

## Manual

# QSMP-SV-GLYN1V1 & QSRZ-SV-GLYN1V1 STARTERKIT



### Important Legal Notices Independent of Contractual Agreements

The following legal notices apply in particular to the pre-contractual obligation. They apply regardless of whether a contract is concluded at all. If a contract is concluded, this information applies regardless of the conditions under which a contract is concluded, unless this information is expressly changed by contractual agreements.

#### 1 Legal notice regarding the storage of personal data

1.1 GLYN GmbH & Co. KG (hereinafter referred to as GLYN) shall save personal data of business partners as well as of persons who express an interest in the goods and services offered by GLYN or who in turn offer services or goods to GLYN. In doing so, GLYN shall comply with the statutory provisions on data protection. The data is stored for the purpose of processing and handling business transactions that have already been concluded and ongoing business, for initiating new contracts or for similar business contacts.

1.2 Persons whose personal data has been stored by GLYN shall be entitled to request information regarding the personal data stored by GLYN about them within the scope of the statutory provisions.

#### 2 Legal notice regarding the return of packaging that GLYN sells to end users as the final distributor in accordance with § 3 para. 13 of the German Packaging Act (VerpackungsG)

In order to avoid or at least reduce the impact of packaging waste on the environment to a level that cannot be avoided, GLYN hereby expressly states that, insofar as GLYN takes back used packaging that has been emptied of its contents and that GLYN sells to end consumers as the final distributor, GLYN shall take back such packaging free of charge. Unless otherwise agreed with the Purchaser, the packaging shall be taken back at the place where it is actually handed over to the Purchaser.

#### 3 Legal notice regarding complaints concerning alleged violations of applicable law

Should the Purchaser or a third party identify a violation of applicable law in the conduct of GLYN, the Purchaser shall contact GLYN directly. In the event of a justified complaint, GLYN shall immediately cease the infringement. In such cases, no warning notice or legal action shall be required. Should the Purchaser or the third party assert the infringement of applicable law by way of a warning notice or by taking legal action, GLYN points out that the Purchaser shall bear the resulting costs itself due to the lack of a risk of repetition.

#### 4 Legal information regarding documents relating to offered, ordered or delivered goods

4.1 If a person interested in the goods and services offered by GLYN, the Purchaser, the user or any other third party, receives documents from GLYN which refer to the goods offered, ordered or delivered (e.g. application note, manual, data sheet, SUPPORT-paper, 8D report, presentations, etc.), all information contained in these documents shall be based on the knowledge and experience of GLYN at the time of transmission or on the knowledge and experience of the manufacturer, without any specific reference to the application, unless such reference to the application has been expressly agreed with regard to the information transmitted. Only employees of GLYN who are holders of a general commercial power of representation or members of the management shall be deemed to be authorized to issue declarations with a specific reference to application.

4.2 Documents with reference to goods (see 4.1) do not contain recommendations for any specific application. If someone should understand a text passage as a recommendation for a specific application, this person must consult with GLYN. The foregoing does not apply to recommendations that are part of a contractual agreement. Only employees of GLYN who are holders of a general commercial power of representation or members of the management shall be deemed to be authorized to make contractually binding recommendations.

4.3 All information in documents that refer to goods (see 4.1) may be changed by GLYN or the manufacturer at any time at their own discretion.

4.4 Any application or use of the information contained in a document provided by GLYN shall be at the sole discretion of the person applying or using the product. GLYN shall not assume any responsibility, liability or warranty for it, for whatever purpose, unless expressly agreed in writing.

4.5 Documents that refer to goods (see 4.1) are subject to the copyrights of GLYN or the copyrights of the manufacturer of the described item. In all other respects, these documents, both in paper form and as a file, shall remain protected as the sole property of GLYN or the manufacturer, respectively, unless the parties have expressly agreed otherwise in writing.

4.6 Any unauthorized use or any use not authorized in writing by GLYN or the manufacturer of the aforementioned documents is prohibited.

4.7 If a document within the meaning of 4.1 describes the characteristics of the item, including its durability, functionality, compatibility and safety, this description shall be deemed to be conclusive. In this context, conclusive means that features not listed here cannot be expected by the buyer or user. For example, if a document does not contain a description regarding vibration resistance, this means that vibration resistance cannot be expected. Deviating agreements can only be made expressly in writing. Only employees of GLYN who are holders of a general commercial power of representation or members of the management shall be deemed to be authorized to issue such declarations.

4.8 It is expressly pointed out that the suitability of the item is solely derived from the described characteristics, which result from the documents provided by GLYN (see 4.1). Only employees of GLYN who are holders of a general commercial power of representation or members of the management shall be deemed authorized to issue declarations with specific reference to suitability.

4.9 It is expressly pointed out that the features described in documents (see 4.1) may result in the item not being suitable for normal use, e.g. because it has a more complex structure and is therefore suitable for more purposes, but therefore also more complex to handle, or because it has a simpler structure and is therefore only suitable for certain purposes.

4.10. If the Purchaser expressly wishes to acquire the item described in a document for a customary use within the meaning of Section 434 (3) No. 1 of the German Civil Code (BGB), it must make express reference to this in its order and in a textually emphasized form (e.g. by means of bold print or red lettering).

4.11. If the terms "safe" or "safety" are used in a document, this always refers only to the safety described in this document. If the person applying or using the product has safety expectations beyond this, it is strongly recommended to discuss this with GLYN.

4.12 The terms "ensure" and "ensures" are to be understood in technical terms only. Unless these terms are expressly used in connection with a warranty declaration, these terms shall not be construed as a warranty within the meaning of Section 443 of the German Civil Code (BGB). Only employees of GLYN who are holders of a general commercial power of representation or members of the management shall be deemed authorized to issue warranty declarations.

4.13 Insofar in a document is expressly referred to possible danger points, this is merely based on experience and does not claim to be complete. It can therefore in no way be inferred from the document that this is a conclusive list of hazardous points.

#### 5 Legal notice regarding consulting contracts

5.1 Only employees of GLYN who are holders of a general commercial power of representation or members of the management are authorized to conclude consulting agreements. Consulting agreements must always be in writing and must be expressly designated as such. This shall also apply if a consulting agreement is to be part of another legal transaction.

5.2 A document which refer to the goods offered, ordered or delivered (see 4.1) shall only be part of a consulting service if it is expressly stated elsewhere (e.g. in a consulting agreement) that this document is part of the consulting service.

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## 1 Change History with Current Version Number

Version. Revision	Date	Changes	Document Owner
1.0	22 Mar 2023	First edition of the manual	Christoph Tenbergen
1.1	29 Aug 2023	Some Additions in Chapter 7	Christoph Tenbergen

## 2 Overview

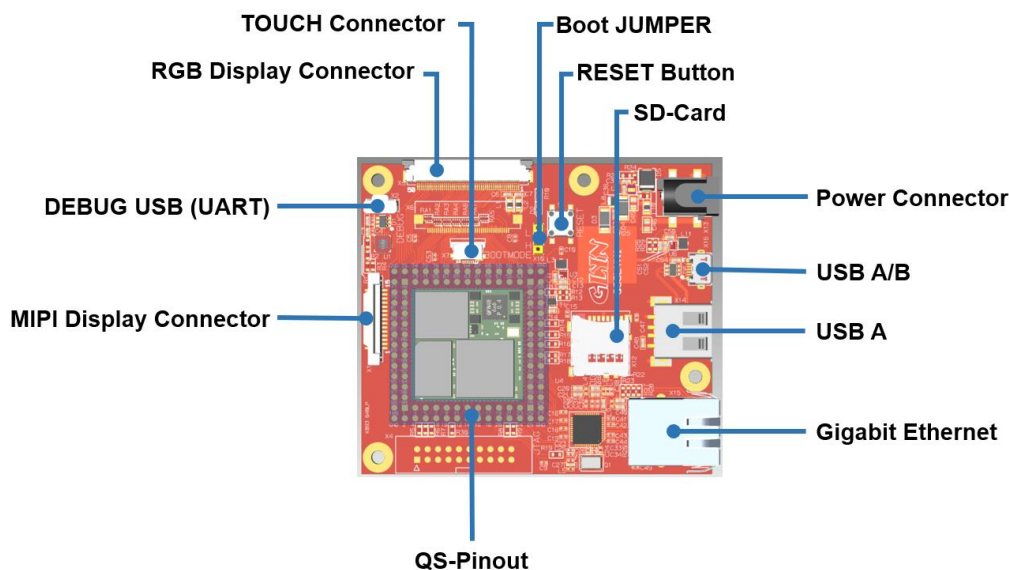
<b>Short Description</b>	Manual for users of our Starterkits QSMP-SV-GLYN1V1 and/or QSRZ-SV-GLYN1V1.
<b>Department and Position Document Owner</b>	DSS, Product Manager Christoph Tenbergen DSS, Application Engineer Daniel Stauffer

## 3 Introduction

The GLYN UI2 Starterkit is an development system, especially designed for building applications based on Ka-Ro's Computer On Modules.

