User Manual

MSC Q7-MB-EP1
MSC Qseven Baseboard

Rev. 1.04
February 4th, 2011

Preface

Copyright Notice

Important Information

This documentation is intended for qualified audience only. The product described herein is not an end user product. It was developed and manufactured for further processing by trained personnel.

Disclaimer

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EMC Rules

This unit has to be installed in a shielded housing. If not installed in a properly shielded enclosure, and used in accordance with the instruction manual, this product may cause radio interference in which case the user may be required to take adequate measures at his or her own expense.

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Certification

MSC Vertriebs GmbH is certified according to DIN EN ISO 9001:2000 standards.

Life-Cycle-Management

MSC products are developed and manufactured according to high quality standards. Our life-cycle-management assures long term availability through permanent product maintenance. Technically necessary changes and improvements are introduced if applicable. A product-change-notification and end-of-life management process assures early information of our customers.

Product Support

MSC engineers and technicians are committed to provide support to our customers whenever needed.
Before contacting the Technical Support, please consult the respective pages on our web site at www.msc-ge.com/support-boards for the latest documentation, drivers and software downloads.
If the information provided there does not solve your problem, please contact our Technical Support:

Email: support.boards@msc-ge.com
Phone: +49 8165 906-200

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1 General Information

1.1 Revision History

Rev.	Date	Description
1.0	15.3.2010	Preliminary Release for website
1.01	23.3.2010	Minor corrections
1.02	26.3.2010	CH7317A -> CH7317B
1.03	14.6.2010	Fix JILI30 Connector pinout (X801)
1.04	04.02.2011	Major corrections

1.2 Reference Documents

[1] Qseven Module Specification
Revision 1.1
http://www.qseven-standard.org/

[2] PCI Local Bus Specification Rev. 2.1
PCI21.PDF
Last update: June 1st, 1995
http://www.pcisig.com

[3] JILI Specification
Jilim120.pdf
Last update: April 7th, 2003
http://www.jumptec.de/product/data/jili/index.html

[4] Digital Video Interface DVI
dvi_10.pdf
Rev. 1.0 April 2nd, 1999
http://www.ddwg.org/

[5] Serial ATA Specification
Serial ATA 1.0 gold.pdf
Last update: August 29th, 2002 Rev.1.0
http://www.sata-io.org/

[6] IEEE Std. 802.3-2002
802.3-2002.pdf
http://www.ieee.org

[7] Universal Bus Specification
usb_20.pdf
Last update: April 27th, 2000
http://www.usb.org

[8] SDIO Card Specification
Simplified_SDIO_Card_Spec.pdf
Last update: February 8th, 2007
http://www.sdcard.org

[9] Mini PCIe Card Specification
http://www.pcisig.com

1.3 Definitions and Abbreviations

COM	Computer-On-Module
RTC	Real Time Clock
PCI	Peripheral Component Interconnect
SATA	Serial Advanced Technology Attachment
USB	Universal Serial Bus
LVDS	Low Voltage Differential Signaling
JILI	JUMPtec Intelligent LVDS Interface
LAN	Local Area Network
VGA	Video Graphics Array
LPC	Low Pin Count
POST	Power on self test
SMBus	System Management Bus
MDI	Medium Dependent Interface

2 Introduction

2.1 Qseven™ Product Description

Qseven™ modules are off the shelf compact, highly integrated Computer on Module devices which are designed to connect to a carrier baseboard. The Qseven standard is supported by multiple companies and defines a standardized square board size of 70x70 mm with s defined interface to the carrier board. The connection to the carrier board is made with an MXM type edge connector.

Typically a Qseven module includes CPU, chipset, memory, Ethernet controller, BIOS flash, SATA- and USB controller. Interface controllers or connectors (e.g. RJ45) are implemented on the baseboard on to which the Qseven module is mounted.

In addition to the power supply also signals for PCIe, SATA, USB, LPC etc. are routed over the Qseven edge connector.

Thanks to the standardized mechanics and interfaces the system can be scaled arbitrarily. Despite the modular concept the system design is very flat and compact.

Qseven modules require a baseboard for proper operation.

This manual describes the Qseven Embedded Platform (MSC Q7-MB-EP1), which is a baseboard designed for small production runs or as a small evaluation platform for Qseven modules.

2.2 Features

- Edge connector for Qseven module
- Mini PCIe Card slot
- VGA display interface
- LVDS LCD panel interface, using the standard JILI30 connector
- 5 Pin LCD panel Backlight Connector
- High Definition Audio using Via VT1708A
  - LineOut
  - HDA Front Panel
- 2 SATA channel connectors, each capable of 300MB/s
- 5 Port USB interface
  - 2 USB type A connectors
  - 1 mini USB connector, which can be configured as host or client
  - 2 USB interfaces on on-board pin header connector
- 10/100/1000 Base-T LAN interface
- RS232 Com Port (using USB to serial controller)
- Fan connector
- Power supply with variable Input Supply Voltage from 10 to 28 V
- Beeper
- Resistive Touch controller
  - Two 4-wire Connectors
  - One 5-wire Connector

2.3 Block Diagram

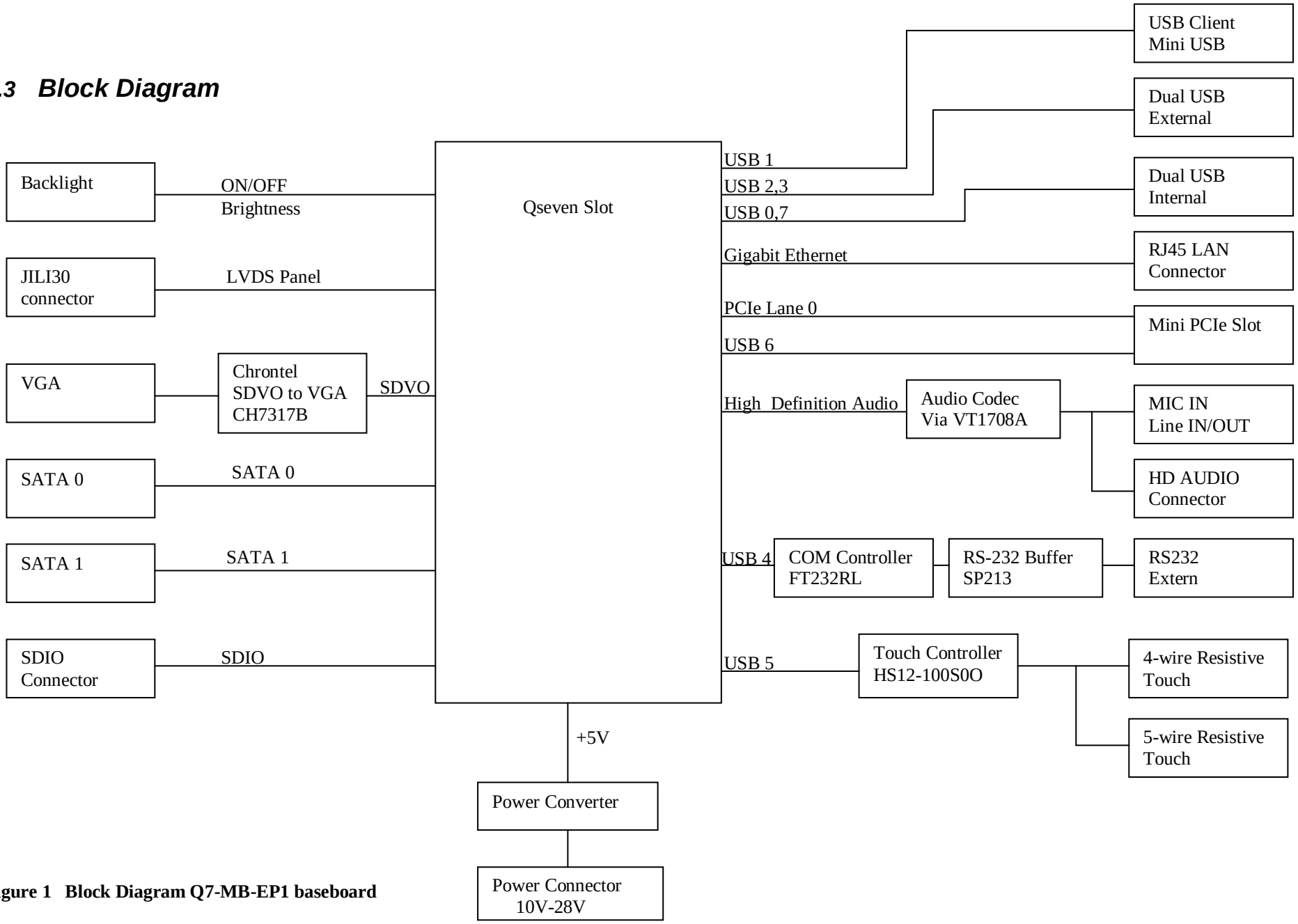


Figure 1 Block Diagram Q7-MB-EP1 baseboard

2.4 Positioning of Connectors and Jumpers

Figure 2 Positioning of Connectors and Jumpers (Top side)

