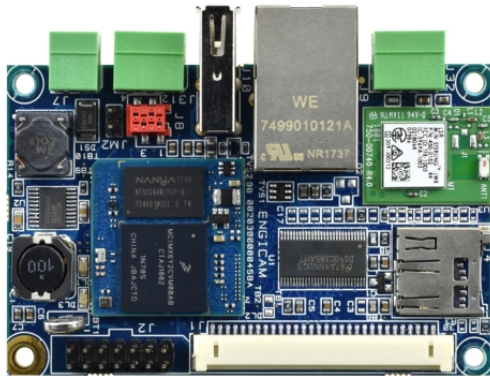


MicroDev carrier USB Manual 1.1.0



***** Revision History *****

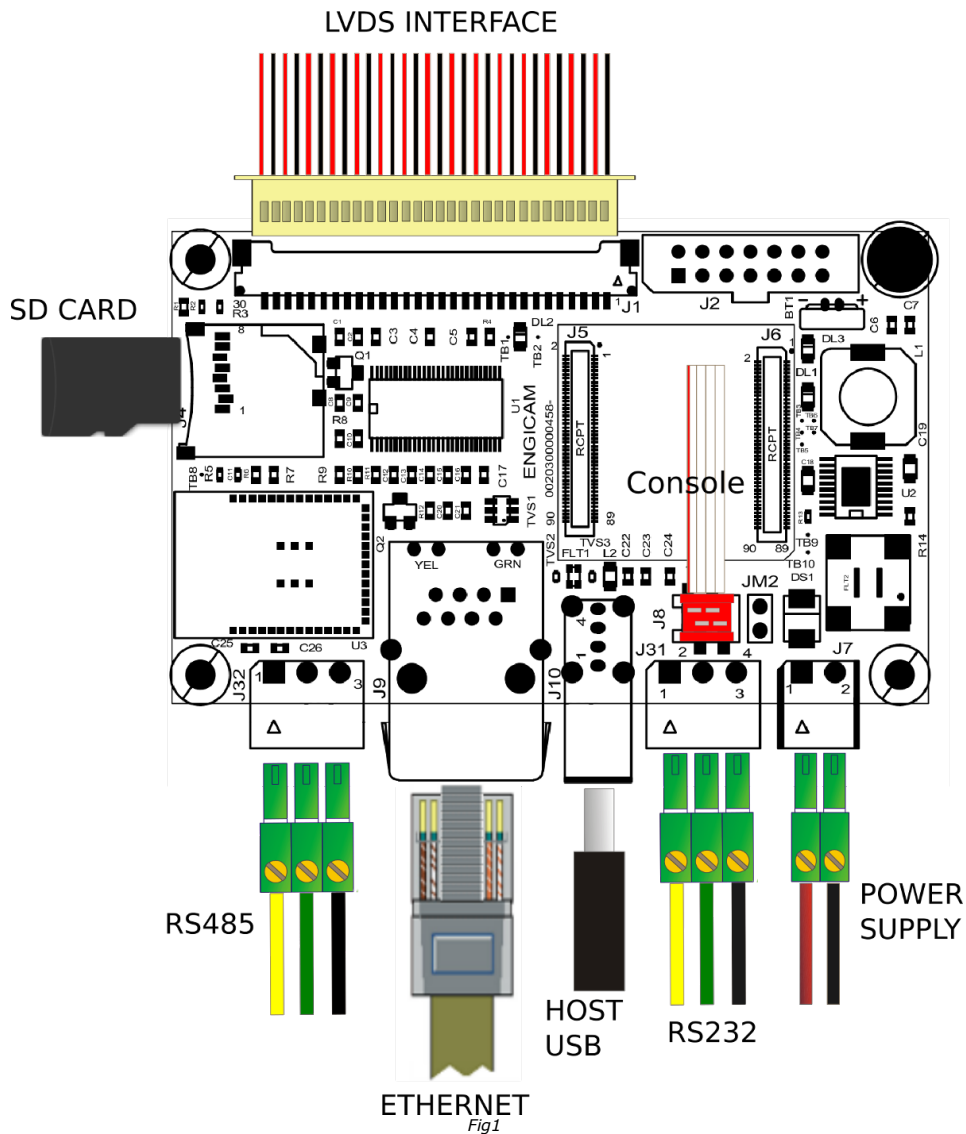
DATE	REVISION	CHANGE DESCRIPTION
08/01/18	1.0.0	Release
30/05/18	1.0.1	Added Open Frame specifications. Added Ordering information
02/07/18	1.0.2	Added Plastic enclosure option ordering codes
11/07/18	1.0.3	Added ordering specification, and mechanics size
07/03/19	1.0.4	Added list of the regulation certified, added new order code, added current consumption
16/04/19	1.0.5	Replaced the specs of the new display, updated order codes
25/06/19	1.0.6	Updated Product compliance chapter for rechargeable battery mounting option
31/01/20	1.0.7	Added in standard code MicroDev equipped with uGEA MX6ULL (512MB NAND & 512MB DDR3)
24/07/20	1.0.8	Updated Product Compliance, corrected errata
15/10/20	1.0.9	Correct the resistors' mapping for the peripheral options controlled by the USB
22/04/22	1.1.0	Updated LOGO and general enhancement

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1. Cable Map Overview

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



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. Ordering Information

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

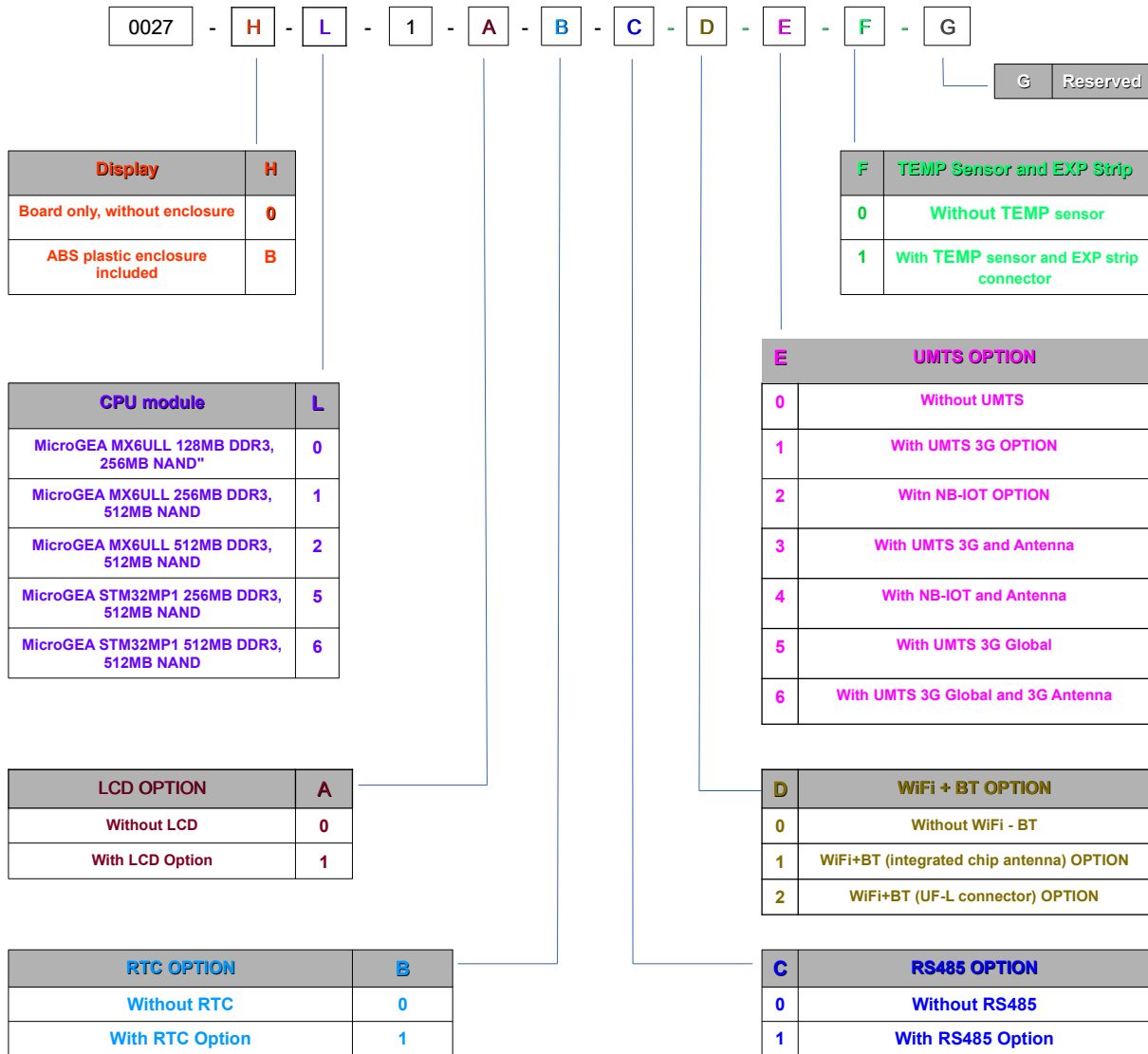
Ordering Code	MOQ	Description	Operating temperature range °C
0027B211111310	1	MicroDev FULL-EU BOXED (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, UMTS/3G EU, 3G antenna, Temp sensor, Exp. Connector, plastic enclosure)	-40 to +85 *
00270211111110	1	MicroDev FULL-EU (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, UMTS/3G EU, Temp sensor, Exp. Connector)	-40 to +85 *
00270211111510	1	MicroDev FULL-GLOBAL (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, UMTS/3G UG96 global, Temp sensor, Exp. Connector)	-40 to +85 *
0027B210011610	1	MicroDev IOT Gateway (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG96 Global, 3G antenna,Exp. Connector, plastic enclosure)	-40 to +85 *
00270210011510	1	MicroDev IOT board (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG96 Global, Exp. Connector)	-40 to +85 *
00270211111010	1	MicroDev FULL NO-UMTS (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, Temp sensor, Exp. Connector)	-40 to +85 *
00270211010000	1	MicroDev BASIC+LCD+RS485 (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RS485)	-40 to +85 *
0027B211010000	1	MicroDev BASIC+LCD+RS485 BOXED (MicroGEA MX6ULL 800MHz, 512MB DDR3, 512MB NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RS485, plastic enclosure)	-40 to +85 *
0027B011111310	1	MicroDev FULL-EU BOXED (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, UMTS/3G EU, 3G antenna, Temp sensor, Exp. Connector, plastic enclosure)	-40 to +85 *
00270011111110	1	MicroDev FULL-EU (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, UMTS/3G EU, Temp sensor, Exp. Connector)	-40 to +85 *
0027B010011610	1	MicroDev IOT Gateway (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG96 Global, 3G antenna,Exp. Connector, plastic enclosure)	-40 to +85 *
00270010000000	500	MicroDev BASIC (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial)	-40 to +85 *
0027B010011310	1	MicroDev IOT Gateway EMEA (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG95EA EMEA, 3G antenna,Exp. Connector, plastic enclosure)	-40 to +85 *
00270010011510	1	MicroDev IOT board (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG96 Global, Exp. Connector)	-40 to +85 *
00270010011110	1	MicroDev IOT board EMEA (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, RS485, WiFi+BT, UMTS/3G UG95A EMEA, Exp. Connector)	-40 to +85 *

