

Hardware documentation

for QBliss Startintf

Version 1.3
(2013-03-21)

**QBliss
Startintf**

About This Document

This document describes how to use the QBlissA8 board with mechanical and electrical informations. The latest version of this document can be found at <http://www.fs-net.de>.

History

Date	V	Platform	A,M,R	Chapter	Description	Au
18.06.10	0.1	All	A	-	Build the document	KW
03.05.11	1.1	All	A, M	-	Correct and add a lot of information	KW
21.02.12	1.2	All	A	2	Add mechanical dimension	KW
21.03.13	1.3	All	M	4.51	Change MOSFET for VLCD to SI2301DS	KW

V Version

A,M,R Added, Modified, Removed

Au Author

Table of Contents

About This Document	2
History	2
Table of Contents	3
1 Introduction	4
2 Mechanical dimension	5
3 Connector layout	6
4 Interface and signal description	7
4.1 Sound	7
4.2 USB host	8
4.3 USB client	9
4.4 CAN	10
4.5 LVDS port connector	11
4.5.1 Display Power	12
4.6 MicroSD	13
4.7 Display	14
4.8 F&S Feature	15
4.9 Ethernet	16
4.10 SATA	17
4.11 COM port	18
4.12 Power	19
5 Electrical characteristic	20
6 Appendix	21
Important Notice	21



1 Introduction

This document does describe the mechanical and electrical informations for the F&S QBliss embedded module Startinterface. Please also refer the design guide by using this module for your application.

For signal description and connection to the goldfinger connector please refer the royalty free specification and design guide from www.qseven-standard.org .

