1* RS232 via 4 pin power 1* RS485 via 24 pin GPIO 2* USB Type A
Antennas	LTE CatM GPRS via FAKRA connectors
GPIO	24 pin connector Input and output control

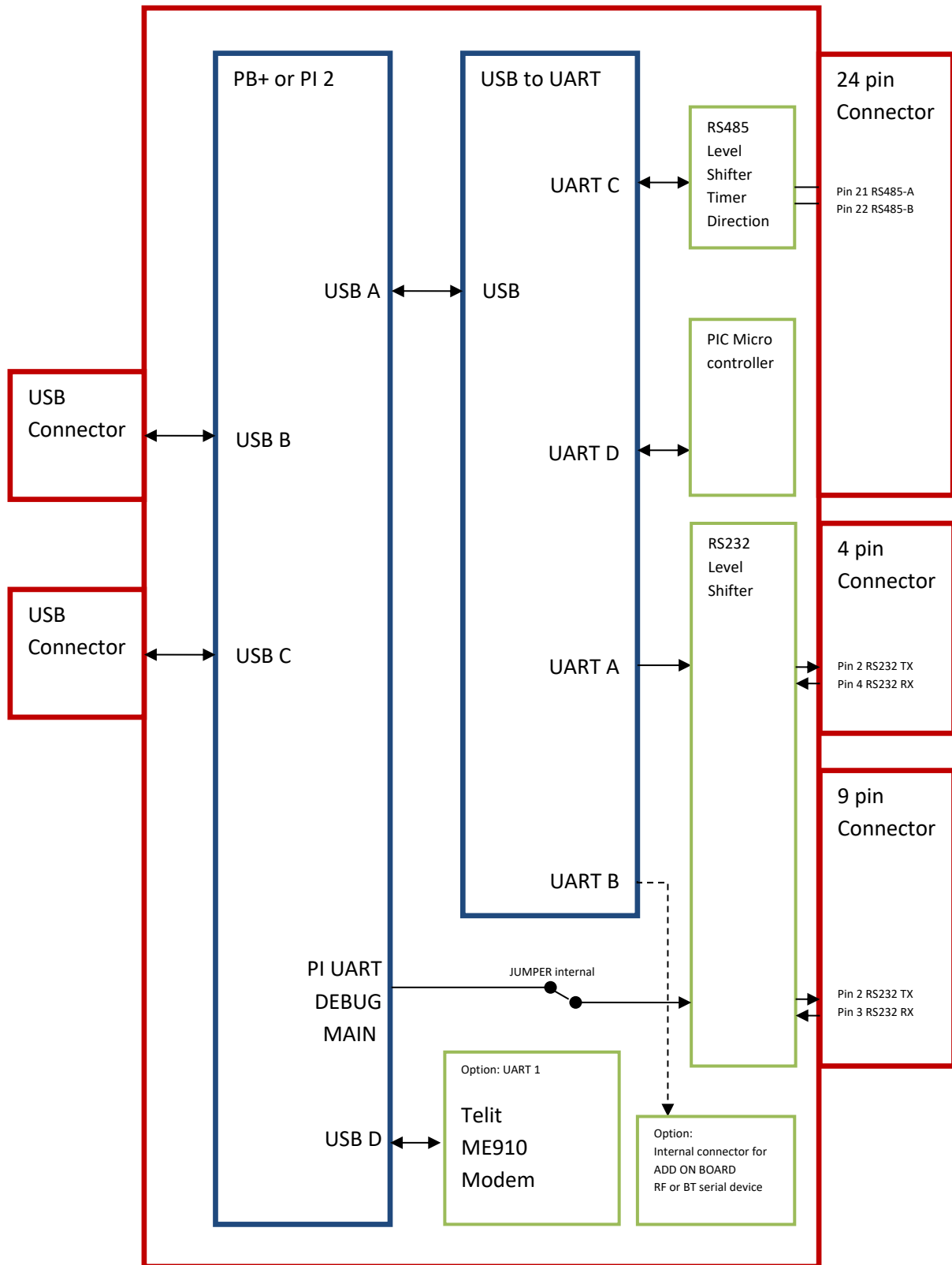
2.2 Hardware block diagram



2.3 Hardware (pin assignments) diagram



2.4 I/O block diagram



3. Interface description

3.1 Molex 4 pin connector – Power connector

3.1.1 Power Supply

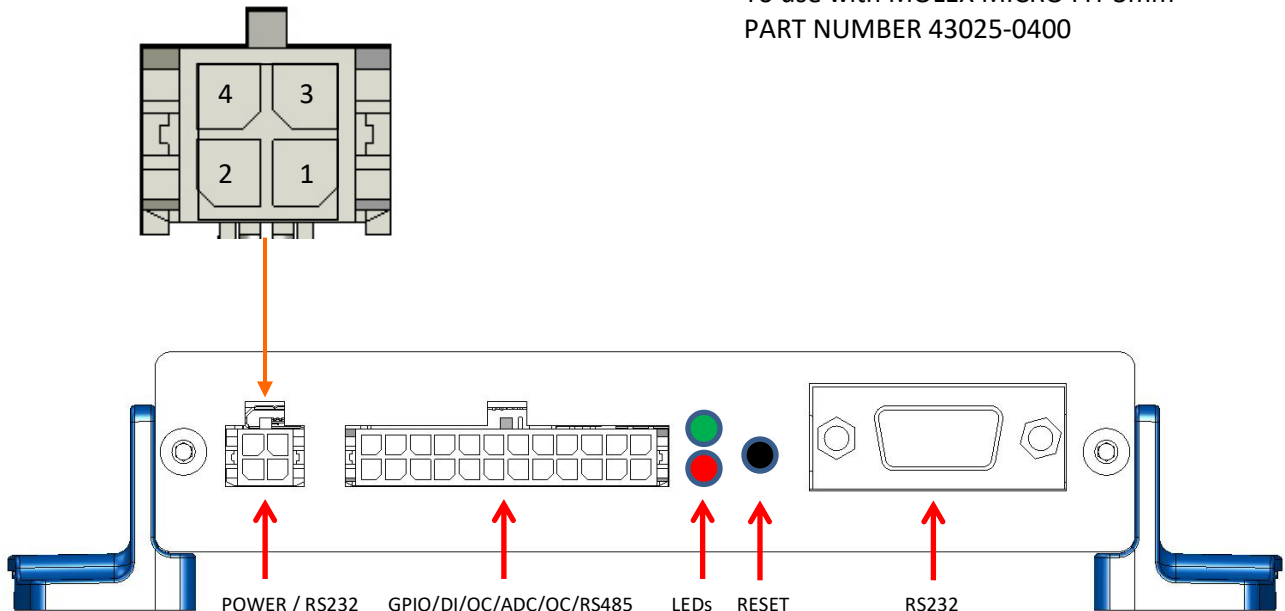
The power supply of the EZmoto Router requires a single voltage source of POWER 8V-55V capable of providing a peak during an active transmission. The EZmoto Router is protected against supply voltage reversal. An internal fuse 1.1A 60V ensures an electrical safety according to EN60950-1. This fuse is not removable. A fast blow fuse of 2A is necessary for 24V power supply system (for vehicles).

The power supply recommended being any safety approved power supply certified IEC 60950-1 or EN 60950-1 or UL 60950-1 with limited output current up to 2A. The type of the receptacle assembled on the EZmoto Router is 4 pin Micro Mate-N-LOK 3mm (0.11 inch) from MOLEX.

