

Qseven[®] conga-MCB/Qseven

Short description of the congatec Qseven[®] mini carrier board



Short Description

Revision 1.0

Revision History

Revision	Date (dd.mm.yy)	Author	Changes
1.0	16.01.12	GDA	Official release

Preface

This short description provides information about the components, features and connectors available on the conga-MCB/Qseven mini carrier board.

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Lead-Free Designs (RoHS)

All congatec AG products are created from lead-free components and are completely RoHS compliant.

Symbols

The following symbols are used in this short description:



Warning

Warnings indicate conditions that, if not observed, can cause personal injury.



Caution

Cautions warn the user about how to prevent damage to hardware or loss of data.



Note

Notes call attention to important information that should be observed.



Connector Type

Describes the connector that must be used with the Qseven® mini carrier board, not the connector found on the Qseven® mini carrier board.



Link to connector layout diagram

This link icon is located in the top left corner of each page. It provides a direct link to the connector layout diagram on page 8 of this document.

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Terminology

Term	Description
PCI Express (PCIe)	Peripheral Component Interface Express – next-generation high speed Serialized I/O bus
ExpressCard	A PCMCIA standard built on the latest USB 2.0 and PCI Express buses.
PCI Express Mini Card	PCI Express Mini Card add-in card is a small size unique form factor optimized for mobile computing platforms.
MMCplus	MMCplus was defined for first time in MMC System Specification v4.0. MMCplus is backward compatible with MMC. MMCplus has 13 pins.
SDIO card	SDIO (Secure Digital Input Output) is a non-volatile memory card format developed for use in portable devices.
USB	Universal Serial Bus
SATA	Serial AT Attachment: serial-interface standard for hard disks
HDA	High Definition Audio
S/PDIF	S/PDIF (Sony/Philips Digital Interconnect Format) specifies a Data Link Layer protocol and choice of Physical Layer specifications for carrying digital audio signals between devices and stereo components.
HDMI	High Definition Multimedia Interface. HDMI supports standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable.
TMDS	Transition Minimized Differential Signaling. TMDS is a signaling interface defined by Silicon Image that is used for DVI and HDMI.
DVI	Digital Visual Interface is a video interface standard developed by the Digital Display Working Group (DDWG).
LPC	Low Pin-Count: a low speed interface used for peripheral circuits such as Super I/O controllers, which typically combine legacy device support into a single IC.
I ² C Bus	Inter-Integrated Circuit Bus: is a simple two-wire bus with a software-defined protocol that was developed to provide the communications link between integrated circuits in a system.
SM Bus	System Management Bus: is a popular derivative of the I ² C-bus.
SPI Bus	Serial Peripheral Interface is a synchronous serial data link standard named by Motorola that operates in full duplex mode.
CAN Bus	Controller-area network is a vehicle bus standard.
GBE	Gigabit Ethernet
LVDS	Low-Voltage Differential Signaling
SDVO	Serial Digital Video Out is a proprietary technology introduced by Intel® to add additional video signaling interfaces to a system.
DDC	Display Data Channel is an I ² C bus interface between a display and a graphics adapter.
N.C.	Not connected
N.A.	Not available
T.B.D.	To be determined

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Electrostatic Sensitive Device



All electronic parts described in this short description are electrostatic sensitive devices and are packaged accordingly. Do not open or handle a carrier board or module except at an electrostatic-free workstation. Additionally, do not ship or store electronic devices near strong electrostatic, electromagnetic, magnetic, or radioactive fields unless the device is contained within its original manufacturer's packaging.

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1 Introduction

The conga-MCB/Qseven is a Qseven® module mini carrier board. It has an industrial 5 pin power connector with an input voltage allowance from 9V up to 20V, as well as 5V STB and therefore can be used as a stand-alone carrier board for Qseven® modules. It's also possible to use the conga-MCB/Qseven as a small evaluation platform for your battery supported application using Qseven® modules or it can be directly integrated into an application.

conga-MCB/Qseven Features

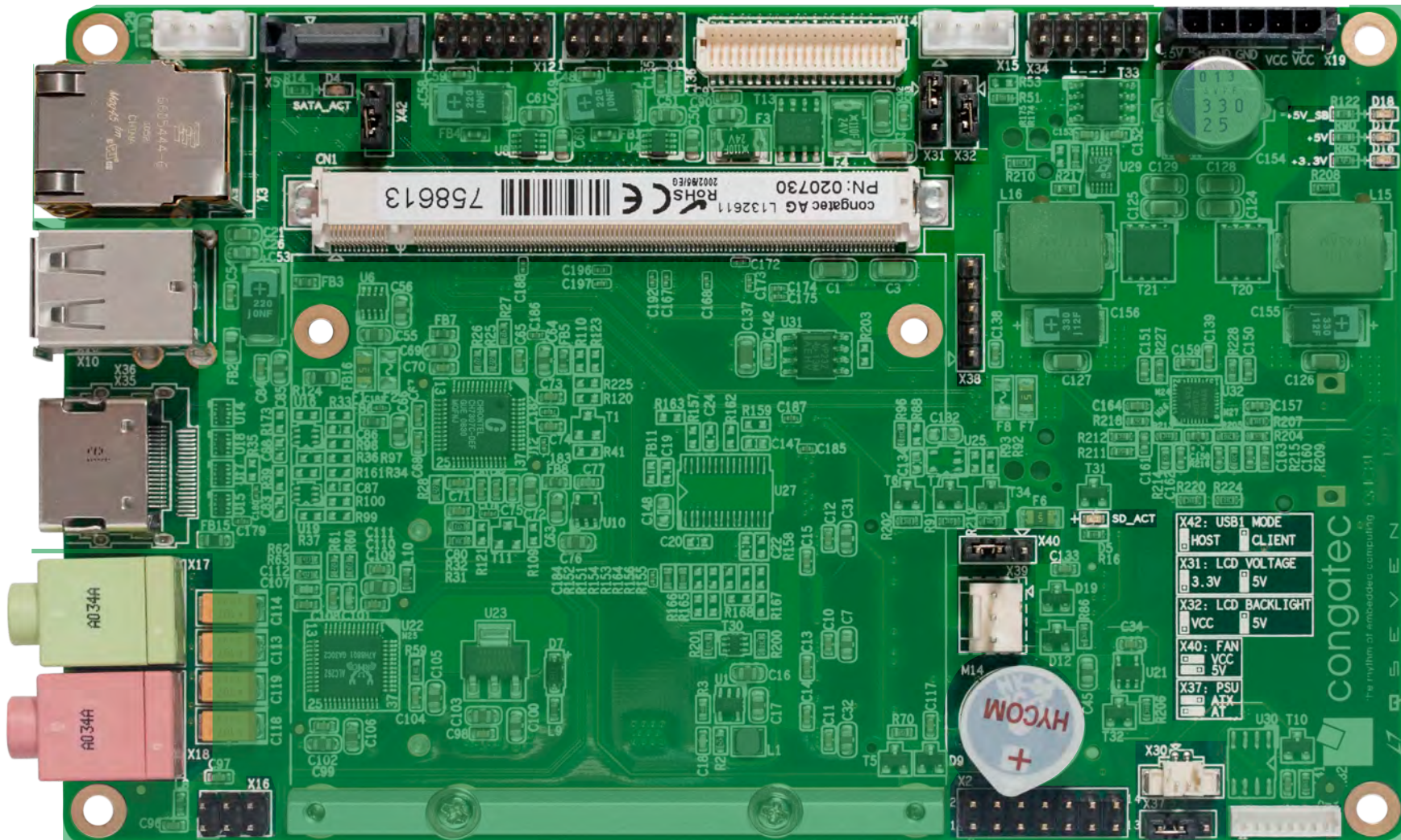
Qseven® Specification rev. 1.20 compliant
1x PCI Express mini Card socket specification rev. 1.2 (bottom side)
Gigabit Ethernet connector with LEDs on front panel
1x CFast socket or 1x horizontal SATA connector (bottom side)
1x vertical SATA connector + 1x power JST PH header
1x 8bit SD Card socket (bottom side)
2x USB on front panel, 4x USB on 2 internal 2x5 pin 2.54 USB headers
1x HDMI or DisplayPort connector on front panel (output is module dependent)
LVDS – Single/Dual 18/24bits 40pins 1mm Hirose connector and 4pins Backlight JST PH connector.
Audio – 2x 3.5" Jack on front panel; 2x3pins 2.54 SPDIF I/O internal header
1x SPI on 2x5 pin 2.54 header
1x CAN on 5 pin connector
PC Beep Speaker
APIX2 extension on 45 pin 0.5mm FFC connector as option
FAN – 1x controlled standard 3 pin FAN connector
5 pin power connector for wide input voltage range, 8 pin connector for conga battery module, 2 pin connector for control of an ATX power supply unit.
Feature connector for Power, Reset, Sleep, and LID button, LED indicators, mini card Wifi radio On/Off



