

Openframe LOW COST 7 CAP USR Manual 1.0.4



***** REV 1.0.4 *****

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04/05/16	1.0.0	Release
20/05/16	1.0.1	General enhancements
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21/12/16	1.0.3	General enhancements
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1. Cable Map Overview

This document is an overview about cable connecting map of Open-Frame system. It describes the connector and the interface unit available to user, and it specifies the electrical characteristic of signals.

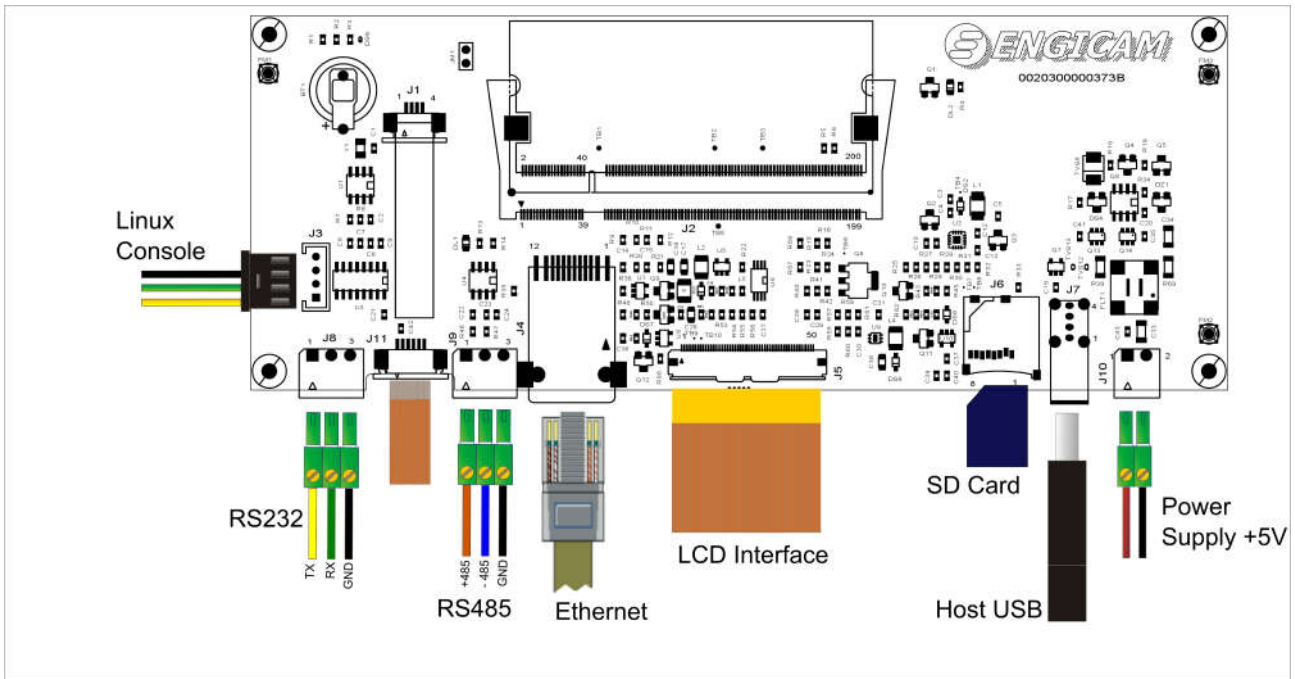


fig1

The figure1 shows the whole wiring map and its join connectors. This document will try to analyse all type of used connections to help the user's start up.

2. Micro SD Connections

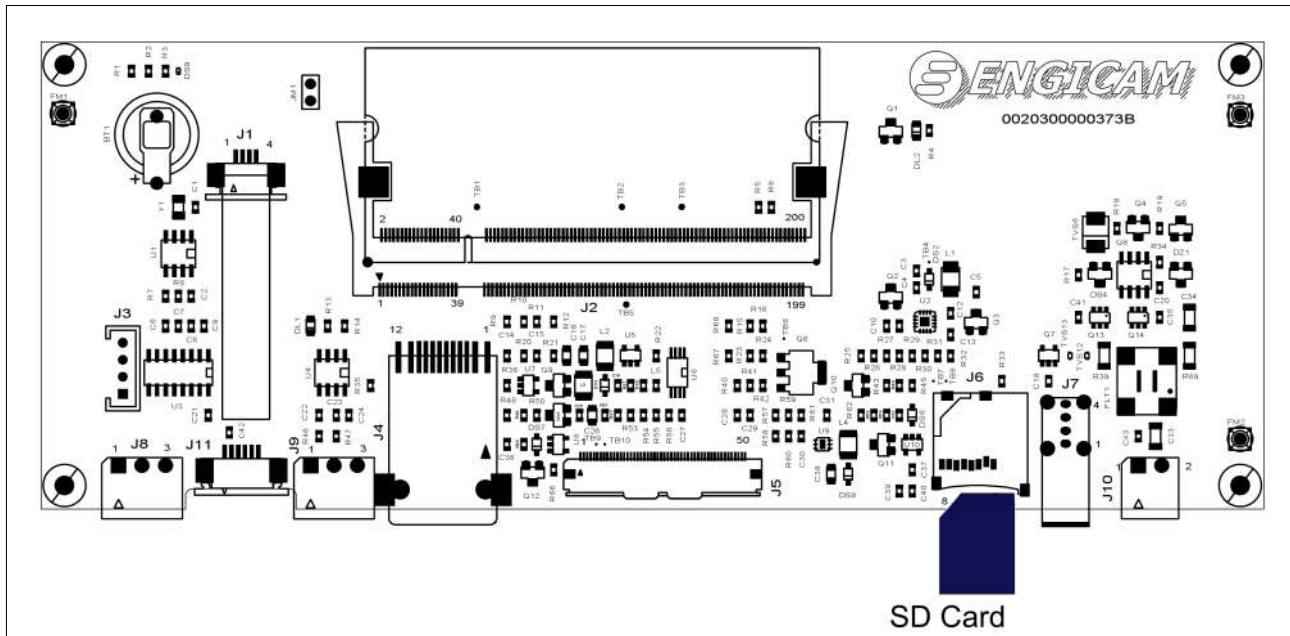


fig2

The Open-Frame board has a Micro SD switch detected connector (J6). It uses both SD standard type card and SD High Capacity type card