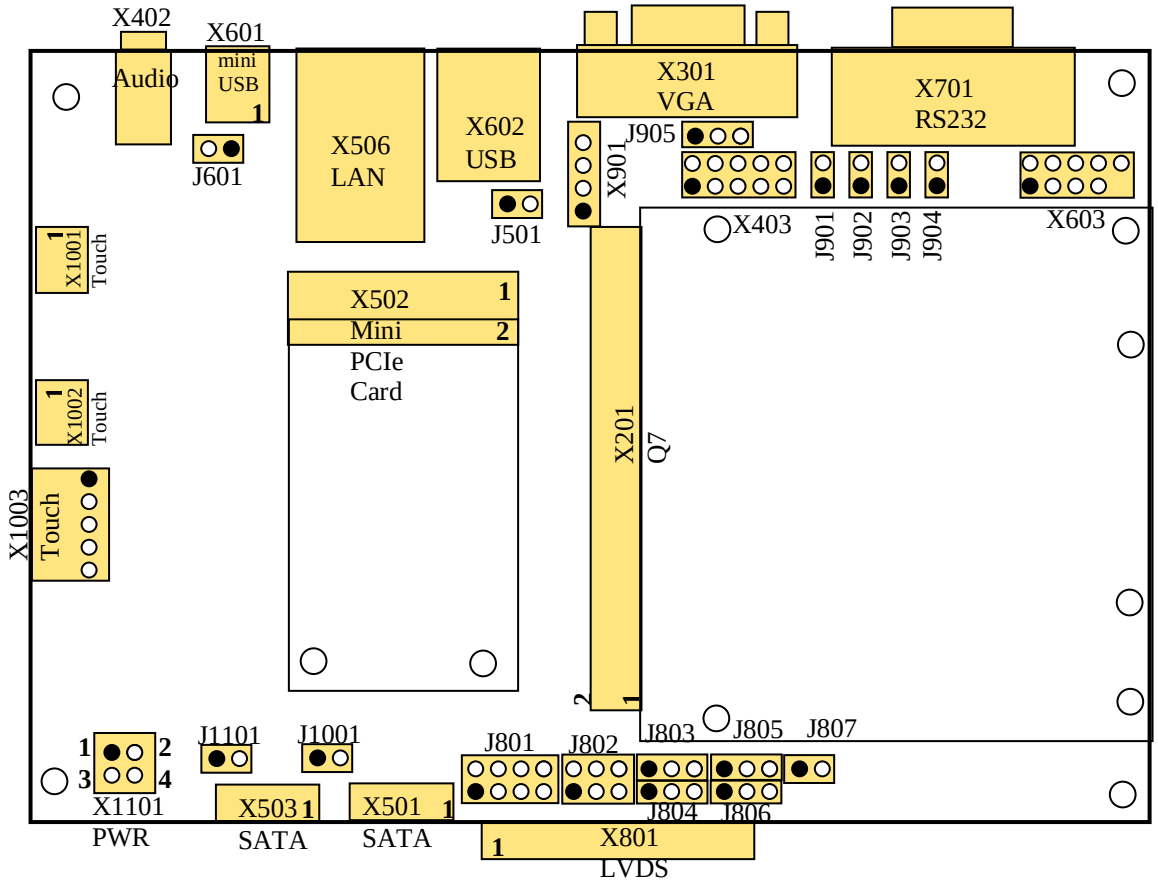
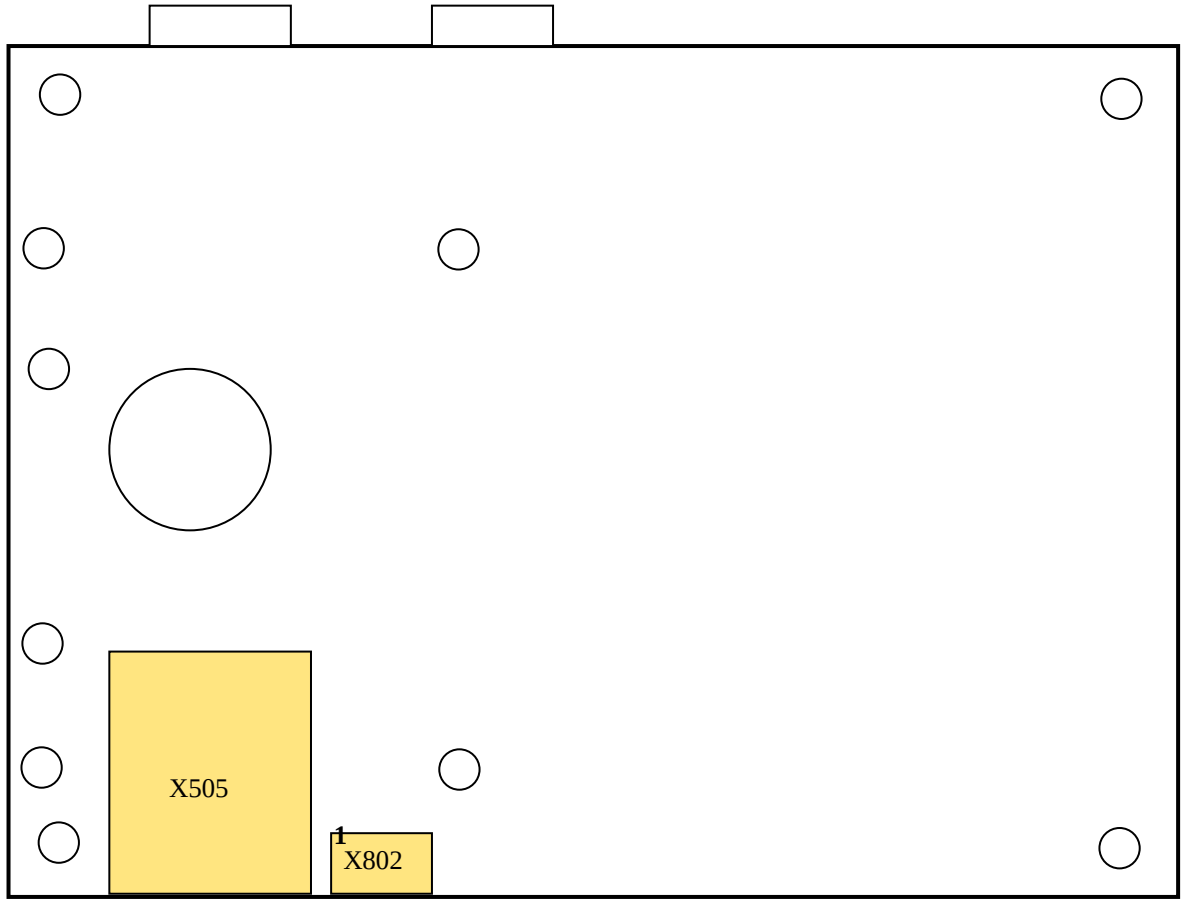


Figure 3 Positioning of Connectors (Under side)



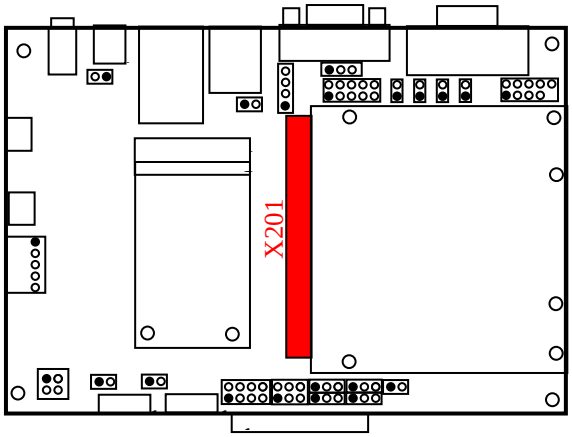
2.5 Dimensions

Dimension:	148.02 x 102.22 mm
Board Thickness:	1.8 mm + /-10%
Board Top-side (module side) max height (highest component) – no module	16.8 mm
Board Under-side max height (highest component)	5.4 mm
Total height = 16.8 + 5.4 + 1.8	24.0 mm
Drill hole positioning tolerance :	+/- 0.1mm in X and Y
Drill hole diameter tolerance :	+ 0.1 mm

3 Hardware

NOTE: Not all Qseven modules may support all connectors and functionality available on the MSC Q7-MB-EP1 embedded platform baseboard.

3.1 Qseven Connector X201



Specification:

- Reference: X201 Foxconn AS0B326-S78N-7F
- Mating: PCB Q7-Card
- Pinout: Refer to Qseven specification [1]

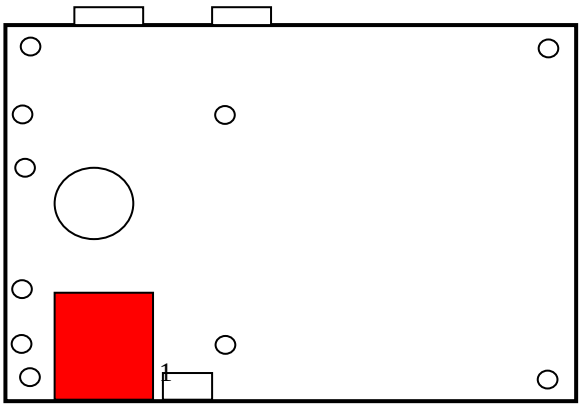
Table 1 Qseven Connector (X201)

