

conga-DP/HDMI 4k Adapter

Short Description of congatec's Multiple Graphics Channel Adapter

Short Description

Revision 1.0

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Revision History

Revision	Date (yyy.mm.dd)	Author	Changes
1.0	2016.11.24	AEM	Official release

Preface

This short description provides information about the features, connectors and jumper settings of the conga-DP/HDMI 4k adapter.

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Symbols

The following symbols are used in this user's guide:



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.



Link to connector layout diagram

This link icon is located in the top right corner of each page. It provides a direct link to the connector layout on page 11 of this document.

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Terminology

Term	Description
MGCA	Multi Graphics Channel Adapter
HDMI	High Definition Multimedia Interface
DVI	Digital Visual Interface
DP	DisplayPort
DDI	Digital Display Interface
TMDS	Transition Minimized Differential Signaling
DDC	Display Data Channel (I2C bus to read display information)

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1 Introduction

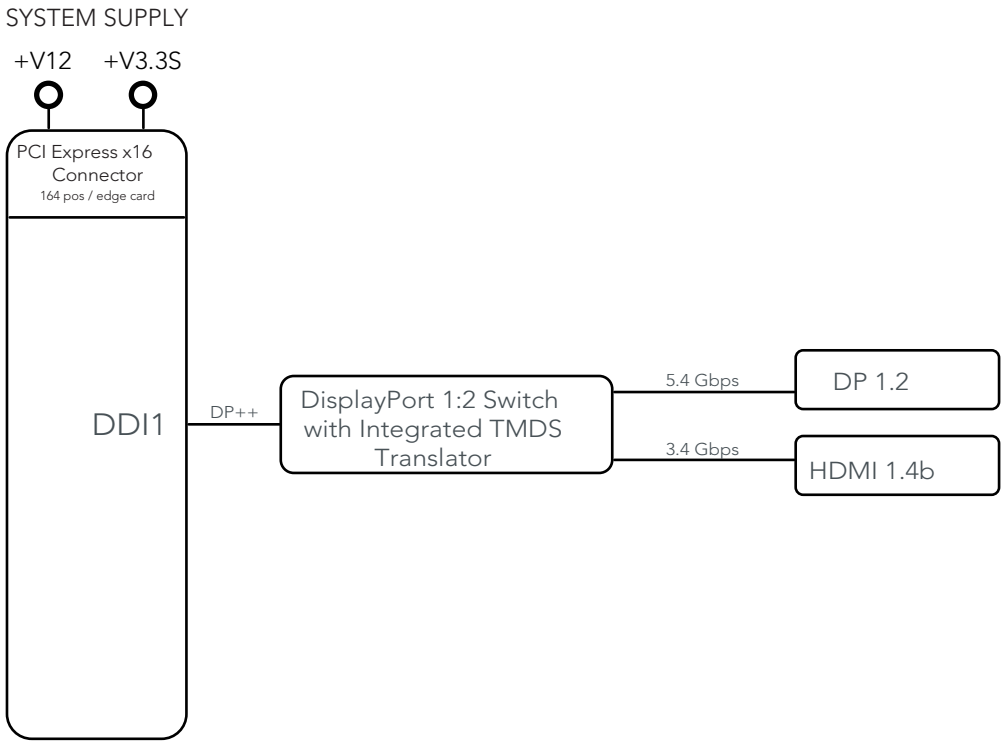
1.1 Background

The conga-TEVAL and conga-QEVAL/Qseven 2.0 carrier boards provide additional display interfaces via a x16 PCIe slot. This slot supports only display cards that can transmit DDI signals (for example, the conga-DP/HDMI 4k adapter card).

The conga-DP/HDMI 4k adapter card offers HDMI 1.4b and DP 1.2 interfaces. The card supports data rates up to 3.4 Gbps on the HDMI interface and up to 5.4 Gbps on the DP interface. You can use this card to evaluate the DDI interface on the congatec Qseven or COM Express modules. The jumpers on the adapter card allows you to:

- configure the card for use on the Qseven or COM Express carrier board
- set the display output to DP or HDMI/DVI