Micro SD card features are:

- Capacity: variable from 32 MB to 32 GB
- Length: 15 mm
- Depth: 11 mm
- Height: 1 mm
- Voltage supply 2,7 V 3,6 V
- Slot: TransFlash
- MTBF: 1.000.000 h/e
- Operating temperature min.: -25 °C
- Operating temperature max: 85 °C

3. RS 485 & RS 232 Connections

The following figure represents the connections of the RS485 and RS232 signals. Both RS485, and RS232 are connected through a terminal male connector (Phoenix code MC 1.5/3-G-3.5 - 1844223 90° or compliant) mounted on PCB and referenced J8, J9.

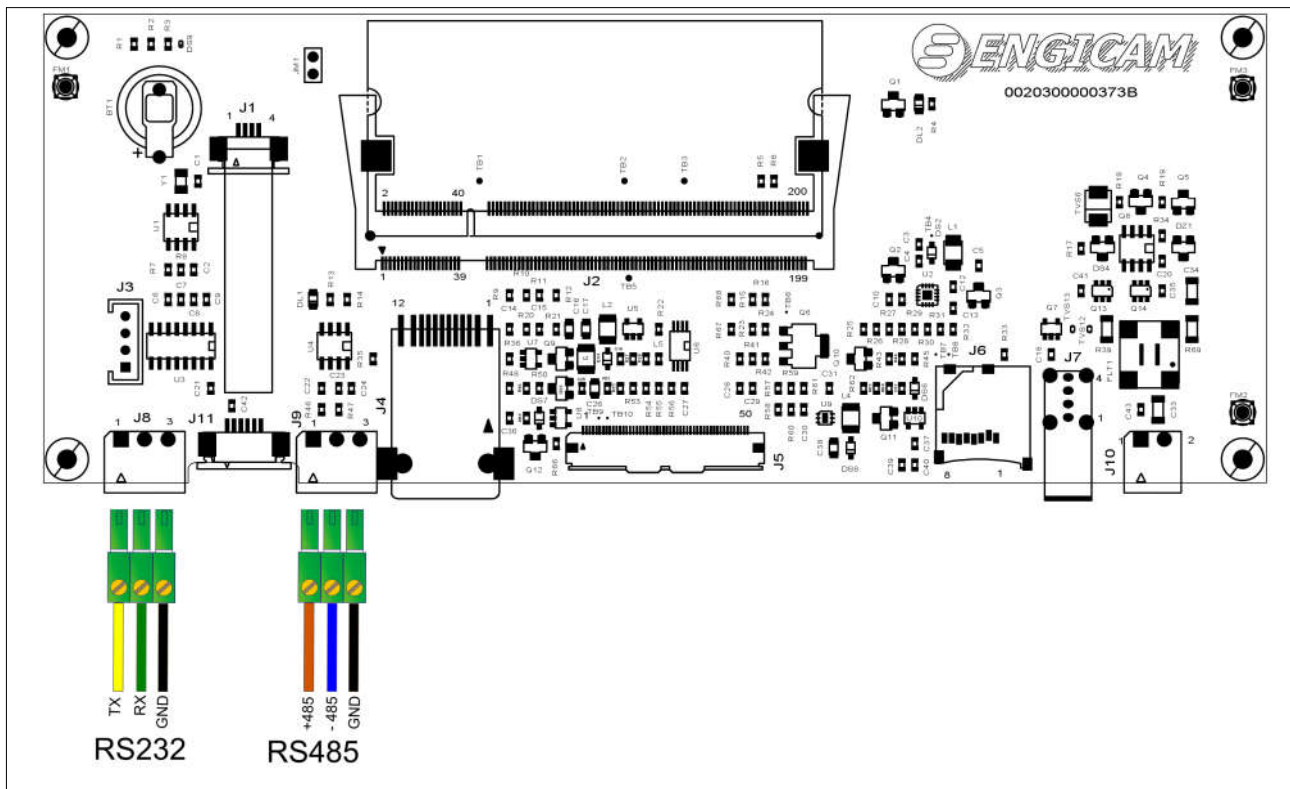


fig3

The wiring map of female connector (Phoenix code MC 1.5/3-ST-3.5-1840379) used for UART RS232 is shown in the following table.

J8

Pin Number	Signal Name	Function Description	Pin on Modules	Voltage
1	TX	Transmit Signal Output	112	RS232 Standard
2	RX	Receive Signal Input	113	RS232 Standard
3	GND	Power Signal	-	-

Table 1

The wiring map of female connector (Phoenix code MC 1.5/3-ST-3.5-1840379) used for UART RS485 is shown in the following table.