Row A		Row B	
1	GND	2	GND
3	GBE_MDI3-	4	GBE_MDI2-
5	GBE_MDI3+	6	GBE_MDI2+
7	GBE_LINK100#	8	GBE_LINK1000#
9	GBE_MDI1-	10	GBE_MDI0-
11	GBE_MDI1+	12	GBE_MDI0+
13	GBE_LINK#	14	GBE_ACT#
15	GBE_CTREF	16	SUS_S5#
17	WAKE#	18	SUS_S3#
19	SUS_STAT#	20	PWRBTN#
21	SLP_BTN#	22	LID_BTN#
23	GND	24	GND
KEY		KEY	
25	GND	26	PWGIN
27	BATLOW#	28	RSTBTN#
29	SATA0_TX+	30	SATA1_TX+
31	SATA0_TX-	32	SATA1_TX-
33	SATA_ACT#	34	GND
35	SATA0_RX+	36	SATA1_RX+
37	SATA0_RX-	38	SATA1_RX-
39	GND	40	GND
41	BIOS_DISABLE#	42	SDIO_CLK#
43	SDIO_CD#	44	SDIO_LED
45	SDIO_CMD	46	SDIO_WP
47	SDIO_PWR#	48	SDIO_DAT1
49	SDIO_DAT0	50	SDIO_DAT3
51	SDIO_DAT2	52	SDIO_DAT5
53	SDIO_DAT4	54	SDIO_DAT7

55	SDIO_DAT6	56	SDIO_PWRSEL
57	GND	58	GND
59	HDA_SYNC	60	SMB_CLK
61	HDA_RST#	62	SMB_DAT
63	HDA_BITCLK	64	SMB_ALERT#
65	HDA_SDI	66	I2C_CLK
67	HDA_SDO	68	I2C_DAT
69	THRM#	70	WDTRIG#
71	THRMTRIP#	72	WDOUT
73	GND	74	GND
75	USB_P7-	76	USB_P6-
77	USB_P7+	78	USB_P6+
79	USB_6_7_OC#	80	USB_4_5_OC#
81	USB_P5-	82	USB_P4-
83	USB_P5+	84	USB_P4+
85	USB_2_3_OC#	86	USB_0_1_OC#
87	USB_P3-	88	USB_P2-
89	USB_P3+	90	USB_P2+
91	USB_CC	92	RSVD
93	USB_P1-	94	USB_P0-
95	USB_P1+	96	USB_P0+
97	GND	98	GND
99	LVDS_A0+	100	LVDS_B0+
101	LVDS_A0-	102	LVDS_B0-
103	LVDS_A1+	104	LVDS_B1+
105	LVDS_A1-	106	LVDS_B1-
107	LVDS_A2+	108	LVDS_B2+
109	LVDS_A2-	110	LVDS_B2-
111	LVDS_PPEN	112	LVDS_BLEN
113	LVDS_A3+	114	LVDS_B3+
115	LVDS_A3-	116	LVDS_B3-
117	GND	118	GND
119	LVDS_A_CLK+	120	LVDS_B_CLK+
121	LVDS_A_CLK-	122	LVDS_B_CLK-
123	LVDS_BLT_CTRL	124	RSVD
125	LVDS_DID_DAT	126	LVDS_BLC_DAT
127	LVDS_DID_CLK	128	LVDS_BLC_CLK
129	RSVD	130	RSVD
131	SDVO_BCLK+	132	SDVO_INT+
133	SDVO_BCLK-	134	SDVO_INT-
135	GND	136	GND
137	SDVO_GREEN+	138	SDVO_FLDSTALL+
139	SDVO_GREEN-	140	SDVO_FLDSTALL-
141	GND	142	GND
143	SDVO_BLUE+	144	SDVO_TVCLKIN+
145	SDVO_BLUE-	146	SDVO_TVCLKIN-
147	GND	148	GND
149	SDVO_RED+	150	SDVO_CTRL_DAT
151	SDVO_RED-	152	SDVO_CTRL_CLK
153	HDMI_HPD#	154	DP_HPD#
155	PCIE_CLK_REF+	156	PCIE_WAKE#
157	PCIE_CLK_REF-	158	PCIE_RST#
159	GND	160	GND
161	PCIE3_TX+	162	PCIE3_RX+
163	PCIE3_TX-	164	PCIE3_RX-
165	GND	166	GND
167	PCIE2_TX+	168	PCIE2_RX+
169	PCIE2_TX-	170	PCIE2_RX-
171	EXCD0_PERST#	172	EXCD1_PERST#
173	PCIE1_TX+	174	PCIE1_RX+

175	PCIE1_TX-	176	PCIE1_RX-
177	EXCD0_CPPE#	178	EXCD1_CPPE#
179	PCIE0_TX+	180	PCIE0_RX+
181	PCIE0_TX-	182	PCIE0_RX-
183	GND	184	GND
185	LPC_AD0	186	LPC_AD1
187	LPC_AD2	188	LPC_AD3
189	LPC_CLK	190	LPC_FRAME#
191	SERIRQ	192	LPC_LDRQ#
193	VCC_RTC	194	SPKR
195	FAN_TACHOIN	196	FAN_PWMOUT
197	GND	198	GND
199	RSVD	200	RSVD
201	RSVD	202	RSVD
203	RSVD	204	RSVD
205	VCC_5V_SB	206	VCC_5V_SB
207	MFG_NC0	208	MFG_NC2
209	MFG_NC1	210	MFG_NC3
211	VCC	212	VCC
213	VCC	214	VCC
215	VCC	216	VCC
217	VCC	218	VCC
219	VCC	220	VCC
221	VCC	222	VCC
223	VCC	224	VCC
225	VCC	226	VCC
227	VCC	228	VCC
229	VCC	230	VCC

3.2 SDIO Card



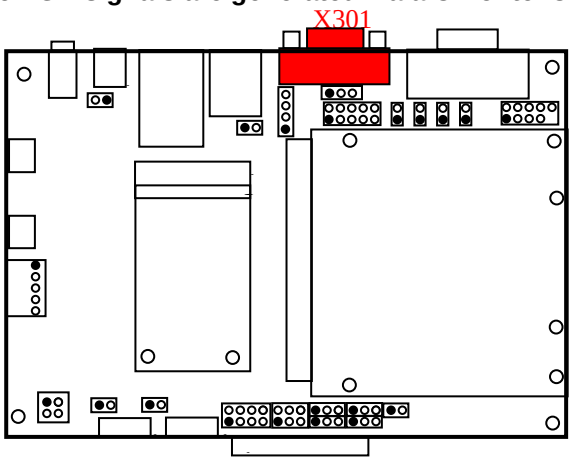
X505

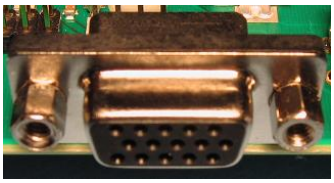
Specification:

- References: X505 SD DM1AA-SF-PEJ(21) Hirose
- Mating: SD Memory Card
- Pinout: See SDIO Card specification [8]

3.3 VGA Interface (X301)

The VGA signals are generated via a Chrontel CH7317B SDVO to VGA display controller.





Specification:

- References: X301 SUYIN 070207FR015S218ZA
- Mating: VGA-Monitor

Table 2 Pinout VGA Interface

Pin	Signal name	Function
1	RED	Signal red
2	GREEN	Signal green
3	BLUE	Signal blue
4	RSVD	reserved
5	GND	Ground digital
6	RGND	Ground red
7	GGND	Ground green
8	BGND	Ground blue
9	+5V	+5V VDC
10	SGND	Sync. Ground
11	ID0	Monitor ID Bit 0 (optional)
12	SDA	DDC Data
13	HSYNC	Horizontal Sync.
14	VSYNC	Vertical Sync.
15	SCL	DDC Clock

3.4 LCD Panel LVDS Interface

3.4.1 JILI30 Connector

LCD/TFT displays with support for LVDS can be connected via the JILI30 connector.

Two 24 bit LVDS channels are available on this 32-pin header. Single channel and 18bit displays are also supported using the appropriate cables.

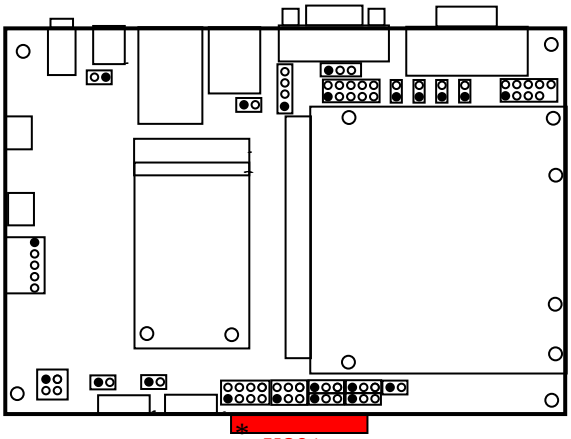
NOTE: Support of single/dual channel and 18/24 bit will depend on the Qseven module used.

The Supply voltage of the LVDS Signal can be adjusted using jumper J0801.