2 Mechanical dimension

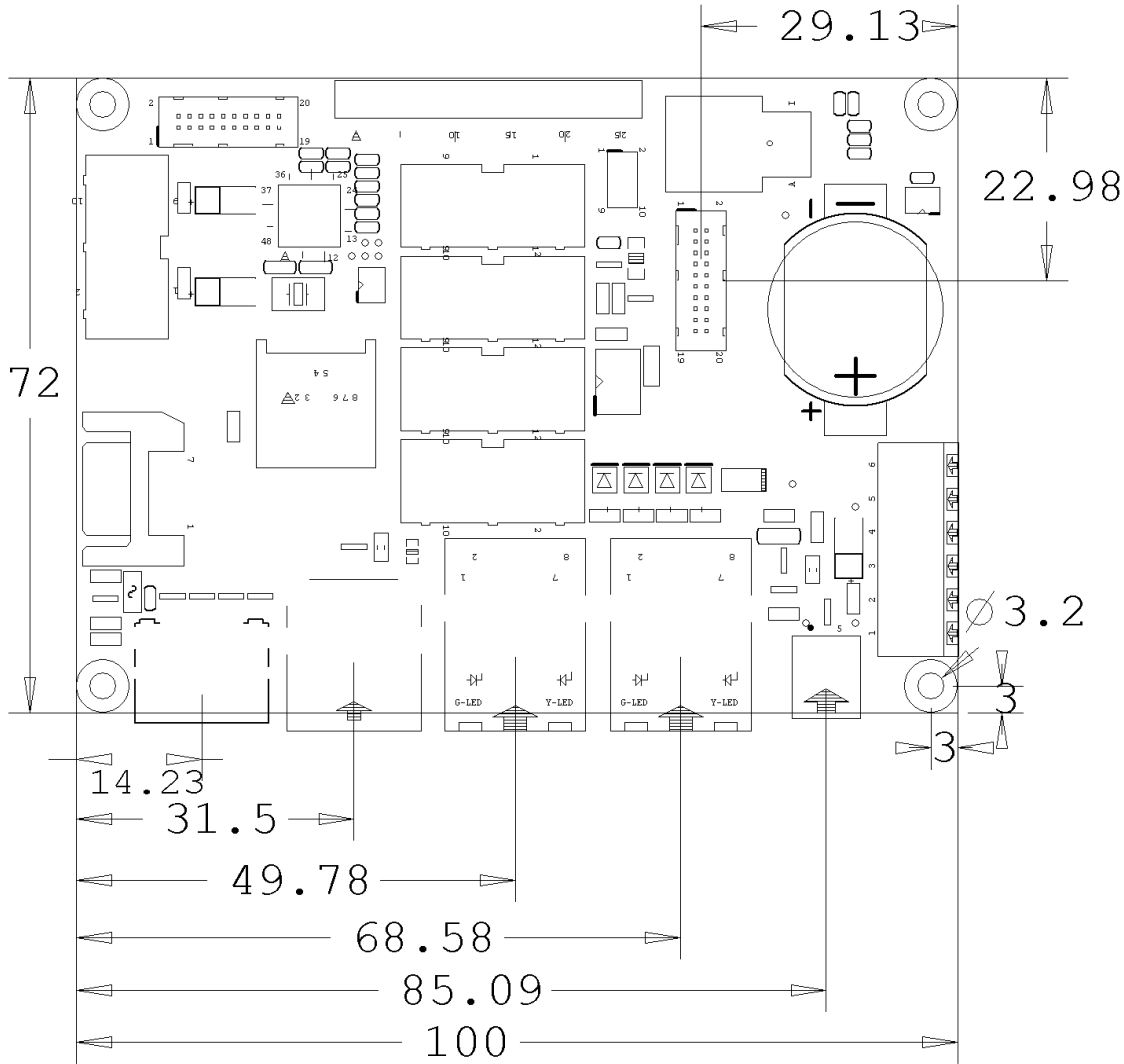


Figure 1: mechanical dimension

3 Connector layout

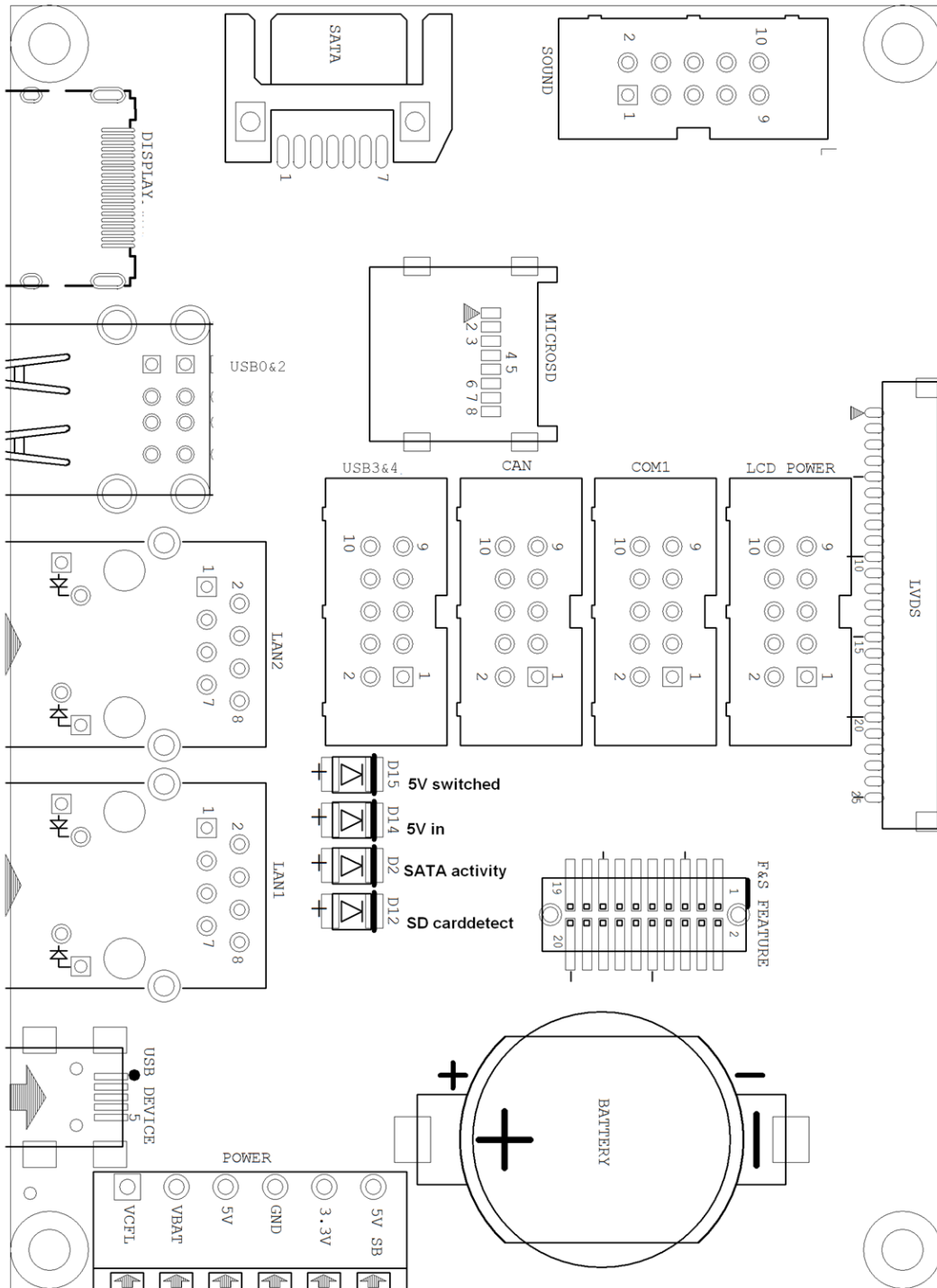


Figure 2: connnector layout

4 Interface and signal description

4.1 Sound

The connector does provide Stereo Line out and Stereo microphone.

The 10pin header on the startinterface is compatible to standard AC97 and HDA frontpanel sound adapter using for motherboards with 3.5mm plugs. Pin 1 is marked on the connector with an arrow.

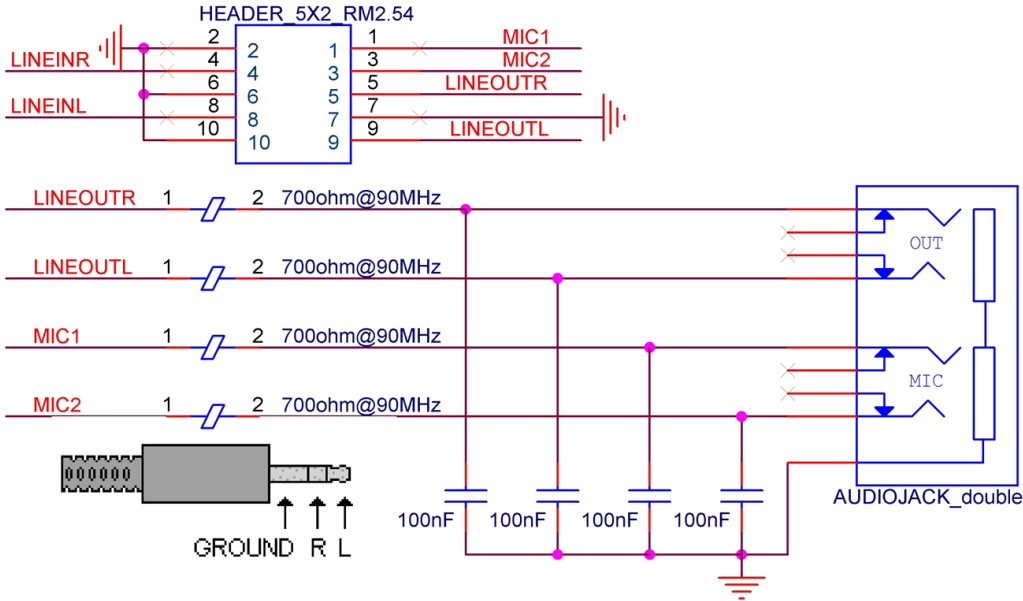


Figure 3: Audio connection



4.2 USB host

All USB ports are following the USB 2.0 specification.

