FMC 4K HDMI Module

FH1159

User Manual

Rev 1.0

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Document Revision Record:

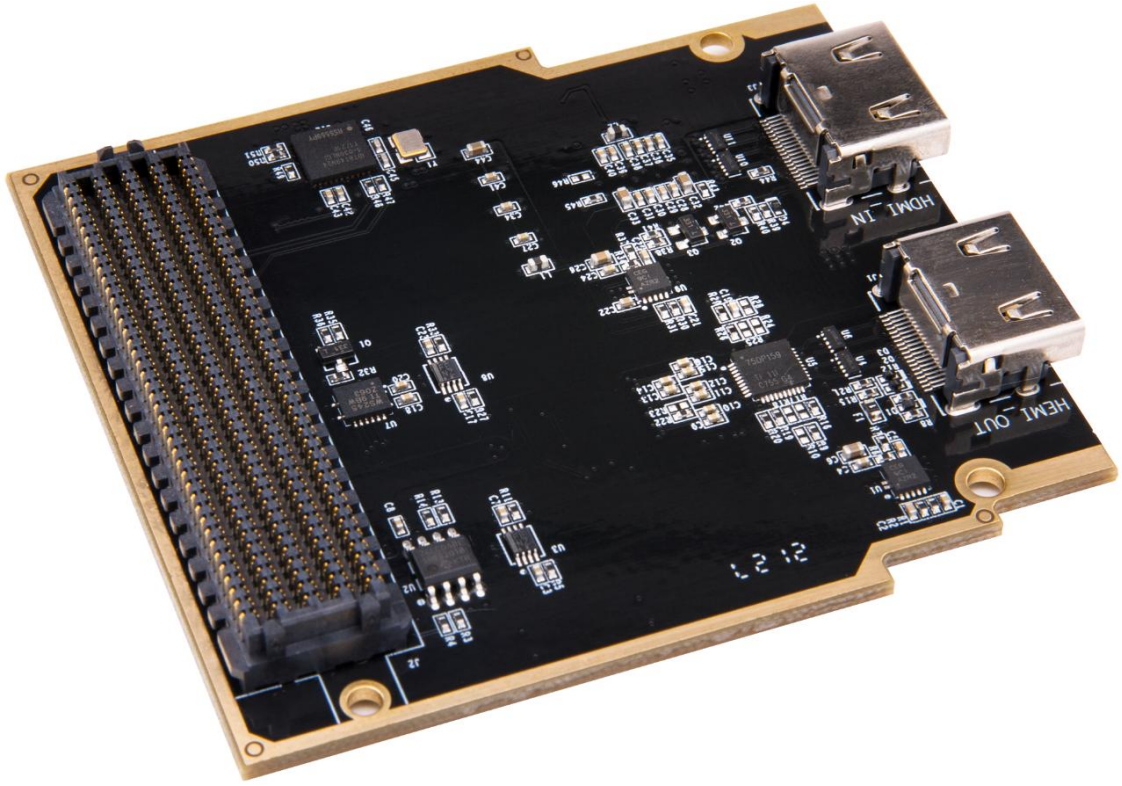
Version	Time	Description
1.0	2021/12/22	First Release

Part1: FH1159 Introduction & Description of FMC convert to HDMI Module

FH1159 is a module that converts the FMC interface to one HDMI input and one HDMI output，HDMI interface supports up to 4K@60Hz.

The FMC interface of FH1159 is a standard HPC interface used to connect FPGA development boards, meeting the VITA 57.1 standard. The connector model of FMC is ASP-134488-01.

The picture of the FH1159 module is as follows:



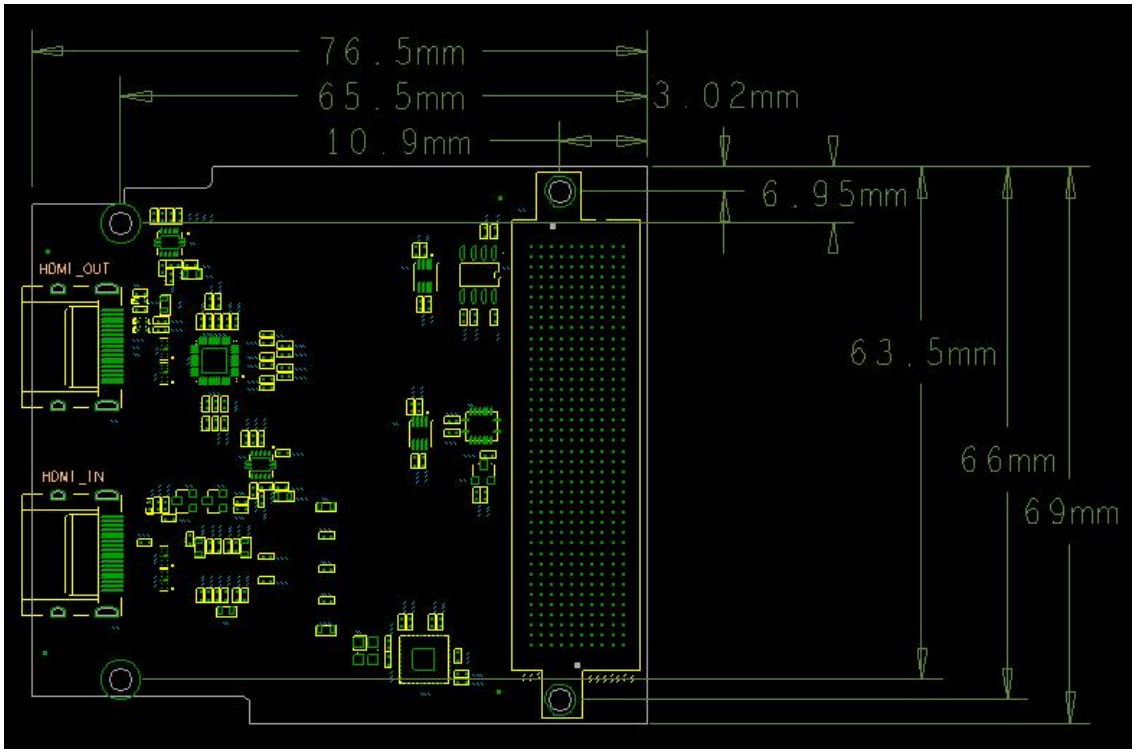
FH1159 photo

1.1 FH1159 Module Parameters

FH1159 module parameters listed as below:

- HPC Connectors
- 1-Channel HDMI video output interface, with support up to 4K@60Hz.
- 1-Channel HDMI video input interface, with support up to 4K@60Hz, supporting data input in different formats.