(See section 3.20 Jumper settings)

Please contact support.boards@msc-ge.com for assistance in finding appropriate display/backlight inverter and cable sets for your application requirements

Specification:



PIN1

- References: X801 Hirose MDF76GW-30S-1H(55)
- Mating: Cable Plug MDF76-30P-1C

Table 3 Pinout JILI30 Connector (X801)

Pin	Signal name	Function
1	LVDS_A0-	LVDS Negative data signal (-)
2	LVDS_A0+	LVDS Positive data signal (+)
3	LVDS_A1-	LVDS Negative data signal (-)
4	LVDS_A1+	LVDS Positive data signal (+)
5	LVDS_A2-	LVDS Negative data signal (-)
6	LVDS_A2+	LVDS Positive data signal (+)
7	GND	Ground
8	LVDS_A_CLK-	LVDS Negative clock signal (-)
9	LVDS_A_CLK+	LVDS Positive clock signal (+)
10	LVDS_A3-	LVDS Negative data signal (-)
11	LVDS_A3+	LVDS Positive data signal (+)
12	LVDS_B0-	LVDS Negative data signal (-)
13	LVDS_B0+	LVDS Positive data signal (+)
14	GND	Ground
15	LVDS_B1-	LVDS Negative data signal (-)
16	LVDS_B1+	LVDS Positive data signal (+)
17	GND	Ground
18	LVDS_B2-	LVDS Negative data signal (-)
19	LVDS_B2+	LVDS Positive data signal (+)
20	LVDS_B_CLK-	LVDS Negative clock signal (-)
21	LVDS_B_CLK+	LVDS Positive clock signal (+)
22	LVDS_B3-	LVDS Negative data signal (-)
23	LVDS_B3+	LVDS Positive data signal (+)
24	GND	Ground
25	PANEL_I2C_DAT	I2C Signal
26	LVDS_PPEN	Panel Power Enable
27	PANEL_I2C_CLK	I2C Signal
28	VCC	Power Supply: +3.3V or +5V or +12V
29	VCC	Power Supply: +3.3V or +5V or +12V
30	VCC	Power Supply: +3.3V or +5V or +12V

3.4.2 LVDS EEPROM

To store configuration data for the display, a serial EEPROM is connected to the LVDS I2C bus - signals LVDS_I2C_CK and LVDS_I2C_DAT.

To avoid conflicts with a configuration EEPROM on the connected display, this EEPROM can be mapped to an unused address space. The address can be configured using jumper J807. (See section 3.20 Jumper settings)

3.4.3 Backlight Inverter Interface (X802)

The backlight inverter (for CCFL) or LED driver (for CCD) is attached using this 5 pin connector.

The supply voltage (VCC) of the backlight can be selected using jumper J802 for 12V, 5V or 3.3V.

The inverter or LED driver can be turned on or off using the BLON signal. The polarity of the BLON signal is selected using jumper J803.

The brightness of the backlight is controlled using the VCON signal.

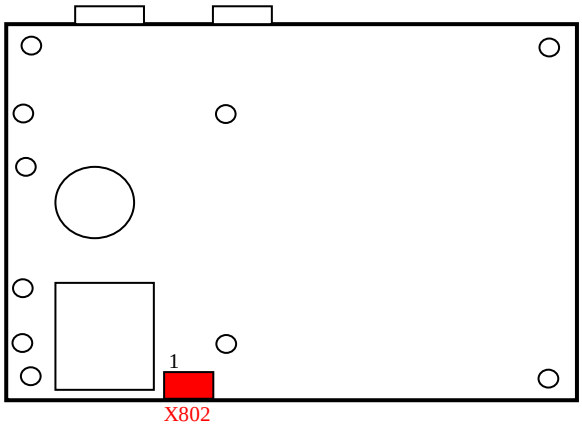
The LVDS_BKLT_CTRL signal coming from the Qseven module normally provides a PWM signal. Depending on the settings of jumpers J805 and J806 the following brightness control signals can be applied :

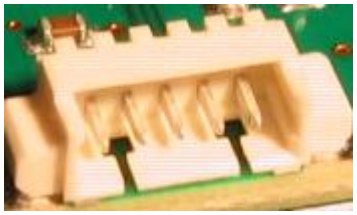
- PWM signal either inverted or non-inverted
- Analog signal level derived either from the inverted or non-inverted PWM signal. (The PWM signal is integrated and then limited to the selected peak voltage of the backlight inverter).

The peak level of the brightness signal can be selected using jumper J804 to be either 3.3V or 5V.

The maximum brightness (with 0V or with 3.3V/5V) will depend on the Inverter or LED backlight type used.

(See also section 3.20 Jumper settings)





Specification:

- References: X802 Würth Elektronik 653105131822
- Mating: Cable Plug 653005113322

Table 4 Pinout Backlight Connector (X802)

Pin	Signalname	Funktion
1	VCC	Backlight power supply
2	GND	Ground
3	BLON	Backlight On/Off control
4	VCON	Brightness control
5	GND	Ground

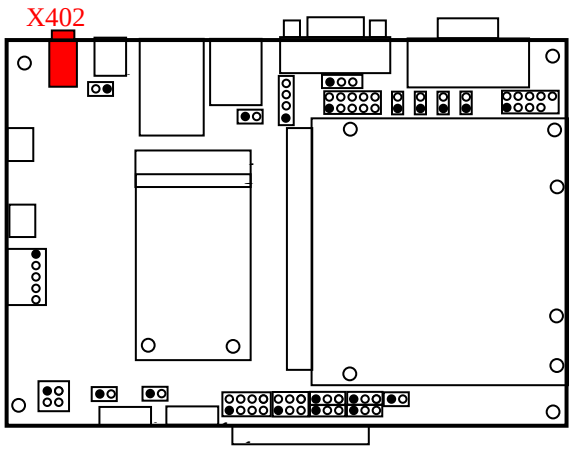
3.5 Audio interfaces (X402, X403)

The Via VT1708A High Definition Audio codec is connected to the HDA link of the Qseven module.

The following LF signals are provided by the HDA codec:

- Stereo Line Out (X402)
- Pin header connector for HDA panel interface (X403)

3.5.1 Stereo Line out (X402)



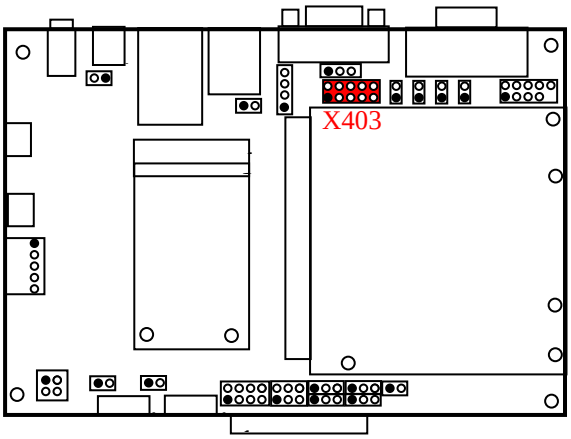
Specification:

- References: X402 Foxconn JA13431-N002-4F
- Mating Cable Plug Audio 3,5mm Stereo

Table 5 Pinout Audio Connector (X402)

Con		Function
X402		Line Out

3.5.2 HD Audio (X403)

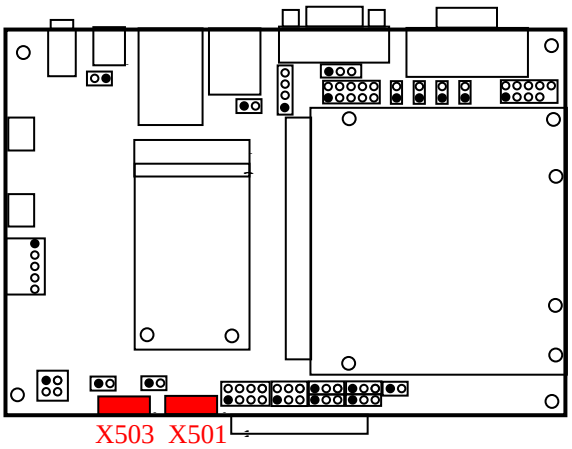


- References: X403 CAB 1002-161-010-RoHS
- Mating female crimp-connector Reference FCI 65043-032

Table 6 Pin assignment of the HD-Audio Connector (X403)

Pin	Signal	Pin	Signal
1	Microphone In Left	2	GND
3	Microphone In Right	4	PRESENCE# - HD presence detect
5	LINE_OUT_R	6	MIC2_JD – Jack detect
7	GND	8	NC
9	LINE_OUT_L	10	LINE2_JD – Jack 2 detect

3.6 SATA-Interface (X501, X503)



For the connection of SATA drives there are two SATA interfaces

Table 7 Assignment SATA Channel to Connector Reference

SATA Channel	References
SATA 0	X501
SATA 1	X503

Specification SATA signal connector:

- References: X501, X503 FCI 59334-002-LF
- Mating: SATA-cable
- Pinout: Refer to SATA Specification [8, page 46, table 3]

Table 8 Pinout SATA

Con	Signal name	Function
1	GND	Ground
2	TX+	SATA Positive transmit signal (+)
3	TX-	SATA Negative transmit signal (-)
4	GND	Ground
5	RX-	SATA Negative transmit signal (-)
6	RX+	SATA Positive transmit signal (+)
7	GND	Ground

NOTE: Availability of the SATA Ports will depend on the Qseven module used.

3.7 USB Topology

Eight USB ports are normally provided by the Qseven module.

