SXPi

Linux box

version 1.0

User Manual

Revision 1.1

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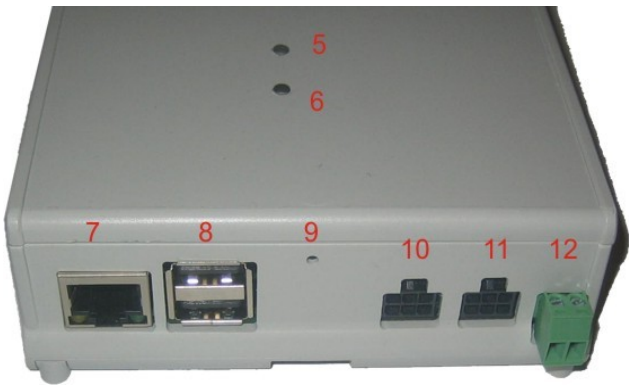
General Index

General description

Picture 1 – SXPi Front



Picture 2 SXPi Rear

Picture 3 SXPi Side

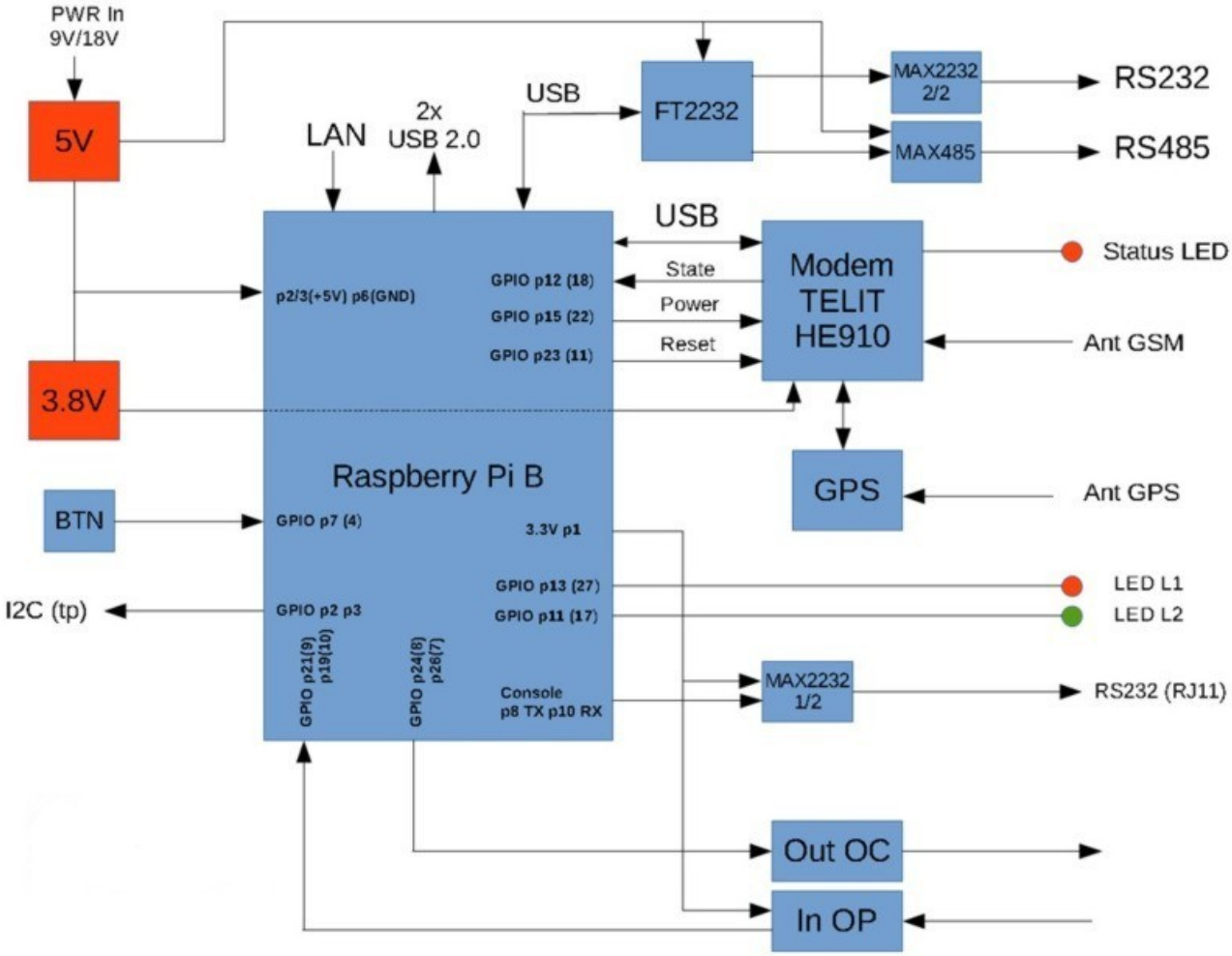
1. RJ11 connector for serial console
2. GMS/UMTS SIM card holder (push push)
3. RS485 Serial Port terminl block
4. SMA connector for GSM/UMTS antenna
5. LED bi-colore red/green
6. LED yellow modem status
7. RJ45 connector for LAN
8. USB ports
9. Button
10. MicroFIT P10 connector
11. MicroFIT P9 connector
12. Power supply terminal block
13. HDMI port
14. Audio / Video port