Ordering Code	MOQ	Description	Operating temperature range °C
00270011111010	1	MicroDev FULL NO-UMTS (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RTC, RS485, WiFi+BT, Temp sensor, Exp. Connector)	-40 to +85 *
00270011010000	1	MicroDev BASIC+LCD+RS485 (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RS485)	-40 to +85 *
0027B011010000	1	MicroDev BASIC+LCD+RS485 BOXED (MicroGEA MX6ULL 800MHz, 128MB DDR3, 256 NAND, Ethernet, 2xRS232, 1XUSB, 1xSD, Industrial, LCD i/f, RS485, plastic enclosure)	-40 to +85 *

Table 1

- * CPU junction temperature excluded (range -40; +105°C)
- * LCD 7" components excluded (range -20; +60 °C)
- * LCD 10.1" components excluded (range -20; +70 °C)

The main order codes, shown in the table above, could be modified following the structure below:



Ordering Code nomenclature

Note: the codes *not* included in the Table 1 have a MOQ of 500 pieces

3. HW Compatibility with modules

The following table shows the modules available with the MicroDev Open Frame

Modules	MicroDev carrier	Microdev Open Frame 10.1"	Microdev Open Frame 7"
MicroGEA MX6ULL	Compliant	Compliant	Compliant
MicroGEA STM32MP1	Compliant	Compliant	Compliant

Table 2

4. Carrier Board Specifications

In this chapter are described the informations about the carrier board. These specifications include the descriptions of all the available peripheral assembled on the board and the code or the family of any mating connectors for each interface

4.1 Mechanical informations

In the following picture is reported the drawing and the size of the carrier board.

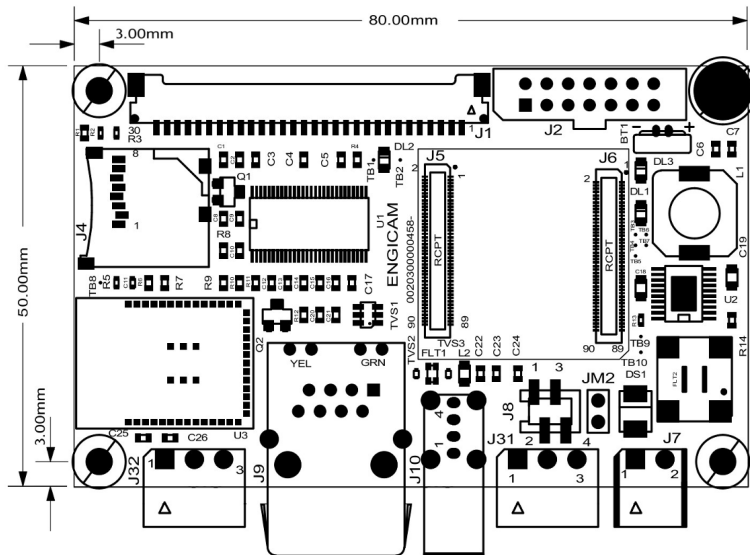


Fig2

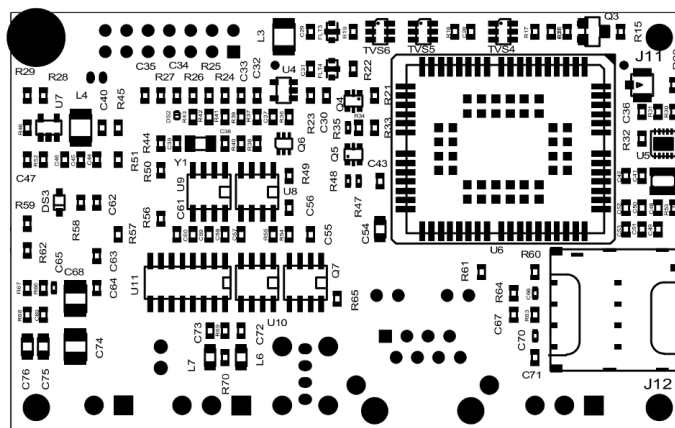


Fig3

Note: all the unit reported measure are in mm

4.2 3D STEP View

The Figure below shows the 3D STEP view screenshot.

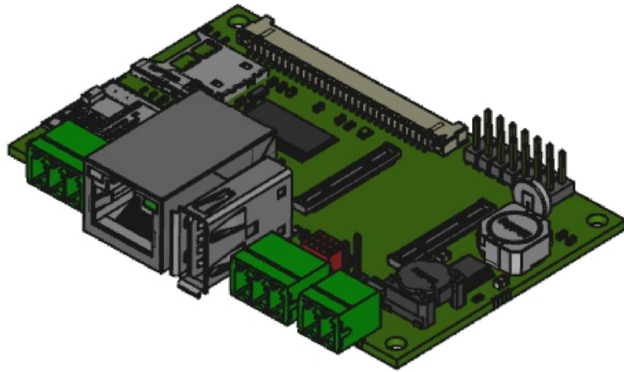


Fig4

For 3D step file or further information, contact Engicam support

4.3 Boot Mode

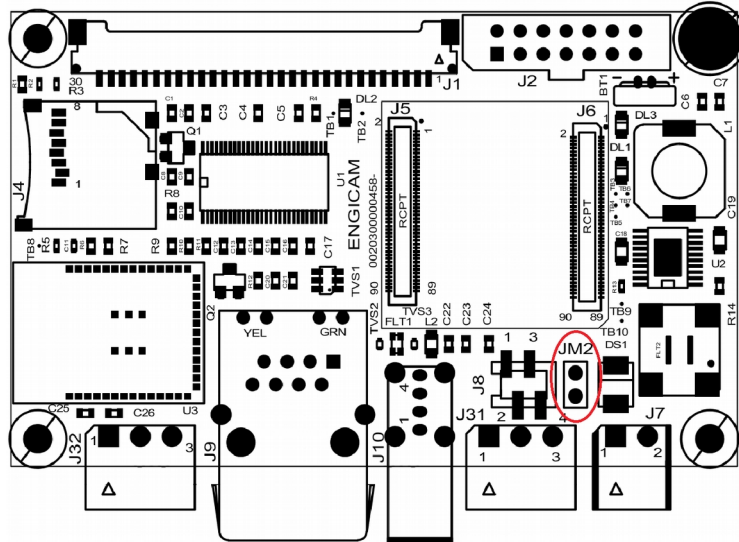


Fig5

The MicroDev board is equipped with a jumper that allows to choose the boot source

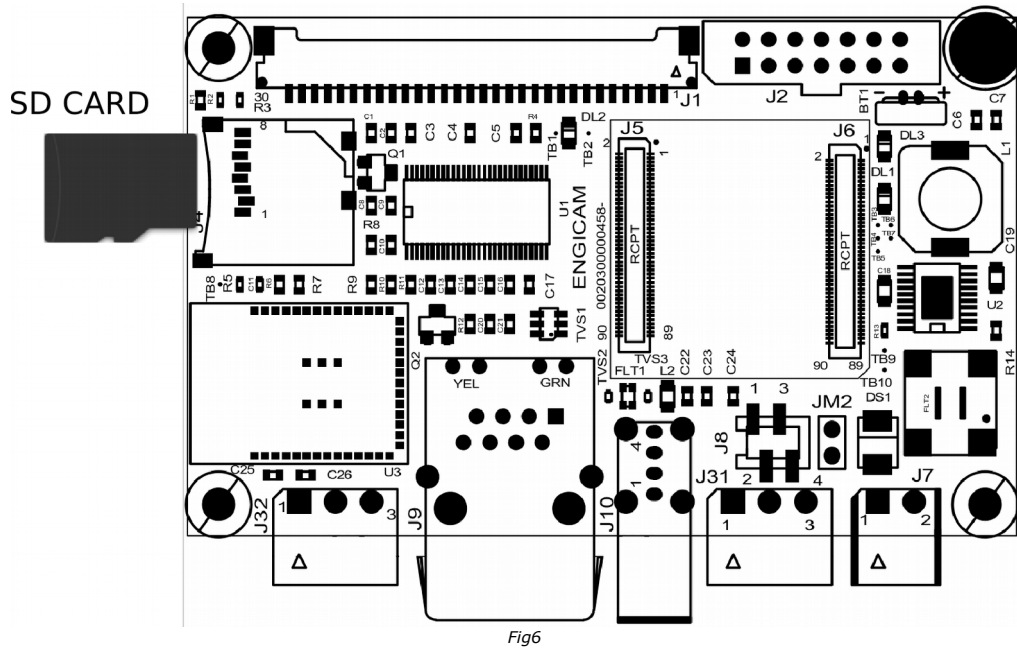
Jumper JM2	Action
Close	Boot from SD
Open	Boot from NAND

Table 3

Note: For further details refers also to *MicroGEA HW manual*

4.4 Micro SD Connections

The MicroDev board has a Micro SD switch detected connector (J4). It uses both micro 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

4.5 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 J31, J32.