J9

Pin Number	Signal Name	Function Description	Pin on Modules	Voltage
1	RS485 P	Non Inverting Receiver In/Driver Out	108	RS485 Standard
2	RS485 N	Inverting Receiver In/Driver Out	109	RS485 Standard
3	GND	Power Signal		-

Table 2

Note: Do NOT use the UART on connector J8 as Linux console

4. USB Connections

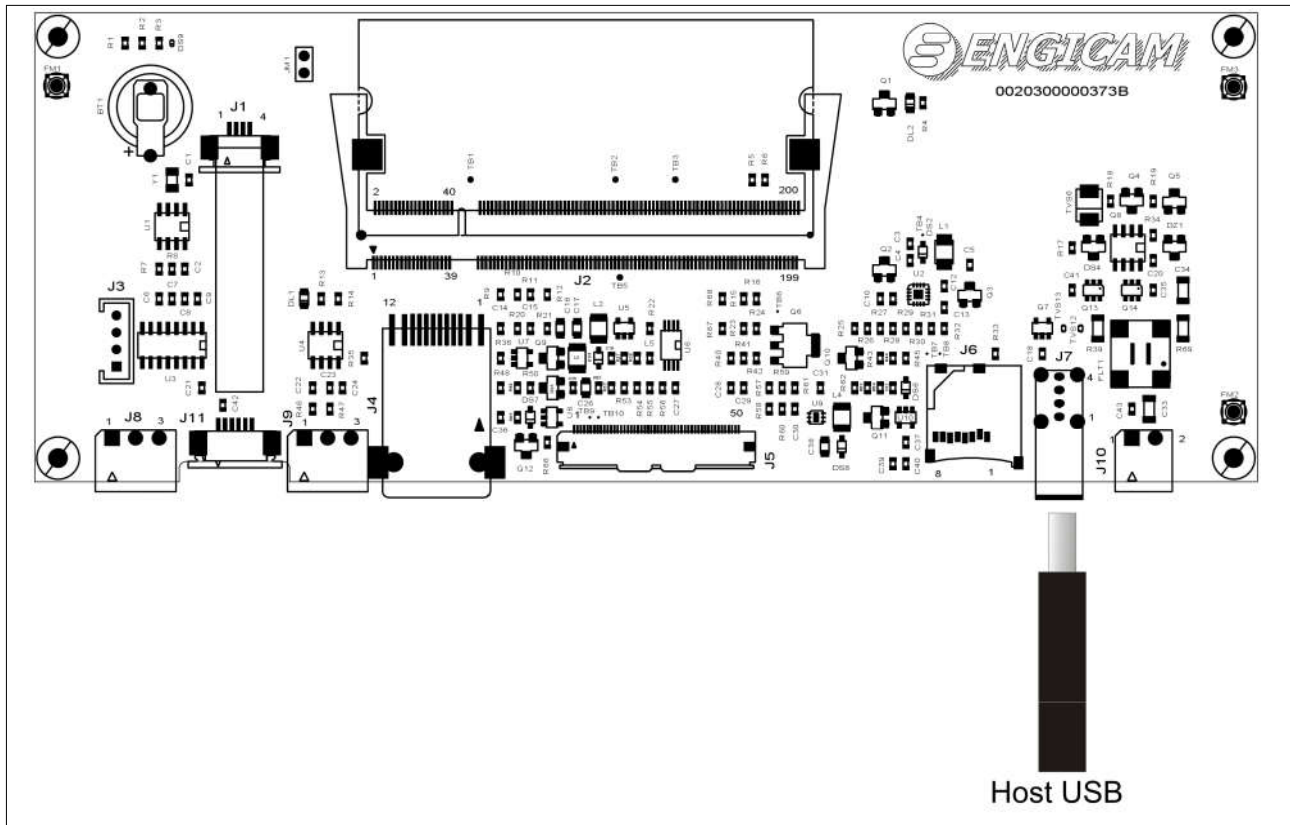


fig4

In the following tables are represented the electrical connection of the USB standard interface connections (USB type A plug)

Pin Number	Signal Name	Function Description	Voltage
1	VBUS	Power Signal	Standard USB
2	DM	Data N	Standard USB
3	DP	Data P	Standard USB
4	GND	Power Signal	Standard USB