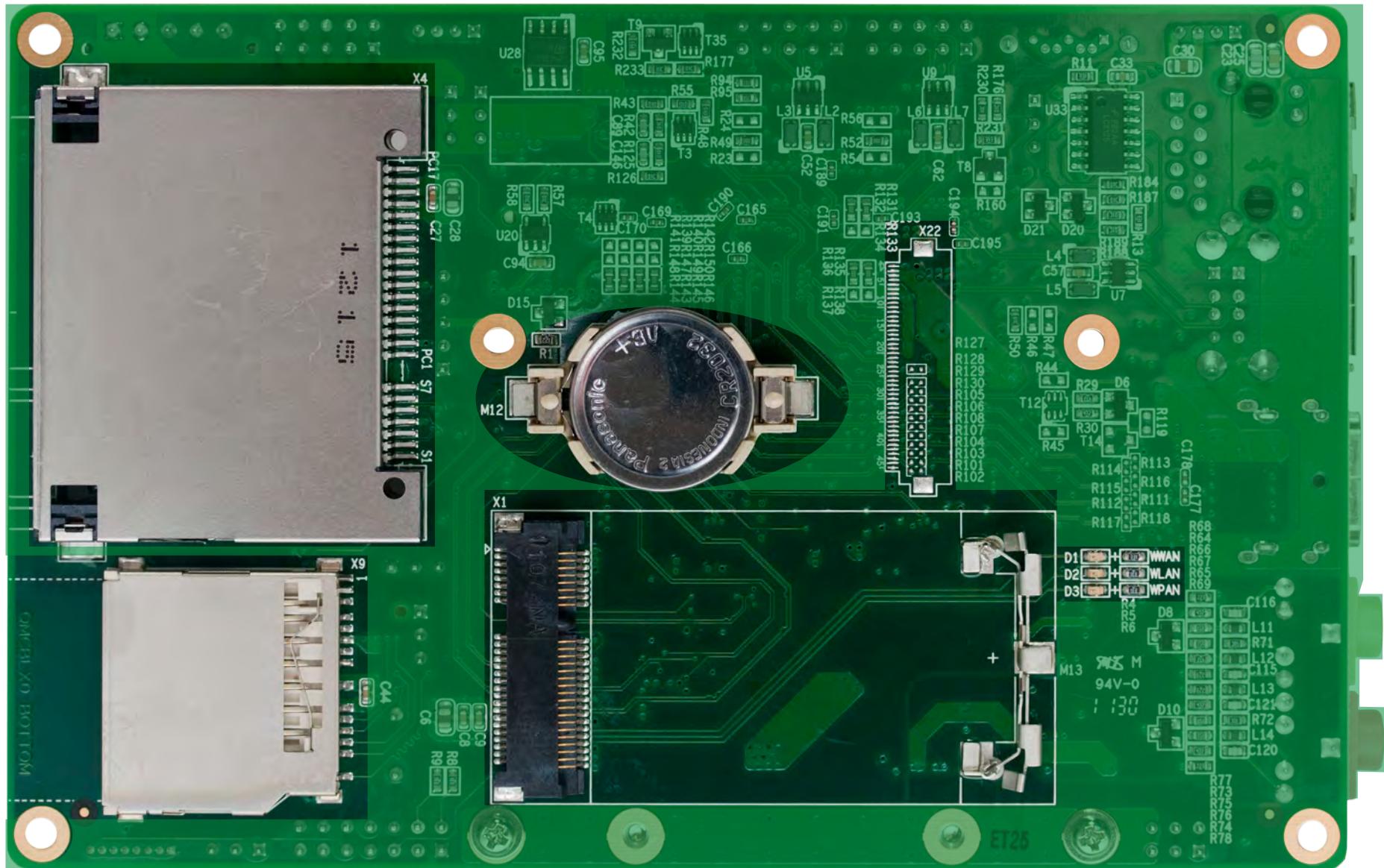
Information about the cables required to operate the conga-MCB/Qseven mini carrier board can be found in section 6 "Cables" of this document.

2 Connector Layout

The connector layout picture below shows each connector and its name designator. Jumpers and their respective Pin 1 are also shown. Select the Adobe 'Zoom-In-Tool' and zoom in on a given component to see its designator. Hover over the component and the 'Zoom-In-Tool' will change indicating there is a link. Click on the link to navigate to the area in the document where the component is described. Use the mouse icon in the top left hand corner of the destination page to return to the connector layout pictures.



Bottom Side conga-MCB/Qseven



3 Specifications

3.1 Mechanical Dimensions

- 95mm x 145mm
- Height approximately 17mm (top side)
- Height approximately 6mm (bottom side)

3.2 Environmental Specifications

Temperature	Operation: 0° to 60°C	Storage: -20° to +80°C
Humidity	Operation: 10% to 90%	Storage: 5% to 95%



Note

The above operating temperatures must be strictly adhered to at all times. The maximum operating temperature refers to any measurable spot on the modules surface.

Humidity specifications are for non-condensing conditions.



4 Connector Descriptions

The following tables describe the pin assignments for the connectors found on the conga-MCB/Qseven.