The assignment of the ports is defined in the following table:

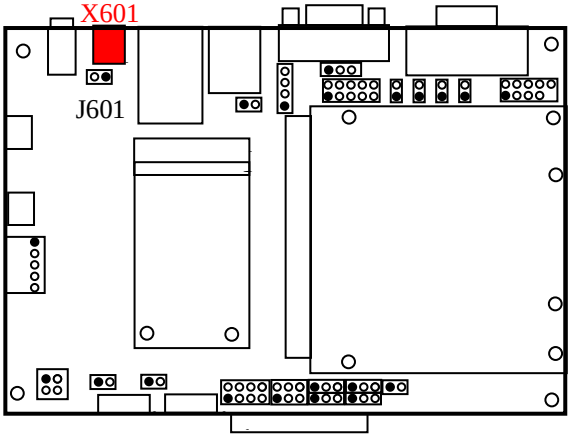
Table 9 Assignment USB Ports

Signal	Source	Target	Remark
USB[6]+ USB[6]-	Qseven connector USB6	X502	Mini PCIe Card
USB[1]+ USB[1]-	Qseven connector USB1	X601	Mini USB Client / Host
USB[2]+ USB[2]-	Qseven connector USB2	X602	Dual USB Connector
USB[3]+ USB[3]-	Qseven connector USB3	X602	Dual USB Connector
USB[4]+ USB[4]-	Qseven connector USB4	X701	RS232 COM Port
USB[5]+ USB[5]-	Qseven connector USB5	X1001/X1002	Touch controller
USB[0]+ USB[0]-	Qseven connector USB0	X603	On-board 10 Pin Header
USB[7]+ USB[7]-	Qseven connector USB7	X603	On-board 10 Pin Header

NOTE: Depending on the module used, not all ports may be available.

Also depending on the module used not all ports may be USB 1.1 compatible, some ports may be only USB 2.0 compliant. For example with current Q7-US15W-xx modules ports 6 & 7 are USB 2.0 only and will NOT work with USB 1.1 devices - e.g. Keyboard, Mouse, …

3.7.1 Mini USB Connector (X601)



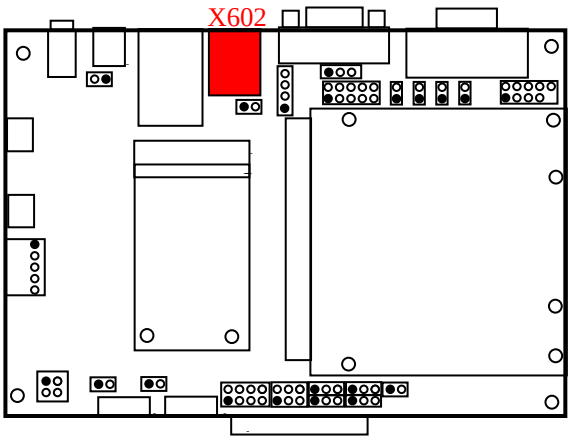
Specification:

- References: X601 Molex 67803-8020
- Mating: Mini USB-cable
- Pinout: according to USB specification 2.0 [7]

The Mini USB port can be configured as a client or host using jumper J601.

Function	J601
USB mini AB client	removed
USB mini AB host	inserted (default)

3.7.2 Dual USB Connector X602



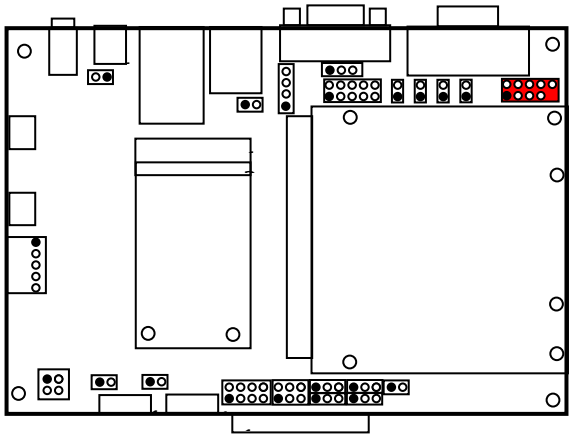
USB 3

USB 2

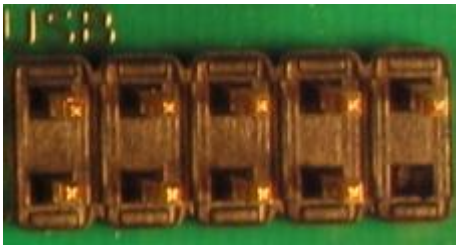
Specification:

- References: X602 Neltron 5075AR-08B-BK
- Mating: USB-A cable
- Pinout: according to USB specification 2.0 [7]

3.7.3 On-board 10 Pin USB-Connector (X603)



Pin 2 Pin 10



Pin 1

- References: X603 male connector 2x5pin pitch 2.54mm
- Mating female crimp-connector Reference FCI 65043-032

Table 10 Pin assignment of the Dual USB PIN-connector (X603)

Pin	Signal	Pin	Signal
1	USB_VCC6	2	USB_VCC7
3	USB_R0-	4	USB_R7-
5	USB_R0+	6	USB_R7+
7	GND	8	GND
9	No Pin	10	NC

With current Q7-US15W-xx modules port 7 are USB 2.0 only and will NOT work with USB 1.1 devices - e.g. Keyboard, Mouse, …

3.7.4 USB Power Supply

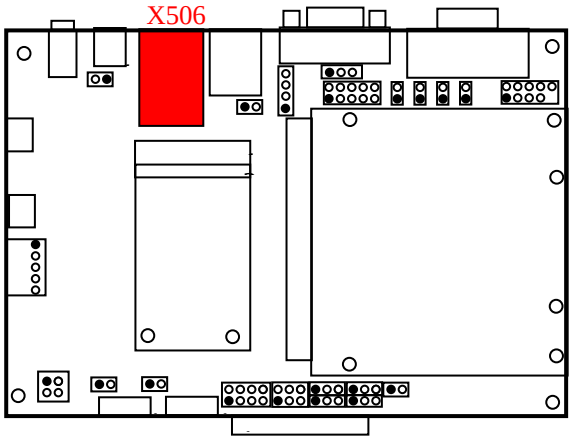
The power supplies are protected by USB power switches. In addition to that the input voltages of the USB power switches are protected by resettable fuses.

The USB power switches have the following features:

- The output current is limited to 500mA per port
- A signal to detect over-current is generated for each pair of ports
  - USB0 and USB1 have one common signal to detect over-current
  - USB2 and USB3 have one common signal to detect over-current
  - USB4 and USB5 have one common signal to detect over-current
  - USB6 and USB7 have one common signal to detect over-current

3.8 Ethernet (X506)

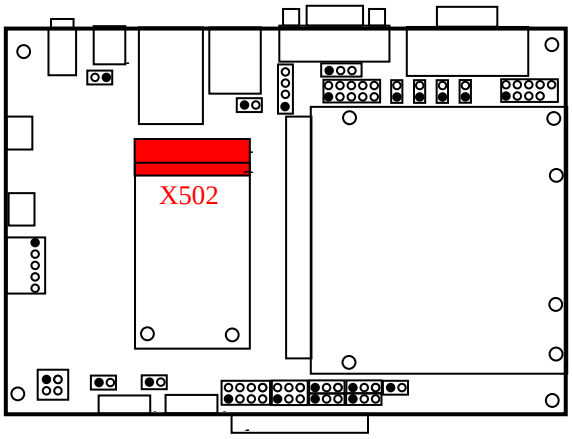
The MSC Q7-MB-EP1 can be connected to a local area network via a 10/100/1000 Base-T interface. A 1000Base-T transformer is assembled on the baseboard, hence the Qseven CPU module must support Gigabit Ethernet.

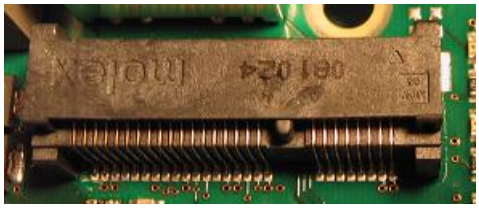


Specification:

- References: X506 Foxconn JMF3811E-2102-4F
- Pinout: Refer to IEEE Std. 802.3 [9, section three, page 225]

3.9 Mini PCIe Card (X502)





Use 2 standoffs M2x7 and 4 screws M2x4 for fixing the Mini PCIe Card

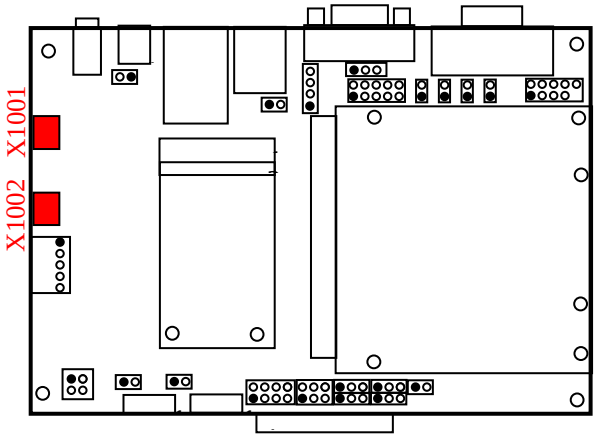
Specification:

- References: X502
- Pinout: Refer to Mini PCIe Card Specification [9]

3.10 Touch Interface – 4-wire (X1001, X1002)

A Resistive Touch Controller for 4-wire and 5-wire touch screens is integrated on the base board
The touch controller is the HS12-100S0O from Hampshire. The latest device drivers for the controller can be downloaded from www.msc-ge.com/support-boards

The X+, X- and Y+, Y- signals are connected to X1001, X1002 and X1003, so whichever connector is most convenient for the touch interface can be used.