Table 3

5. Ethernet Connections

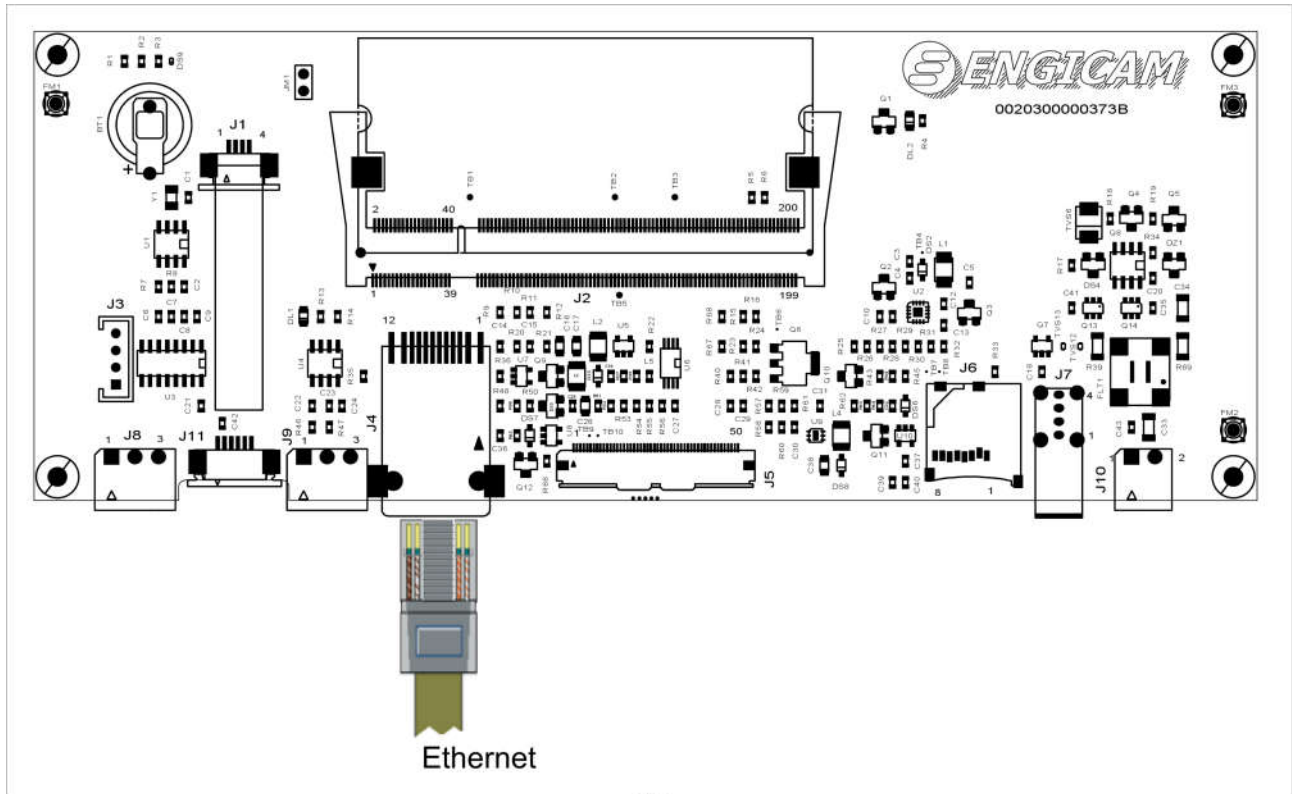


fig5

The figure5 represents the Ethernet 10/100 connection. This connection uses a RJ45 standard plug (8 wires) and the following table shows the wiring map.

Pin Number	Signal Name	Function Description	Voltage
1	TX-	Transmit positive signal	Standard Ethernet
2	TX+	Transmit negative signal	Standard Ethernet
3	RX+	Receive positive signal	Standard Ethernet
4	NC	-	-
5	NC	-	-
6	RX-	Receive negative signal	Standard Ethernet
7	NC	-	-
8	NC	-	-

Table 4

6. Power Supply Connections

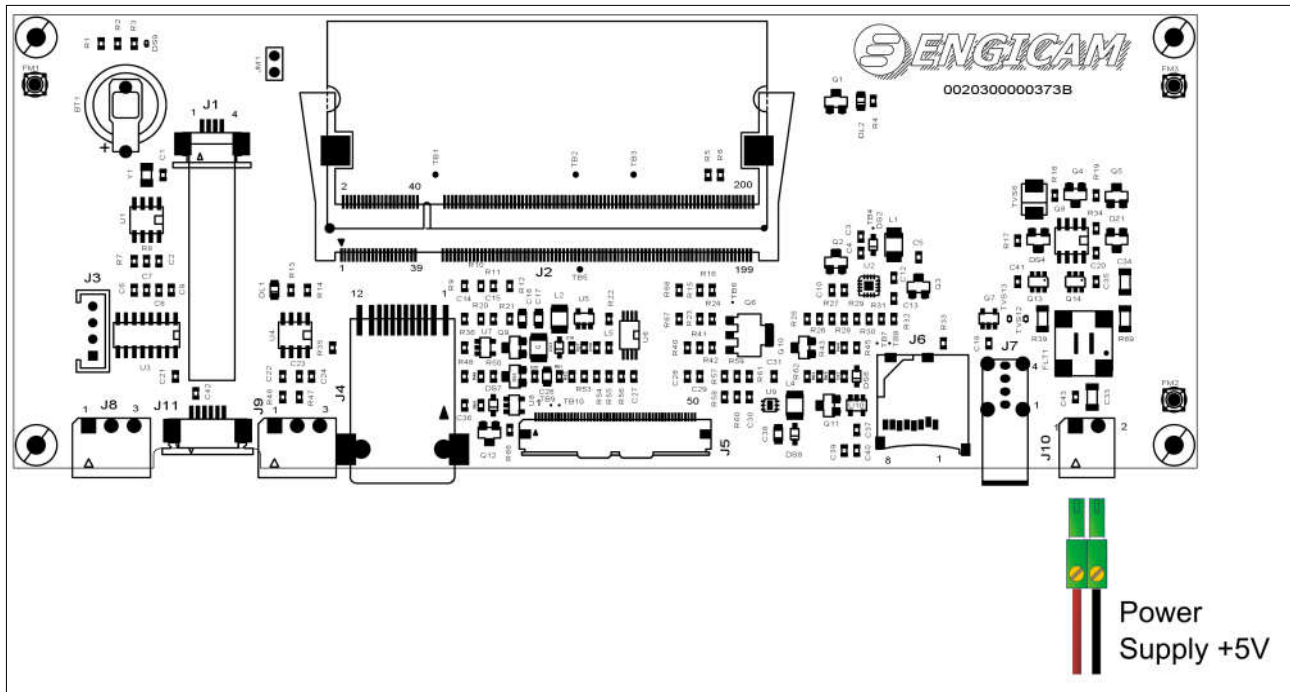


fig6

WARNING:
the Open-Frame LOCO is powered by a voltage of +5V DC

The figure shows the power supply connection. The Open-Frame LOCO receives an input DC voltage, of **+5V**. J10 is Phoenix MC 1.5/2-G-3.5 1844210 90° positions p.3.5mm male connector, connected as follows:

Pin Number	Signal Name	Function Description	Voltage
1	+VIN	Power Signal	+5V DC
2	GND	Power Signal	-

Table 5

7. Current consumption

The following table shows the system's current consumption measured at **+5V**

Open-Frame 7" LOCO GeaM6UL on Board	
Current @ +5V DC	~ 800 mA

Table 6

The measure is done during the standard operating mode, the LCD switched on.