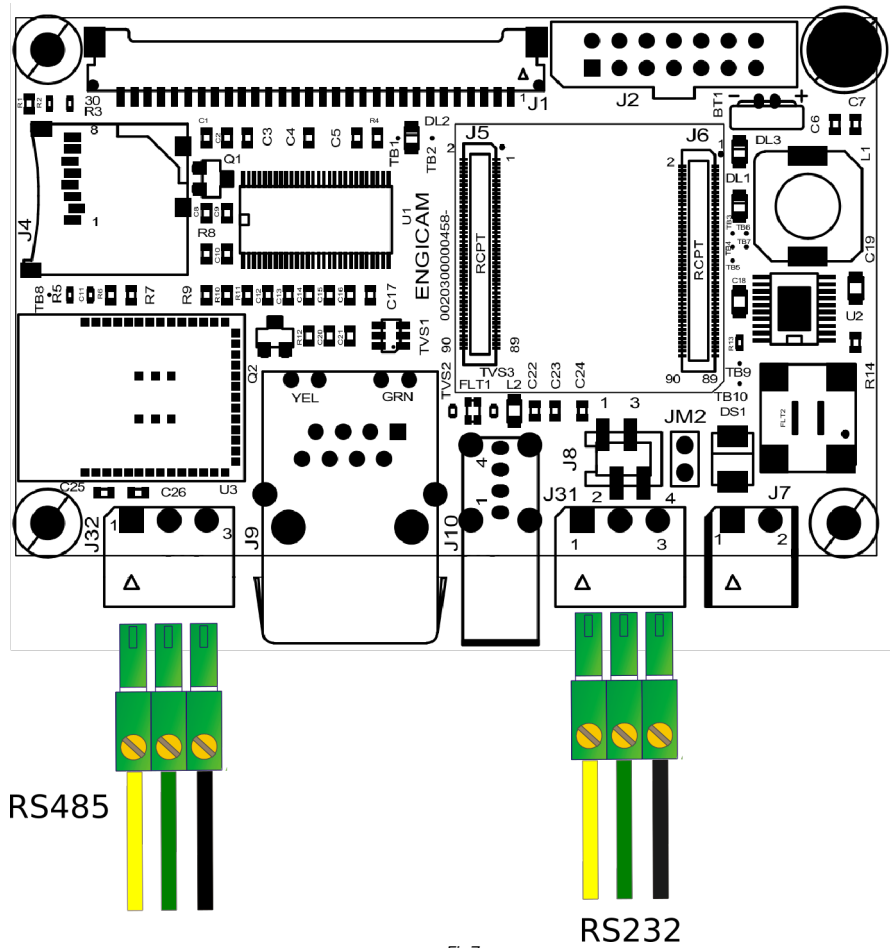


Fig7

The table shows the wiring map of female connector Mors Phoenix Contact MC1.5/3-G-3.5, 3 poles (or compliant) used for RS485 (UART2).

J32

Pin number	Signal Name	Function Description	Voltage reference
1	RS485 P	Non Inverting Receiver In/Driver Out	RS485 Standard
2	RS485 N	Inverting Receiver In/Driver Out	RS485 Standard
3	GND	Power Signal	-

Table 4

The table shows the wiring map of female connector Mors Phoenix Contact MC1.5/3-G-3.5, 3 poles (or compliant) used for RS232 (UART5).

J31

Pin number	Signal Name	Function Description	Voltage reference
1	TX	Transmit Signal Output	RS232 Standard
2	RX	Receive Signal Input	RS232 Standard
3	GND	Power Signal	-

Table 5

Note: Do NOT use the UART5 on connector J31 as Linux console

4.6 USB Connections

4.6.1 USB HOST

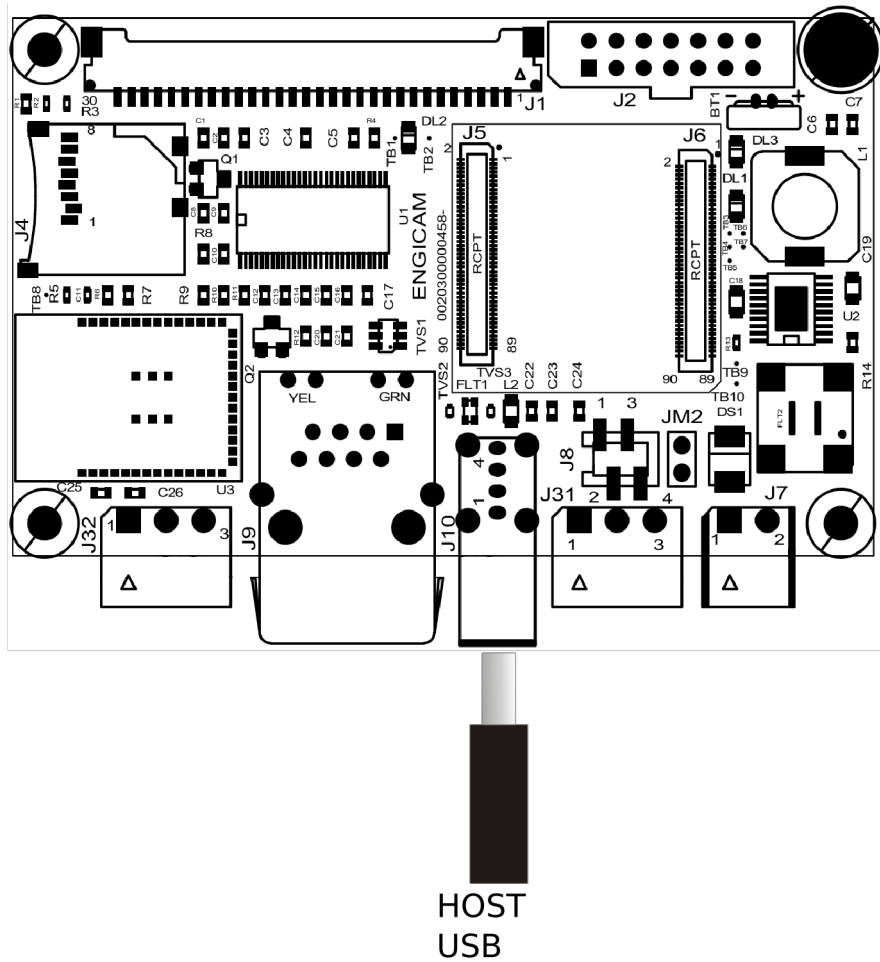


Fig8

The USB HOST signal is connected by standard type A USB connector. The following table shows the electrical connection of the USB standard interface (USB type A plug)

Pin number	Signal Name	Function Description	Voltage reference
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 6

4.7 Ethernet Connections

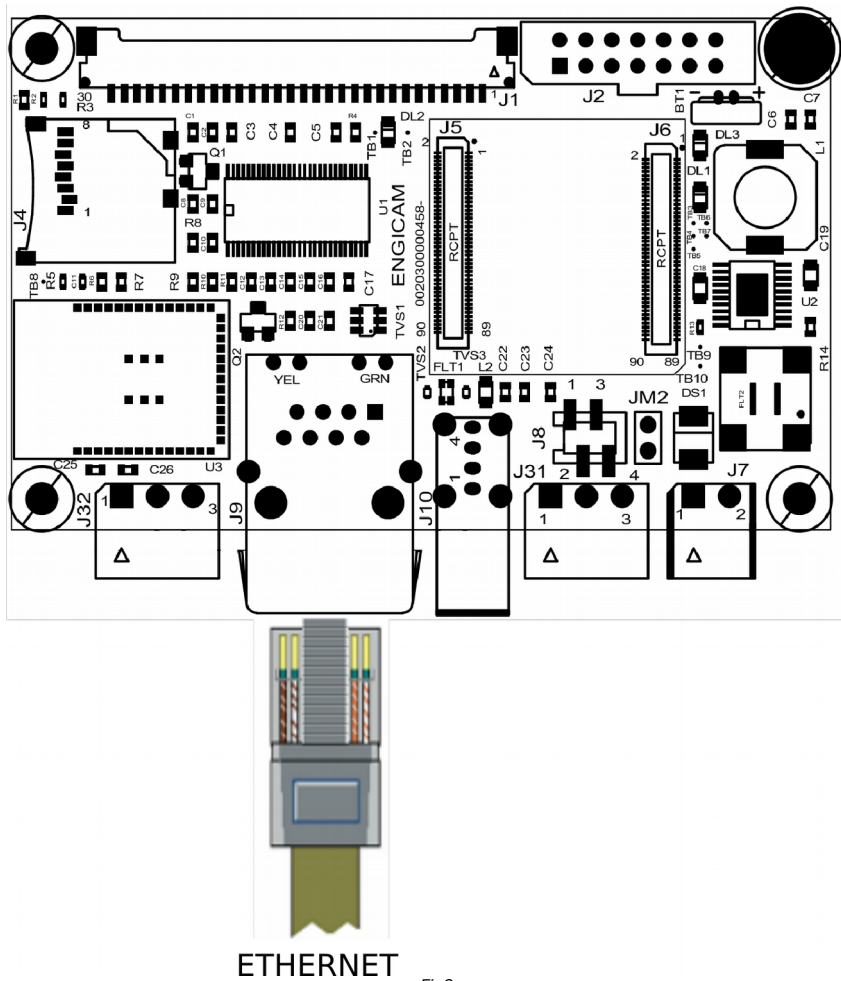


Fig9

The figure 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 reference
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 7