The Starterkit serves as a perfect match for edt's new UI2 Family Concept displays series from 3.5" up to 7".

### Baseboard Overview



### Connectivity

- Gigabit-Ethernet
- USB
- SD-Card
- Debug-USB
- UI2 RGB Display
- All pins of the QS-Module could be connected to daughter board slot for easy application design-in

### Development

- JTAG
- Test Pads
- Schematics of the base board are included for reference.

### Size and supply

- 5 to 30 VDC Power Supply
- 85mm x 75mm

## 4 Kit-Contents and Unpacking



- **QSRZ-SV-GLYN1V1** Board with QSRZ-G2L1 and UI2 Display Connector
- 12V Power Supply
- 2 x USB Cable

Or

- **QSMP-SV-GLYN1V1** Board with QSMP-1570 and UI2 Display Connector
- 12V Power Supply
- 2 x USB Cable

## 5 Connecting TFT to the UI2-Kit

First carefully open the two connectors for touch and display in the direction of the arrow.



Then carefully slide the 50-pin display cable into the connector and close the connector.



After this slide the Touchcable into the Touch-Connector and close carefully the Touch-Connector.



!!! Cables and TFT not included in the Kit !!!



The edt-UI2-Display-Family currently consists of our sizes:

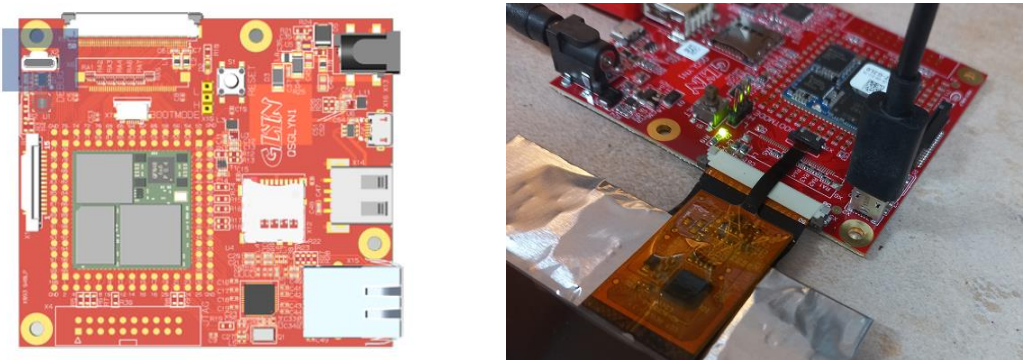
- 3.5" ET035023UDBA
- 4.3" ET043023UDBA
- 5.0" ET050023UDBA
- 7.0" ET070023UDBA



## 6 Booting, First Steps

### 6.1 Connect Debug UART

Connect the Micro USB cable to the DEBUG port on the board. The other side should be connected to your host computer.



The U-Boot boot loader and the Linux kernel use UART A as serial debug console. UART A is connected to a USB to UART Bridge Virtual COM Port from SILABS

#### USB-UART driver

Download and Install USB to UART Bridge Virtual COM Port (VCP) drivers

<https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers>

A terminal program like Windows 'TeraTerm' or Unix based 'minicom', has to be running on the host PC. The debug-UART usually appears as `/dev/ttyUSB0`.

The communication settings are:

```
Baud rate:115200
Data bits:8
Parity:None
Stop bits:1
Flow control:None (or Xon/Xoff)
(disable hardware handshake (RTS/CTS))
```



## 6.2 Connect 12V DC power supply

Now connect the 12V power supply to your board.

Your UI2-Kit is pre-programmed with the Glyn Touchdemo.

Just wait until Linux has booted and log in, depending on the rootfs with the optionally needed password:

```
User:root
Password:root(optional)
```

## 6.3 Configuration of the Display (Ka-Ro Yocto)

To do this, restart the board and interrupt the boot process by pressing any key on the serial debug console while the u-boot starts.

```
U-Boot 2020.10+karo+g991fa4bcb3 (Jan 24 2023 - 09:36:25 +0000)

CPU: Renesas Electronics CPU rev 1.0
Model: Ka-Ro rzg2l based QSRZ-G2L0
DRAM: 896 MiB
board_cpg_init: DMAC GPIO USB
MMC: sd@11c00000: 0, sd@11c10000: 1
Loading Environment from MMC... OK
In: serial@1004b800
Out: serial@1004b800
Err: serial@1004b800
MAC addr from fuse: 00:0c:c6:08:5c:76
Net: Phy mode = rgmii
eth0: ethernet@11c20000

Hit any key to stop autoboot: 0
```

Setting the environment variable for Display is done by the command:

```
env set videomode <display-model1>
env save
```

The DTB as provided by the Ka-Ro has already defined values that the user can see using the command below:

```
fdt print display
```

Setting the environment variable is done by the command:

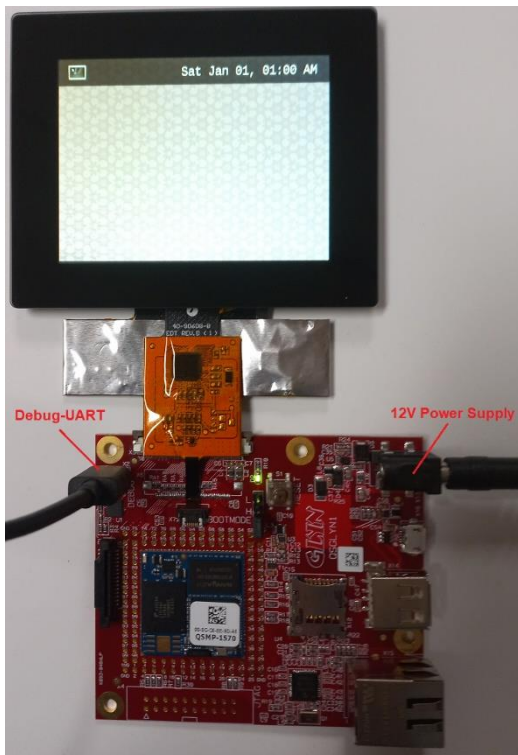
```
set videomode ET0700
saveenv
```

Following a short list of available **<display-modell>**:

**<display-modell>**:

<b>ET0350</b>	➔ 3.5" ET035023UDBA 320 x 240
<b>ET0430</b>	➔ 4.3" ET043023UDBA 480 x 272
<b>ET0500</b>	➔ 5.0" ET050023UDBA 800 x 480
<b>ET0700</b>	➔ 7.0" ET070023UDBA 800 x 480

## 6.4 Running System



If everything is connected and set correctly, the Weston desktop should appear on the TFT. Some information about working with the Weston Desktop can be found in chapter 11.

## 7 (Re-)Installing the OS on **QSRZ-UI2** Development Kit

Pre-compiled Image files to flash the QSRZ-UI2 Development Kit are located in our Download Area. They contain different environments, e.g. a minimal and a desktop environment.