4.1 Connector CN1 Pinout

Pin	Signal	Description	Pin	Signal	Description
1	GND	Power Ground	2	GND	Power Ground
3	GBE_MDI3-	Gigabit Ethernet MDI3-	4	GBE_MDI2-	Gigabit Ethernet MDI2-
5	GBE_MDI3+	Gigabit Ethernet MDI3+	6	GBE_MDI2+	Gigabit Ethernet MDI2+
7	GBE_LINK100#	100 Mbps link speed	8	GBE_LINK1000#	1000 Mbps link speed
9	GBE_MDI1-	Gigabit Ethernet MDI1-	10	GBE_MDI0-	Gigabit Ethernet MDI0-
11	GBE_MDI1+	Gigabit Ethernet MDI1+	12	GBE_MDI0+	Gigabit Ethernet MDI0+
13	GBE_LINK#	Gigabit Ethernet Link indicator	14	GBE_ACT#	Gigabit Ethernet Activity indicator
15	GBE_CTREF	Reference voltage for GBE	16	SUS_S5#	S5 (Soft OFF) – shutdown state
17	WAKE#	External system wake event	18	SUS_S3#	S3 (Suspend to RAM) – SLP
19	SUS_STAT#	Suspend status	20	PWRBTN#	Power button
21	SLP_BTN#	Sleep button	22	LID_BTN#	LID button
23	GND	Power Ground	24	GND	Power Ground
Key					
25	GND	Power Ground	26	PWGIN	Power good input
27	BATLOW#	Battery low input	28	RSTBTN#	Reset button input
29	SATA0_TX+	Serial ATA Channel 0 TX+	30	SATA1_TX+	Serial ATA Channel 1 TX+
31	SATA0_TX-	Serial ATA Channel 0 TX-	32	SATA1_TX-	Serial ATA Channel 1 TX-
33	SATA_ACT#	Serial ATA Activity	34	GND	Power Ground
35	SATA0_RX+	Serial ATA Channel 0 RX+	36	SATA1_RX+	Serial ATA Channel 1 RX+
37	SATA0_RX-	Serial ATA Channel 0 RX-	38	SATA1_RX-	Serial ATA Channel 1 RX-
39	GND	Power Ground	40	GND	Power Ground
41	BIOS_DISABLE# /BOOT_ALT#	BIOS Module disable Boot Alternative Enable	42	SDIO_CLK	SDIO Clock Output
43	SDIO_CD#	SDIO Card Detect	44	SDIO_LED	SDIO LED
45	SDIO_CMD	SDIO Command/Response	46	SDIO_WP	SDIO Write Protect
47	SDIO_PWR#	SDIO Power Enable	48	SDIO_DAT1	SDIO Data Line 1
49	SDIO_DAT0	SDIO Data Line 0	50	SDIO_DAT3	SDIO Data Line 3
51	SDIO_DAT2	SDIO Data Line 2	52	SDIO_DAT5	SDIO Data Line 5
53	SDIO_DAT4	SDIO Data Line 4	54	SDIO_DAT7	SDIO Data Line 7
55	SDIO_DAT6	SDIO Data Line 6	56	RESERVED	
57	GND	Power Ground	58	GND	Power Ground
59	HDA_SYNC	HD Audio/AC'97 Synchronization	60	SMB_CLK	SMBus Clock line



Pin	Signal	Description	Pin	Signal	Description
61	HDA_RST#	HD Audio/AC'97 Codec Reset	62	SMB_DAT	SMBus Data line
63	HDA_BITCLK	HD Audio/AC'97 Serial Bit Clock	64	SMB_ALERT#	SMBus Alert input
65	HDA_SDI	HD Audio/AC'97 Serial Data In	66	I2C_CLK	I2C Bus Clock
67	HDA_SDO	HD Audio/AC'97 Serial Data Out	68	I2C_DAT	I2C Bus Data
69	THRM#	Thermal Alarm active low	70	WDTRIG#	Watchdog trigger signal
71	THRMTRIP#	Thermal Trip indicates an overheating condition	72	WDOUT	Watchdog event indicator
73	GND	Power Ground	74	GND	Power Ground
75	USB_P7-	USB Port 7 Differential Pair-	76	USB_P6-	USB Port 6 Differential Pair-
77	USB_P7+	USB Port 7 Differential Pair+	78	USB_P6+	USB Port 6 Differential Pair+
79	USB_6_7_OC#	Over current detect input 6/7 USB	80	USB_4_5_OC#	Over current detect input 4/5 USB
81	USB_P5-	USB Port 5 Differential Pair-	82	USB_P4-	USB Port 4 Differential Pair-
83	USB_P5+	USB Port 5 Differential Pair+	84	USB_P4+	USB Port 4 Differential Pair+
85	USB_2_3_OC#	Over current detect input 2/3 USB	86	USB_0_1_OC#	Over current detect input 0/1 USB
87	USB_P3-	USB Port 3 Differential Pair-	88	USB_P2-	USB Port 2 Differential Pair-
89	USB_P3+	USB Port 3 Differential Pair+	90	USB_P2+	USB Port 2 Differential Pair+
91	USB_CC	USB Client present detect pin	92	USB_ID	USB ID pin
93	USB_P1-	USB Port 1 Differential Pair-	94	USB_P0-	USB Port 0 Differential Pair-
95	USB_P1+	USB Port 1 Differential Pair+	96	USB_P0+	USB Port 0 Differential Pair+
97	GND	Power Ground	98	GND	Power Ground
99	LVDS_A0+	LVDS Primary channel 0+	100	LVDS_B0+	LVDS Secondary channel 0+
101	LVDS_A0-	LVDS Primary channel 0-	102	LVDS_B0-	LVDS Secondary channel 0-
103	LVDS_A1+	LVDS Primary channel 1+	104	LVDS_B1+	LVDS Secondary channel 1+
105	LVDS_A1-	LVDS Primary channel 1-	106	LVDS_B1-	LVDS Secondary channel 1-
107	LVDS_A2+	LVDS Primary channel 2+	108	LVDS_B2+	LVDS Secondary channel 2+
109	LVDS_A2-	LVDS Primary channel 2-	110	LVDS_B2-	LVDS Secondary channel 2-
111	LVDS_PPEN	LVDS Power enable	112	LVDS_BLEN	LVDS Backlight enable
113	LVDS_A3+	LVDS Primary channel 3+	114	LVDS_B3+	LVDS Secondary channel 3+
115	LVDS_A3-	LVDS Primary channel 3-	116	LVDS_B3-	LVDS Secondary channel 3-
117	GND	Power Ground	118	GND	Power Ground
119	LVDS_A_CLK+	LVDS Primary channel CLK+	120	LVDS_B_CLK+	LVDS Secondary channel CLK+
121	LVDS_A_CLK-	LVDS Primary channel CLK-	122	LVDS_B_CLK-	LVDS Secondary channel CLK-
123	LVDS_BLT_CTRL /GP_PWM_OUT0	PWM Backlight brightness General Purpose PWM Output	124	RESERVED	
125	LVDS_DID_DAT /GP_I2C_DAT	DDC Display ID Data line General Purpose I2C Data line	126	LVDS_BLC_DAT	SSC clock chip data line
127	LVDS_DID_CLK //GP_I2C_CLK	DDC Display ID Clock line General Purpose I2C Clock line	128	LVDS_BLC_CLK	SSC clock chip clock line
129	CAN0_TX	CAN TX Output for CAN Bus Channel 0	130	CAN0_RX	CAN RX Input for CAN Bus Channel 0
131	SDVO_BCLK+	SDVO Clock line+	132	SDVO_INT+	SDVO Interrupt line+
133	SDVO_BCLK-	SDVO Clock line-	134	SDVO_INT-	SDVO Interrupt line-
135	GND	Power Ground	136	GND	Power Ground