4.8 Power Supply Connections

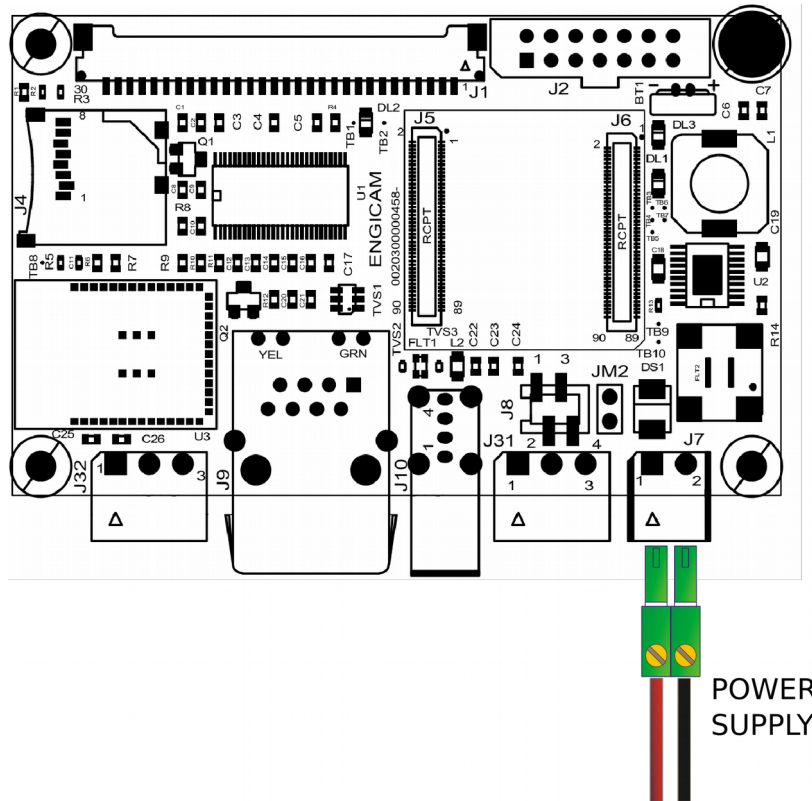


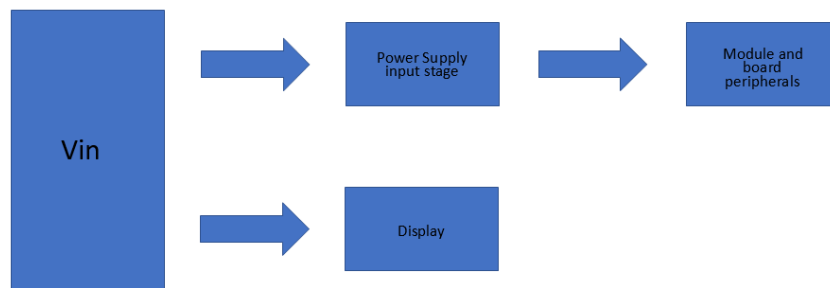
Fig10

The figure shows the power supply connection. The board receives a typical input DC voltage of +12V. J7 is Phoenix MC 1.5/2-G-3.5 1844210 90° (mate female connector MC 1,5/ 2-ST-3,5 - 1840366) p.3.5mm male connector linked as follows:

Pin number	Signal Name	Function Description	Voltage Min	Voltage Typ	Voltage Max
1	+VIN	Power Signal	Vin_min	12V	Vin_max
2	GND	Power Signal		-	

Table 8

The power input signal Vin is connected directly also to the display's connectors.



Vin_max and Vin_min must be the evaluate depending the minimum and maximum voltage of:

- Voltage regulator
- Display used

Vin_min = **Maximum** voltage between Vmin (Voltage regulator), Vmin (Display)

Vin_max = **Minimum** voltage between Vmax (Voltage regulator), Vmax (Display)

This tables show the minimum and maximum value of voltage reported in the specifications sheet of the known components and current consumption at +12 and +24 Volt, during standard working

Device	V min	V max
Voltage Regulator MP4570	+7V	+40V
Display	See display's Data Sheet	See display's Data Sheet

Table 7

	Current @ +12V	Current @ +24V
MicroDev Carrier Board	110 mA	60 mA
MicroDev Carrier Board + Display 7"	400 mA	210 mA
MicroDev Carrier Board + Display 10.1"	420 mA	215 mA

Table 8

4.9 Linux Console Debug Connections

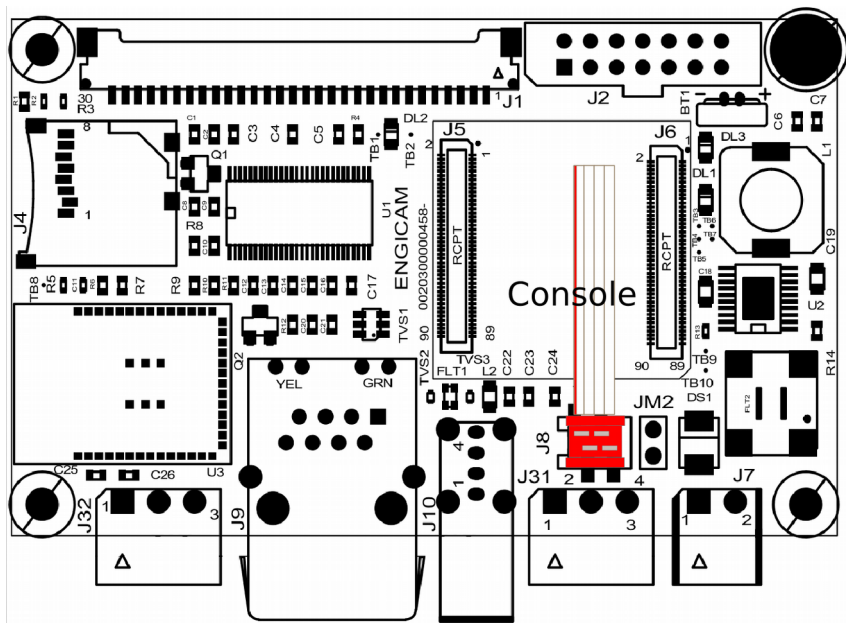


Fig11

When Linux OS is installed on the board's module, the UART1 is used as console. The connector used is a vertical MicroMatch 3.0 2x2 poles; in the following table is shown the electrical features:

Pin number	Signal Name	Function Description	Voltage reference
1	TX	Transmit Signal	Standard RS232
2	RX	Receive Signal	Standard RS232
3	NC	-	-
4	GND	Power Signal	-

Table 9

The default communications settings is shown in following table

Console Default Settings	
Baud rate	115200
Data length	8 bit
Parity	none
Stop	1bit

4.10 Expansion Connector

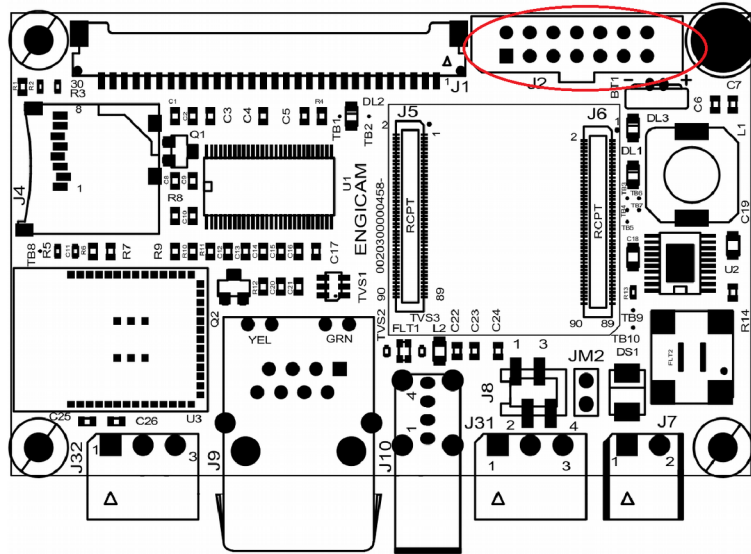


Fig12

The MicroDev is provided of Expansion connector (STRIP 2x7 poles, 2.54mm pitch referenced J3) which allows to connect the following module's pins:

Pin Number	Pin on Module Connector A	Pin on Module Connector B	Description	Voltage reference
1	7	-	UART4_TXD	+3,3V
2	9	-	UART4_RXD	+3,3V
3	-	-	GND	-
4	88	-	CAN1_TX	+3,3V
5	90	-	CAN1_RX	+3,3V
6	-	-	+5V	-
7	6	-	USB_EXT_DP if R43 is mounted, NC otherwise ¹⁾	USB Standard
8	4	-	USB_EXT_DN if R26 is mounted NC, otherwise ¹⁾	USB Standard
9	-	-	+3,3V	-
10	-	35	I2C4_SCL	+3,3V
11	-	43	I2C4_SDA	+3,3V
12	-	-	GND	-
13	53	-	Spare GPIO	+3,3V
14	55	-	Spare GPIO	+3,3V

Table 10

¹⁾ The USB_EXT signals are shared also with CPT signals of the display connector and UMTS control interface. The enable of the 3 different interfaces is available by mounting or removing the couple of resistor R24, R41; R26, R43; R25, R42. In the standard assembly mode the resistors R24 and R41 are mounted and only the CPT is available on the board. If the resistors R25, R42 are mounted only the UMTS interface is provided. If the couple is R26, R43 mounted only the USB on the expansion connector is available.

4.11 Wi-Fi + Bluetooth Interface (optional)

MicroDev board is equipped with **Sterling-LWB™ 2.4 GHz Wi-Fi® and Bluetooth® Smart Ready Multi-Standard Module**. This module is based upon the **Broadcom 4343W** chipset, and supports IEEE 802.11 b/g/n, BT 2.1+EDR, and BLE 4.1 wireless connectivity. The module comes in three configurations to best address specific applications, and features an industrial temperature rating (-40° to +85° C) and an industry-leading breadth of certifications and antenna options.