### 7.1 Flashing via Fastboot

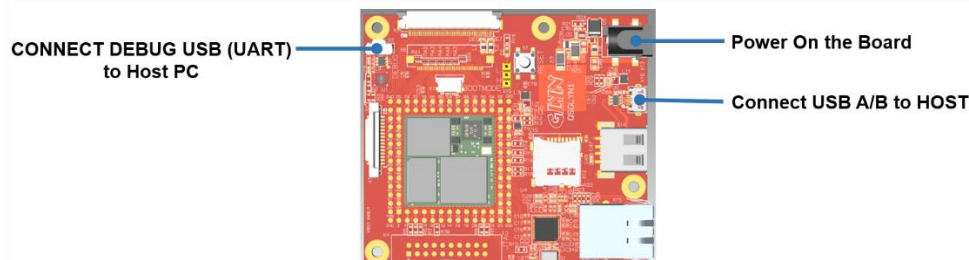
Flashing to eMMC is done via Fastboot protocol using **UUU**. If you want to flash the bootloader “u-boot” by itself please go first to chapter **7.2 Bootloader Flashing**

If you are not familiar with UUU follow [UUU - Universal Update Utility](#).

For flashing RZ/G2L boards with UUU it's **not necessary** to put the board into Serial Download Bootmode. You have to start fastboot from U-Boot by hand.

Yocto generated images and our precompiled images contain the **uuu.auto** script.

#### Board Configuration for flashing via Fastboot



1. Connect Debug USB (UART) to Host PC and start a terminal program on PC.
2. Connect USB A/B to Host PC
3. Power On The Board
4. Boot the module and abort the automatic boot sequence by hitting any key. Herefore use a serial terminal program:

```
U-Boot 2020.10+karo+g991fa4bcb3 (Jan 24 2023 - 09:36:25 +0000)

CPU: Renesas Electronics CPU rev 1.0
Model: Ka-Ro rzg2l based QSRZ-G2L0
DRAM: 896 MiB
board_cpg_init: DMAC GPIO USB
```

```
MMC: sd@11c00000: 0, sd@11c10000: 1
Loading Environment from MMC... OK
In: serial@1004b800
Out: serial@1004b800
Err: serial@1004b800
MAC addr from fuse: 00:0c:c6:08:5c:76
Net: Phy mode = rgmii
eth0: ethernet@11c20000

Hit any key to stop autoboot: 0
```

5. Open another Linux Terminal. Go to your image-directory. When UUU is installed on your host and ready to use, simply run:

```
cd <image-directory>

uuu -v
```

6. Now enter the U-Boot prompt on your target via **serial terminal** and type:

```
QSRZ U-Boot > fastboot usb 0
```

Now UUU partitions your board and flashes the filesystem. This takes some time!

```
QSRZ U-Boot > fastboot usb 0
RZG2L-PHY gadget probed
RZG2L-USBHS probed
status: -104 ep 'ep1' trans: 0
Writing GPT: success!
status: -104 ep 'ep1' trans: 4
status: -104 ep 'ep1' trans: 4
status: -104 ep 'ep1' trans: 4
status: -104 ep 'ep1' trans: 4
Starting download of 33554432 bytes
status: -104 ep 'ep1' trans: 14
.....
.....
.....
.....
```

7. When everything done start your board with an open serial connection and a Terminal.

Cancel the boot process by pressing any key. You will end up in the UBoot environment.

Here some changes have to be made to use one of your displays.

Set the baseboard, the used display and save the changes:

```
setenv baseboard qsglyn1  
  
setenv videomode ET0700  
  
saveenv
```

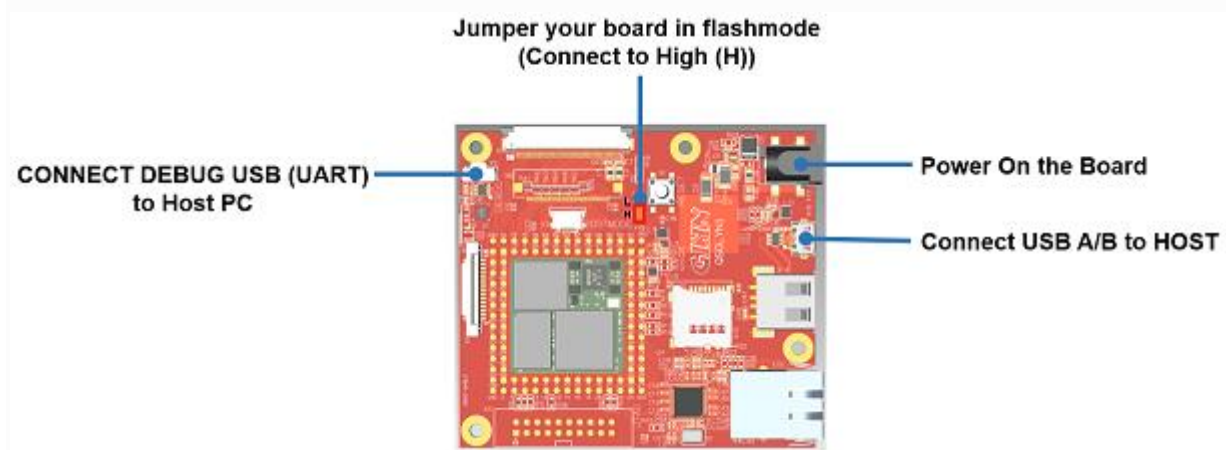
## 7.2 Bootloader Flashing on **QSRZ-UI2** Development Kit

Due to serial transfer, this process takes some time. Usually you have a working bootloader on your board, so you can **skip this section**. Go back to chapter 7.1 .

**Make sure to put the board into Boot Mode .**

With the jumper the bootmode can be pulled to high (H) or low (L).

**Please set the PIN to HIGH, BOOTMODE. Then press RESET Button.**



Yocto generated images and our precompiled images contain the `install-boot-loader.sh` script.

For running the script, pass the serial port device, and let it work for you. The serial port normally is something like `/dev/ttyUSB0`:

```
cd <image-directory>  
./install-bootloader.sh /dev/ttyUSB0
```

The output will look as follows:

```
Started bootloader flash process on /dev/ttyS0

Put your board into SCIF Download mode
When done press any key to continue...

Sending FlashWriter:
269312 bytes (269 kB, 263 KiB) copied, 23 s, 11,6 kB/s
269+1 records in
269+1 records out
275980 bytes (276 kB, 270 KiB) copied, 23,458 s, 11,8 kB/s

BL2 transfer:
107520 bytes (108 kB, 105 KiB) copied, 9 s, 11,6 kB/s
115+1 records in
115+1 records out
118724 bytes (119 kB, 116 KiB) copied, 9,91065 s, 12,0 kB/s

FIP transfer:
2274304 bytes (2,3 MB, 2,2 MiB) copied, 196 s, 11,6 kB/s
2223+1 records in
2223+1 records out
2276684 bytes (2,3 MB, 2,2 MiB) copied, 196,241 s, 11,6 kB/s

Writing eMMC partconf

=====

Done. Put the board into normal bootmode and reset it.

=====
```

You can also notice output in serial terminal while flashing.

### Tip

After flashing put the board back to normal bootmode and reset it.

## 8 (Re-)Installing the OS on **QSMP-UI2** Development Kit

First step is to download the Images you want to use.

They're found on the Ka-Ro Homepage under the Download section.

### QSMP - Downloads

[WurzelFlashImages](#)qsmp-1570-qsglyn1

Dateiname



[\\_qsmp-1570-qsglyn1-karo-image-weston.zip](#)



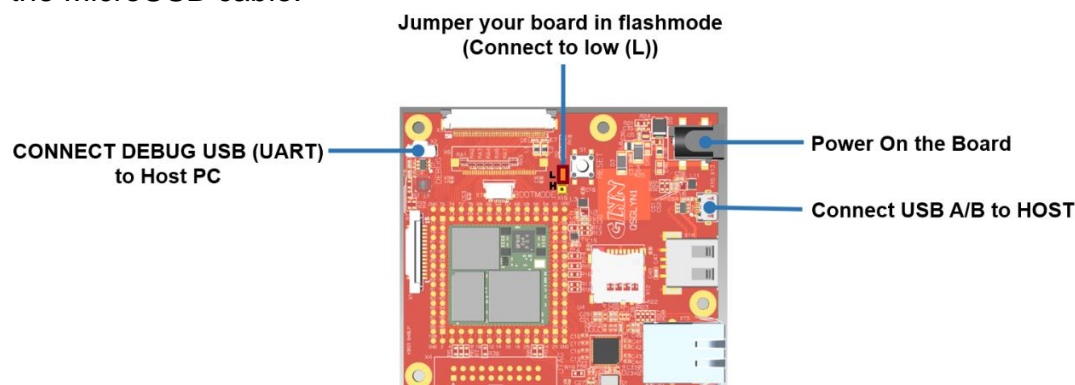
[\\_qsmp-1570-qsglyn1-electron.zip](#)

Unpack them in a folder of your choice.