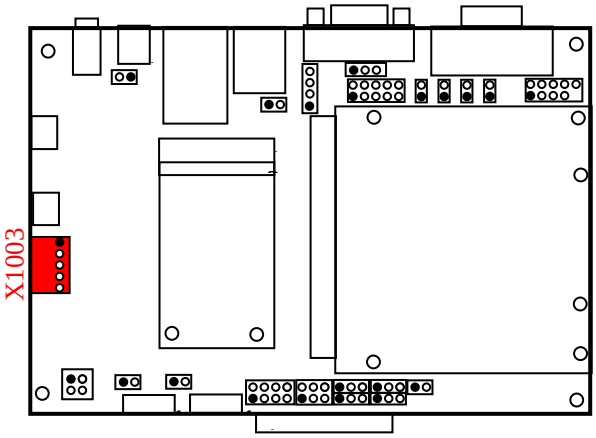
Specification:

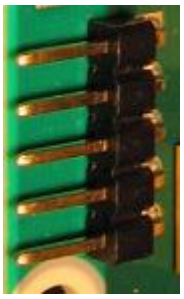
- References: X1001 (4-wire eTurbo-Touch pinning) Hirose FH12-10-4-SA-1SH
  X1002 (4-wire AUO-Touch pinning) Hirose FH12-10-4-SA-1SH
- Mating: X1001 & 1002 FPC/FCC pitch 0.5mm x 0.3mm

Table 11 Pinout 4-wire Touch (X1001, X1002)

X 1001 4-wire eTurbo-Touch		X1002 4-wire AUO-Touch	
Pin	**Signal**	**Pin**	**Signal**
1	Y+	1	X+
2	X-	2	Y+
3	Y-	3	X-
4	X+	4	Y-

3.11 Touch Interface – 5-wire (X1003)





- References: X1003 (5-wire) CAB 1006-141-005
- Mating: X1003 female crimp-connector Reference FCI 65039-032

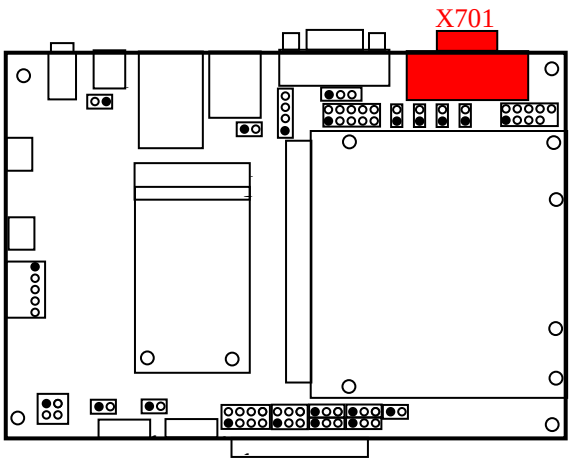
Table 12 Pinout 5-wire Touch (X1003)

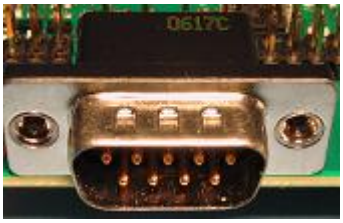
X 1003 5-wire eTurbo-Touch	
Pin	**Signal**
1	Y+ (Lower left)
2	X+ (Upper left)
3	5W (Top sheet)
4	X- (Lower right)
5	Y- (Upper right)

Please contact support.boards@msc-ge.com for assistance in finding appropriate displays with touch screen for your application requirements

3.12 RS-232 COM port (X701)

- RS232 standard
- RS232 transceiver ESD protected +/- 15kV
- EMC improvement by using EMI filters in the signal lines





Specification:

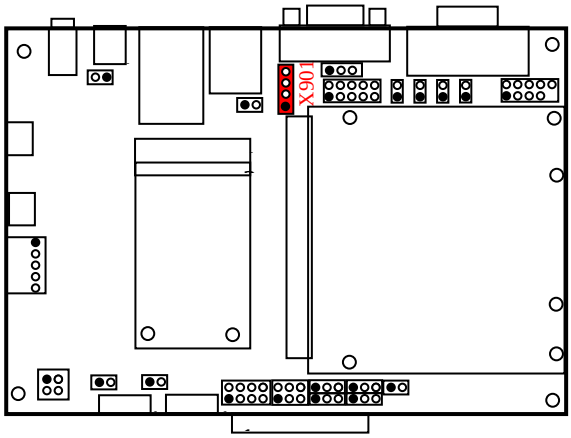
- References: X701 (COM1) Kycon K22X-E9P-N30
- Mating: Cable RS232 D-SUB 9pin female

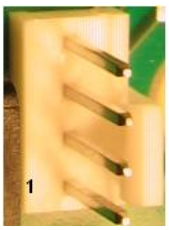
Table 13 Pinout COM1

Pin	Signal name	Function
1	DCD#	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR#	Data Terminal Ready
5	GND	Ground
6	DSR#	Data Set Ready
7	RTS#	Request To Send
8	CTS#	Clear To Send
9	RI#	Ring Indicator

3.13 Fan Interface (X901)

A PWM controlled fan interface is integrated on the baseboard.





Specification:

- References: X901 Molex 47053-1000
- Mating: Molex 047054-1000

Table 14 Pinout Fan Interface

Pin	Signal name	Function
1	GND	Ground
2	VCC	5V / 12V selectable via J905
3	TACHO	Tacho signal input
4	PWM	PWM signal output

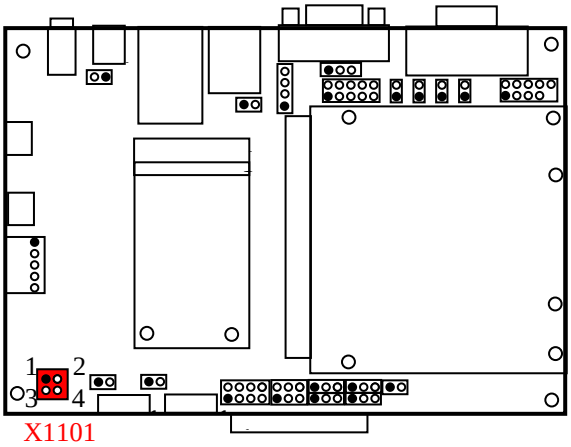
3.14 Power Connector (X1101)

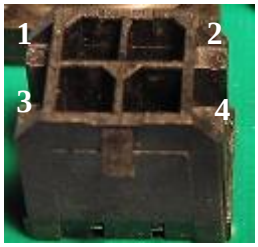
The Base Board provides a wide range Input Power Converter which supports input voltages from 10V up to 28V.

NOTE: Backlight inverters and LVDS Displays with 12V Input Voltage should only be supplied with power, if the Input Voltage is also 12V.

To enable 12V Power for the Display, set jumpers J1101, J801 and J802 accordingly.

NOTE: A wrongly configured jumper setting can damage the display and/or module.





Specification:

- References: X1101
- Connector: Molex 43045-0412

Table 15 Pinout Power Connector

Pin	Signal name	Function
1	GND	Ground
2	GND	Ground
3	VCC	10V - 28V
4	VCC	10V - 28V

3.15 Battery

The RTC and CMOS RAM on the Qseven module is buffered with a battery mounted in a socket on the Qseven Embedded Platform. (Reverse side)

Please use Duracell DL2032 or compatible batteries.

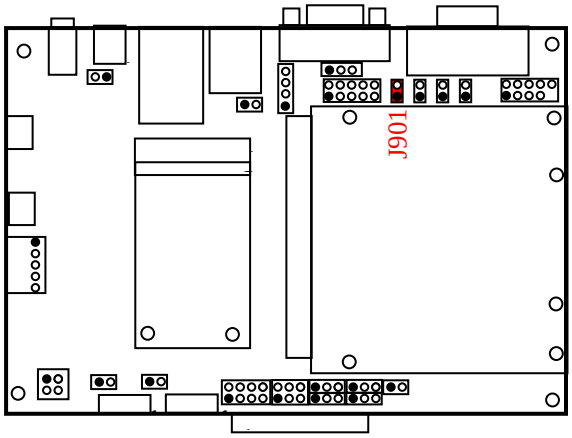
3.16 Beeper

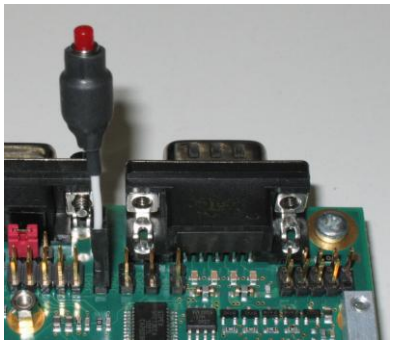
A piezo buzzer is implemented for acoustic warning signals.

3.17 System Reset Button (J901)

The Qseven Embedded Platform provides a Reset Button

The RESET# signal is low-active and is connected to the SYS_RESET# pin of the Qseven module.

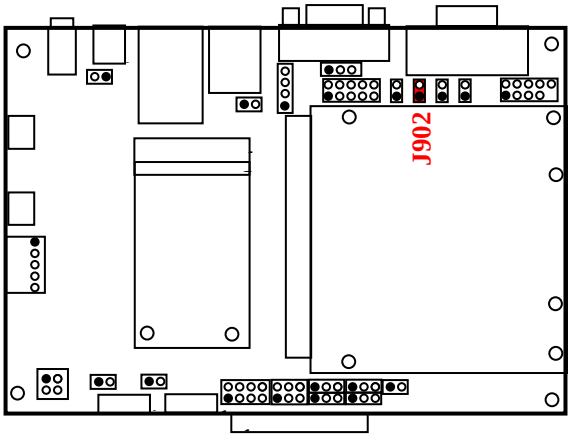


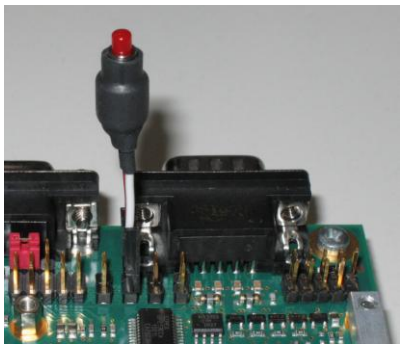


3.18 Sleep button (J902)

A sleep button can be connected to the pin header connector.