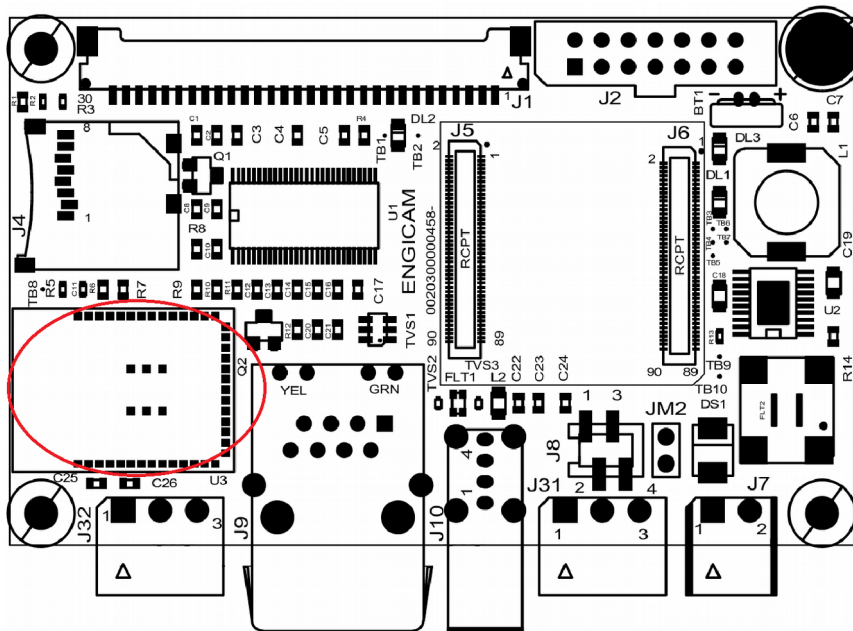


Fig13

The Wi-Fi interface is managed using the SDIO2 bus

B Connector	Name	Pin Name on i.MX	GPIO Capable	Voltage
79	SD2_D0	CSI_DATA00	Y	+3,3V
77	SD2_D1	CSI_DATA01	Y	+3,3V
83	SD2_D2	CSI_DATA02	Y	+3,3V
81	SD2_D3	CSI_DATA03	Y	+3,3V
87	SD2_CMD	CSI_HSYNC	Y	+3,3V
85	SD2_CLK	CSI_VSYNC	Y	+3,3V

Table 11

The Bluetooth interface is managed using the PAD of the UART 8 on the iMX processor.

B Connector	Signal Name	Pin Name on i.MX	GPIO Capable	Voltage
53	UART8_CTS (Output)	ENET2_TX_CLK	Y	+3,3V
41	UART8_RTS (Input)	ENET2_RX_ER	Y	+3,3V
57	UART8_TXD	ENET2_TX_DATA1	Y	+3,3V
45	UART8_RXD	ENET2_TX_EN	Y	+3,3V

Table 12

4.12 LVDS Interface

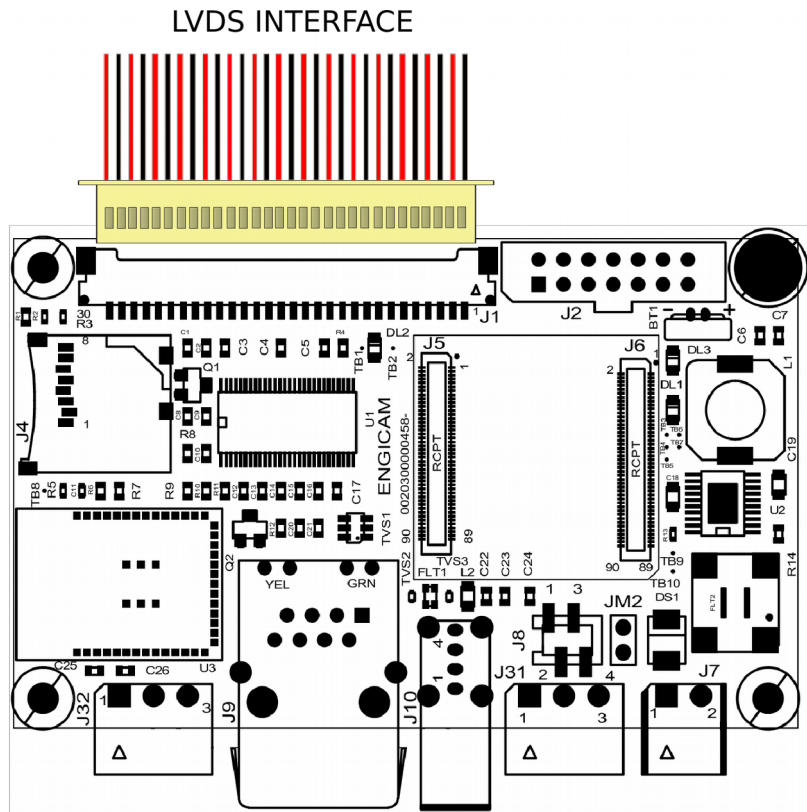


Fig14

The board connector, reference J1, mates with the cable connector code DF14-30S-1.25C (HIROSE) or compliant

Pin number	Signal Name	Function Description	Voltage reference
1	GND	Power PIN	-
2	+3V3_LCD	Power PIN	-
3	+3V3_LCD	Power PIN	+3,3V@ up to 1A
4	+5V	Power PIN	-
5	+5V	Power PIN	+5V@ up to 1A
6	Vin_FLT	Power PIN	(see Chapter 2.6)
7	NC	-	-
8	LVDS0_TX0_N	LVDS Interface's Signals	+2,5V
9	LVDS0_TX0_P	LVDS Interface's Signals	+2,5V
10	GND	Power PIN	-
11	LVDS0_TX1_N	LVDS Interface's Signals	+2,5V
12	LVDS0_TX1_P	LVDS Interface's Signals	+2,5V
13	GND	Power PIN	-
14	LVDS0_TX2_N	LVDS Interface's Signals	+2,5V

Pin number	Signal Name	Function Description	Voltage reference
15	LVDS0_TX2_P	LVDS Interface's Signals	+2,5V
16	GND	Power PIN	-
17	LVDS0_CLK_N	LVDS Interface's Signals	+2,5V
18	LVDS0_CLK_P	LVDS Interface's Signals	+2,5V
19	GND	Power PIN	-
20	LVDS0_TX3_N	LVDS Interface's Signals	+2,5V
21	LVDS0_TX3_P	LVDS Interface's Signals	+2,5V
22	GND	Power PIN	-
23	LCD_BKL_PWM	PWM (Display Contrast)	+3,3V
24	I2C2_SCL	I2C SCL Signal	+3,3V
25	I2C2_SDA	I2C SDA Signal	+3,3V
26	GPIO1_T_CONTROL	General Purpose IO	+3,3V
27	USB_DISP_DP	USB interface if R41 is mounted NC otherwise ³⁾	Standard USB
28	USB_DISP_DN	USB nterface if R24 is mounted NC otherwise ³⁾	Standard USB
29	U/D#	Vertical inversion (selectable by board pull-up/down) ¹⁾	+3,3V
30	8/6 BIT	selectable by board pull-up/down ²⁾	+3,3V

Table 13

The LVDS connector is designed to manage the CTP with both USB and I2C interfaces. To use the USB interface pay attention on note number ³⁾

¹⁾ U/D# Signal is controlled by:

R1, 5,6K Ohm pull-up resistor (Mounted on the standard PCB configuration)

R2, 100K Ohm pull-down resistor (Not Mounted)

²⁾ Spare Pin Signal is controlled by:

R15, 5,6K Ohm pull-up resistor (Mounted on the standard PCB configuration)

R3, 100K Ohm pull-down resistor (Not Mounted)

³⁾ The USB_DISP signals are shared also with expansion connector and with CPT signals of the display connector . The enable of the 3 different interfaces is available by mounting or removing the couple of resistor R24, R41; R26, R43; R25, R42 .In the standard assembly mode the resistors R24 and R41 are mounted and the only CPT is available on the board.

If the resistors R25, R42 are mounted only the UMTS interface is provided.

If the couple is R26, R43 mounted only the USB on the expansion connector is available.

4.13 UMTS interface (optional)

The MicroDev carrier board is equipped with an (optional) embedded 3G wireless communication module, supports GSM/GPRS/EDGE and UMTS/HSDPA/HSUPA networks. The module offers a maximum data rate of 7.2Mbps on downlink and 5.76Mbps on uplink in HSPA mode.

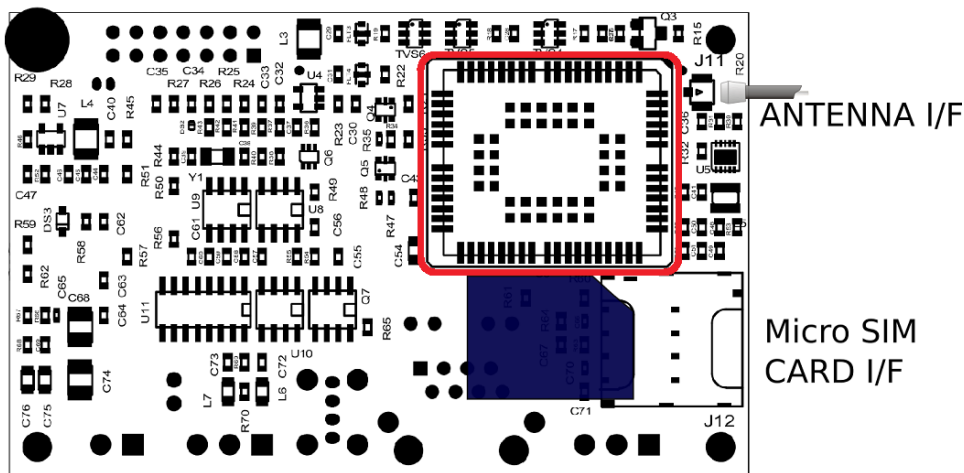


Fig15

The UMTS interface is managed using the USB_OTG bus and some committed signals

PIN number A Connector	Name	Pin Name on i.MX	GPIO Capable	Voltage
4	USB_OTG_DN ¹⁾	USB_OTG1_DN	N	USB Standard
6	USB_OTG_DP ¹⁾	USB_OTG1_DP	N	USB Standard

Table 14

PIN number on Connector		Name	Pin Name on i.MX	GPIO Capable	Voltage
A	B				
34	-	UMTS_EN	GPIO_IO02	Y	+3,3V
36	-	UMTS_RESET	UART3_RX_DATA	Y	+3,3V
38	-	UMTS_ON	SNVS_TAMPER5	Y	+3,3V
40	-	UMTS_STATUS	SNVS_TAMPER4	Y	+3,3V
-	70	UMTS_STOP	CSI_DATA05	Y	+3,3V

Table 15

¹⁾ The USB_DISP signals are shared also with expansion connector and UMTS control interface. The enable of the 3 different interfaces is available by mounting or removing the couple of resistor R24, R41; R26, R43; R25, R42. In the standard assembly mode the resistors R24 and R41 are mounted and only the CPT is available on the board. If the resistors R25, R42 are mounted only the UMTS interface is provided. If the couple is R26, R43 mounted only the USB on the expansion connector is available.