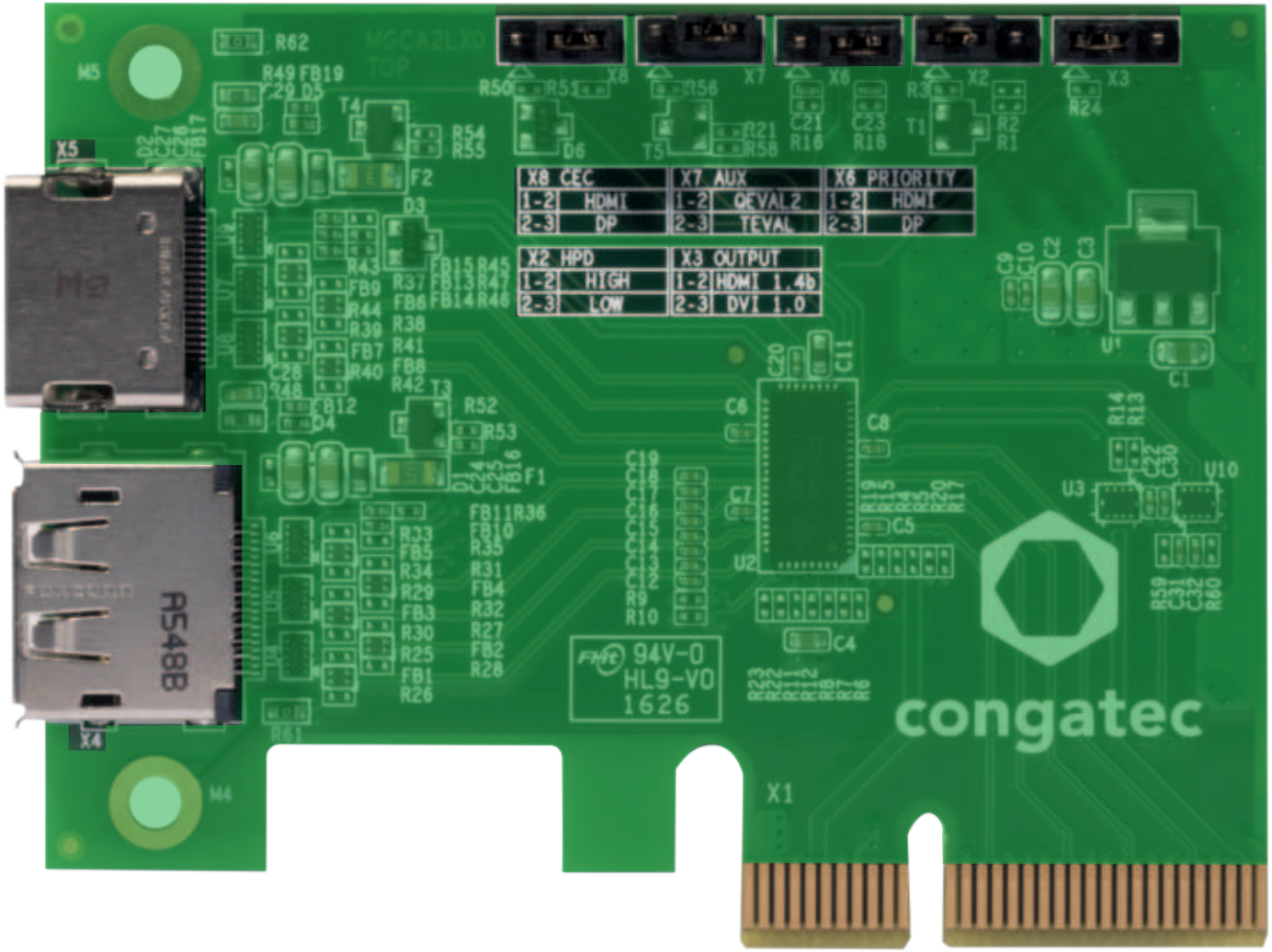
1.2 Block Diagram



2 Connector Layout

The connector layout picture on the right shows the location of the connectors and the jumpers. Select the Adobe 'Zoom-In-Tool' and zoom in on a given component to see the descriptive text. 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 in detail.

Use the mouse icon in the top left hand corner of the destination page to return to the connector layout picture.



3 Connectors

This section describes the connectors on the conga-HDMI/DisplayPort 4k adapter.

Note

On the conga-TEVAL and conga-QEVAL/Qseven 2.0, the DDI signals are routed to a PCIe x16 slot. Connect the conga-HDMI/DisplayPort 4k adapter to this slot for additional display interfaces.