The SLP_BTN# signal is low-active and is connected directly to the corresponding pin of the Qseven module.

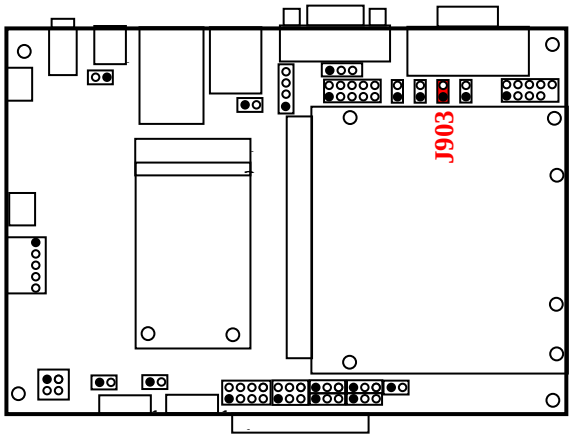


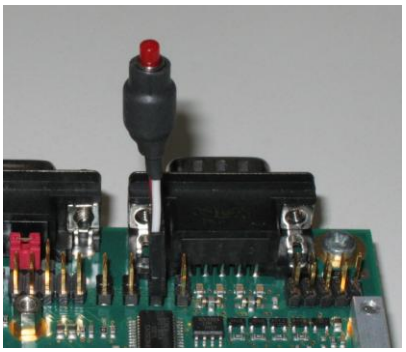


3.19 ATX power button (J903)

To control the system with a power button a switch may be connected to the pin header connector.

The PWR_BTN# signal is low-active and is connected directly to the corresponding pin of the Qseven module.

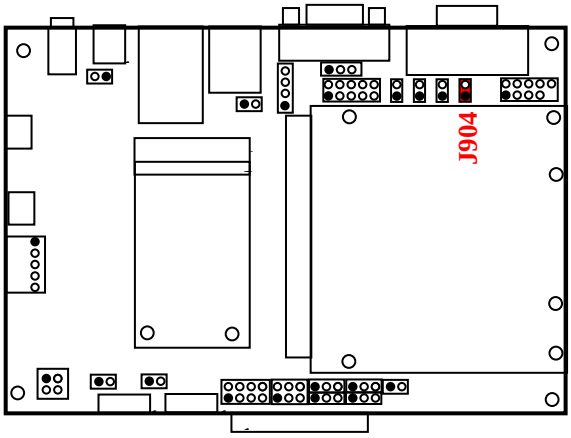


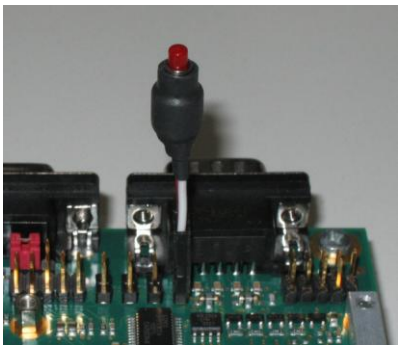


3.20 Lid Switch (J904)

To make use of the LID signal, a switch may be connected to the pin header connector.

The LID_BTN# signal is low-active and is connected directly to the corresponding pin of the Qseven module.

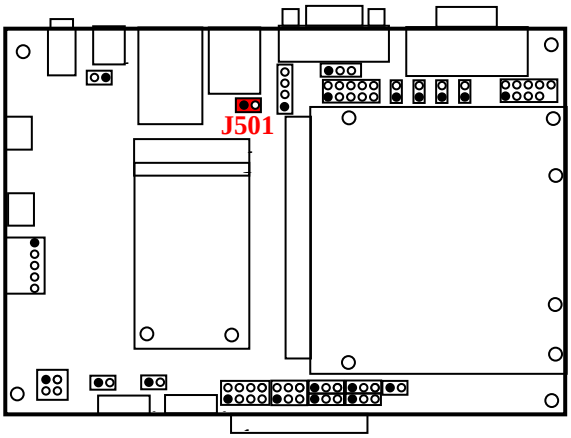




3.21 Jumper settings

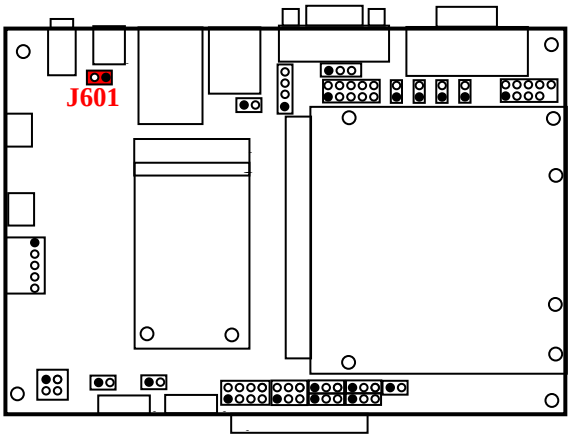
3.21.1 Wireless operation on Mini PCIe add-in cards (J501)

A jumper is provided to enable / disable wireless operation on the Mini PCIe card.



Function	J501
wireless operation enabled	removed (default)
wireless operation disabled	installed

3.21.2 USB mini AB control jumper (J601)

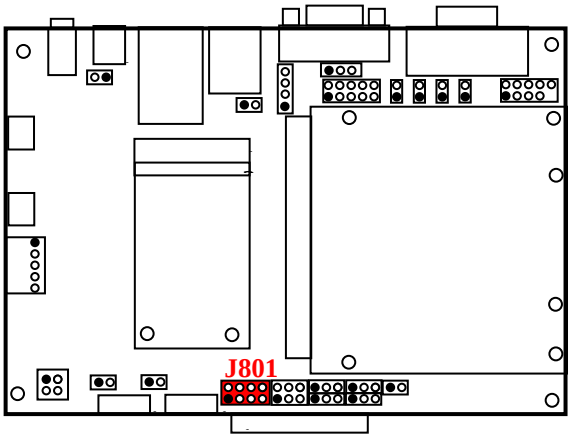


Function	J601
USB mini AB client	removed
USB mini AB host	installed (default)

3.21.3 Display power Jumper (J801)

The power supply voltage for the LCD panel (NOT the backlight) is selected using the jumper block J801. The software control of the LCD panel enable signal can be bypassed by inserting a jumper on pins 1-2.

NOTE: The 12V is derived directly from the input power (X1101) applied, so please ensure that the input power is really 12V when using the 12V selection.

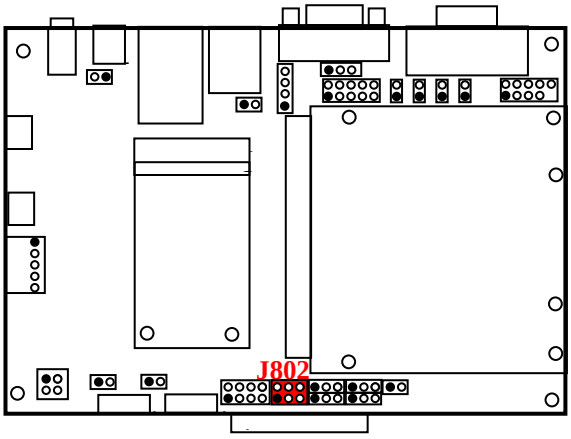


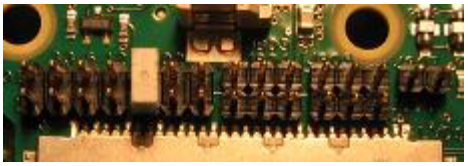
Function	J801 Pins
Power always on*	1-2
+3.3 V	3-4 (default)
+5.0 V	5-6
Power in (+12V)	7-8 **Warning : Only possible if J1101 closed and 12V main supply**

*Panel is no longer enabled by LVDS_VDD_EN# signal, but is permanently enabled if this jumper is installed.

3.21.4 Backlight power selection jumper (J802)

The backlight power for the inverter or LED driver is selected using J802.
NOTE: The 12V is derived directly from the input power (X1101) applied, please ensure that the input power is really 12V when using the 12V selection.