8. Boot Jumper set up

Boot mode's pin determines how the module runs the boot. The carrier board has one jumper used to choice the boot sequence (JM1)

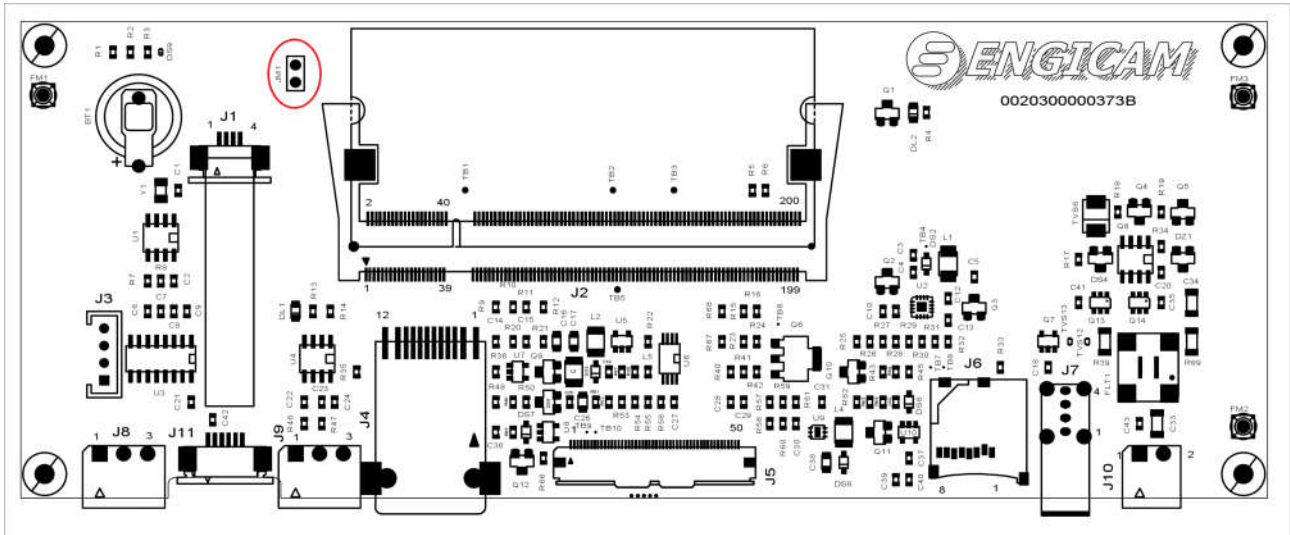


fig7

This jumper allows to choice the boot sequence. The following table lists the possible boot choices:

JM1	Boot CFG
Open	Nand Boot
Close	SD Boot

Table 7

Note: for further information is strongly recommended to refer to the module's manual and NXP's "Reference manual"

9. Linux Console Debug Connections

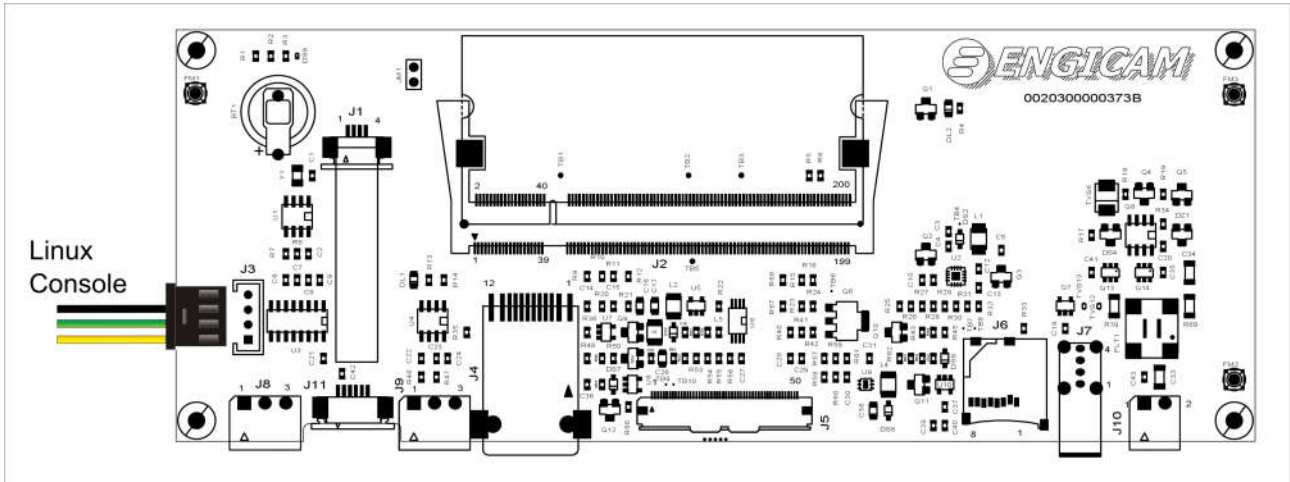


fig8

On the Open-Frame module, UART1 is used like console debug. The connector used is Modu II type; in the following table is shown the electrical features:

Pin Number	Signal Name	Function Description	Pin on Modules	Voltage
1	TX	Transmit Signal	116	Standard RS232
2	RX	Receive Signal	117	Standard RS232
3	GND	Power Signal	-	-
4	NC	-	-	-

Table 8

The default communications settings is shown in following table

console default settings	
Baud rate	115200
Data length	8 bit
Parity	none
Stop	1bit

Table 9

10. Open-Frame LOCO assembly plan

This chapter provides to guide and to illustrate the method to installing an Open-Frame LOCO in an own system. They'll be specified the methodologies of insertion, of installation and the mechanical dimensions, useful to the user, to determinate the size requirements to design a custom product containing the Open-Frame.