Pin	Signal name	Use
1	POWER	Input Power supply range 8-55V
2	TX RS232	UART A ARM Tx
3	GND	Ground
4	RX RS232	UART A ARM Rx

Pin assignment of the power plug including power supply and Power Enable

Male 4-pole plug for power supply
To use with MOLEX MICRO FIT 3mm
PART NUMBER 43025-0400



3.1.2 Supply voltage requirements

The DC power supply must be connected to the POWER input:

- Input voltage range 8 - 55V DC
- Nominal Voltage 12V DC
- Power Supply current rating: max. 2A @12V
- Power Supply ripple: max. 120mV
- Input current in idle mode: 400mA @ 12V
- Input average current in communication mode: 700mA @ 12V

3.2 USB CONNECTORS

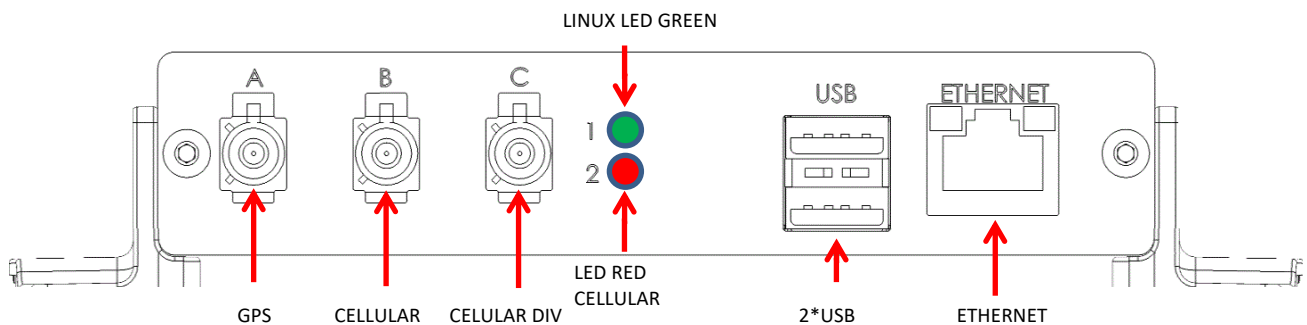
The USB CONNECTOR of the EZmoto is **USB 2.0 TYPE A**.

3.3 FAKRA CONNECTORS

The EZmoto Terminal uses FAKRA CONNECTORS for ANTENNAS.

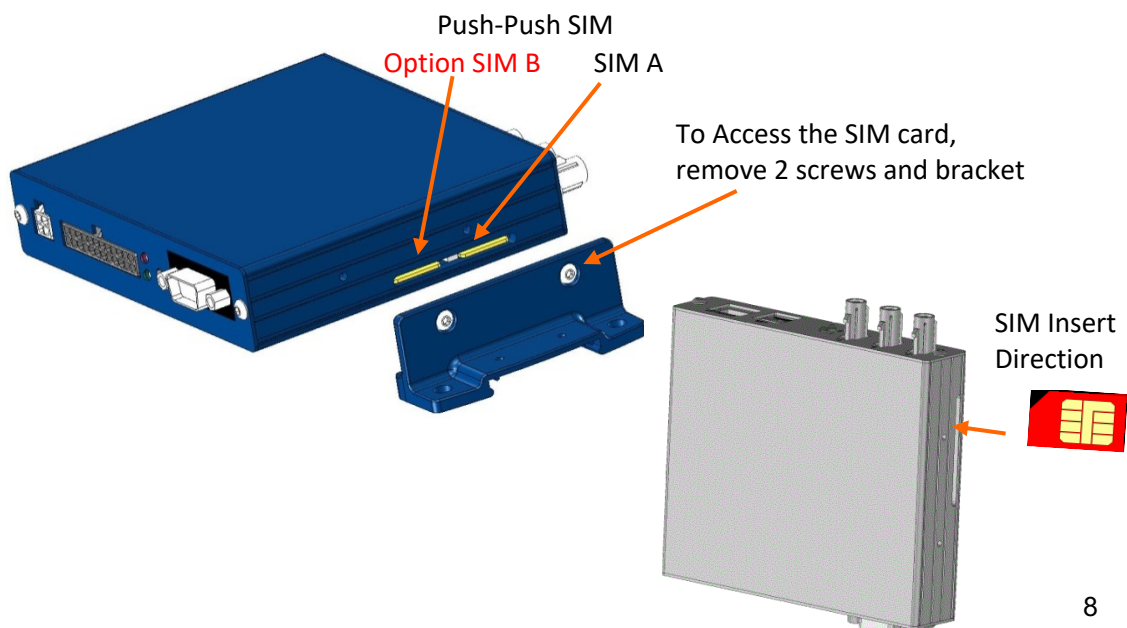
3.4 RJ45 – ETHERNET CONNECTOR

RJ45 jack is capable of meeting the high performance needs of networking devices.