1.2 FH1159 Module Form Factor

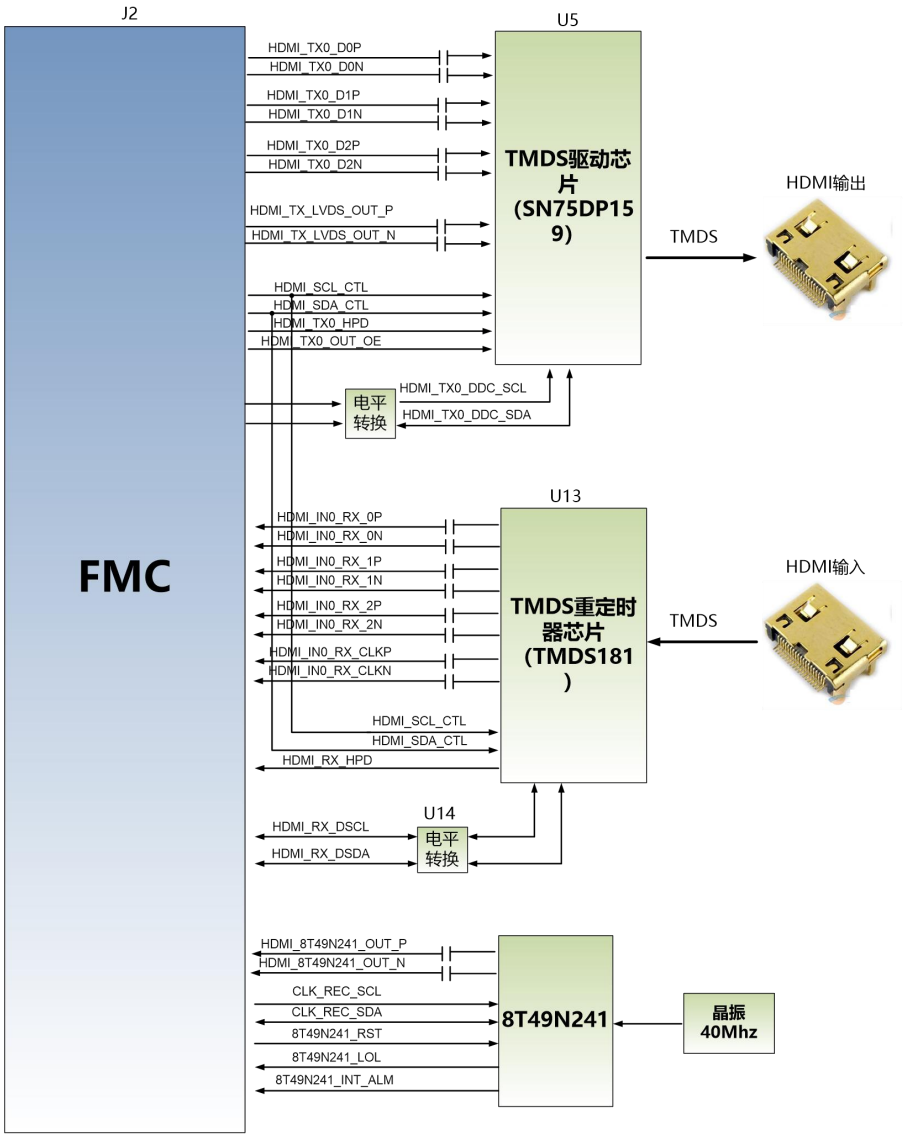


FH1159 Module Form Factor

Part 2: FH1159 Module Function Description

2.1 FH1159 Module Block Diagram

FH1159 Module Block Diagram as below:



The HMDI output chip uses TI's SN75DP159 chip to achieve TMDS level conversion, driver and receiver equalization functions, and increase signal driving capability. The HMDI input chip is based on TI's TMDS181IRGZT, which is a TMDS retimer chip with a clock and data recovery (CDR) circuit between the HDMI input and output ports, supporting data rates up to 6Gbps.

2.2 FMC HPC Module Pin Assignment:

The following only lists the signals of the interface, while the signals of the power supply and GND are not listed. For specific information, please refer to the schematic diagram.

FMC Pin No.	Network Name	Description
H37	HDMI_TX_LVDS_OUT_P	HDMI Video output clock Positive
H38	HDMI_TX_LVDS_OUT_N	HDMI Video output clock Negative
A38	HDMI_TX0_D0P	HDMI Video output data 0 Positive
A39	HDMI_TX0_D0N	HDMI Video output data 0 Negative
B36	HDMI_TX0_D1P	HDMI Video output data 1 Positive
B37	HDMI_TX0_D1N	HDMI Video output data 1 Negative
A34	HDMI_TX0_D2P	HDMI Video output data 2 Positive
A35	HDMI_TX0_D2N	HDMI Video output data 2 Negative
G24	HDMI_TX0_DDC_SCL_L	HDMI output EDID Reading and writing clock
G25	HDMI_TX0_DDC_SDA_L	HDMI output EDID Reading and writing data
G28	TX0_OUT_OE_L	HDMI output Enable
H26	HDMI_TX0_HPD_L	HDMI output Hot swap detection signal
H28	HDMI_SCL_CTL_L	HDMI Device I2C control clock
H29	HDMI_SDA_CTL_L	HDMI Device I2C control data
B20	HDMI_IN0_RX_CLKP	HDMI Video input clock Positive
B21	HDMI_IN0_RX_CLKN	HDMI Video input clock Negative
A18	HDMI_IN0_RX_0P	HDMI Video input data 0 Positive
A19	HDMI_IN0_RX_0N	HDMI Video input data 0 Negative
B16	HDMI_IN0_RX_1P	HDMI Video input data 1 Positive
B17	HDMI_IN0_RX_1N	HDMI Video input data 1 Negative
A14	HDMI_IN0_RX_2P	HDMI Video input data 2 Positive
A15	HDMI_IN0_RX_2N	HDMI Video input data 2 Negative
G21	HDMI_RX_DSCL	HDMI input EDID Reading and writing clock
G22	HDMI_RX_DSDA	HDMI input EDID Reading and writing data
G27	HDMI_RX_PWR_DET_L	HDMI input 5V Power detection signal
H25	HDMI_RX_HPD_L	HDMI input Hot swap detection signal
G7	8T49N241_LOL	Clock Chip LOSS of LOCK signal
G9	8T49N241_INT_ALM	Clock Chip Interrupt signal
G10	8T49N241_RST	Clock Chip Reset signal
G12	CLK_REC_SDA	Clock Chip I2C Control Clock
G13	CLK_REC_SCL	Clock Chip I2C Control Data
G15	HDMI_REC_CLOCK_P	Clock Chip Reference Clock input Positive
G16	HDMI_REC_CLOCK_N	Clock Chip Reference Clock input Negative
D4	HDMI_8T49N241_OUT_P	Clock Chip Reference Clock output Positive
D5	HDMI_8T49N241_OUT_N	Clock Chip Reference Clock output Negative