To help to achieve the best results, the size and the dimensions with their tolerances (0,2mm if not specified) will be described, this will allow the integration of the Open-Frame, that will interact with any system through its display and its touch screen.

Therefore the attention will be focus on the possibility of adjust the positioning through the tolerances left on the constraints and the use of appropriate screws.

In this way the user will be able to place the Open-Frame within its system ensuring accuracy and reproducibility of the production process.

10.1 Overall Dimensions

In the following pictures are reported the drawing with the size of the Open-Frame LOCO. This can be useful to calculate the encumbrance area to consider during the designing.

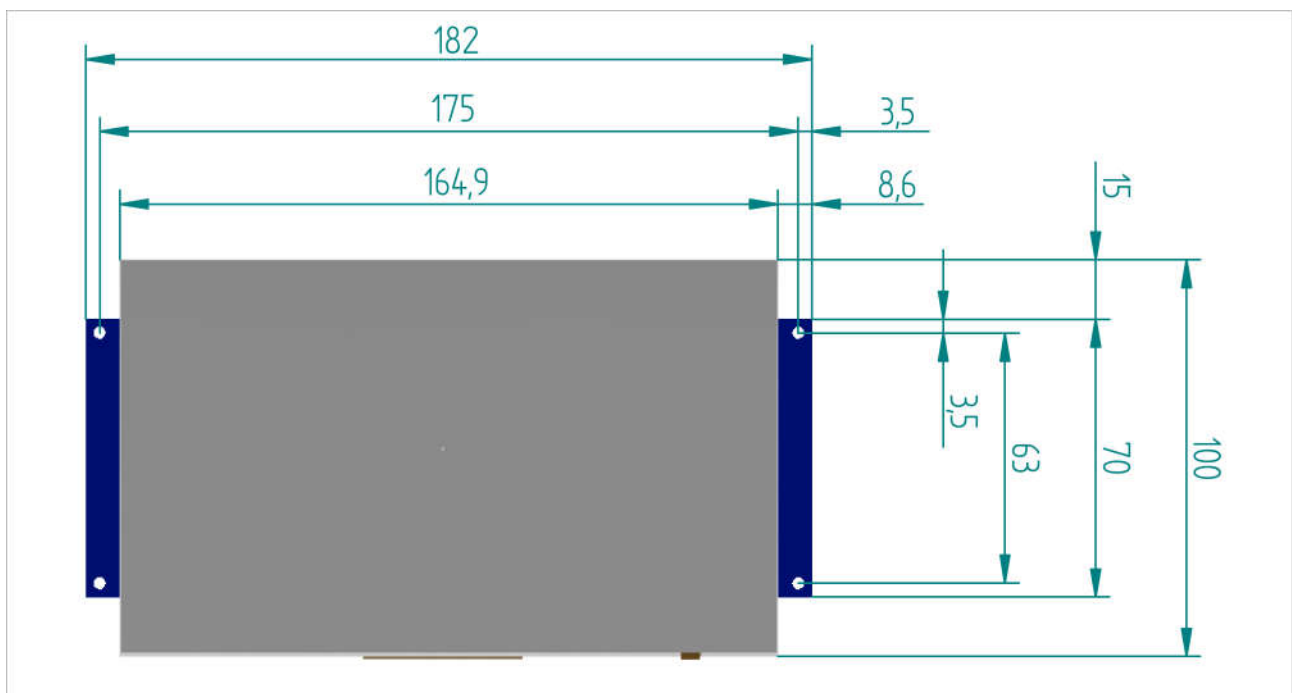


fig9

The figure also underlines the size of the PCB board and of the display. The diameter of the holes is designed for standard screw M3.

In the pictures below are shown the maximum size of the Open-Frame system also in its depth (in which are considered also the dimensions of PCB and the higher components assembled).

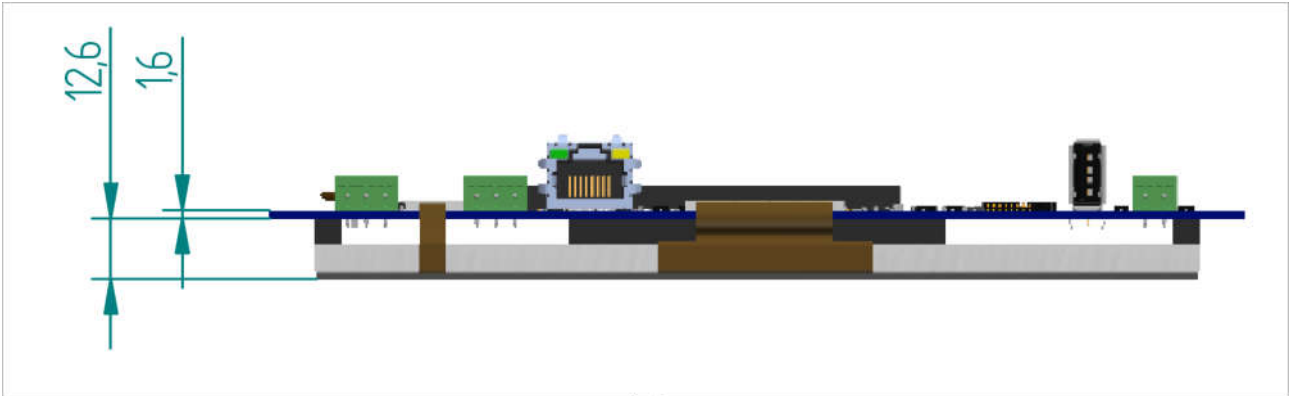


fig10

These can be useful to calculate and consider the volume necessary to place or to integrate the Open-Frame within another system and to design a suitable mounting points.