4.14 Temperature Sensor

The MicroDev carrier board is provided with a LM75AD temperature sensor managing by the I2C1 interface

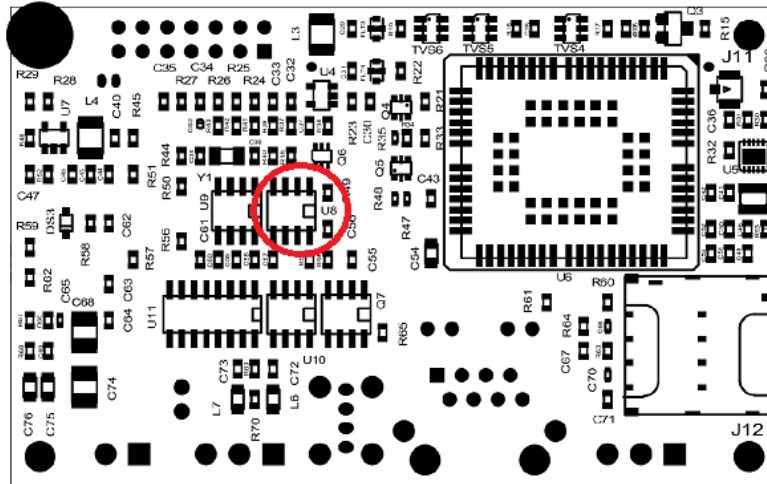


Fig16

PIN number B Connector	Name	Pin Name on i.MX	GPIO Capable	Voltage
62	I2C_SCL	CSI_PIXCLK	Y	+3,3V
64	I2C_SDA	CSI_MCLK	Y	+3,3V

Table 16

5. MicroDev Boxed Size

This chapter want illustrate the size of the box, and the fixed point of the Microdev Boxed. It will be specified the mechanical dimensions useful to the user to determinate the space requirements to design a custom product to contain and to fix the box.

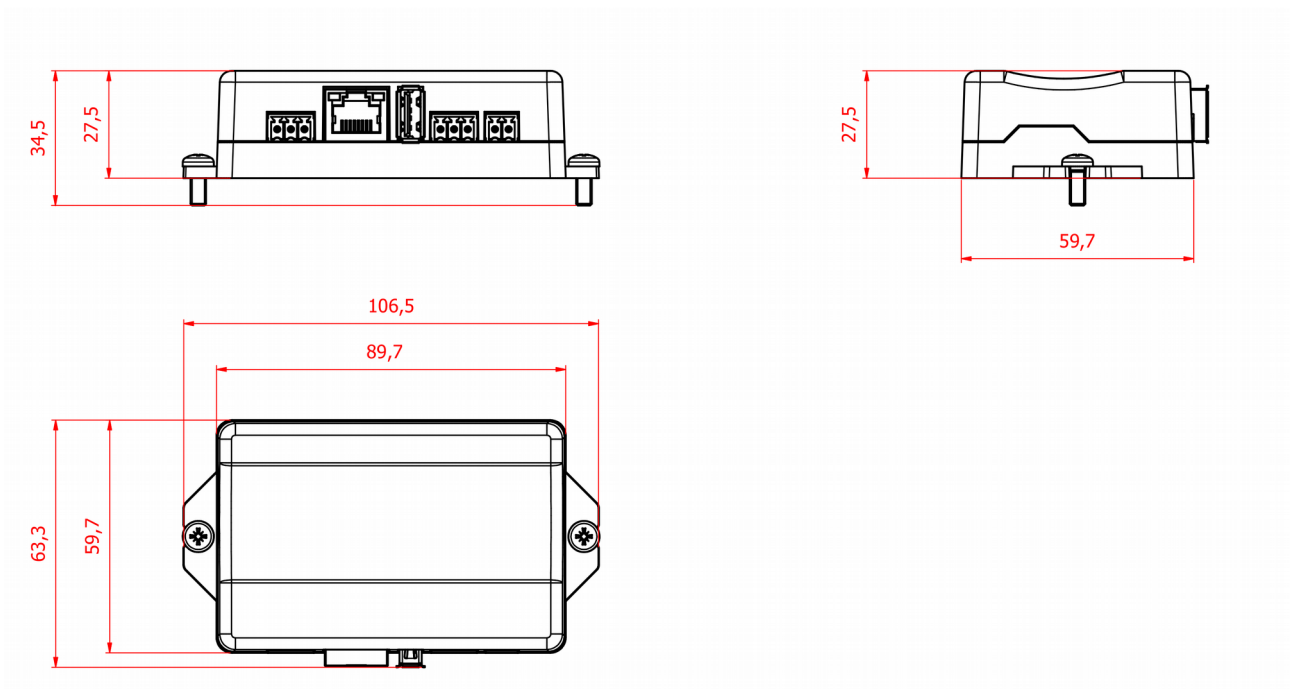


Fig17

6. MicroDev 7" Open Frame assembly plan

This chapter want to be a guide and illustrate the method to installing an Open-Frame in a customised system. First of all it will be specified the methodologies of insertion, of installation and the mechanical dimensions useful to the user to determinate the space requirements to design a custom product containing the MicroDev Open-Frame.

To help you to achieve the best results will be described the size and dimensions with their tolerances, this will allow the integration of Open-Frame, that will interact with any system through its visual interface and its touchscreen.

Therefore the attention of the user 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.

6.1 MicroDev Open Frame 7" Overall Dimensions

In the following picture is reported the drawing with the size of the OF. This can be useful to calculate the encumbrance area and the fixing points to consider during the system designing.

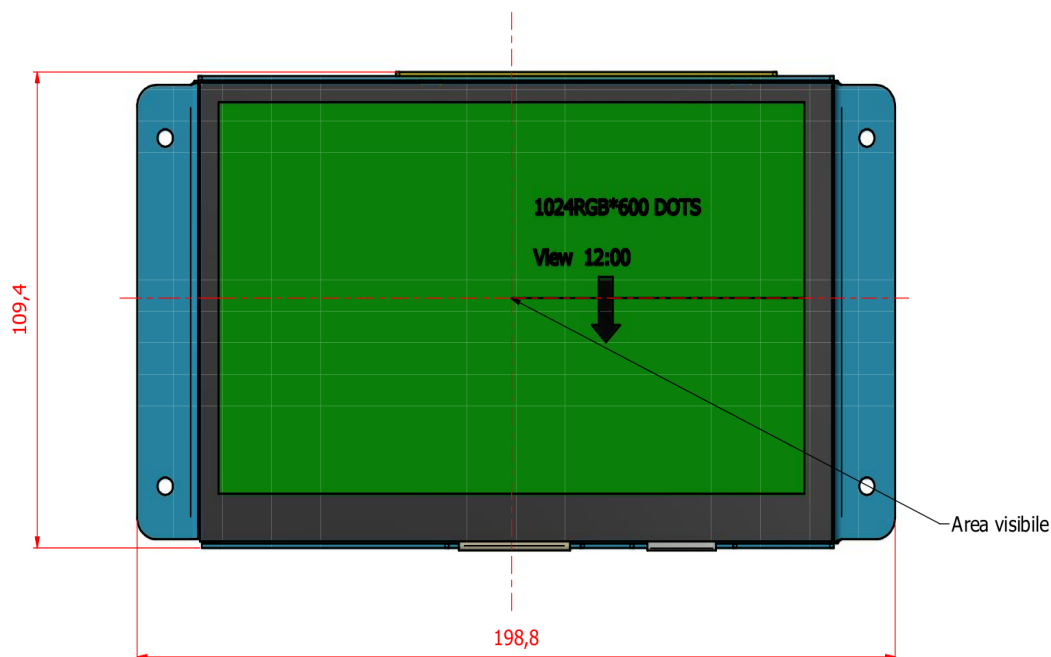


Fig18

The pictures below show the maximum size of the Open-Frame system also in its depth (in which are considered also the dimensions of carter that cover the PCB and its components assembled).

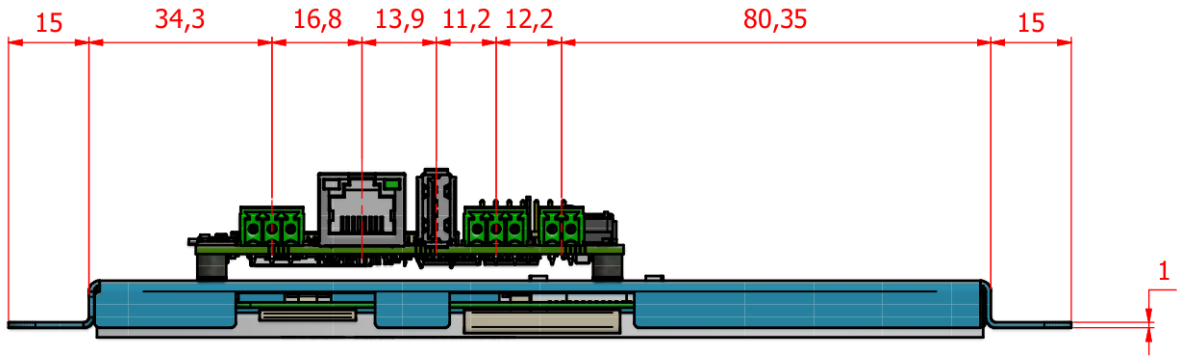


Fig19

Those 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.

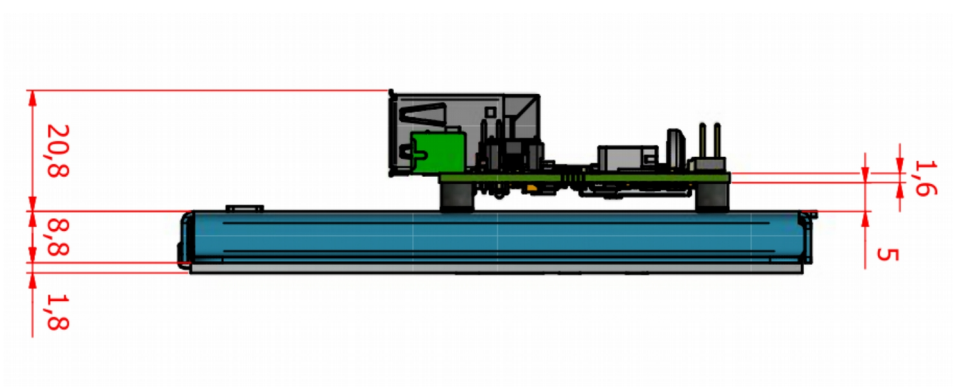


Fig20

6.2 Positioning and Balancing

In this chapter it will be explained to the user how positioning the Open-Frame and how to centre the display in a mechanical window. In the following figure you'll find the spacing between the fixing hole and the centre of the display's visible area. Based on following measure you can find the position compared to the four fixing hole.