Pin	Signal	Description	Pin	Signal	Description
137	SDVO_GREEN+	SDVO Green line+	138	SDVO_FLDSTALL+	SDVO Field stall line+
139	SDVO_GREEN-	SDVO Green line-	140	SDVO_FLDSTALL-	SDVO Field stall line-
141	GND	Power Ground	142	GND	Power Ground
143	SDVO_BLUE+	SDVO Blue line+	144	SDVO_TVCLKIN+	SDVO TV-Out line+
145	SDVO_BLUE-	SDVO Blue line-	146	SDVO_TVCLKIN-	SDVO TV-Out line-
147	GND	Power Ground	148	GND	Power Ground
149	SDVO_RED+	SDVO Red line+	150	SDVO_CTRL_DAT	I2C based control clock for SDVO
151	SDVO_RED-	SDVO Red line-	152	SDVO_CTRL_CLK	I2C based control data for SDVO
153	HDMI_HPD#	Hot plug detection for HDMI	154	DP_HPD#	Hot plug detection for Display port
155	PCIE_CLK_REF+	PCI Express Reference Clock+	156	PCIE_WAKE#	PCI Express Wake event
157	PCIE_CLK_REF-	PCI Express Reference Clock-	158	PCIE_RST#	Reset Signal for external devices
159	GND	Power Ground	160	GND	Power Ground
161	PCIE3_TX+	PCI Express Channel 3 Output+	162	PCIE3_RX+	PCI Express Channel 3 Input+
163	PCIE3_TX-	PCI Express Channel 3 Output-	164	PCIE3_RX-	PCI Express Channel 3 Input-
165	GND	Power Ground	166	GND	Power Ground
167	PCIE2_TX+	PCI Express Channel 2 Output+	168	PCIE2_RX+	PCI Express Channel 2 Input+
169	PCIE2_TX-	PCI Express Channel 2 Output-	170	PCIE2_RX-	PCI Express Channel 2 Input-
171	EXCD0_PERST#	Express Card slot#0 reset	172	EXCD1_PERST#	Express Card slot#1 reset
173	PCIE1_TX+	PCI Express Channel 1 Output+	174	PCIE1_RX+	PCI Express Channel 1 Input+
175	PCIE1_TX-	PCI Express Channel 1 Output-	176	PCIE1_RX-	PCI Express Channel 1 Input-
177	EXCD0_CPPE#	Express Card slot#0 Capable/Req	178	EXCD1_CPPE#	Express Card slot#0 Capable/Req
179	PCIE0_TX+	PCI Express Channel 0 Output+	180	PCIE0_RX+	PCI Express Channel 0 Input+
181	PCIE0_TX-	PCI Express Channel 0 Output-	182	PCIE0_RX-	PCI Express Channel 0 Input-
183	GND	Power Ground	184	GND	Power Ground
185	LPC_AD0	LPC Interface Address/Data 0	186	LPC_AD1	LPC Interface Address/Data 1
187	LPC_AD2	LPC Interface Address/Data 0	188	LPC_AD3	LPC Interface Address/Data 3
189	LPC_CLK	LPC Interface Clock	190	LPC_FRAME#	LPC frame indicator
191	SERIRQ	Serialized interrupt	192	LPC_LDRQ#	LPC DMA request
193	VCC_RTC	3V backup cell input	194	SPKR /GP_PWM_OUT2	Output for audio enunciator General Purpose PWM Output
195	FAN_TACHOIN /GP_TIMER_IN	Fan tachometer input General Purpose Timer In	196	FAN_PWMOUT /GP_PWM_OUT1	Fan speed control (PWM) General Purpose PWM Output
197	GND	Power Ground	198	GND	Power Ground
199	SPI_MOSI	SPI Master serial output/Slave serial input	200	SPI_CS0#	SPI Chip Select 0 Output
201	SPI_MISO	SPI Master serial input/Slave serial output signal	202	SPI_CS1#	SPI Chip Select 1 Output
203	SPI_SCK	SPI Clock Output	204	MFG_NC4	Do not connect on carrier board
205	VCC_5V_SB	+5VDC,Standby $\pm 5\%$	206	VCC_5V_SB	+5VDC Standby $\pm 5\%$
207	MFG_NC0	Do not connect on carrier board	208	MFG_NC2	Do not connect on carrier board
209	MFG_NC1	Do not connect on carrier board	210	MFG_NC3	Do not connect on carrier board
211	VCC	Power supply +5VDC $\pm 5\%$	212	VCC	Power supply +5VDC $\pm 5\%$
213	VCC	Power supply +5VDC $\pm 5\%$	214	VCC	Power supply +5VDC $\pm 5\%$



Pin	Signal	Description	Pin	Signal	Description
215	VCC	Power supply +5VDC $\pm 5\%$	216	VCC	Power supply +5VDC $\pm 5\%$
217	VCC	Power supply +5VDC $\pm 5\%$	218	VCC	Power supply +5VDC $\pm 5\%$
219	VCC	Power supply +5VDC $\pm 5\%$	220	VCC	Power supply +5VDC $\pm 5\%$
221	VCC	Power supply +5VDC $\pm 5\%$	222	VCC	Power supply +5VDC $\pm 5\%$
223	VCC	Power supply +5VDC $\pm 5\%$	224	VCC	Power supply +5VDC $\pm 5\%$
225	VCC	Power supply +5VDC $\pm 5\%$	226	VCC	Power supply +5VDC $\pm 5\%$
227	VCC	Power supply +5VDC $\pm 5\%$	228	VCC	Power supply +5VDC $\pm 5\%$
229	VCC	Power supply +5VDC $\pm 5\%$	230	VCC	Power supply +5VDC $\pm 5\%$



4.2 Connector X1 PCIe Mini Card Socket

The conga-MCB/Qseven is equipped with a PCI Express Mini Card socket. PCI Express Mini Card is a unique small size form factor optimized for mobile computing platforms equipped with communication applications such as Wireless LAN. Connector X1 on the bottom side of the conga-MCB/Qseven provides an interface to insert a standard PCIe Mini Card. The signal to Enable/Disable Wi-Fi Radio is made available on the X2 feature connector (pin 5) to control Wi-Fi Radio (when Wi-Fi card is inserted into slot X1).



Connector Type

Standard PCIe Mini Card, 52 pos.



4.3 Connector X2 Feature Header LEDs/Buttons

Connector X2 provides an interface to connect LED indicators, buttons and a signal to Enable/Disable Wi-Fi Radio (when Wi-Fi card is inserted into slot X1).

Pin	Signal	Pin	Signal
1	GND (PWR_LED Cathode)	2	PWR_LED Anode
3	HDD_LED Cathode	4	HDD_LED Anode
5	PCIe Mini Card WiFi Dis#	6	GND
7	Reset Button	8	GND
9	Power Button	10	GND
11	Sleep Button	12	GND
13	LID Button	14	GND

Feature Connector (X2)



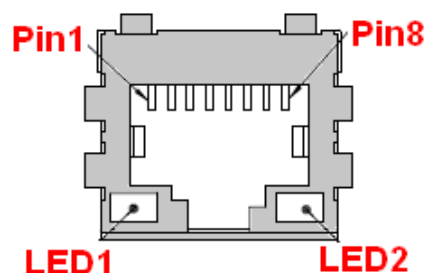
Connector Type

2.54mm Pitch Female Crimp Housing 2 Pos. (female) Harwin P/N: M20-1060200 and jumper (for WiFi Radio disable).

4.4 Connector X3 LAN

The conga-MCB/Qseven is equipped with a RJ45 connector with integrated magnetics to support Gigabit Ethernet on the X3 connector. Additionally, “Link” and “Activity” LED indicators are integrated within the LAN connector.