Port 0 & 2 are connected to the USB Host connector. USB Port 3&4 are connected to a 5 pin header.

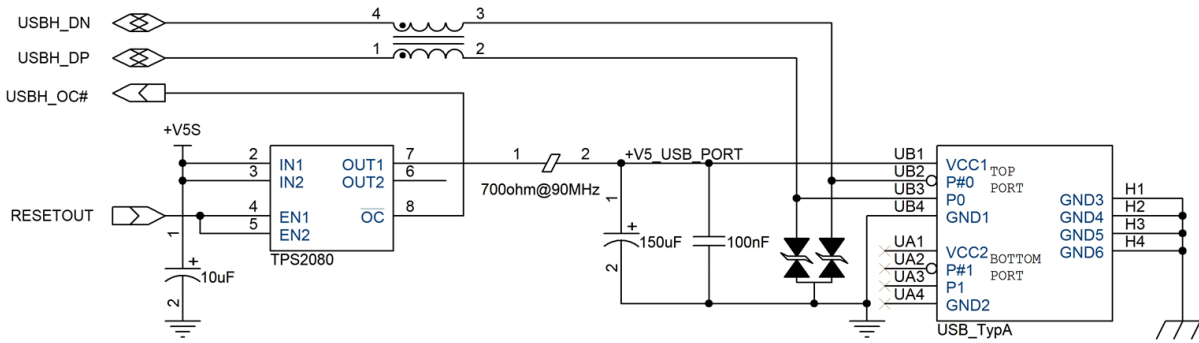


Figure 4:USB Host 0&2 connection USB connector

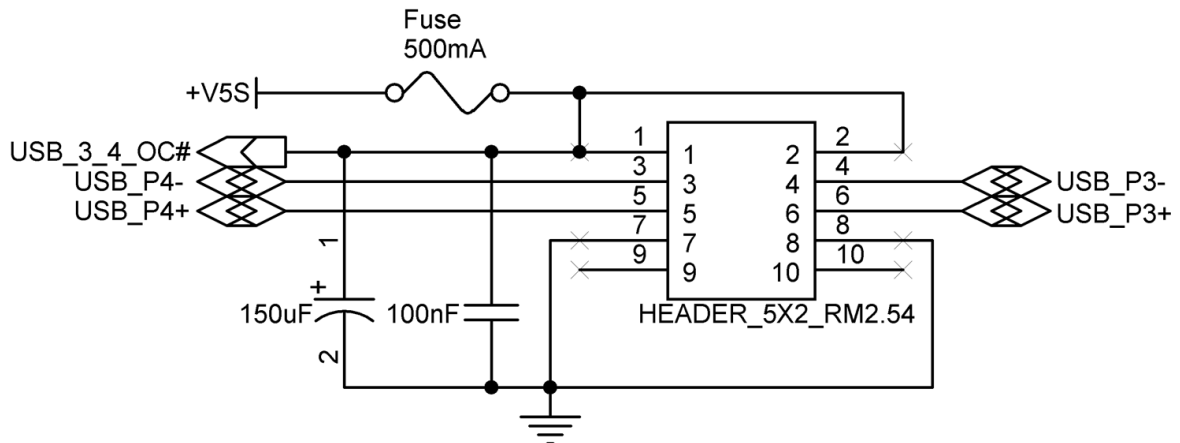


Figure 5: USB Host 3 & 4 connection via 10 pin header

4.3 USB client

It's a standard USB mini connector to use the board as USB device.