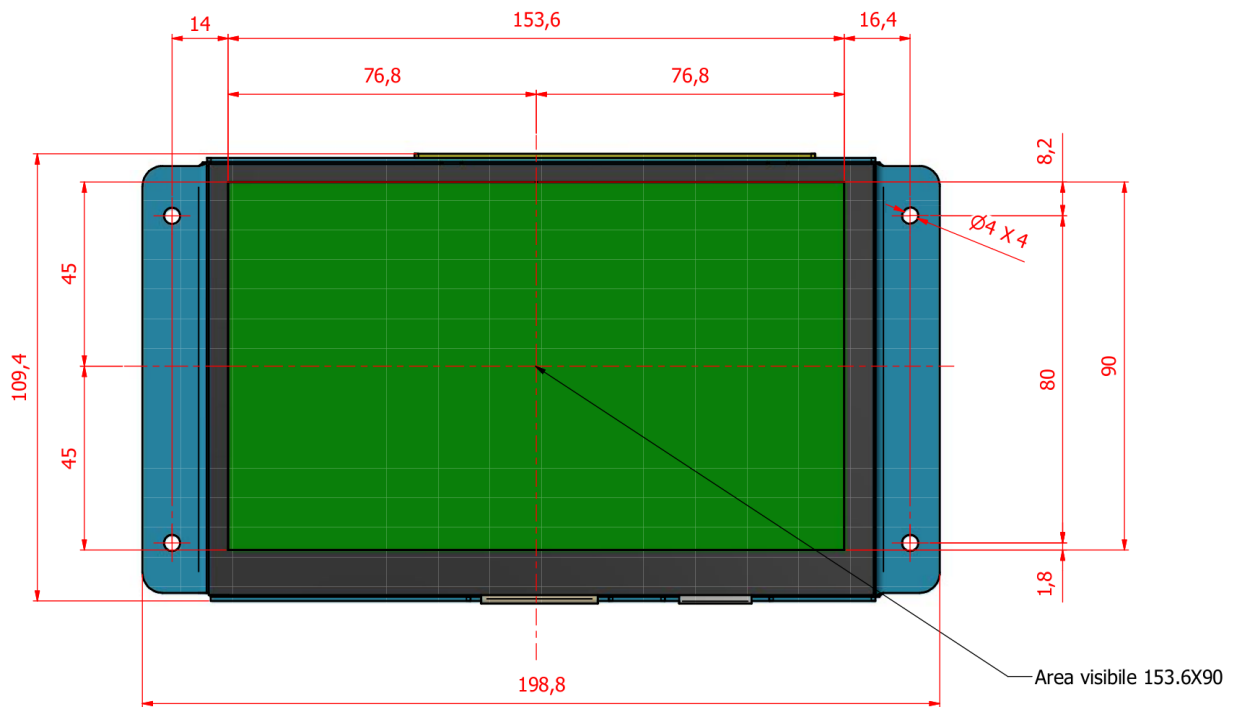


Fig21

It's possible to use the smaller screws to have a more flexible constraint during the centring of the Open-Frame within the system. In this way you'll have more tolerance on the centring the display (also considering drilling tolerances). if you use threaded PEM reducing the size of diameter).

Warning:

for any doubt about the positioning do not hesitate to contact Engicam support

6.3 General specifications for display 7"

In the table are shown the displays' specifications driven by C.TOUCH carrier board:

YTC700TLAG-05-201C	7"
Operating temperature range	-20; +60 °C
Size	7 inch
Luminance	350 cd/mq
Colour	16.2M
Resolution	1024 (RGB) x 600
View Angles	TYP: T 50 Deg, B, L, R 70 Deg
Interface	LVDS

Table 17

The following picture reports the drawing with the size of the display. This can be useful to determinate the encumbrance viewing area and the multiple active area to consider during the system designing.

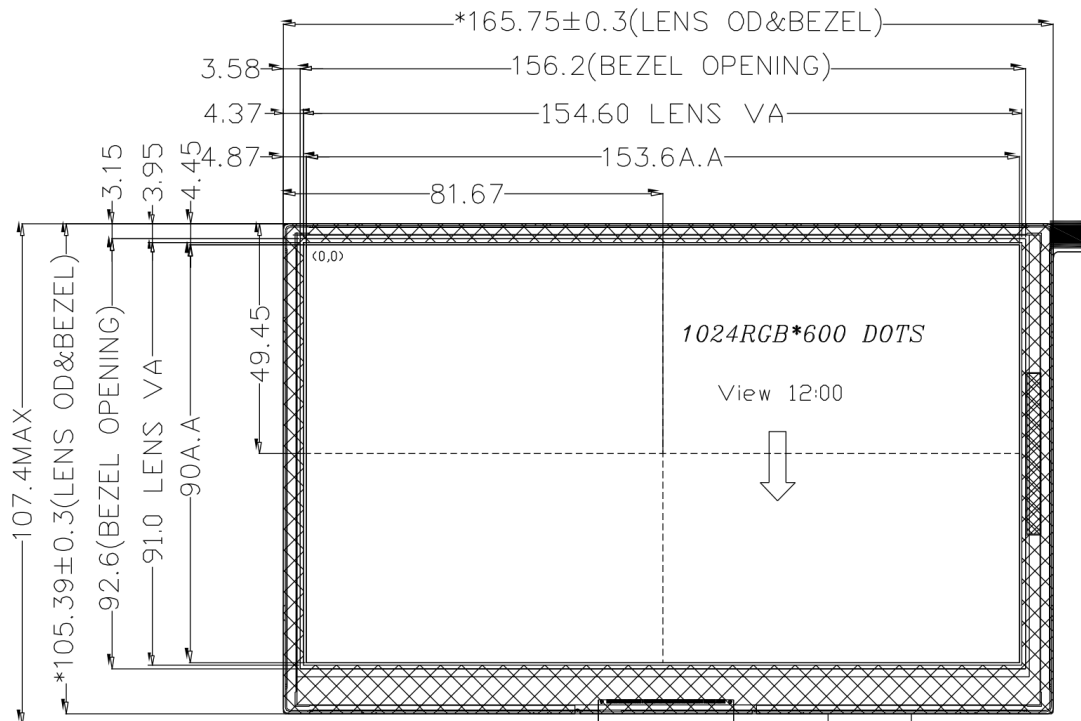


Fig22

Note: all the unit reported measure are in mm

7. MicroDev 10.1” Open Frame assembly plan

This chapter want to be a guide and illustrate the method to installing an Open-Frame in a customised system. First of all it will be specified the methodologies of insertion, of installation and the mechanical dimensions useful to the user to determinate the space requirements to design a custom product containing the MicroDev Open-Frame.

To help you to achieve the best results will be described the size and dimensions with their tolerances, this will allow the integration of Open-Frame, that will interact with any system through its visual interface and its touchscreen.

Therefore the attention of the user 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.

7.1 MicroDev Open Frame 10.1” Overall Dimensions

In the following picture is reported the drawing with the size of the OF. This can be useful to calculate the encumbrance area and the fixing points to consider during the system designing.

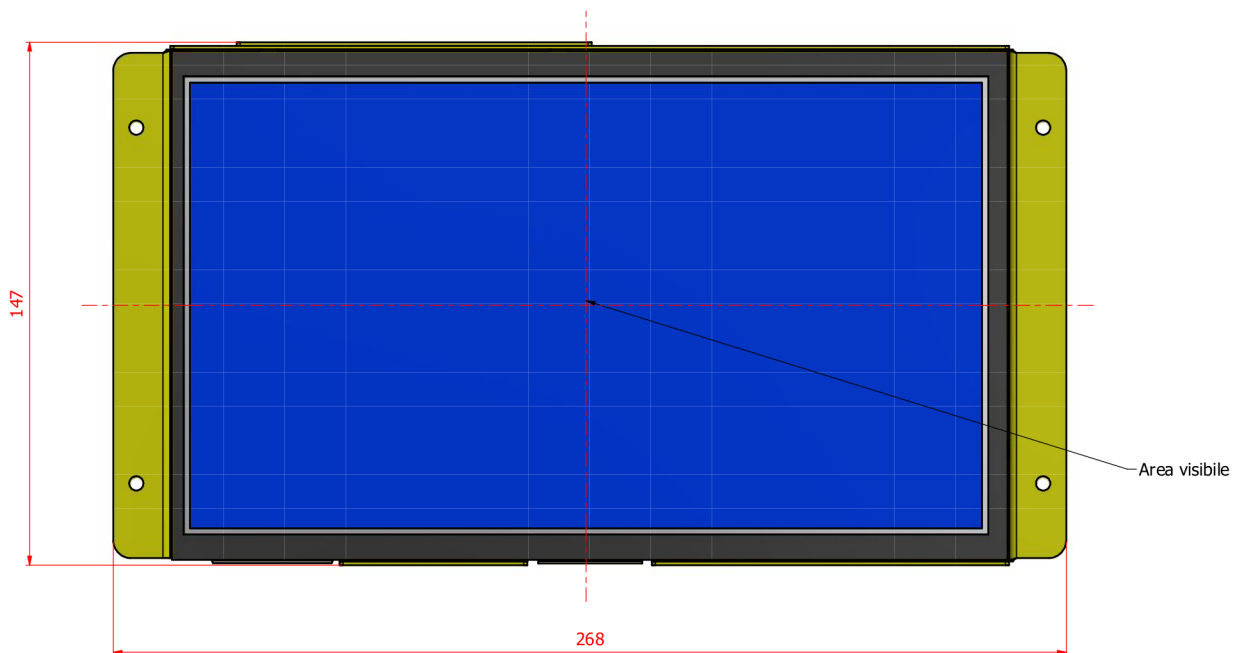


Fig23

The pictures below show the maximum size of the Open-Frame system also in its depth (in which are considered also the dimensions of carter that cover the PCB and its components assembled).