Pin	Signal
1	GbE MDI0P
2	GbE MDI0N
3	GbE MDI1P
4	GbE MDI2P
5	GbE MDI2N
6	GbE MDI1N
7	GbE MDI3P
8	GbE MDI3N



Action	Description
LED 1 Green lit	Link
LED 1 Green blinking	Activity
LED 2 Green lit	Link 100Mbit
LED 2 Yellow lit	Link 1 Gbit

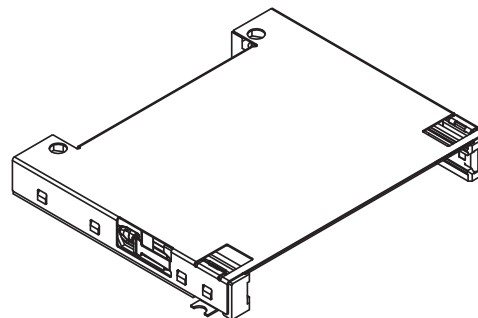
Connector Type

Standard Patch cable with 8pin RJ45 connector (male).



4.5 Connector X4 CFast Host Type II Push-Push

A CFast socket Type II is implemented on the bottom side of conga-MCB/Qseven to provide support for the new media based on Serial ATA interface. It is connected to Serial ATA channel 0 that originates from Qseven® module.

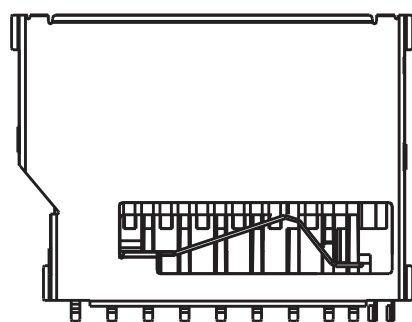


Connector Type

Standard CFast media Type I or Type II.

4.6 Connector X9 SD/MMC 4.0 Card Socket

The X9 socket on bottom side of the conga-MCB/Qseven offers an interface for SD Card, SDHC Card and MMC Plus card media.

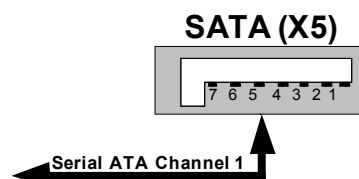




4.7 Connector X5 SATA

The conga-MCB/Qseven features one standard SATA connector X5 (Serial ATA channel 1), which originates from the Qseven® module. An optional second SATA connector can be fitted instead of connector X4 (CFast socket).

Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



Connector Type

1.27mm Pitch Standard SATA Connector 7 Pos. (plug).

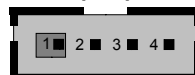


4.8 Connector X6 Power Supply

The X6 connector is dedicated for supplying main power (for example to a 2.5' SATA hard disk drive or other external devices requiring +5V and/or +3.3V). 12V is not supported and therefore 3.5' SATA hard drives will not work.

Pin	Signal
1	+3.3V (max 1A)
2	GND
3	GND
4	+5V (max 1A)

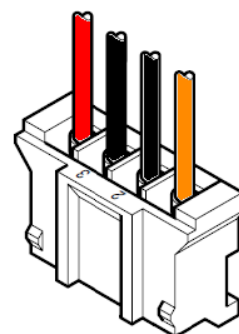
**Main Power
(X6)**



Connector Type

2.00mm Pitch Housing connector 4 Pos. (female) JST P/N: PHR-4.

See section 6 of this document for information about this cable.

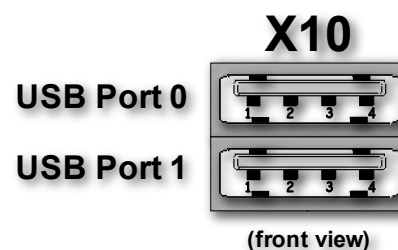




4.9 Connector X10 Dual USB 2.0

The conga-MCB/Qseven features a Dual USB connector (X10) that is connected to USB port 2 and USB port 3, which originate from the Qseven® module. Support for USB 2.0 and/or 1.1 devices is dependent on the Qseven® module used.

Pin	Signal
1	+5V
2	DATA-
3	DATA+
4	GND



4.10 Connector X11, X12 USB 2.0 Headers

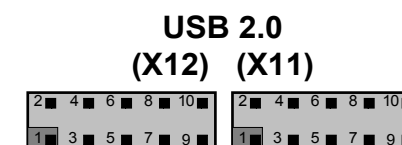
Additional USB 2.0 ports are available on the conga-MCB/Qseven via pin header connectors (X11, X12). X11 provides a connection to USB port 0 and 1 while X12 provides a connection to USB port 4 and 5. All of the above mentioned USB ports originate from Qseven® module. Support for USB 2.0 and/or 1.1 devices is dependent on the Qseven® module used.

USB 2.0 Pin Header X11

Pin	Signal	Pin	Signal
1	+5V (USB0)	2	+5V (USB1)
3	DATA - (USB0)	4	DATA - (USB1)
5	DATA + (USB0)	6	DATA + (USB1)
7	GND (USB0)	8	GND (USB1)
9	NC	10	USB CLIENT DETECT

USB 2.0 Pin Header X12

Pin	Signal	Pin	Signal
1	+5V (USB4)	2	+5V (USB5)
3	DATA - (USB4)	4	DATA - (USB5)
5	DATA + (USB4)	6	DATA + (USB5)
7	GND (USB4)	8	GND (USB5)
9	NC	10	NC



Connector Type

2.54mm Pitch Housing 5 Pos. (female) Harwin P/N: M20-1060500 or 2.54mm Pitch Housing 10 Pos. (dual row, female) Harwin P/N: M20-1070500.

See section 6 of this document for information about this cable.

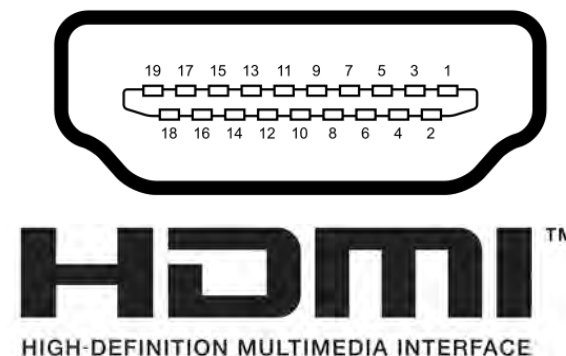




4.11 Connector X35 HDMI / X36 DisplayPort

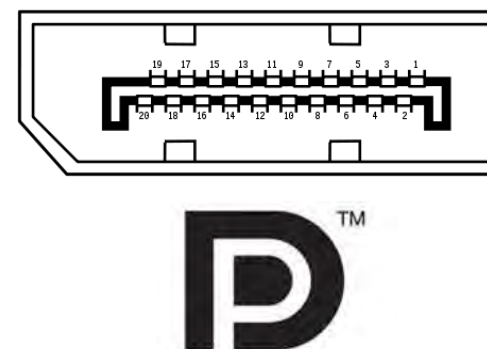
A high resolution monitor can be attached to the conga-MCB/Qseven through the use of either the HDMI port on connector X35 or the DisplayPort on connector X36. Only one option (connector) is available at any given time and this option is dependant on the Qseven® module used. These connections support DDC detection.