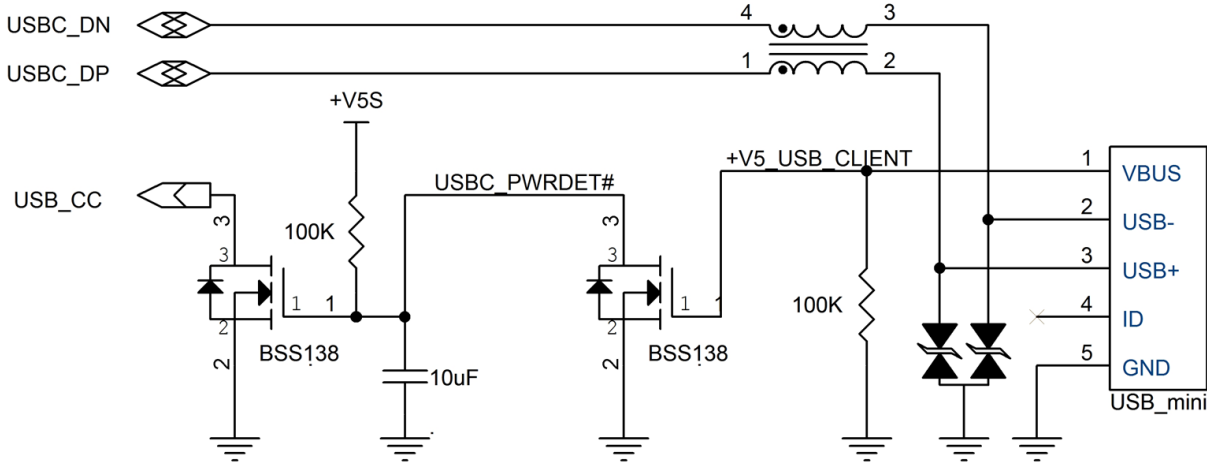


Figure 6: USB device connection



4.4 CAN

The CAN_TX and CAN_RX signals are with 3.3V voltage level and are not 5V compliant. The 120 Ohm termination is mounted per default. The CAN connector is a standard 10 pin header to connect a free hanging IDC DSUB-9 connector. Pin 1 is marked on the connector with an arrow.

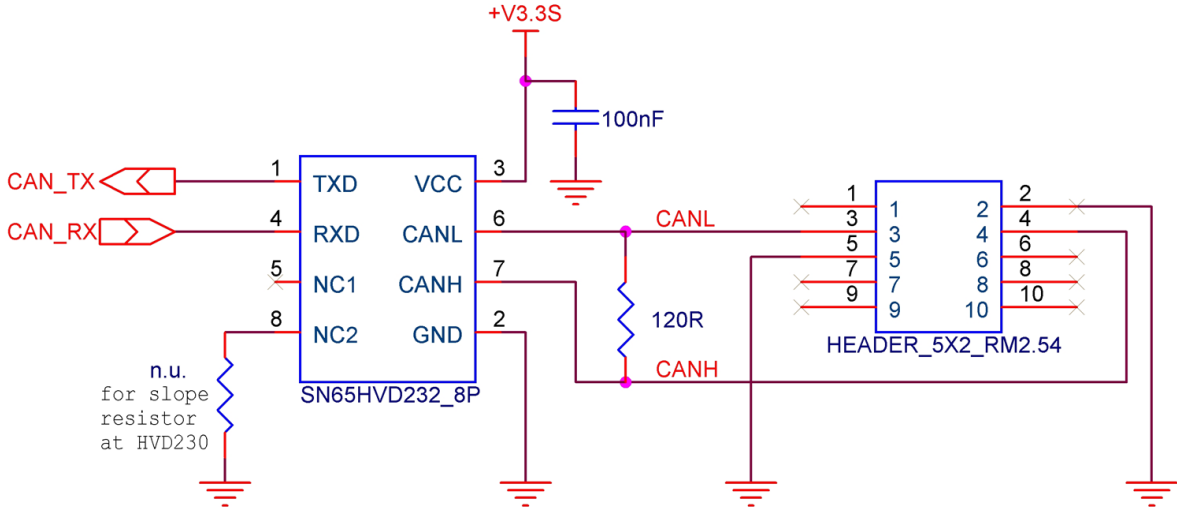


Figure 7: CAN transceiver



4.5 LVDS port connector

The single channel LVDS display port can be direct connected with 95 ohm differential lines to a LVDS 18 or 24 bit display (mounting option on the CPU module).

It is recommended to add a differential ferrit on each differential pair to reduce EMV.

The VLCD voltage is 3.3V and switched on the baseboard. The current limit is 2.2 A.

Connector is a JAE FI-S25P-HFE. Matching connector on display cable is a crimp connector FI-S25S housing and a cable with FI-C3-A1-15000 crimp contacts.

This connector is used because a wide range of displays does have a JAE FI-S series connector (with different pinouts) and it's easy to handle identical crimp contacts for the cable manufacturer.

LCD connector pinout

1,2,23,24	VLCD (3.3V switched)
3,4,7,10,13,16,19..22	GND
14	LVDS_CLK-
15	LVDS_CLK+
5	LVDS_DATA0-
6	LVDS_DATA0+
8	LVDS_DATA1-
9	LVDS_DATA1+
11	LVDS_DATA2-
12	LVDS_DATA2+
17	LVDS_DATA3- (24bit only)
18	LVDS_DATA3+ (24bit only)
25	CFL PWM signal

Pin 1 is marked on the connector with an arrow and also marked on PCB.