Then you need the STM32CubeProgrammer found here  
<https://www.st.com/en/development-tools/stm32cubeprog.html>

Install the program and its tools.

Now jumper your board in flashmode (Connect to low (L)) and connect it to the PC with the MicroUSB cable.



**TIP**

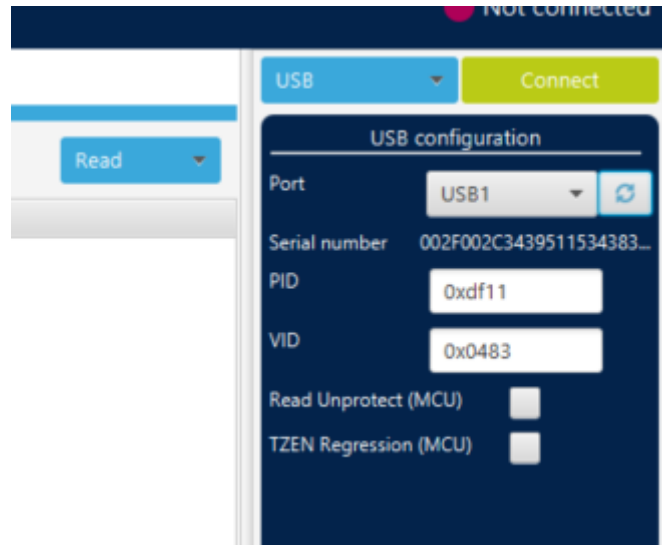


If you connect it the first time a driver is being installed. This could take a while.

If everything is done you can start the STM32CubeProgrammer.

On the top right of the interface are the buttons to refresh the USB/Serial and connect a board.

It looks like this :

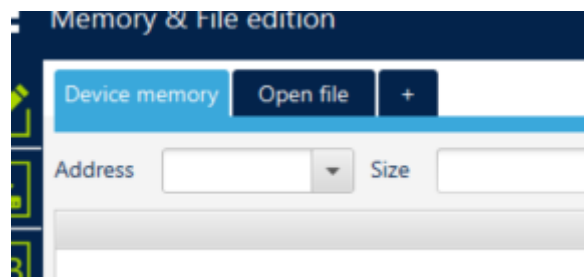


If the driver is installed and the board connected you should be able to connect.

If nothing is found on the port please click on refresh.

Now choose your image.

Click on Open file



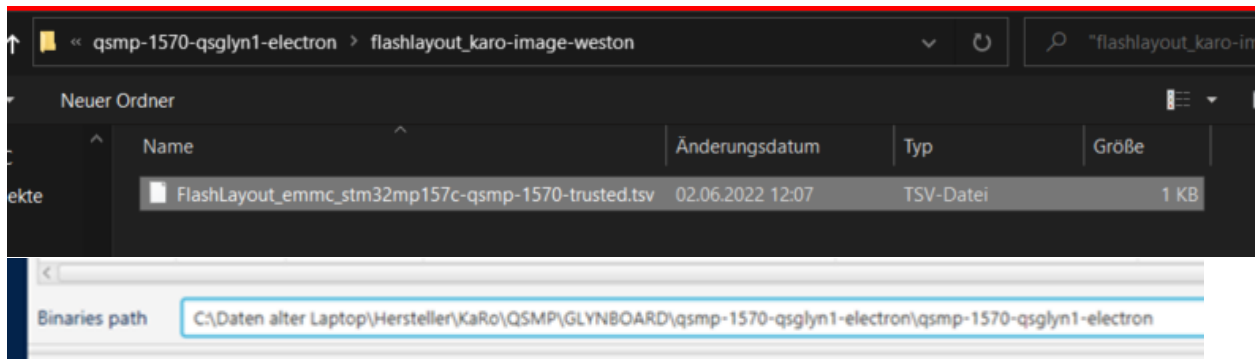
Now choose the script file ending with \*.tsv in the last directory of your unpacked image.

For example : ...\\qsm-1570-qsglyn1-electron\\flashlayout\_karo-image-weston\\\*.tsv

Next step is to locate the binary folder.

Click on Browse. The binaries are one directory above the script folder.

Example:



Now you are ready to go by clicking on the Download button.

This may take a while.

When everything done start your board with an open serial connection and a Terminal.

Cancel the boot process by pressing any key. You will end up in the UBoot environment.

Here some changes have to be made to use one of your displays.

Set the baseboard, the used display and save the changes:

```
setenv baseboard qsglyn1
setenv videomode ET0700
saveenv
```

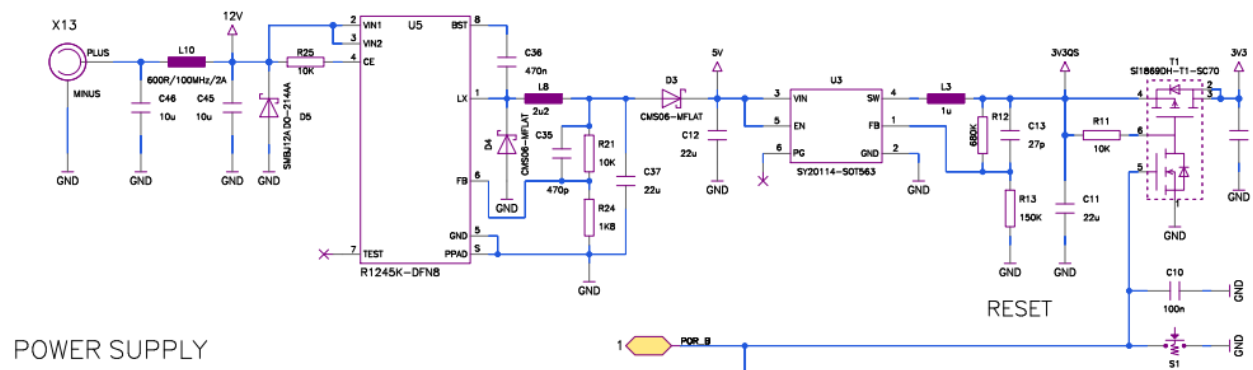
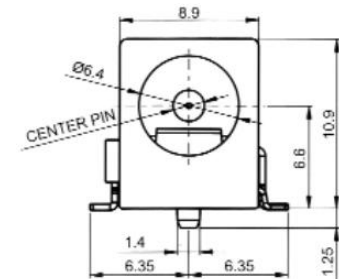
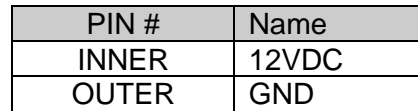
You can show the available display timings by typing

```
fdt print display
```

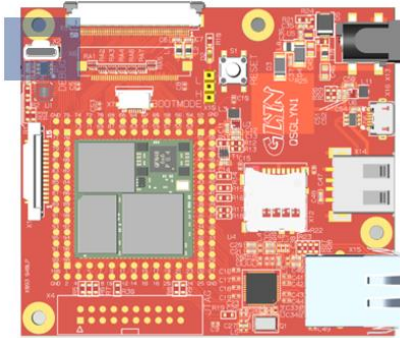
The used environment variables can be shown by typing

```
printenv
```