Hardware description

Main features:

Device	Description
Modem	Telit HE910 GSM/UMTS
Modem frequencies bands	GSM:850/900/1800/1900MHz UMTS/HSPA+: 850/ 900/ 2100MHz
Processor	Raspberry Pi B+ CPU Broadcom BCM2835 700Mhz with 512MB RAM
Power supply	9V – 24V DC (18V AC)
Interfaces	1 x Ethernet RJ45 10/100 BaseT 2 x USB type A 2.0 1 x RS232 console 1 x RS232 full duplex 1 x RS485 1 x HDMI (rev 1.3 & 1.4) video 1 x 3.5mm jack audio / video
Antenne	GSM/UMTS on SMA connector
GPIO	2 x Photo-coupled input (Vin max 24V CC) 2 x Open collector output (max 500mA)
LED	1 x Yallow for signalling of modem status 1 x Bi-color red/green

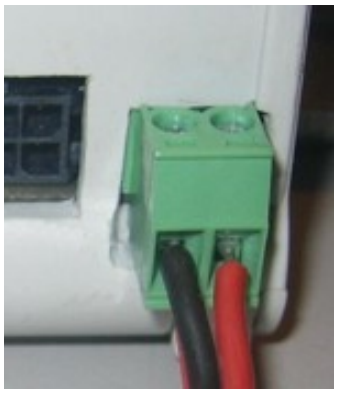
Hardware schematics



Picture 4 – Hardware schematics

Power Supply

The SXPi requires a DC or AC power supply with voltage in the range 8V - 24V maximum (18V in case of AC voltage) to be applied on the 2-pin terminal block:



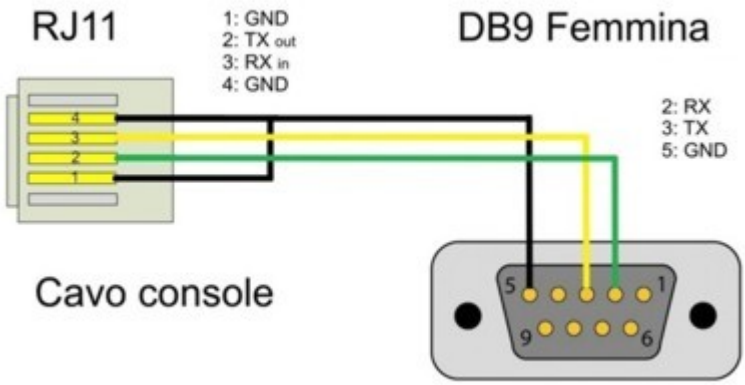
Picture 5 – Power supply terminal block

The SXPi manages internally the revers polarity connection in case of DC power supply. The average consumption in offline mode (LAN and GPRS disconnected) is about 140mA. The two USB ports can supply a voltage of 5V with a maximum current of 500mA per port. When in fully operations, SXPi can draw currents peak up to 2A.

Before powering on the SXPi, always connect the antenna GSM / UMTS to avoid modem damage.

Serial Consol

The RS232 serial port available on the RJ11 connector of SXPi is directly connected to the console of the ARM processor. To enter, you need a cable with the following schematics:



Picture 6 – Serial console cable schematics

Communication parameters are:

- Baud rate: 115200
- Bits: 8
- Parity: None
- Stop Bits: 1
- Flow Control: None

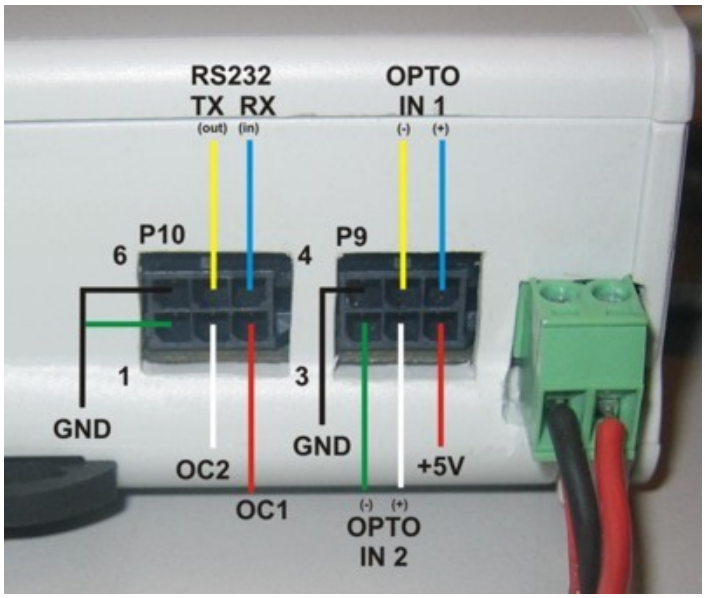
As a client, you can use the Putty software (http://www.putty.org/).