Pin	Signal	Pin	Signal
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS DATA1 Shield	6	TMDS Data1-
7	TMDS DATA0+	8	TMDS Data0 Shield
9	TMDS DATA0-	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock-
13	CEC (not supported)	14	RESERVED
15	SCL (Serial Clock for DDC)	16	SDA (Serial Data for DDC)
17	DDC/CEC/HEC GND	18	+5V Power (max 50mA)
19	Hot Plug Detect		



HDMI is supplied via a DVI/HDMI transmitter connected to the SDVO interface that originates from the Qseven® module. Not all Qseven® modules support the SDVO interface. Refer to your Qseven® module's user's guide to find out what options your Qseven® module supports.

Pin	Signal	Pin	Signal
1	ML_Lane 0P	2	GND
3	ML_Lane 0N	4	ML_Lane 1P
5	GND	6	ML_Lane 1N
7	ML_Lane 2P	8	GND
9	ML_Lane 2N	10	ML_Lane 3P
11	GND	12	ML_Lane 3N
13	GND	14	GND
15	AUXCH P	16	GND
17	AUXCH N	18	Hot Plug Detect
19	Return for Power	20	+3.3V Power (max 0.5A)



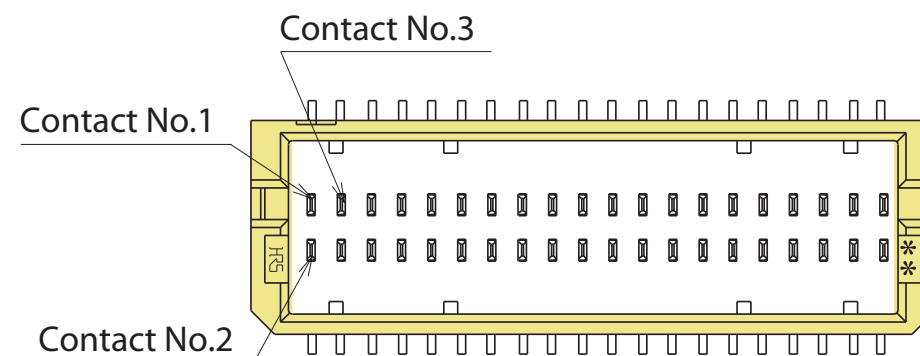
DisplayPort originates from the Qseven® module. Not all Qseven® modules support the DisplayPort interface. Refer to your Qseven® module's user's guide to find out what options your Qseven® module supports.



4.12 Connector X14 LVDS

A dual LVDS Interface is supported on the conga-MCB/Qseven via box header X14. DDC detection is included. Supply Voltage for the LCD display can be set to either 5V or 3.3V using jumper X31. Maximal output current is 1A.

Pin	Signal	Pin	Signal
1	LVDS B TX0N	2	LCD + VDD (+3.3V/+5V)
3	LVDS B TX0P	4	LCD + VDD (+3.3V/+5V)
5	GND	6	GND
7	LVDS B TX1N	8	GND
9	LVDS B TX1P	10	LVDS A TX0N
11	GND	12	LVDS A TX0P
13	LVDS B TX2N	14	GND
15	LVDS B TX2P	16	LVDS A TX1N
17	GND	18	LVDS A TX1P
19	LVDS B CLKN	20	GND
21	LVDS B CLKP	22	LVDS A TX2N
23	GND	24	LVDS A TX2P
25	LVDS B TX3N	26	GND
27	LVDS B TX3P	28	LVDS A CLKN
29	GND	30	LVDS A CLKP
31	GND	32	GND
33	LVDS VDD ENABLE	34	LVDS A TX3N
35	NC	36	LVDS A TX3P
37	LVDS BKL CTRL	38	LVDS SCL
39	LVDS BKL ENABLE	40	LVDS SDA



Jumper X31 provides the ability to select the LCD supply voltage for pins 2 and 4 of the LVDS connector X14..

Jumper X31	Configuration
1-2	+3.3V (default)
2-3	+5V

Jumper X31



Connector Type

X14: 1 mm Pitch Double Row socket 40 Pos. (female) HRS (Hirose), P/N: DF20A-40DS-1C.

X31: 2.54mm grid jumper

See section 6 of this document for information about this cable.





4.13 Connector X15 Backlight

Connector X15 on the conga-MCB/Qseven is a 4pin box header designated for backlight voltage. Supply voltage for the backlight converter can be set to mini carrier input power supply voltage (VCC) or +5V using jumper X32. When the VCC is used as backlight voltage, a suitable backlight converter must be used. Maximal output current is 1A.

Pin	Signal
1	VDD BCKL (VCC*/+5V)
2	GND
3	BCKL EN (High active)
4	BCKL CTRL*

**Backlight Power
(X15)**



Note

* VCC is the input power supply voltage of conga-MCB/Qseven.

*BCKL_CTRL signal is controlled by the I²C bus and originates from the Qseven® module.

Jumper X32 provides the ability to select the backlight supply voltage for pin 1 of connector X15.

Jumper X32	Configuration
1-2	VCC*
2-3	+5V (default)

Jumper X32



Note

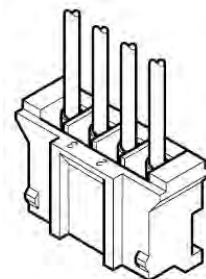
* VCC is the input power supply voltage of conga-MCB/Qseven. If a 12V backlight inverter is to be used 12V VCC has to be present and jumper X32 set to position 1-2. BCKL_CTRL signal is controlled by the I²C bus and originates from Qseven® module.

Connector Type

X15: 2.00mm Pitch Housing connector 4 Pos. (female) JST P/N: PHR-4.

X32: 2.54mm grid jumper

See section 6 of this document for information about this cable.





4.14 Connector X16 S/PDIF

The conga-MCB/Qseven provides a S/PDIF audio interface via a 6 pin header (X16).

Pin	Signal	Pin	Signal
1	+5V	2	+5V S/PDIF (Filtered)
3	S/PDIF OUT	4	S/PDIF IN
5	GND	6	GND

**S/PDIF
(X16)**



Connector Type

2.54mm Pitch Female Crimp Housing 3 Pos. (female) Harwin P/N: M20-1060300 or 2.54mm Pitch Housing 6 Pos. (dual row, female) Harwin P/N: M20-1070300.



4.15 Connectors X17 Line-Out and X18 Mic-In

Stereo analog audio signals are provided via 3.5mm 2 Audio Jack Connectors. X17 is for Line-Out (lime color) and X18 is for Mic-In (pink color).



Connector Type

Standard 3.5mm stereo Jack.

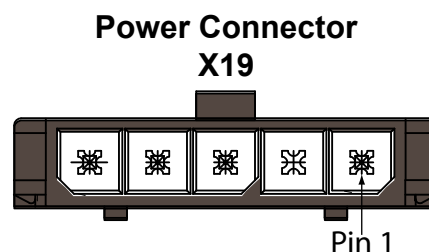




4.16 Connector X19 Power Supply

The conga-MCB/Qseven has a 5 pin power connector that provides the ability to connect a power source starting with 9V up to 20V, 5V Standby with $\pm 5\%$ is an optional voltage supported by ATX mode in conjunction with the power control connector X30 and the ATX cable adapter (available from congatec, see section 6 of this document for more information). Connector X19 can also be used for a single voltage supply (without 5V Standby) thereby allowing the mini carrier to be a stand-alone carrier board.