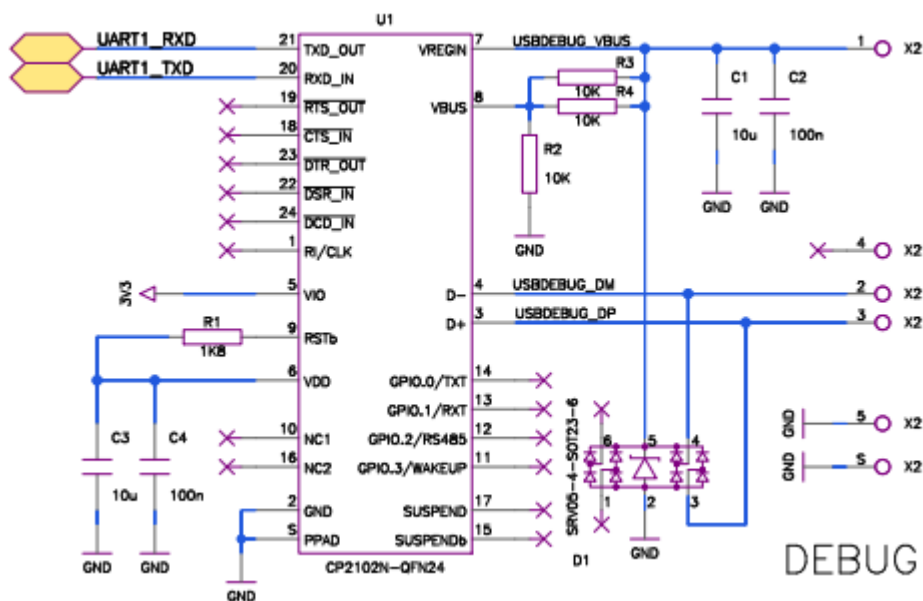
## 9.1 Power Supply



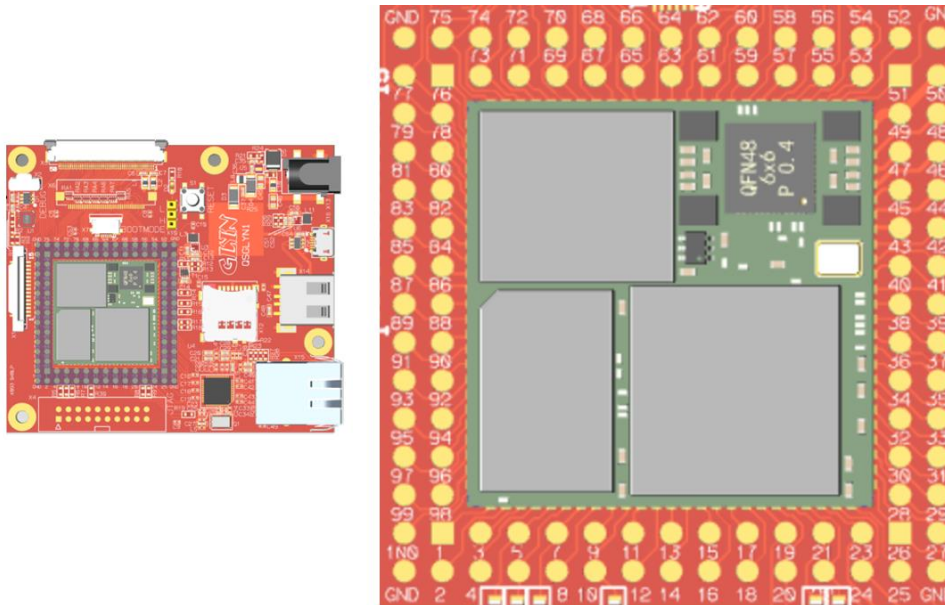
## 9.2 Debug UART / UART to USB X2



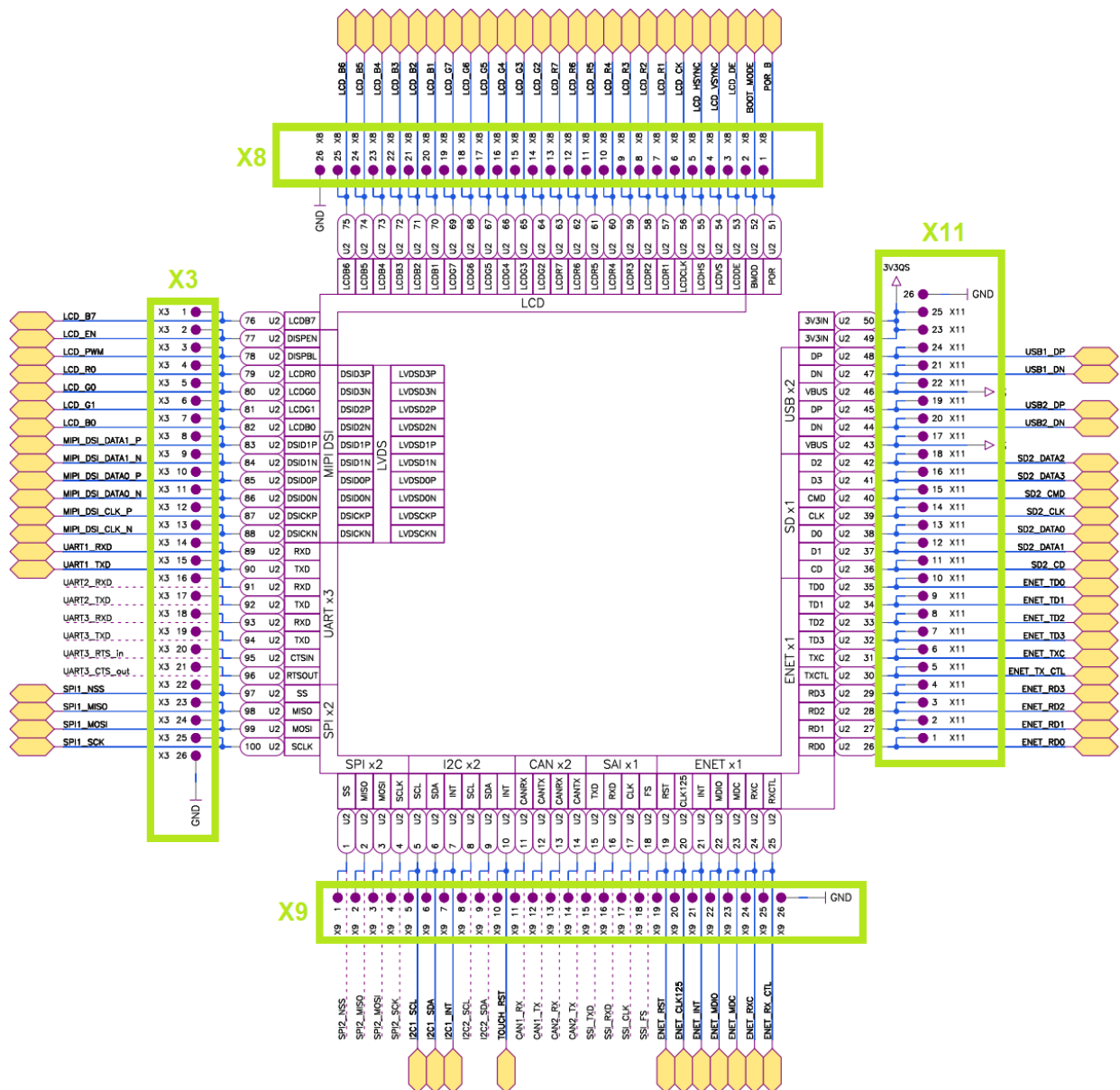
QS-COM pin	Selected Function	RZ/G2L Pad Name	GPIO	Description
89	UARTA_RXD	P38_1	P38_1	1 st application UART Receive Data input signal
90	UARTA_TXD	P38_0	P38_0	1 st application UART Transmit Data output signal



### 9.3 Module PIN Connector X3,X8,X9,X11

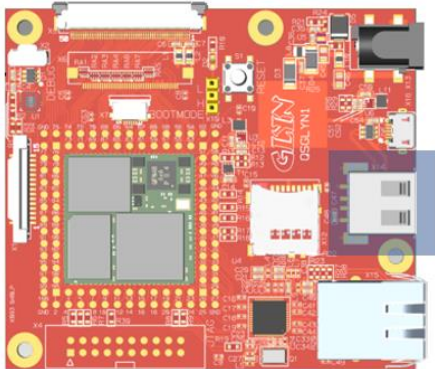


Pins	Function	QSMP	QSRZ
1-4	SPI	X9	X9
5-10	I2C	X9	X9
11-14	CAN	X9	X9
15-18	SAI (Serial Audio Interface)	X9	X9
19-25	Ethernet	X9	X9
26-35	Ethernet	X11	X1
36-39	SD Interface	X11	X11
43-48	USB	X11	X11
49-52	Power Supply, Reset and Boot mode	X11/X8	X11/X8
53-76	18-bit RGB Display Interface	X8/X3	X8/X3
77-78	Backlight and Display Control	X3	X3
79-88	MIPI DSI Display	X3	X3
89-96	UART	X3	X3
97-100	SPI	X3	X3