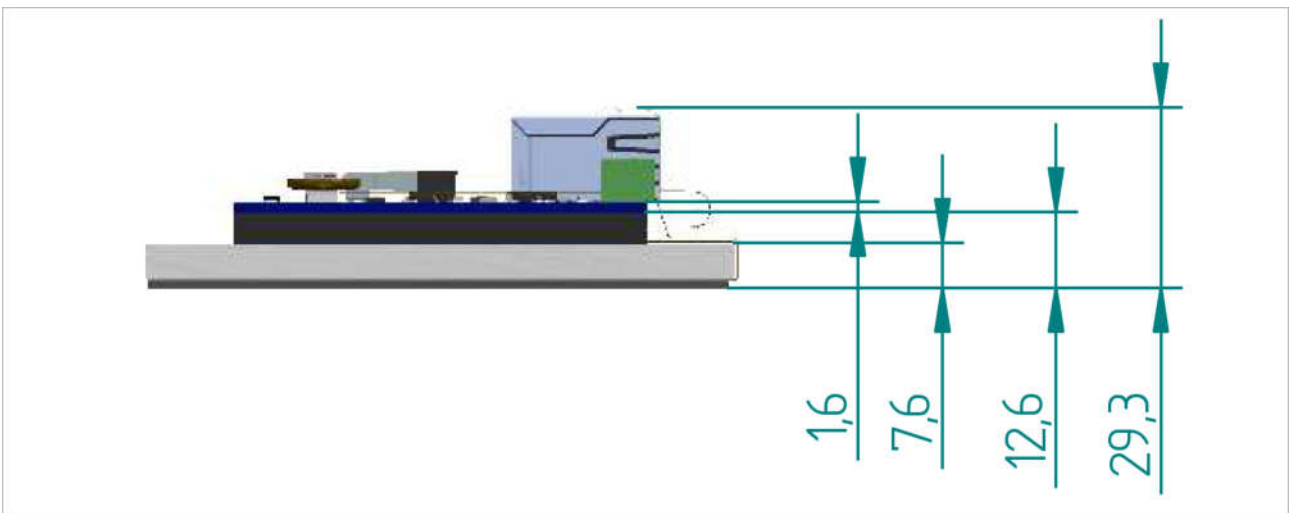


fig11

A bi-adhesive and non-conductive rubber is located between the PCB and the display.

10.2 Positioning and Balancing

This chapter tries to show to the user how position the Open-Frame and how to centre the display in a "window". In the following figure it's possible to find the spacing between the fixing hole and their sizes. Based on the following measure it's possible to find the position compared to the four fixing hole.