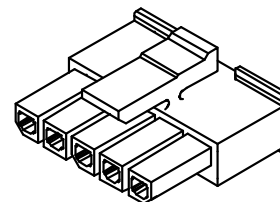
Pin	Signal
1	VCC
2	VCC
3	GND
4	GND
5	+5V STB ($\pm 5\%$)



Connector Type

3.00mm Pitch Micro-Fit 3.0™ Receptacle Housing Molex, P/N: 0436450500.

See section 6 of this document for information about this cable.



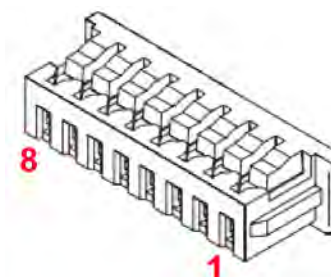
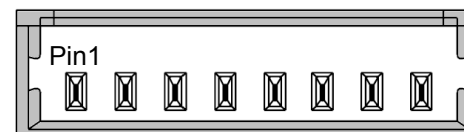


4.17 Connector X20 Power Supply Control

The conga-MCB/Qseven has an 8 pin power control connector (X20) that provides a connection to a battery management module 12V power source.

Pin	Signal	Description
1	GND	Ground
2	SDA	I2C bus Data
3	SCL	I2C bus Clock
4	BATLOW#	signal from Qseven® connector CN1
5	SUS_STAT#	signal from Qseven® connector CN1
6	SUS_S3#	signal from Qseven® connector CN1
7	SUS_S5#	signal from Qseven® connector CN1
8	PWRBTN#	Power Button

**Power Connector
X20**



Connector Type

1.25mm Pitch PicoBlade™ Housing Female Molex, P/N: 0510210800.

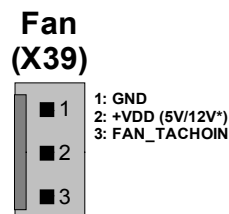
See section 6 of this document for information about this cable.



4.18 Connector X39 Fan

A standard 3 pin header for a fan is provided on the conga-MCB/Qseven. A 5V or 12V fan can be connected to connector X39, the output voltage is set by jumper X40. If a 12V fan is to be used, then the input voltage of conga-MCB/Qseven must be +12V.

Pin	Signal
1	GND
2	+VDD (12V*/5V)
3	FAN_TACHOIN



Connector Type

2.54mm Standard 3pin Housing for Fan.



Caution

* The input voltage of the conga-MCB/Qseven must be +12V when a 12V Fan is used. Any other input voltage may result in the fan malfunctioning or being damaged.

Jumper X40 provides the ability to select the fan supply voltage on pin 2 of the fan connector X39.

Jumper X40	Configuration
1-2	VCC*
2-3	+5V (default)

Jumper X40



Note

* VCC is the input power supply voltage of conga-MCB/Qseven.



Connector Type

X40: 2.54mm grid jumper



4.19 Connector X38 CAN Bus

The conga-MCB/Qseven provides a Controller Area Network bus interface via a 5 pin header (X38). Connector X38 also provides +5V power supply for an external CAN device via 750mA fuse. Supplying power to the CAN device via the Qseven® mini carrier power input is optional.

Pin	Signal
1	+5V / VCC*
2	CAN Low bus output
3	GND
4	CAN High bus output
5	NC

**CAN Bus
X38**



Note

* VCC is the input power supply voltage of conga-MCB/Qseven, VCC is optional.



Connector Type

X38: 2.54mm Pitch Housing 5 Pos. (female) Harwin P/N: M20-1060500.



4.20 Connector X30 ATX Power Source Control

The conga-MCB/Qseven has an 2 pin ATX power source control connector (X30) which can control an ATX power source in conjunction with the ATX cable adapter (available from congatec, see section 6 of this document for more information). Jumper X37 is associated with connector X30. For more information about jumper X37 see section 4.20.1 of this document.

Pin	Jumper X37 Setting	Configuration	Description
1	1-2	PS_ON#	Power Supply ON (active low TTL signal)
1	2-3	GND	
2		GND	

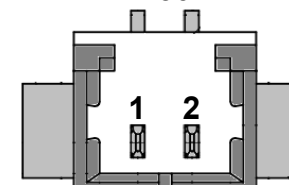


Connector Type

X30: 1.25mm Pitch PicoBlade™ Housing Female Molex, P/N: 0510210200.



**ATX Power Source Control
X30**





4.20.1 Jumper X37 ATX Power Source Mode Selector

Jumper X37 provides the ability to select AT or ATX mode of the ATX power source, which is connected to X19 and X30 connectors via a cable adapter (available from congatec, see section 6 of this document for more information).

Jumper X37	Configuration
1-2	ATX mode (default)
2-3	AT mode

Jumper X37



Connector Type

X37: 2.54mm grid jumper

4.21 Connector X34 SPI Header

The Serial Peripheral Interface Bus on the Qseven® module is made available on the conga-MCB/Qseven via a 10 pin header connector (X34). This connector also provides +3.3V power supply.

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	MOSI	4	CS0#
5	MISO	6	CS1#
7	SCK (Serial clock)	8	NC
9	GND	10	GND

SPI Bus (X34)



Connector Type

2.54mm Pitch Housing 5 Pos. (female) Harwin P/N: M20-1060500 or 2.54mm Pitch Housing 10 Pos. (dual row, female) Harwin P/N: M20-1070500.





4.22 Jumper X42 USB1 Client/Host Selector

Jumper X42 provides the ability to set USB port 1 as Client or Host. USB port 1 is available on connector X11 (see section 4.10). Working as Client depends on module support.

Jumper X42	Configuration
1-2	USB Host
2-3	USB Client (default)

Jumper X42



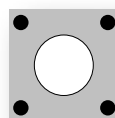
Connector Type

X37: 2.54mm grid jumper

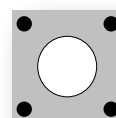
4.23 Power and Reset Buttons

The conga-MCB/Qseven is not equipped with a power button or a reset button due to space limitations but it does have the possibility to connect both buttons using the feature header X2.

Power On



Reset



The power button is functional only if the conga-MCB/Qseven power is being supplied by an ATX power supply (for example when using the congatec ATX cable adapter for conga-MCB/Qseven, see section 6 of this document for more information). The carrier board must be connected to an ATX power supply for this feature to work. Additionally, the reset button can be used to invoke the hardware reset signal for the system. If the conga-MCB/Qseven is supplied from a single power source or power source working in AT mode, the carrier board will start immediately after the supply voltage is connected to power connector X19.

Connector Type

X2: 2.54mm Pitch Female Crimp Housing 2 Pos. (female) Harwin P/N: M20-1060200.





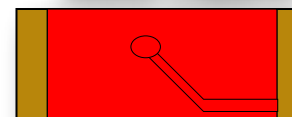
5 Additional Features

5.1 Red LEDs

There are two red LEDs found on the conga-MCB/Qseven. A detailed description of them can be found in the table below.

LED	Function When Lit
D4	SATA Active - indicates activity of SATA channel
D5	SD Active - indicates activity of SD Card

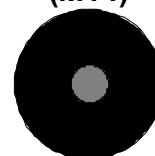
Red LEDs



5.2 PC Speaker (Beeper)

The board-mounted speaker provides audible error code (beep code) information during POST. The speaker M14 is connected to the Qseven® module's SPEAKER signal.

**Speaker
(M14)**

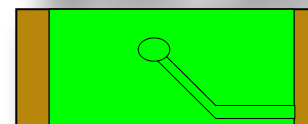


5.3 Power Indication LEDs

There are total of six green LEDs located on the conga-MCB/Qseven. LEDs D16-D18 indicate the presence of supply voltages on the carrier board. A detailed description of these can be found in the table below.