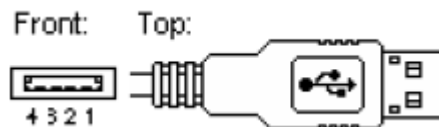


## 9.4 USB Interfaces

### 9.4.1 USB A Host Interface X14



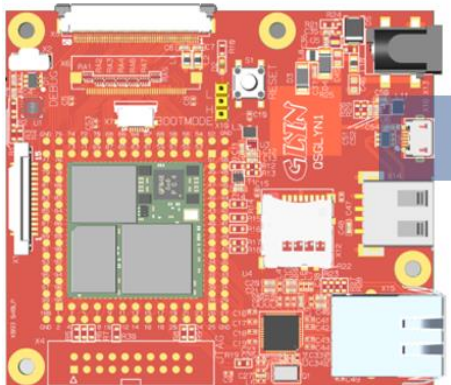
PIN #	Name
1	5V
2	DATA-
3	DATA+
4	GND



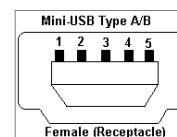
QSRZ pin assignment

X14	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
2	44	USBA_DN	USB1_DM	D- pin of the USB cable
3	45	USBA_DP	USB1_DP	D+ pin of the USB cable

### 9.4.2 USB A/B X16



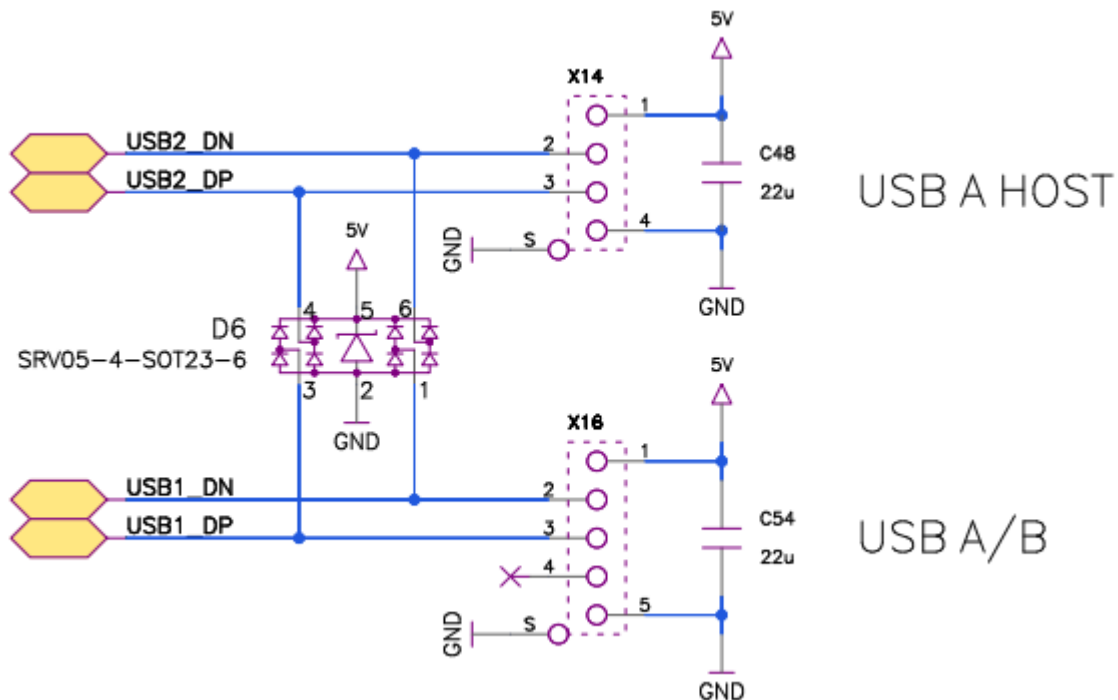
PIN #	Name
1	5V
2	DATA-
3	DATA+
4	ID
5	GND



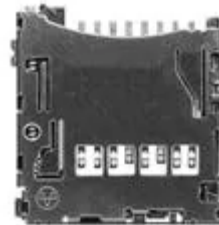
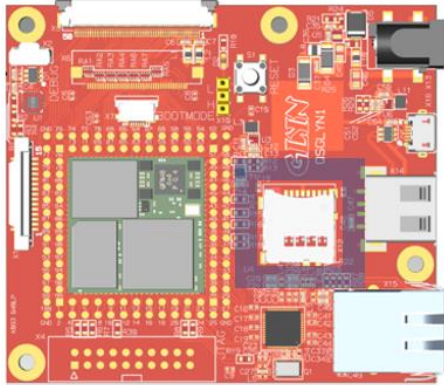
X16	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
2	47	USBB_DN	USB0_DM	D- pin of the USB cable
3	48	USBB_DP	USB0_DP	D+ pin of the USB cable