4.5.1 Display Power

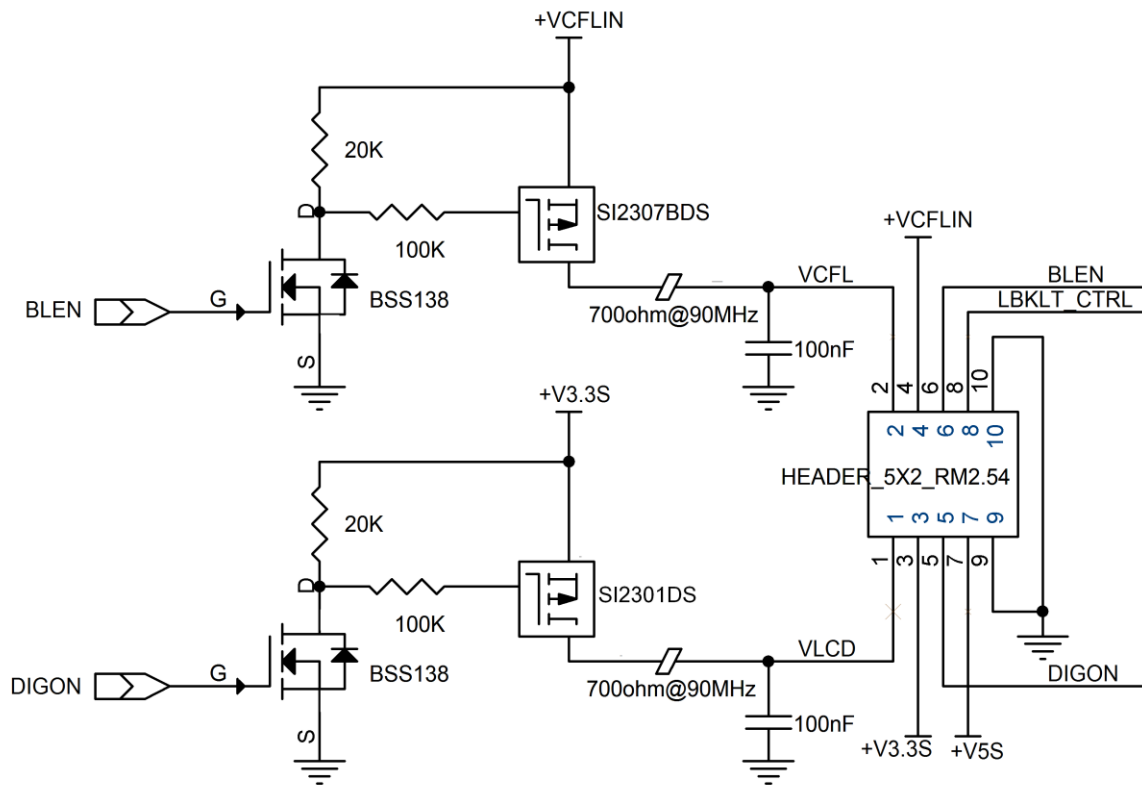


Figure 8: Display power

Comment: for VCFL < 5V please use SI2301DS instead SI2307BDS

4.6 MicroSD

MMC/SD card interface does work with 3.3V level. Because the uSD socket doesn't support the card detect the signal ist pulled low by resistor. Pullups for all signals are integrated on the QBliss module.

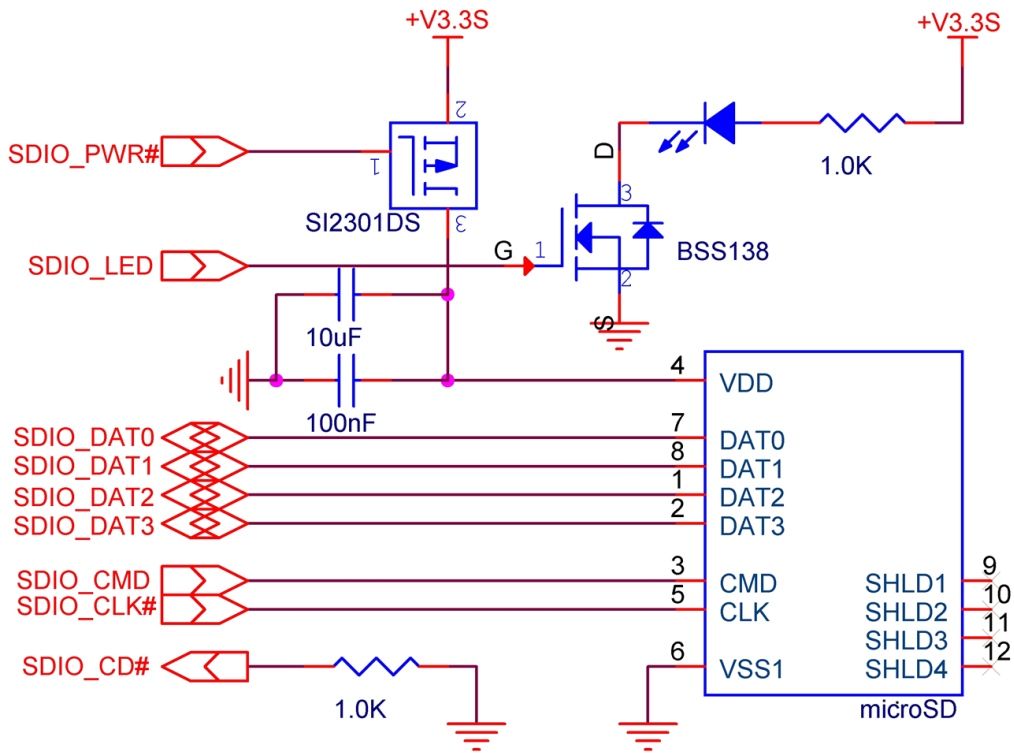


Figure 9: microSD

4.7 Display

The display connector allows to connect HDMI a monitor or a DVI monitor by using a adapter.