3.1 x4 PCIe Edge Finger Pinout

Table 1 Edge Finger Pinout (DDI Signals Routed to x4 PCIe Slot)

Pin	Signal	Description	Pin	Signal	Description
B1	+12V	+12 volt power	A1	N.C	Not connected
B2	+12V	+12 volt power	A2	+12V	+12 volt power
B3	+12V	+12 volt power	A3	+12V	+12 volt power
B4	GND	Ground	A4	GND	Ground
B5	SMB_CLK	SMBus clock	A5	N.C	Not connected
B6	SMB_DAT	SMBus data	A6	N.C	Not connected
B7	GND	Ground	A7	N.C	Not connected
B8	+3.3V	+3.3 volt power	A8	N.C	Not connected
B9	N.C	Not connected	A9	+3.3V	+3.3 volt power
B10	N.C	Not connected	A10	+3.3V	+3.3 volt power
B11	N.C	Not connected	A11	N.C	Not connected
Key					
B12	N.C	Not connected	A12	GND	Ground
B13	GND	Ground	A13	N.C	Not connected
B14	DDI1_PAIR0+	Transmitter lane 0 differential pair	A14	N.C	Not connected
B15	DDI1_PAIR0-		A15	GND	Ground
B16	GND	Ground	A16	DP_HDMI_CEC	Consumer Electronics Control
B17	DDI1_CTRLCLK_AUX+	DDI1 control clock	A17	N.C	Not connected
B18	GND	Ground	A18	GND	Ground

Pin	Signal	Description	Pin	Signal	Description
B19	DDI1_PAIR1+	Transmitter lane 1 differential pair	A19	N.C	Not connected
B20	DDI1_PAIR1-		A20	GND	Ground
B21	GND	Ground	A21	N.C	Not connected
B22	GND	Ground	A22	N.C	Not connected
B23	DDI1_PAIR2+	Transmitter lane 2 differential pair	A23	GND	Ground
B24	DDI1_PAIR2-		A24	GND	Ground
B25	GND	Ground	A25	N.C	Not connected
B26	GND	Ground	A26	N.C	Not connected
B27	DDI1_PAIR3+	Transmitter lane 3 differential pair	A27	GND	Ground
B28	DDI1_PAIR3-		A28	GND	Ground
B29	GND	Ground	A29	DDI1_HPD	Hot plug detect
B30	N.C	Not connected	A30	DDI1_DDC_AUX_SEL	DDC/Aux selection
B31	DDI1_CTRLDATA_AUX-	DDI1 control data	A31	GND	Ground
B32	GND	Ground	A32	N.C	Not connected

3.2 DisplayPort Connector X4

Table 3 DisplayPort Pinout

Pin	Signal	Description	Pin	Signal	Description
1	DP_LANE0+	DisplayPort Lane 0 (positive)	2	GND	Ground
3	DP_LANE0-	DisplayPort Lane 0 (negative)	4	DP_LANE1+	DisplayPort Lane 1 (positive)
5	GND	Ground	6	DP_LANE1-	DisplayPort Lane 1 (negative)
7	DP_LANE2+	DisplayPort Lane 2 (positive)	8	GND	Ground
9	DP_LANE2-	DisplayPort Lane 2 (negative)	10	DP_LANE3+	DisplayPort Lane 3 (positive)
11	GND	Ground	12	DP_LANE3-	DisplayPort Lane 3 (negative)
13	CONFIG1	Configuration Pin 1 (connected to Ground)	14	CONFIG2	Configuration Pin 2 (connected to Ground)
15	DP_AUX+	Auxiliary Channel (positive)	16	GND	Ground
17	DP_AUX-	Auxiliary Channel (negative)	18	DP_HPD#	Hot Plug Detect
19	GND	Ground	20	DP_PWR	Power For Connector

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3.3 HDMI Connector X5

Table 4 HDMI Connector Pinout

Pin	Signal	Description	Pin	Signal	Description
1	TMDS Data 2+	HDMI Lane 2 (positive)	2	TMDS Data 2 Shield	Shield of Data 2 pair
3	TMDS Data 2-	HDMI Lane 2 (negative)	4	TMDS Data 1+	HDMI Lane 1 (positive)
5	TMDS Data 1 Shield	Ground	6	TMDS Data 1-	HDMI Lane 1 (negative)
7	TMDS Data 0+	HDMI Lane 0 (positive)	8	TMDS Data0 Shield	Ground
9	TMDS Data 0-	HDMI Lane 0 (negative)	10	TMDS Clock-	HDMI Clock (positive)
11	TMDS Clock Shield	Ground	12	TMDS Clock-	HDMI Clock (negative)
13	CEC	Consumer Electronics Control Interface	14	Reserved	N.C.
15	DDC Clock	DDC based control signal (clock)	16	DDC Data	DDC based control signal (data)
17	GND	Ground	18	+5V	+5V Power Supply
19	HPD	Hot plug detect			

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4 Jumper Settings

The tables below describe the jumper settings on the conga-DP/HDMI 4k Adapter.