MOLEX MicroFit 6 pins connectors

On the same side of power connector, the SXPi is equipped with two connectors of kind MOLEX MicroFit 6pins and named P9, P10. On these two connectors the following signals are available:

- 2 x photcoupled input (VIN max 24V CC)
- 2 x open collector output (max current 500mA)
- 1 x RS232 serial port

The two pinouts are described in the following picture:

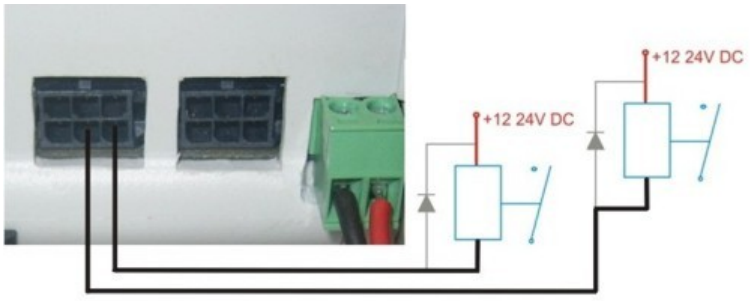


Picture 7 – Pinout of MicroFit connectors

Connection GPIO with the processor:

Device	GPIO Raspberry Pi	PIN Raspberry Pi	Direction
Input Photo-coupled 1	10	19	IN
Input Photo-coupled 2	9	21	IN
Open Collector 1	8	24	OUT
Open Collector 1	7	26	OUT

To drive two optional external relays, you must follow the connections described in the following schematics:

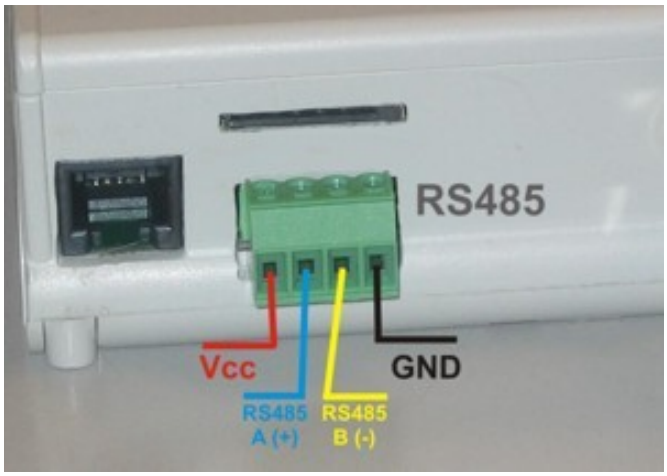


Picture 8 – Schematics for external relays connection

The RS232 serial port available on the MicroFit P10 connector is accessible by the Linux System on the device: **/dev/ttyUSB0**.

RS485 Serial port

The SXPi is equipped with a RS485 serial port on a 4 pins terminal block:



Picture 9 – Terminal block for RS485 port

From this terminal block, it is possible to withdrow a power line with the same voltage of the main power supply input, rectified in case of AC input, and with a max current of 200mA.

The RS485 serial port is accessible by the Linux System on the device: **/dev/ttyUSB1**.

Electrical features of the RS585 serial port:
-Driver Output Capability ±60mA Max
-Receiver Input Impedance 12KOhm Min
-Receiver Input Sensitivity ±200mV
-Receiver Input Hysteresis 50mV Typ
-From Single 5-V Supply

Signalling LEDs

Placed on top of SXPI, there are two LEDs. A yellow one directly connected to and controlled by the Telit modem and another a bi-color one controlled by the ARM processor.

Picture 10 – Signalling LEDs

Device	GPIO Raspberry Pi	PIN Raspberry Pi
LED Red	27	13
LED Green	17	11

Mechanical Features

Caratteristica	Valore
Weight	180g (antenna not included)
Size	L 96,78cm x H 37,7cm x P 106,4cm
Case material	Plastic PC/ABS gray RAL 7035
Operating temperature	From 0°C to +60°C
Operating humidity	From 9% to 75%
Protection class	IP 40
Mounting	Shelf, wall or OMEGA DIN -EN50022 rail

This is a product by:

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INFORMATICA & MICROELETTRONICA

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