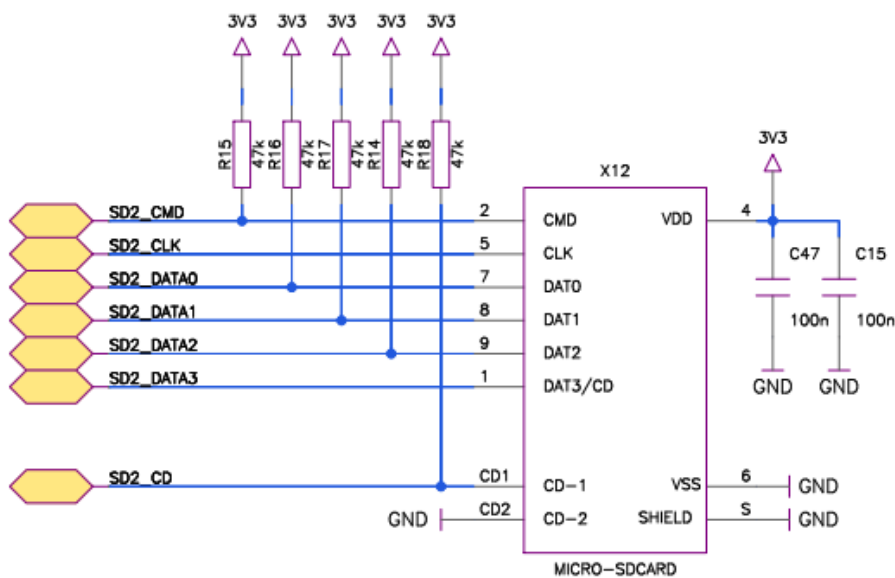
### 9.4.3 Schematics USB



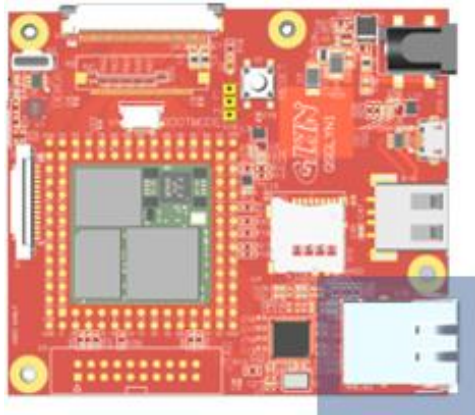
## 9.5 SD Card Interface X12



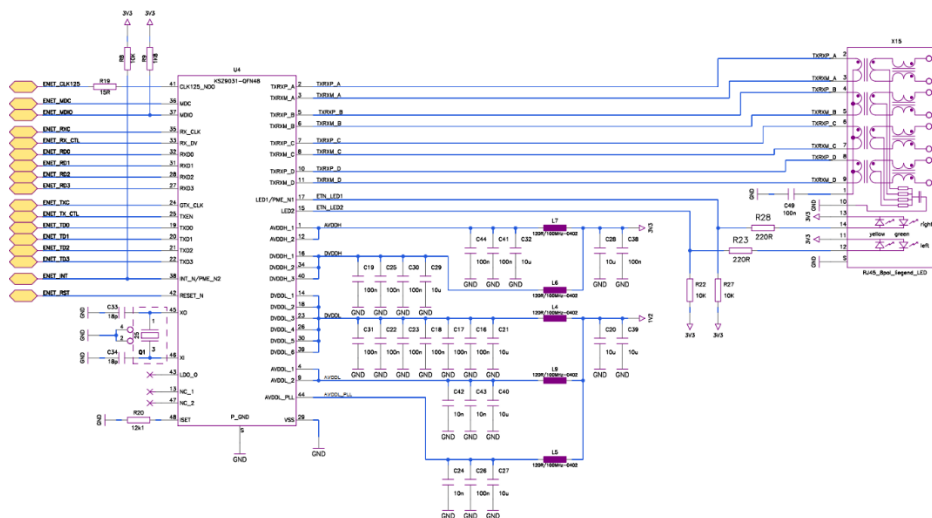
X12	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
CD1	36	SD_CD	P19_0	SD Card Detect
1	41	SD_D3	SD1_DATA3	SD Data bidirectional signals
2	40	SD_CMD	SD1_CMD	
5	39	SD_CLK	SD1_CLK	
7	38	SD_D0	SD1_DATA0	
8	37	SD_D1	SD1_DATA1	
9	42	SD_D2	SD1_DATA2	



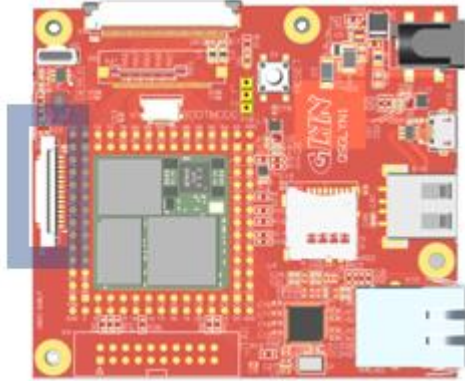
## 9.6 Ethernet X12



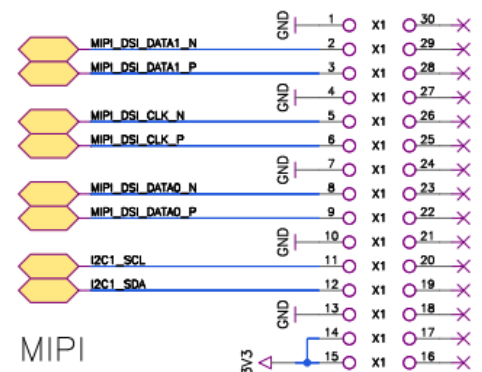
QS-COM pin	Selected Function	RZ/G2L Pad Name	GPIO	Description
19	ENET_RST	P28_1	P28_1	
20	ENET_CLK125	AUDIO_CLK1	N/A	
21	ENET_INT	P22_1	P22_1	
22	ENET_MDIO	P28_0	P28_0	
23	ENET_MDC	P27_1	P27_1	
24	ENET_RXC	P24_0	P24_0	
25	ENET_RX_CTL	P24_1	P24_1	
26	ENET_RXD0	P25_0	P25_0	
27	ENET_RXD1	P25_1	P25_1	
28	ENET_RXD2	P26_0	P26_0	
29	ENET_RXD3	P26_1	P26_1	
30	ENET_TX_CTL	P20_1	P20_1	
31	ENET_TXC	P20_0	P20_0	
32	ENET_TXD3	P22_0	P22_0	
33	ENET_TXD2	P21_1	P21_1	
34	ENET_TXD1	P21_0	P21_0	
35	ENET_TXD0	P20_2	P20_2	



## 9.7 MIPI Connector X1

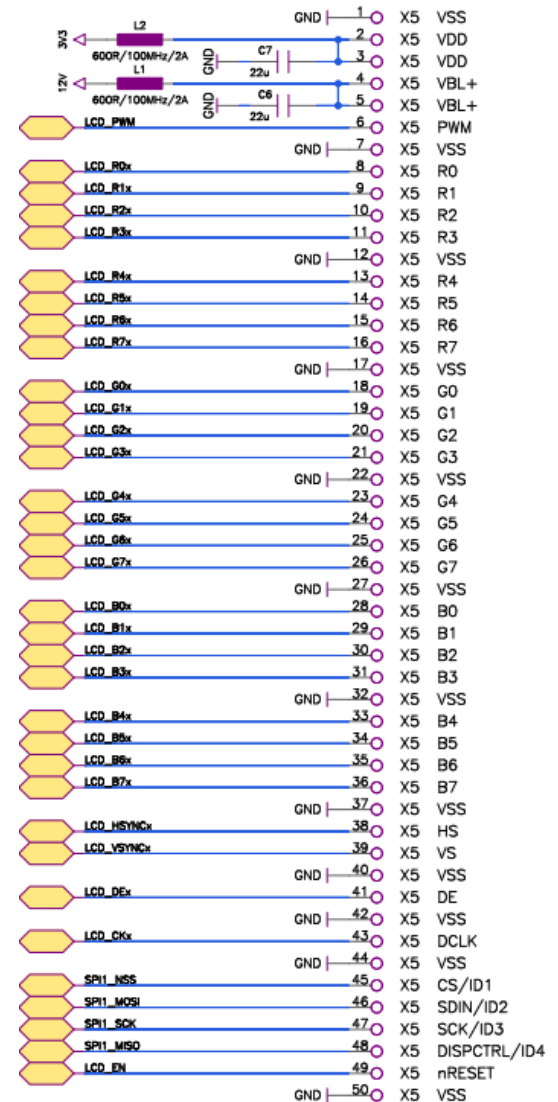
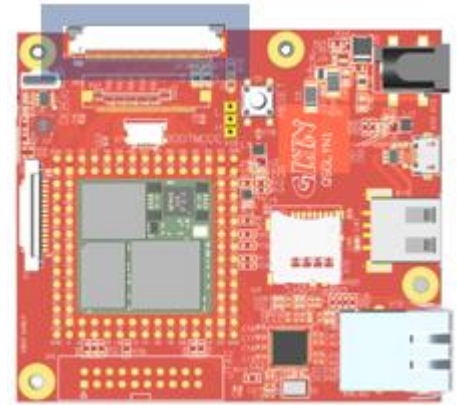


X7	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
1				GND
2	84	DSI_DN1	DSI_DATA1_N	
3	83	DSI_DP1	DSI_DATA1_P	
4				GND
5	88	DSI_CKN	DSI_CLKN	
6	87	DSI_CKP	DSI_CLKP	
7				GND
8	86	DSI_DN0	DSI_DATA0_N	
9	85	DSI_DP0	DSI_DATA0_P	
10				GND
11	5	I2CA_SCL	RIIC1_SCL	SCL
12	6	I2CA_SDA	RIIC1_SDA	SDA
13				GND
14				VDD1 3V3
15				VDD1 3V3