Table 5 COM Express/Qseven Selection

Jumper	Feature	Pinout	Description
X2	DDI1 Hot Plug Detect	1 - 2	High active hot-plug detect signal (default)
		2 - 3	Low active hot-plug detect signal
X7	DDI Aux Selection	1 - 2	Aux set to Qseven
		2 - 3	Aux set to COM Express (default)

Jumper X2



Jumper X7



Table 6 HDMI/DP Selection

Jumper	Feature	Pinout	Description
X8	HDMI/DP CEC Selection	1 - 2	Selects HDMI CEC
		2 - 3	DP CEC (default)
X6	Display Interface Priority	1 - 2	Set HDMI Priority
		2 - 3	Sets DP Priority (default)

Jumper X8



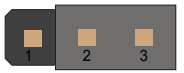
Jumper X6



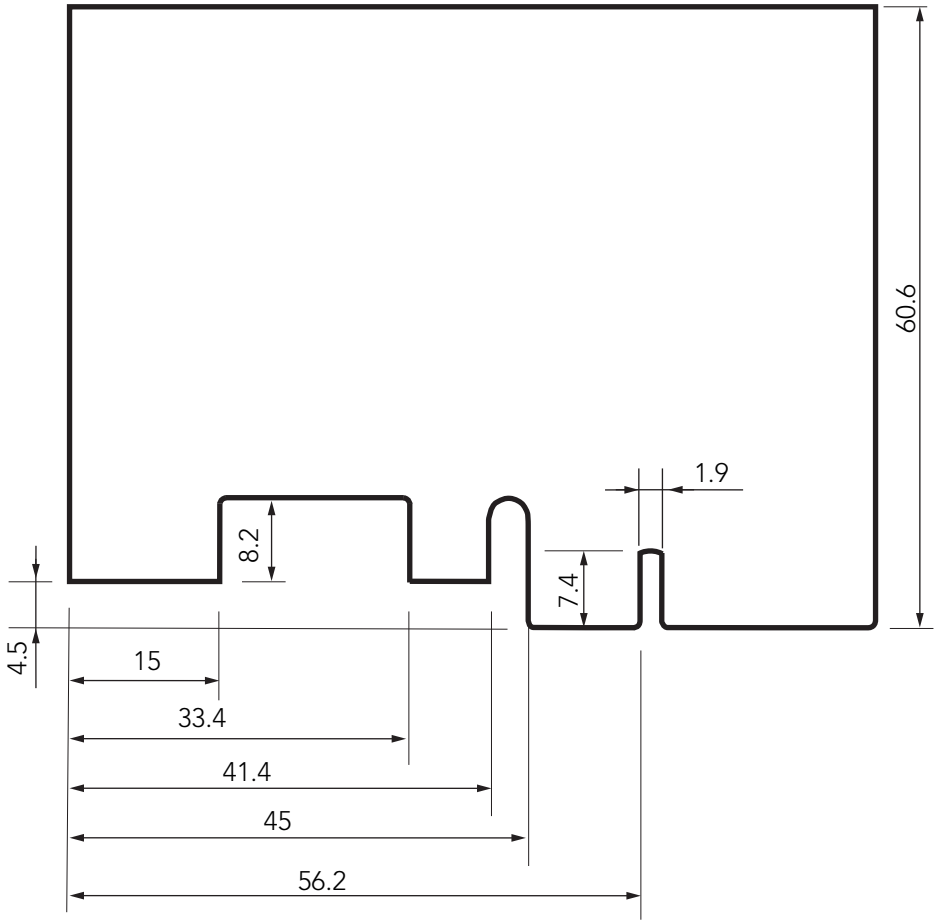
Table 7 HDMI/DVI Selection

Jumper	Feature	Pinout	Description
X3	HDMI/DVI Selection	1 - 2	HDMI 1.4b Compliant
		2 - 3	DVI 1.0 Compliant (default)

Jumper X3



5 Mechanical Dimensions



All dimensions are in millimeters