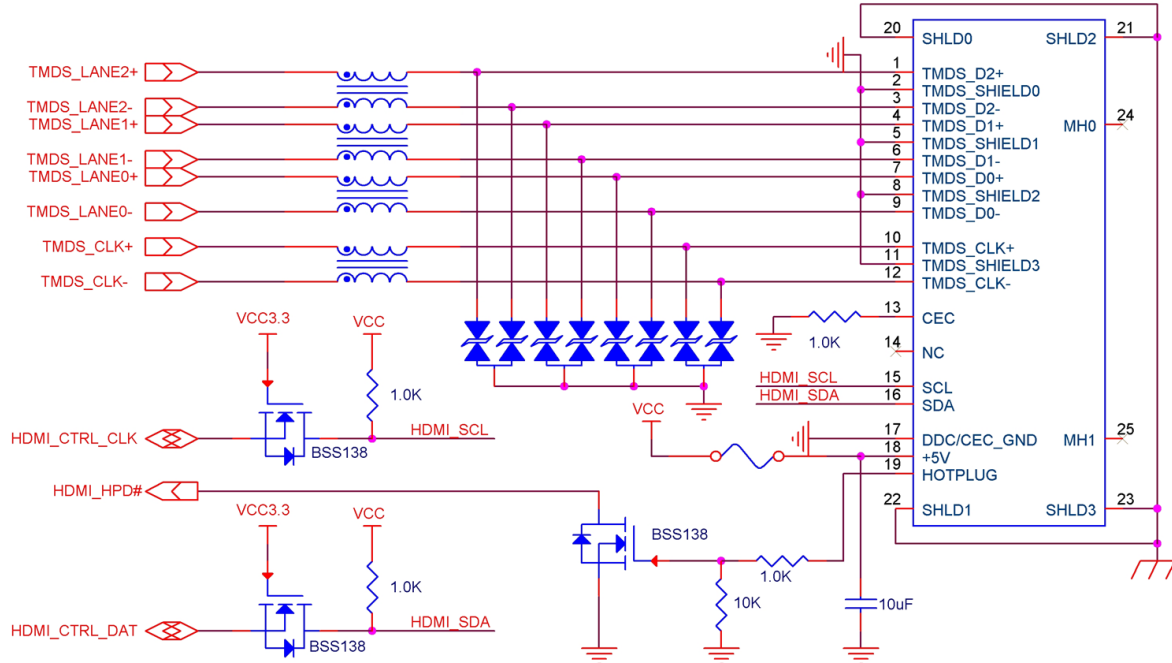


Figure 10: digital monitor

4.8 F&S Feature

F&S does support a standard connection for addon modules with different functions. The

Tyco 5-104693-2 header does provide a I2C Busmaster, a HS-SPI busmaster, a USB 2.0 hostchannel, a reset signal, external interrupt signals and a serial port with TTL signals. Pin 1 is marked with a “1” on PCB. The header on PCB is matching with Tyco 5-104652-2 for board to board an Tyco 5-104893-2 for board to cable connection.

5V, max. 800mA	1	2	5V
USB_P0- differential pair	3	4	I2DAT CMOS Bidir 3.3V
USB_P0+ differential pair	5	6	I2CLK CMOS O 3.3V
3.3V, max. 100mA	7	8	3.3V
COM1_TX CMOS O 3.3V	9	10	SPI_MOSI CMOS O 3.3V
COM1_RX CMOS I 3.3V	11	12	SPI_MISO CMOS I 3.3V
EINT0 CMOS I 3.3V	13	14	SPI_CLK CMOS O 3.3V
EINT1 CMOS I 3.3V	15	16	SPI_CS0 CMOS O 3.3V
Reset CMOS O 3.3V	17	18	SPI_CS1 CMOS O 3.3V
GND	19	20	GND



4.9 Ethernet

Per default the Qseven™ standard provide a single channel Ethernet 10/100 Mbit or 10/100/1000 Mbit. On the Startinterface only a 10/100 Mbit transformer is mounted. So 1000 Mbit is not supported.

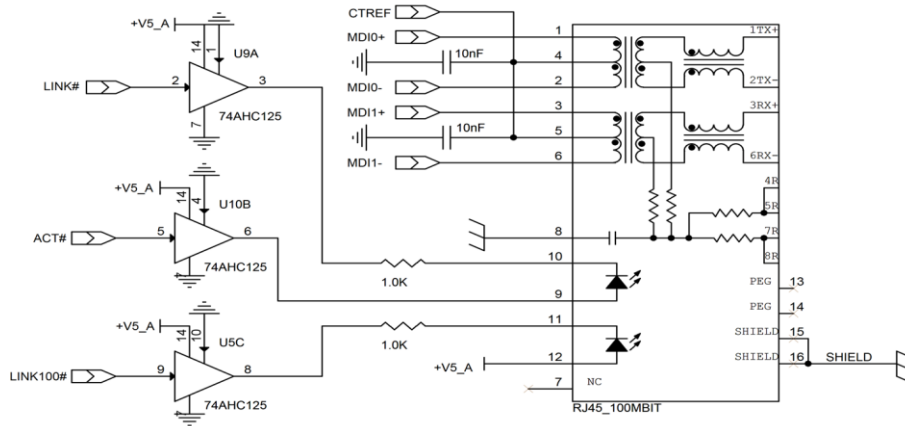


Figure 11: LAN1 (Qseven™ conform)

F&S does also have the Qbliss-A8 module with a secondary Ethernet controller as mounting option. The signals are routed to the unused Gbit signals. This option doesn't following the Qseven™ specification. The second LAN port connector will just mounted on request.

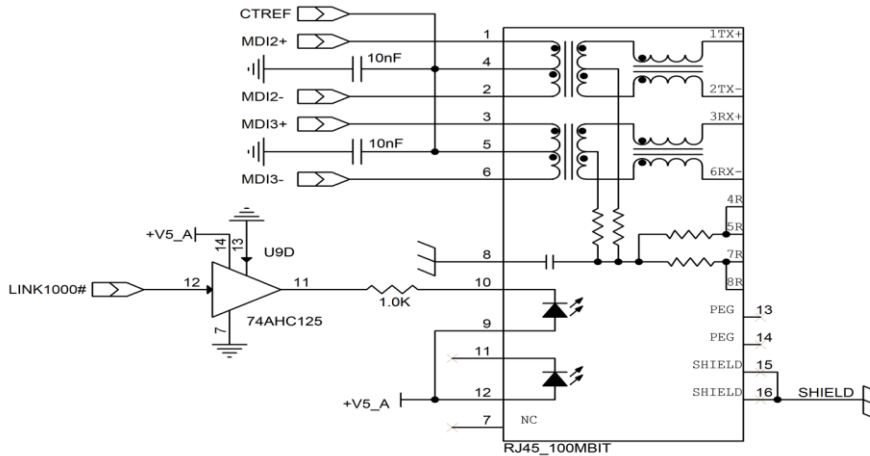


Figure 12: LAN2 (optional, non Qseven™ conform)

4.10 SATA

The Qbliss Startinterface provide a SATA connector to connect a SATA HD or SSD to the port.