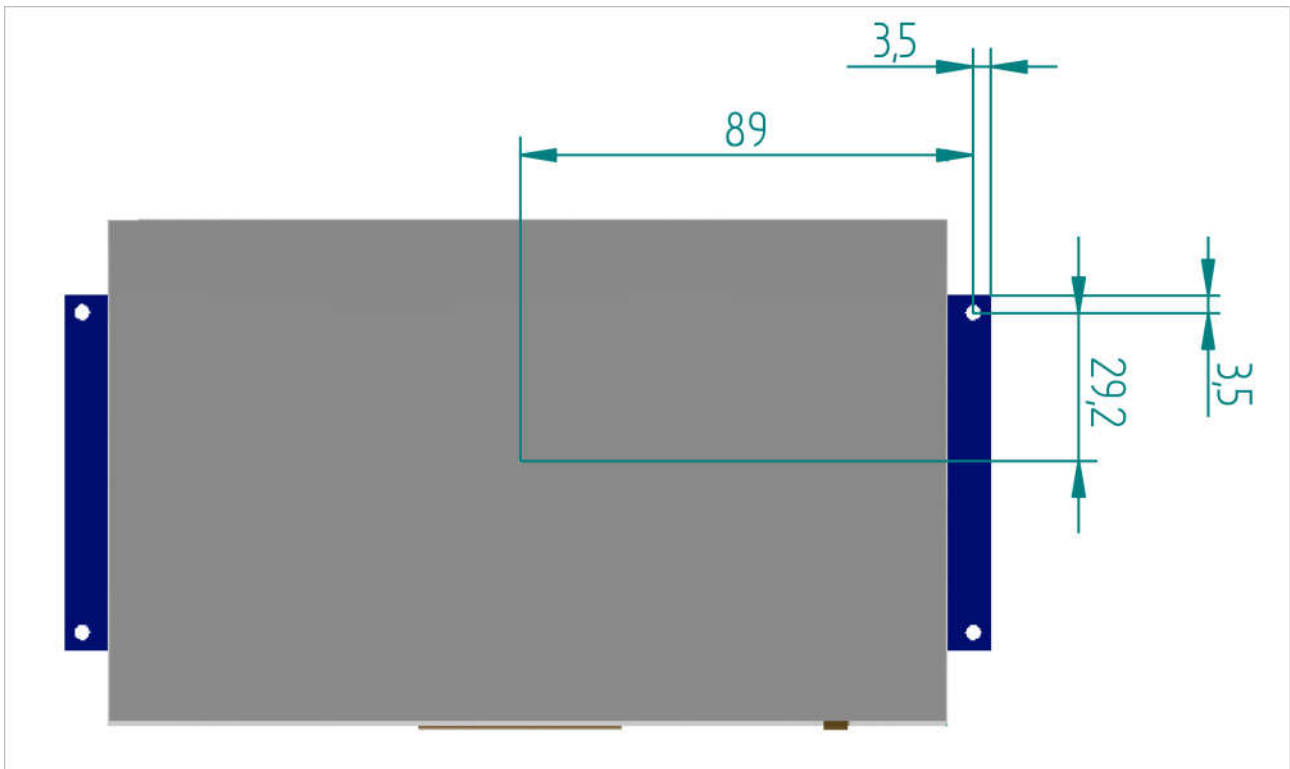


fig12

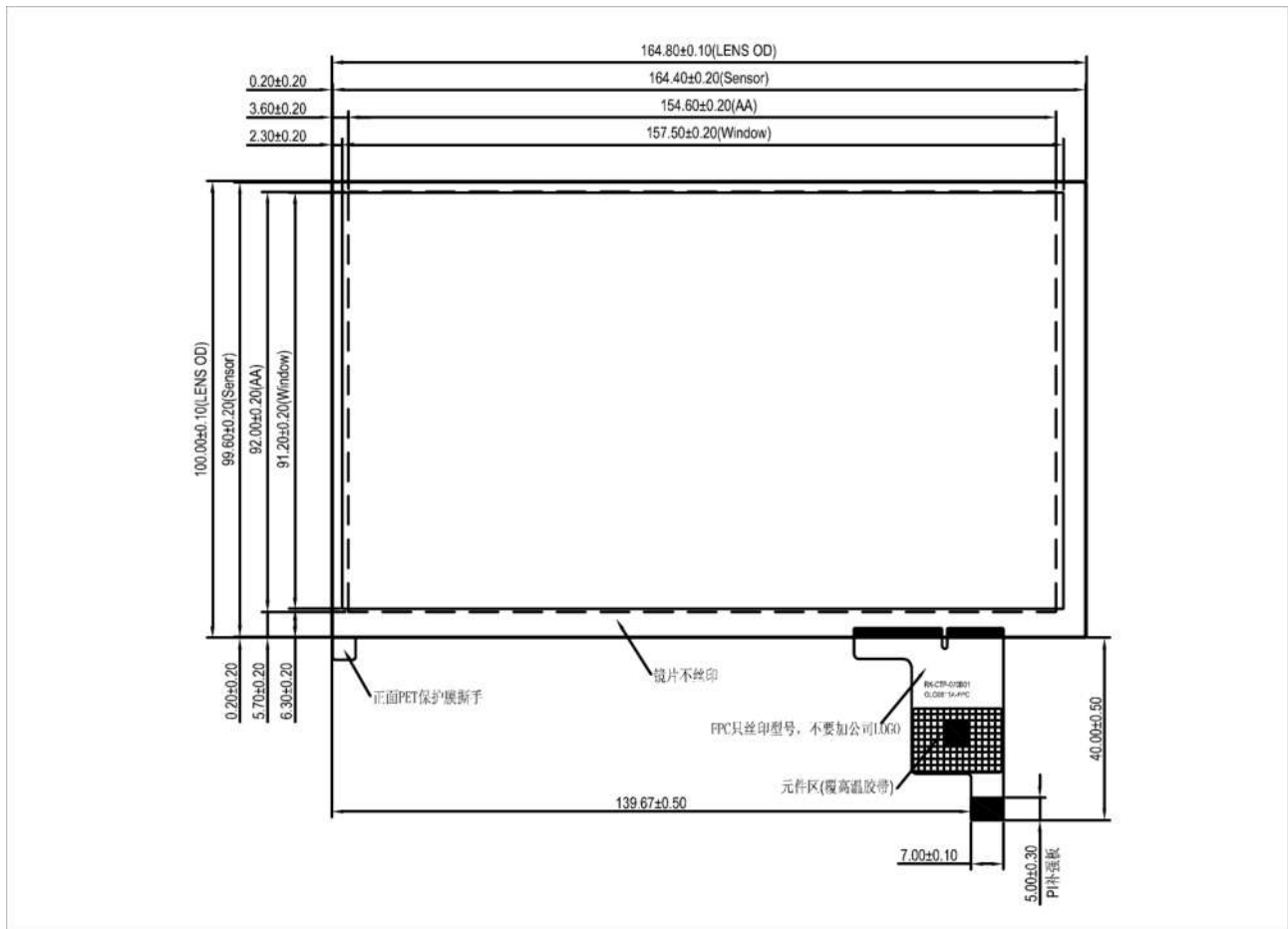
The type of the screws are M3, to have a more flexible constraint during the centring of the Open-Frame into the system it's possible to use smaller screws; in this way it's possible to have more tolerance on the centring the display visible or active area (also considering drilling tolerances). To achieve the same results using the threaded PEM instead of screws, it's possible to reduce the size of the PEM's diameter (e.g. 2,5 mm).

Note: all the unit reported measure are in mm

10.3 Centring the Display

Referring to the figure above to centring the positioning of the Open-Frame and also hit the centre of the display active area.

Basing on this measures it's possible to integrate the Open-Frame inside the own system and also design the cover, calculate the tolerances and whatever is needed on the project.



Note: all the unit reported measure are in mm

11. Product Compliance

In order to respect own internal policy regarding the environmental regulations and safety laws, Engicam in this chapter confirms the compliant, when applicable, of its own products to the normatives ROHS and REACH and to the recognized hazards.

Warning!

The current product board mounts a VL-1220/HFN Rechargeable Battery, that has the following elements included into the SVHC list:

- ***1,2-dimethoxyethane, ethylene glycol dimethyl ether (EGDME)***

12. Ordering Information

Following the ordering informations and the description for the Basic technical specifications:

Ordering Code	MPQ	Description	Operating temperature range °C
00257000011380	1	Open-Frame Low cost 7"CAPI	-40 to +85 *

Table 10

* LCD components excluded

In the table are shown the display specifications:

Operating temperature range	-20; +70 °C
Luminance	320 cd/mq

Table 11

13. Technical support

For help, write an email to:

support@engicam.com

14. Useful links

<http://www.imxdev.org/>

<http://www.imxcommunity.org/>

<http://www.NXP.com/>

<http://www.engicam.com/>