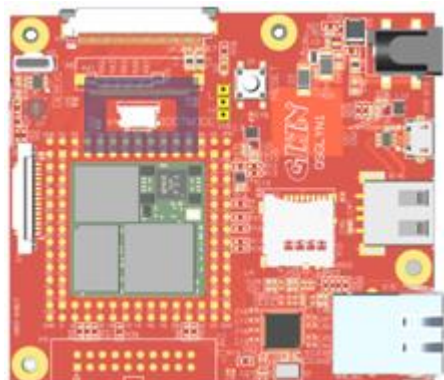


## 9.8 edt UI2 Display-Connector X5

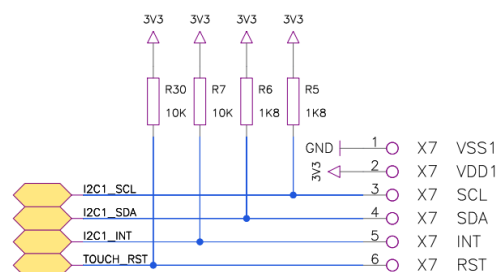
X50	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
1				GND
2				VDD
3				VDD
4				VBL+ 12V
5				VBL+ 12V
6	78	LCD_PWM	P19_1	PWM Output
7				GND
8	79	LCD_R0	P7_2	R0
9	57	LCD_R1	P27_1	R1
10	58	LCD_R2	P24_0	R2
11	59	LCD_R3	P24_1	R3
12				VSS GND
13	60	LCD_R4	P25_0	R4
14	61	LCD_R5	P25_1	R5
15	62	LCD_R6	P26_0	R6
16	63	LCD_R7	P26_1	R7
17				VSS GND
18	80	LCD_G0	P11_0	G0
19	81	LCD_G1	P11_1	G1
20	64	LCD_G2	P20_1	G2
21	65	LCD_G3	P20_0	G3
22				VSS GND
23	66	LCD_G4	P22_0	G4
24	67	LCD_G5	P21_1	G5
25	68	LCD_G6	P21_0	G6
26	69	LCD_G7	P20_2	G7
27				VSS GND
28	82	LCD_B0	P14_1	B0
29	70	LCD_B1	P15_0	B1
30	71	LCD_B2	P15_1	B2
31	72	LCD_B3	P16_0	B3
32				VSS GND
33	73	LCD_B4	P16_1	B4
34	74	LCD_B5	P17_0	B5
35	75	LCD_B6	P17_1	B6
36	76	LCD_B7	P17_2	B7
37				VSS GND
38	55	LCD_HSYNC	P6_1	HS
39	54	LCD_VSYNC	P7_0	VS
40				VSS GND
41	53	LCD_DE	P7_1	DE
42				VSS GND
43	56	LCD_CLK	P6_0	DCLK
44				VSS GND
45	97	SPI1_NSS	P44_3	CS/ID1
46	99	SPI1_MOSI	P44_1	SDIN/ID2
47	100	SPI1_SCK	P44_0	SCK/ID3
48	98	SPI1_MISO	P44_2	DISPCTRL/ID4
49	77	LCD_EN	P40_2	nRESET
50				VSS GND



## 9.9 edt UI2 Touchscreen-Connector X7



X7	QS-COM pin	Selected Function	RZ/G2L Pad Name	Description
1				GND
2				VDD1 3V3
3	5	I2CA_SCL	RIIC1_SCL	SCL
4	6	I2CA_SDA	RIIC1_SDA	SDA
5	7	INTA	P46_3	INT
6	10	INTB	P46_2	RST



## 10 Yocto For Our Boards

Requirements: For Yocto a Linux host machine is needed.

If you're already running a Linux host, you should be fine. Windows users see Ubuntu on Windows 10.

An important consideration is the hard disk space required for the virtual appliance. It is recommended that at least 120 GiB is provided, 500 GiB would be better.

Here you have to choose first the right Yocto, depending on the module what is installed on your board.

QSMP-SV-GLYN1V1 STARTERKIT	Choose QSMP Series
QSRZ-SV-GLYN1V1 STARTERKIT	Choose QSRZ Series

You find the whole Yocto Guide in the WEB:

[Yocto Guide — Ka-Ro electronics GmbH documentation \(karo-electronics.github.io\)](https://karo-electronics.github.io)

Please follow the steps for YOCTO Setup on Ka-Ros Yocto Guide!

- BSP Setup
- Building Images
- Customizing the BSP



## 11 Weston Desktop

The images Ka-Ro provides are using a Weston Desktop Linux including Wayland(display server protocol) from Arch.

Booting the boards will end up in a desktop like GUI with grey background and a terminal button on the upper left.

If you connect a keyboard via USB you are able to start different applications with the terminal in the Weston Desktop.

To move flowers around the screen:

```
$ weston-flower
```

To display images:

```
$ weston-image image1.jpg image2.jpg...
```

Tips how to use images from an USB stick are on the next page.

Benchmark:

GLmark2 will only run smooth on processors having a GPU

```
glmark2-es2-wayland -fullscreen
```

Play a video:

```
gst-play-1.0 --videosink=waylandsink test.mp4
```

If for example you want to show your images connect an USB stick to the board and mount it.

### TIP

A USB hub may be needed depending on board

Further information about Weston and Wayland can be found [here](#).

To mount an USB stick following steps are required :

1. Find what the drive is called

You'll need to know what the drive is called to mount it. To do that use one of the following commands:

```
lsblk  
sudo blkid  
sudo fdisk -l
```

You're looking for a partition that should look something like:

`/dev/sdb1`

The more disks you have the higher the letter this is likely to be.

2. Create a mount point

This needs to be mounted into the filesystem. You can usually use `/mnt/` if you're being lazy and nothing else is mounted there but otherwise you'll want to create a new directory:

```
sudo mkdir /media/usb
```

3. Mount

```
sudo mount /dev/sdb1 /media/usb
```

To unmount you can use

```
sudo umount /media/usb
```

From there you can just copy files to the directory you want like the created `/media/usb`.

For example while in `/media/usb`:

```
Cp image.png /home
```

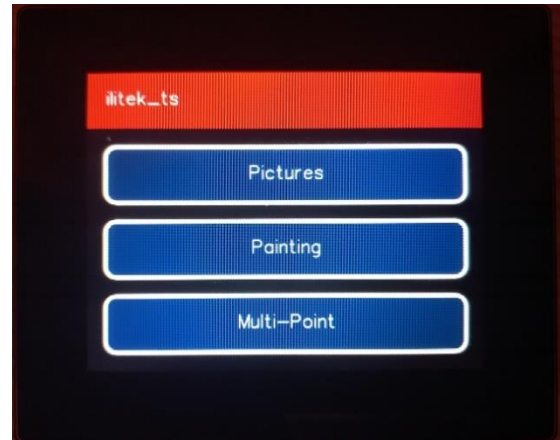
To remove a file use the `rm` command:

```
rm image.png
```

## 12 GLYN Touch Demo

You can also install the Glyn touch demo to test the display. Installing described in chapter 7 for QSRZ or chapter 8 for QSMP.

After it has started, three control buttons appear, as well as the name of the touch controller used in the red top line if the display has touch.



### Pictures:

By pressing this button, images that are on an external USB stick are loaded from this.

If possible, the images should correspond to the resolution of the display.

In this menu you can move pictures on with the “usual” gestures, turning and scaling (2-point gestures).

### Painting:

In this menu you can paint simultaneous with 5 fingers.

If no action takes place, after approx. 2-3 seconds the painted lines automatically will start to disappear. Besides the system recognizes various gestures and figures (e.g. Circle or rectangle) and describes these at the lower image border.

### Multi-Point:

In this menu you can test the function of finger recognition.

### 12.1 GLYN Touch Demo – Display- and Touchscreenconfiguration

To do this, restart the board and interrupt the boot process by pressing any key on the serial debug console while the u-boot starts.

```
U-Boot 2020.10+karo+g991fa4bcb3 (Jan 24 2023 - 09:36:25 +0000)

CPU: Renesas Electronics CPU rev 1.0
Model: Ka-Ro rzg2l based QSRZ-G2L0
DRAM: 896 MiB
board_cpg_init: DMAC GPIO USB
MMC: sd@11c00000: 0, sd@11c10000: 1
Loading Environment from MMC... OK
In: serial@1004b800
Out: serial@1004b800
Err: serial@1004b800
MAC addr from fuse: 00:0c:c6:08:5c:76
```

```
Net:   Phy mode = rgmii
eth0:  ethernet@11c20000
```

```
Hit any key to stop autoboot:  0
```

Two environment variables must now be set in the u-boot:

```
env set display <display-model>
env set touch_controller <touch-controller>
env save
```

The following **<display-model>** models are defined:

- default
- etml0350udra
- etml0430udra
- etml0500udra
- etml0700udra
- etm0700
- tm050

The default environment variable "display" is default.

The following **<touch-controller>** are defined:

- edt
- ili2130
- ili210x
- st1232