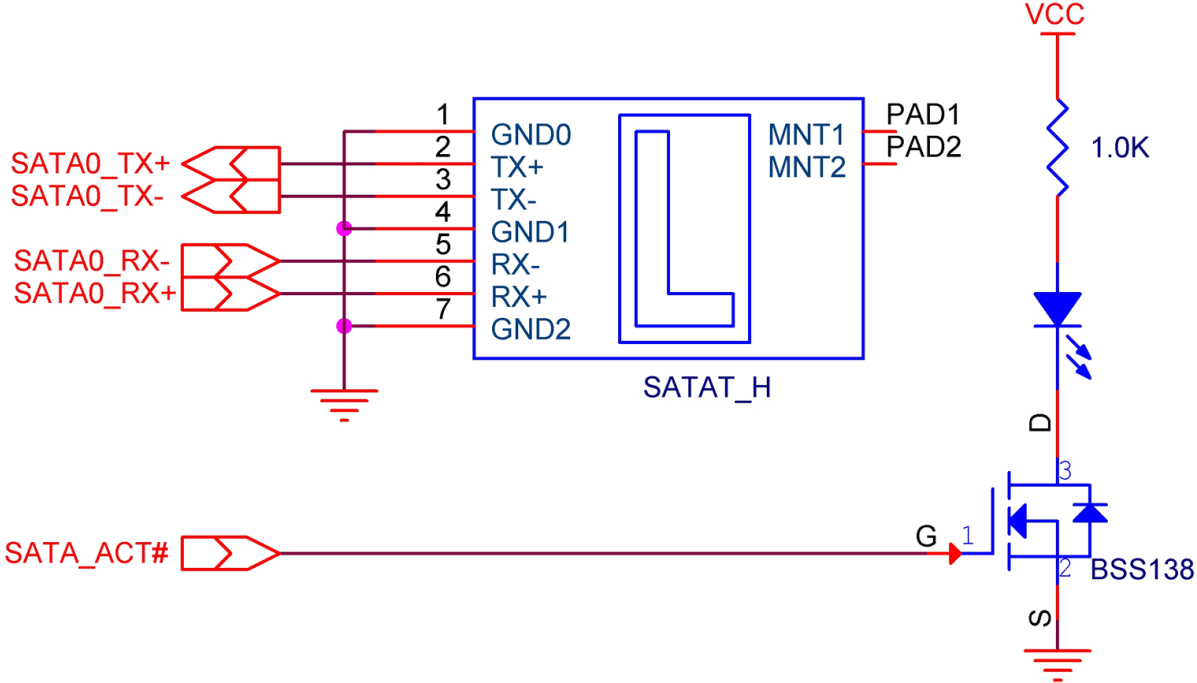


Figure 13: SATA



4.11 COM port

The signals are level shifted. The COM connector is a standard 10 pin header to connect a free hanging IDC DSUB-9 connector. Pin 1 is marked on the connector with an arrow.

A second COM port is available on the F&S feature connector with TTL signals.

This feature is not Qseven spec compliant. A standard Qseven module will not be destroyed by using in this Startintf.

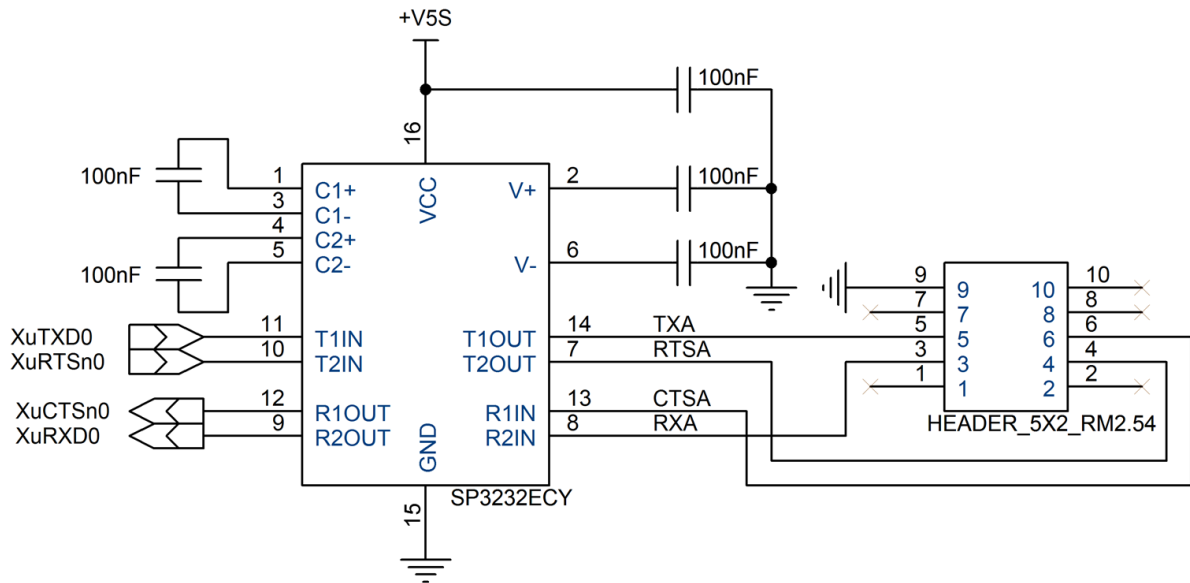


Figure 14: COM port connection

4.12 Power

A Phoenix Contact MCV 1,5/4-GF-3.81 connector is used for power supply.