3.5 SIM DRAWER

Please insert the SIM card into the SIM socket, standard terminal come with one SIM.

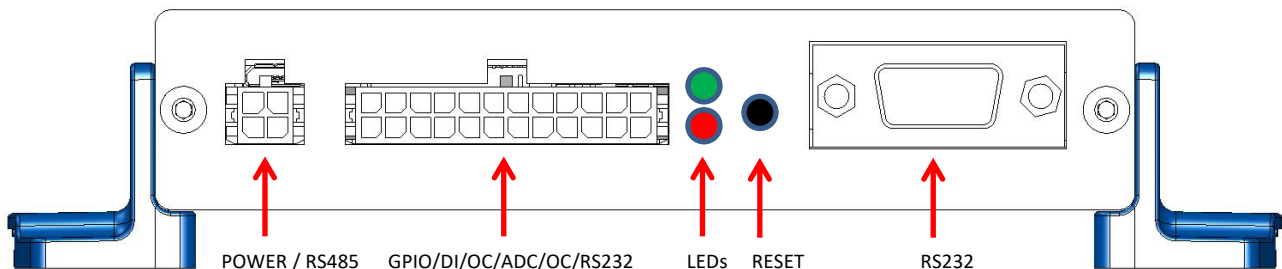
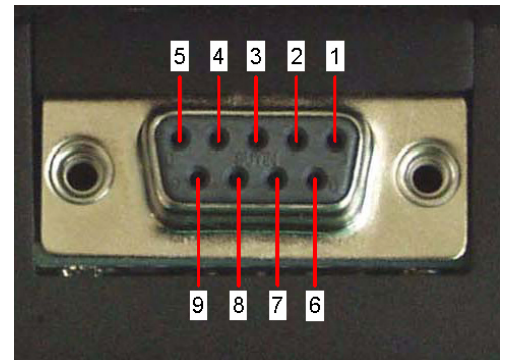


3.6 RS-232 Interface

The serial interface of the EZmoto is intended for the communication between the ARM11 and the host application. This RS-232 interface is a data and control interface for transmitting data. It accepts, AT commands and provides multiplexed channels. EMC immunity complies with the vehicular environment requirements according to EN 301 489-7. The user interface of the EZmoto is accessible from a Data Terminal Equipment DTE connected to the RS232 interface

Pin no.	Signal name	I/O	Function of application
1	-		
2	RXD	I	ARM Receive Data DEBUG
3	TXD	O	ARM Transmit Data DEBUG
4	-		
5	GND	-	Ground
6	RX	I	Option UART B Rx ARM RS232
7	TX	O	Option UART B Tx ARM RS232
8	-		
9	5V	O	5V switch by Microcontroller

D-Type 9 pin female RS232



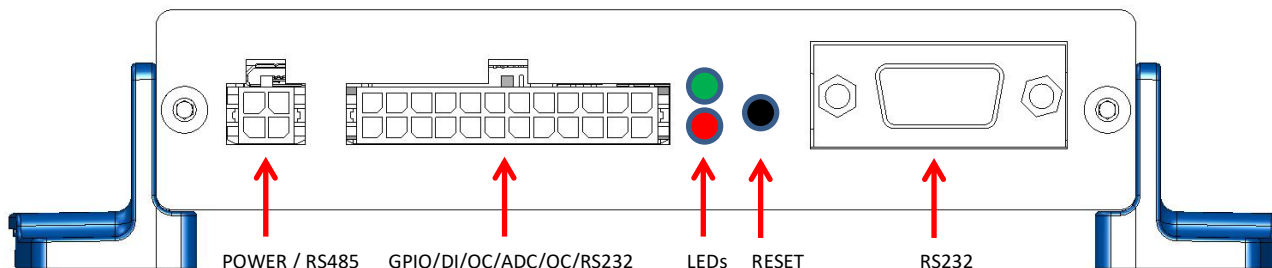
Option: Modem ME910 UART can set with internal jumpers to connect pins 2,3 of D-Type.