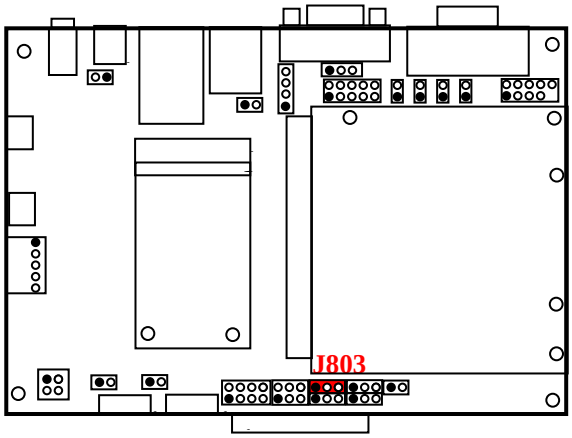




Voltage	J802 Pins to close
+3.3 V / 1A	1-2 (default)
+5.0 V / 1A	3-4
Power in (+12.0 V / 1A)	5-6 **Warning : Only possible if J1101 closed and 12V main supply**

3.21.5 Backlight Enable polarity selection jumper (J803)

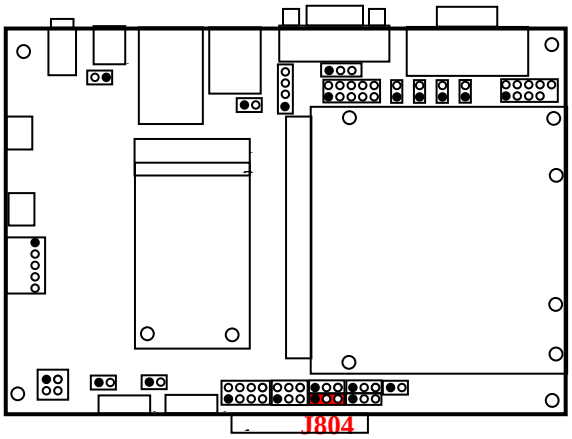
The polarity of the backlight enable signal (BLON) can be selected using J803.



Function	J803 Pins to close
BLON# (low active)	1-2 (default)
BLON (high active)	2-3

3.21.6 Backlight brightness peak voltage level jumper (J804)

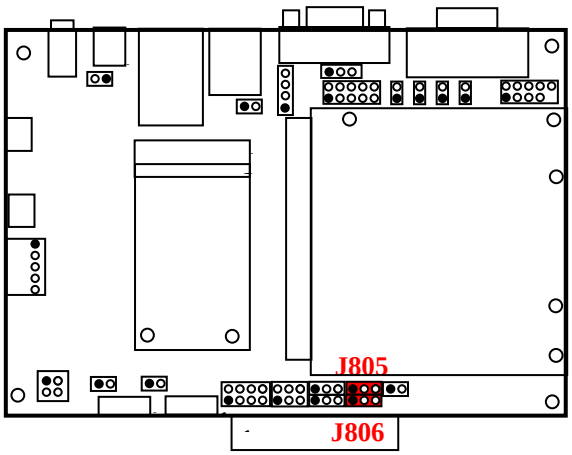
This jumper selects the voltage range for the signal level used for the brightness control. This signal can be either a PWM signal or an analog voltage level depending on the settings of J805 and J806. The voltage range can be either 3.3V or 5V



Function	J804 Pins to close
3.3V Peak level	1-2 (default)
5V Peak level	2-3

3.21.7 Backlight brightness control jumpers (J805/J806)

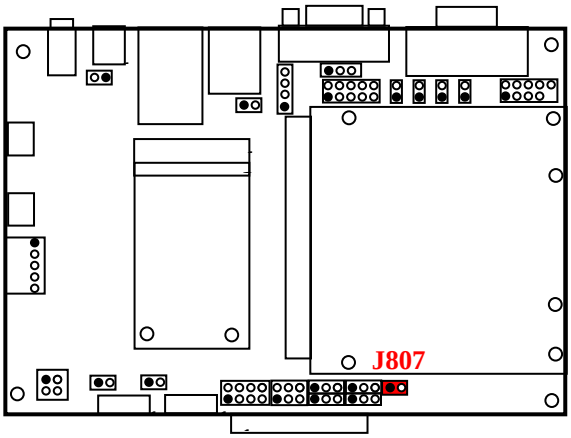
The jumpers J805 and J806 are used in combination to select the type of brightness control signal used for the LCD panel backlight inverter or LED driver. The signal coming from the Qseven module is typically a PWM signal. This signal can be passed through unmodified, or inverted. It can also be converted to an analog voltage level for backlights which do not use a PWM signal for brightness control.

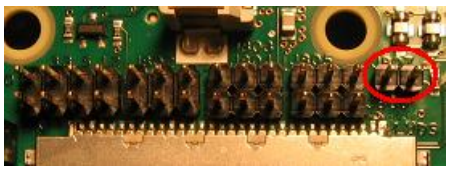


J805	J806	Output signal
1-2	1-2	Analog level based on inverted PWM signal
1-2	2-3	PWM signal (non-inverted) (default)
2-3	1-2	Analog level based on non-inverted PWM signal
2-3	2-3	PWM signal (inverted)

3.21.8 EDID EEPROM address select jumper (J807)

An EDID EEPROM is available on the baseboard in order to configure a customized setting for an LCD panel which is not available in the default BIOS LCD panel entries.

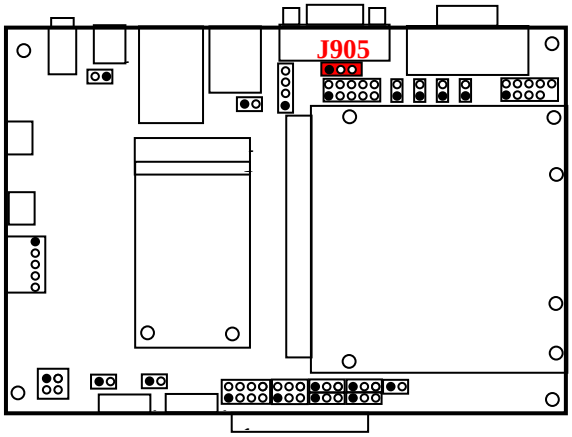


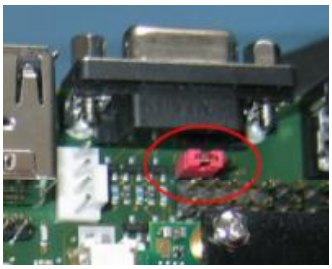


Function	J807
EDID EEPROM disabled	Removed (default)
EDID EEPROM enabled	Installed

3.21.9 Fan voltage selection jumper (J905)

The voltage level (5V or 12V) for the fan can be selected using this jumper.
NOTE: 12V is only available if the power source for the module is 12V and jumper J1101 is installed.

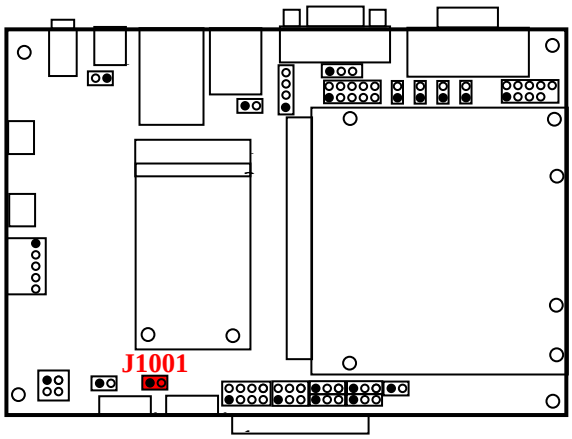




Function	J905
5V Fan voltage	1-2 (default)
12V Fan voltage	2-3

3.21.10 Touch control jumper (J1001)

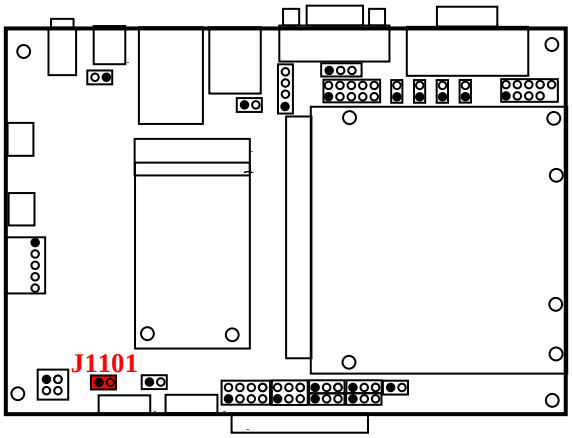
The touch controller interface can be switched between 4-wire and 5-wire using this jumper.



Function	J1001
5-wire enabled	removed
4-wire enabled	installed (default)

3.21.11 12V power routing jumper (J1101)

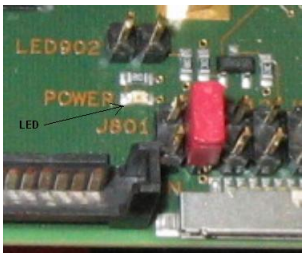
This jumper can be used to route the incoming power source directly to interfaces requiring 12V – and **SHOULD ONLY BE INSTALLED IF THE POWER SOURCE IS 12V.**



Function	J1101
VCC12V disabled	removed (default)
VCCIN routed to VCC12V	installed

NOTE: This jumper should only be installed if a 12V power source is used. A wrongly configured jumper setting can damage the display and/or module.

3.21.12 5V Power LED (LED901, LED902)



An on-board LED (LED901) indicates the presence of 5V Power on the board. A header connector (LED902) allows the connection of an external panel mounted LED to indicate the presence of 5V power.

NOTE: this LED is not an indicator as to whether the Module is turned on or not, it only indicates the presence of 5V on the Q7-MB-EP1 board.

3.22 Mini PCIe Card Status LEDs

The Q7-MP-EP1 has 3 LEDs to display the state of an add-in Mini PCIe card with wireless capabilities.

LED0501 WWAN LED

LED0502 WLAN LED

LED0503 WPAN LED