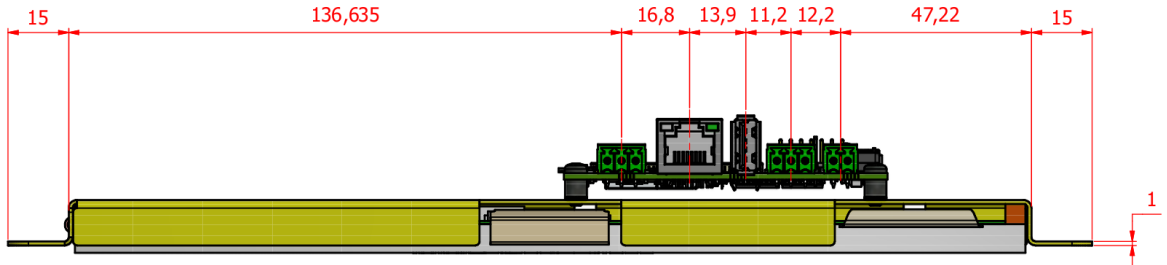


Fig24

Those 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.

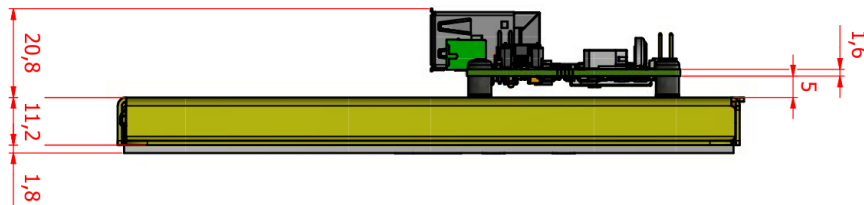


Fig25

7.2 Positioning and Balancing

In this chapter it will be explained to the user how positioning the Open-Frame and how to centre the display in a mechanical window. In the following figure you'll find the spacing between the fixing hole and the centre of the display's visible area. Based on following measure you can find the position compared to the four fixing hole.

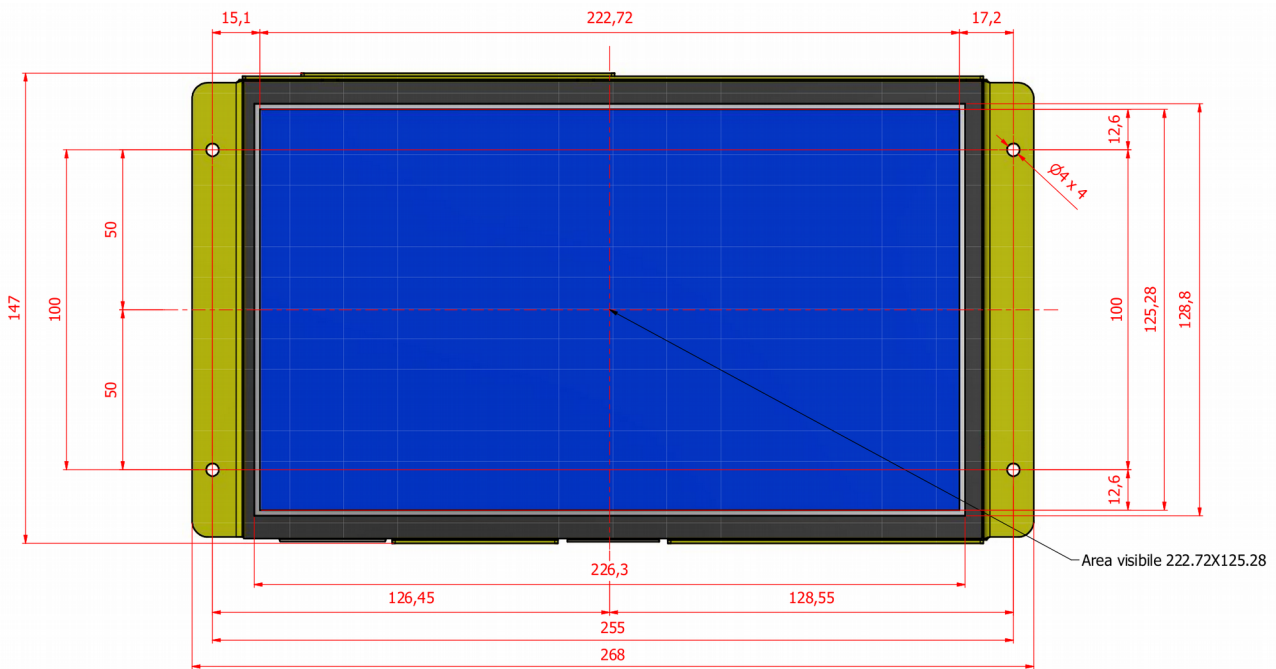


Fig26

It's possible to use the smaller screws to have a more flexible constraint during the centring of the Open-Frame within the system. In this way you'll have more tolerance on the centring the display (also considering drilling tolerances). if you use threaded PEM reducing the size of diameter).

Warning:

for any doubt about the positioning do not hesitate to contact Engicam support

7.3 General specifications for display 10.1”

In the table are shown the displays' specifications driven by C.TOUCH carrier board:

YTCA10TLAA-09-100C-V1	10.1”
Operating temperature range	-20; +70 °C
Size	10.1 inch
Luminance	340 cd/mq
Colour	16.2M
Resolution	1024 (RGB) x 600
View Angles	TYP: T 50 Deg, B, L, R 70 Deg
Interface	LVDS

Table 18

The following picture is reports the drawing with the size of the display. This can be useful to determinate the encumbrance viewing area and the multiple active area to consider during the system designing.

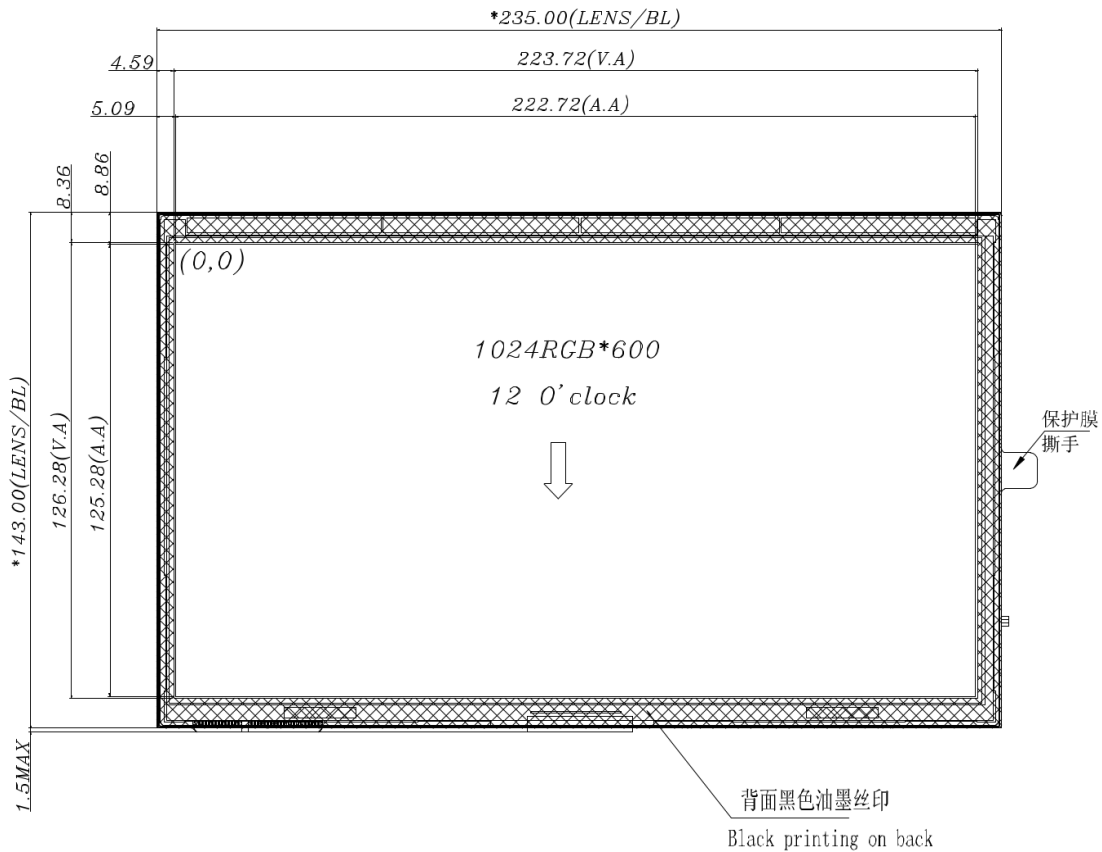


Fig27

Note: all the unit reported measure are in mm

8. 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 rules ROHS and REACH and to the recognized hazards.

Warning!

When the MS621FE-FL11E Rechargeable Battery is mounted instead of the Supercap, the following elements included into the SVHC list must be declared:

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

The lithium batteries are classified as hazardous product and are subject to the air transport restrictions.

The board may mount some of the following items that may include some lead trace Bourns CAY10-332J4LF, CAY10-000J4LF, CAY16-472J4, On Semiconductor MBR340T3G, Lumberg 1503 13 VP3.

The traces of lead are such as not to compromise ROHS compatibility

9. On-line Support

We offer an on-line support to allow the customer to stay updated on the development of software release and on the enhancement of the documentation.

Following is shown the references for ENGICAM on-line support.

9.1 Support

ENGICAM Product Experts are available to answer questions via email:

support@engicam.com

9.2 Disclaimer

Information in this document is provided solely to enable system and software implementers to use Engicam products. Engicam does not guarantee that the information in this manual is up-to-date, correct, complete or of good quality. Nor does Engicam assume guarantee for further usage of the information.

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