Connector type on the terminal is:

- RS-232 through D-Type 9-pin female
- Baud rate from 300 to 230,400 bit/s
- Short circuit (to Ground) protection on all outputs.
- Input voltage range: -12V to +12V

3.7 Molex 24 pin connector – IO interface

The following interfaces and functions are provided via the IO interface connector.



GPIO interface connector 24 pin

Pin	Signal name	I/O	Description
1	Digital input 1	I	0-50V digital input
2	Digital input 2	I	0-50V digital input
3	Digital input 3	I	Interrupt with 200k Pull-up 0-50V digital input
4	Digital input 4	I	Interrupt with 200k Pull-up 0-50V digital input
5	OC1	O	Open collector 250mA output
6	OC2	O	Open collector 250mA output
7	OC3	O	Open collector 250mA output
8	5V SW	O	5V Switch output
9	ADC1	I	0-15V 12bit analog input
10	ADC2	I	0-15V 12bit analog input
11	ONEWIRE		ONEWIRE TEMPERTUER sensor
12	DGND	PWR	Digital ground
13	Relay A	O	Relay output A
14	Relay B	O	Relay output B
15	Digital input 5	I	0-50V digital input
16	Digital input 6	I	0-50V digital input
17	Digital input 7	I	Interrupt with 200k Pull-up 0-50V digital input
18	Digital input 8	I	Interrupt with 200k Pull-up 0-50V digital input
19	ADC3	I	4-20mA 12bit analog input
20	ADC4	I	4-20mA 12bit analog input
21	ARM RS485 A		Tx ARM UART C
22	ARM RS485 B		Rx ARM UART C
23	PLG GND	PWR	Plug ground
24	Vin	PWR	Input voltage

5. Mechanical Characteristics

5.1 General mechanical description

Weight	400g (14.1oz) 0.88 lb
Dimensions (max) L x W x H	100cm x 120mm x 30mm 3.93inch x 4.72 inch x 1.18inch
Humidity	5% - 85%
Case material	Aluminum

5.2 Environmental requirements

Operating temperature range	-20°C to +60°C -4°F to 140°F ambient temperature	The router is fully functional in all the temperature range and it fully meets the ETSI specifications.
	-30°C to +60°C -22°F to 140°F	The router is fully functional in all the temperature range. Temperatures outside of the range -20°C to +60°C (-4°F to 140°F) might slightly deviate from ETSI specifications.
Humidity	5% - 85%	

5.3 Protection class

IP40 Avoid exposing the Terminal to liquid or moisture.

5.4 RoHS compliance

All hardware components are fully compliant with the EU RoHS and WEEE Directives.

6. SAFETY RECOMMANDATIONS

READ CAREFULLY

1. The unit does not provide protection from lightning and surge. For outdoor installation use outdoor nonmetallic case safety approved according UL 50. Additionally you should provide protection from lightning and over voltage according National code.

2. Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas: Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc. Where there is risk of explosion such as gasoline stations, oil refineries, etc. It is responsibility of the user to enforce the country regulation and the specific environment regulation. Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of the hardware user guides for a correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conforming to the security and fire prevention regulations. The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode. The system integrator is responsible of the functioning of the final product; therefore, care has to be given to the external components of the unit, as well as of any project or installation issue, because the risk of disturbing the GSM network or external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force. Every unit has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm/8"). In case this requirement cannot be satisfied, the system integrator should assess the final product against the SAR regulation. The European Community provides some Directives for the electronic equipment introduced on the market. All the relevant information available on the European Community website:

<http://europa.eu.int/comm/enterprise/rtte/dir99-5.htm> The text of the Directive 99/05 regarding telecommunication equipment is available, while the applicable Directives (Low Voltage and EMC) are available at:

http://europa.eu.int/comm/enterprise/electr_equipment/index_en.htm