LED	Function When Lit
D16	Indicates +3.3V is present
D17	Indicates +5V is present
D18	Indicates +5V STB is present

Green LEDs



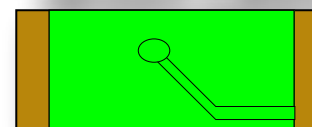


5.4 PCI Mini Card Activity LEDs

There are total of six green LEDs located on the conga-MCB/Qseven. LEDs D1-D3 indicate PCIe Mini Card activity. A detailed description of these LEDs can be found in the table below.

LED	Function When Lit
D1	WWAN - indicates activity of wireless wide area network
D2	WLAN - indicates activity of wireless local area network
D3	WPAN - indicates activity of wireless personal area network

Green LEDs



5.5 Connector X22 APIX 2 (Optional)

A 45 pin flat foil connector (X22) can be optionally provided as an assembly option on the conga-MCB/Qseven. This connector provides the possibility to expand the carrier board features to include the APIX 2 automation interface.

For more information about APIX technology visit <http://www.inova-semiconductors.de/>

5.6 CMOS Battery

The conga-MCB/Qseven includes a battery that supplies the RTC and CMOS memory of the Qseven® CPU module. The battery needs to provide 3V of power. The specified battery type is CR2032.



Warning

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

To fulfill the requirements of the EN60950, the conga-MCB/Qseven incorporates two current-limiting devices (resistor and diode) in the battery power supply path.

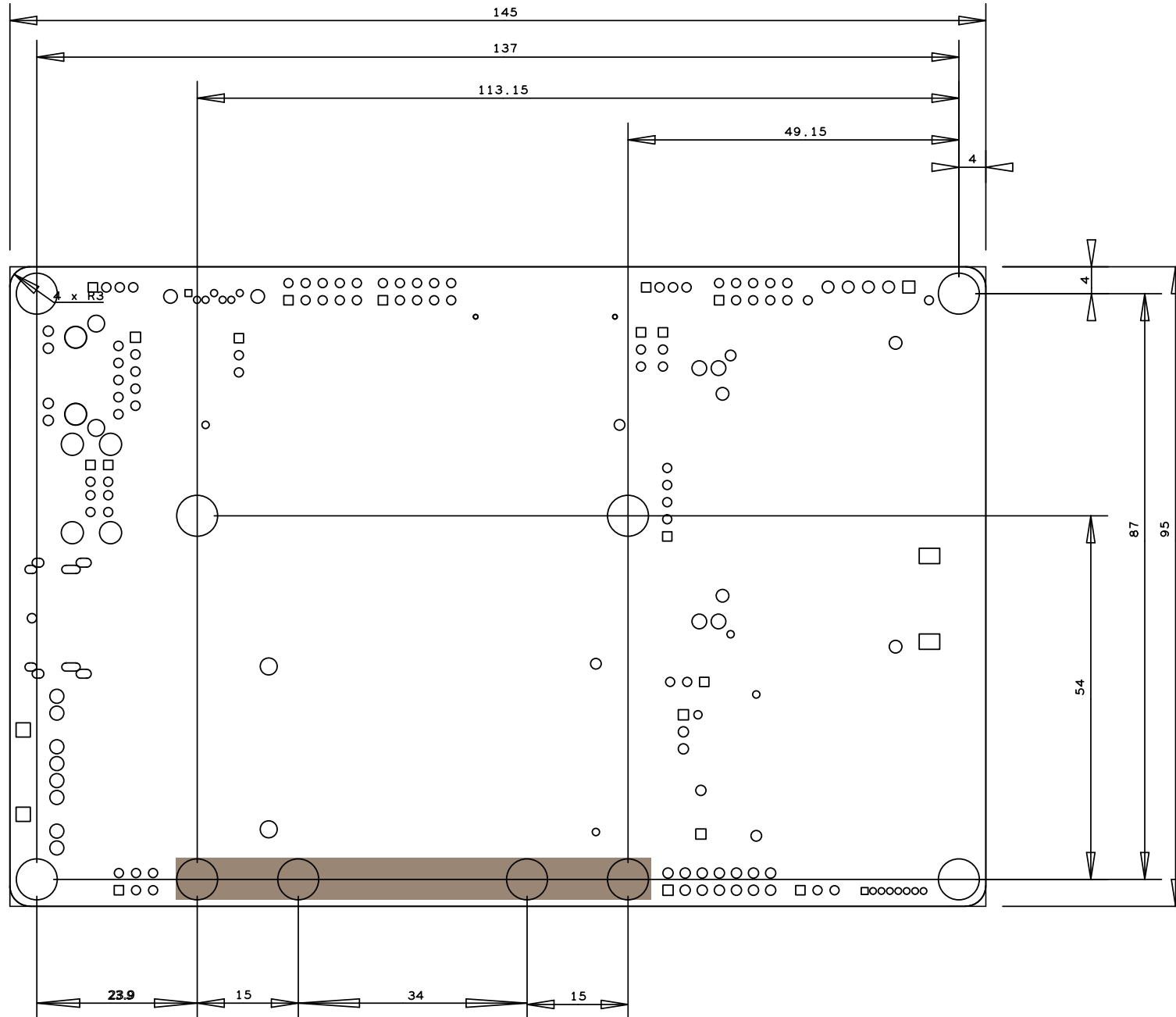
6 Cables

There are several cables that can be utilized with the conga-MCB/Qseven mini carrier board.

The table below lists their part numbers and describes their functions.

Part Number	Name	Discription
14000041	Cable kit	Complete cable kit for conga-MCB/Qseven
14000027	cab-MCB-Power	Power cable for conga-MCB/Qseven connector X19 with female banana plug.
14000032	cab-SATA-Power	SATA power cable for 2.5" HDD. Fits connector X6. <i>Note: 3.5" HDD are not supported (no 12V supply).</i>
14000033	cab-MCB-LVDS	LVDS display data cable for conga-MCB/Qseven connector X14.
14000034	cab-MCB-BKL	Backlight cable for conga-MCB/Qseven connector X15.
14000035	cab-USB-B-Client	USB 2.0 shielded high speed cable (USB B, Client) for conga-MCB/Qseven connector X11.
14000038	Dual USB-A cable	Dual USB 2.0 shielded high speed cable (USB A) for conga-MCB/Qseven connectors X11 or X12.
14000046	cab-QMCB-Power-ATX	Power cable for conga-MCB/Qseven connector X19 and X30 for ATX power supply.

7 Mechanical Drawing



8 Industry Specifications

The list below provides links to industry specifications of the interfaces that can be found on the conga-MCB/Qseven mini carrier board.

Specification	Link
Qseven™ Specification, Revision 1.20	http://www.qseven-standard.org
Qseven™ Design Guide, Revision 1.0	http://www.qseven-standard.org
PCI Express Base Specification, Revision 2.0	http://www.pcisig.com/specifications
Universal Serial Bus (USB) Specification, Revision 2.0	http://www.usb.org/home
PCI Specification, Revision 2.2	http://www.pcisig.com/specifications
Serial ATA Specification, Revision 1.0a	http://www.serialata.org
Low Pin Count Interface Specification, Revision 1.0 (LPC)	http://developer.intel.com/design/chipsets/industry/lpc.htm