1	VCFLIN	5V or 12V power supply only for switched backlight power supply.
2	VBAT	3.0V power supply only used if onboard Li cell is not in use
3	5V	+5V +/- 5% DC power
4	GND	Ground

A Phoenix QC 0,5/ 6-ST-3,81 will allow to connect the power supply.

Pin 1 is marked as square pin. On the Startintf1 board the QBliss VCC_5V_SB power rail is direct connected to the 5V power connector pin. The VCC power rail is switched by SUS_S3# from module to reduce power consumption on standby.

For VCFLIN please refer chapter 3.5.1

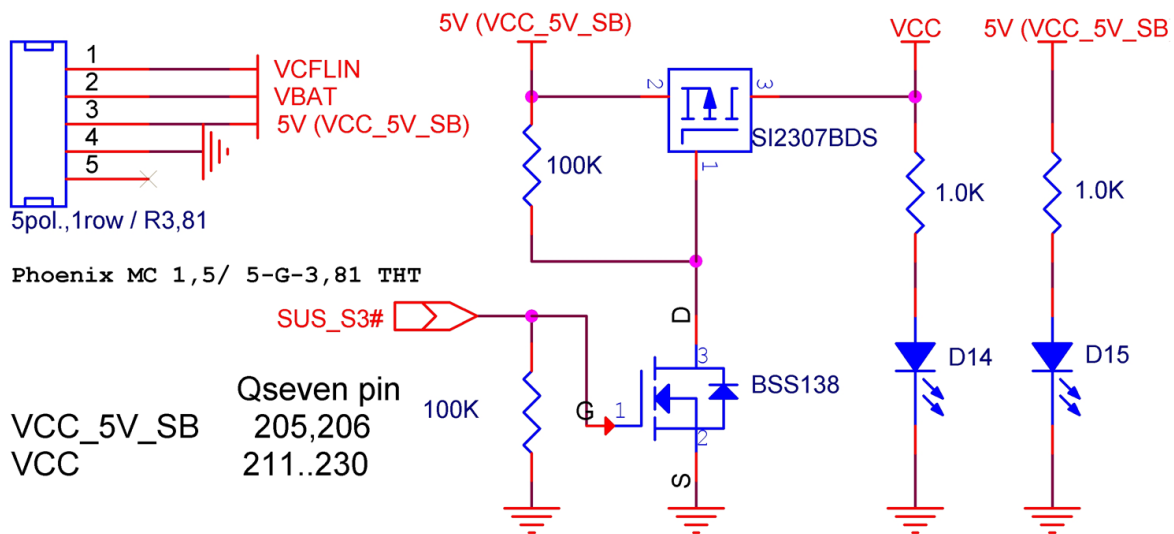


Figure 15: Power

5 Electrical characteristic

VCC 5V +/- 5%

power consumption onboard logic:	max. 200 mA
power consumption USB ports:	max. 500 mA per port
power consumption Qseven module:	please refer module datasheet
power consumption LVDS display:	max. 1.2 A (via 5V to 3.3V LDO)
power consumption F&S feature connector:	max. 200 mA
power consumption SD card:	max. 500 mA

6 Appendix

List of Figures

Figure 1: mechanical dimension	5
Figure 2: connnector layout	6
Figure 3: Audio connection	7
Figure 4:USB Host 0&2 connection USB connector	8
Figure 5: USB Host 3 & 4 connection via 10 pin header	8
Figure 6: USB device connection	9
Figure 7: CAN transceiver	10
Figure 8: Display power.....	12
Figure 9: micoSD.....	13
Figure 10: digital monitor	14
Figure 11: LAN1 (Qseven™ conform).....	16
Figure 12: LAN2 (optional, non Qseven™ conform)	16
Figure 13: SATA	17
Figure 14: COM port connection.....	18
Figure 15: Power.....	19

Important Notice

The information in this publication has been carefully checked and is believed to be entirely accurate at the time of publication. F&S Elektronik Systeme assumes no responsibility, however, for possible errors or omissions, or for any consequences resulting from the use of the information contained in this documentation.

F&S Elektronik Systeme reserves the right to make changes in its products or product specifications or product documentation with the intent to improve function or design at any time and without notice and is not required to update this documentation to reflect such changes.

F&S Elektronik Systeme makes no warranty or guarantee regarding the suitability of its products for any particular purpose, nor does F&S Elektronik Systeme assume any liability arising out of the documentation or use of any product and specifically disclaims any and all liability, including without limitation any consequential or incidental damages.

Products are not designed, intended, or authorised for use as components in systems intended for applications intended to support or sustain life, or for any other application in which the failure of the product from F&S Elektronik Systeme could create a situation where personal injury or death may occur. Should the Buyer purchase or use a F&S Elektronik Systeme product for any such unintended or unauthorised application, the Buyer shall indemnify and hold F&S Elektronik Systeme and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, expenses, and reasonable attorney fees arising out of, either directly or indirectly, any claim of personal injury or death that may be associated with such unintended or unauthorised use, even if such claim alleges that F&S Elektronik Systeme was negligent regarding the design or manufacture of said product.

