

Datasheet

FORTEC Integrated

Prisma-4K-Advanced

4K Display Controller

PR-01-460, PA-42-XXX



Version 1.2
17.06.2021



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1 Revision History

Date	Rev.No.	Description	Page
30.05.2018	0.0	Preliminary version	All
04.06.2018	0.1	Moved "Features" to the beginning of the DS	4
04.06.2018	0.2	Added HW information, corrected temp. range	5,8
16.07.2019	1.0	First and last pages updated. Product pictures added. Electrical Specification updated Interfaces updated. Prisma-4K-Baseboard top view updated. Hardware Information updated	1, 12 2, 9,10 6 7 8 11
25.03.2021	1.1	Template Update HDCP optional	All 5
17.06.2021	1.2	Hardware Information: PR-01-365_A1 (EOL)>>> PR-01-365_A2	11

2 General Description

Prisma-4k-Advanced is an industrial flexible 4k display controller that consists of two parts:

- Prisma-4k-DSE (scaler module)
- Prisma-4k-Baseboard (connector board)

The scaler engine is capable of processing video formats up to 4k@60Hz. TFT panels with resolutions up to 3840x2160 pixels are supported. Prisma-4k-Advanced provides standard digital video input ports (DP and HDMI), flexible dimming control and power supply for a wide range of TFT panels. Control interfaces such as I2C, UART, GPIOs or IR allow customized configuration and controlling of the board.

3 Features

Power Supply

- 12V input power
- Optional 8V..36V wide range input power with add-on board IF414

Video Input Ports

- 1x DisplayPort 1.4
- 2x HDMI 2.0
- 1x HDMI 1.4
- Supports HDCP 2.2 (optional)
- Captures 4k@60Hz

Panel Interfaces

- Supports panel resolutions up to 3840x2160 pixels @60Hz
- V-by-One (or optional eDP with 8-lanes and HBR)
- eDP with 4-lanes and HBR2
- Supports panel voltages of 3.3V, 5V, 10V and 12V
- 12V backlight power
- Flexible backlight control (5V/3.3V backlight enable, PWM/analog dimming control)

Audio

- 8 channel I2S out (to connect an external audio module)
- Audio Line-Out (stereo)
- Audio input via HDMI and DP

Control Interfaces

- UART for Remote OSD (TTL level)
- IR remote control
- I2C
- 5 GPIOs
- Ambient light sensor
- 4-Wire Fan Control Interface

LEDs

- Indicate the selected panel power voltage (3.3V, 5V, 10V, 12V)

4 Absolute Maximum Ratings

Permanent damage to the device may occur if maximum values are exceeded.

Item	Symbol	Min.	Max.	Unit	Note
Supply Voltage	V_{in}	-0.2	16	VDC	1, 2
Supply Current	I_{in}	-	8	A	3
Continuous Backlight Current	I_{bkl} (12V)	-	4	A	3
Inrush Backlight Current	I_{bkl_rush} (12V)	-	15	A	5
Continuous Panel Current	I_{panel} (12V)	-	5	A	3
	I_{panel} (10V)	-	3	A	3
	I_{panel} (5V)	-	3	A	3
	I_{panel} (3.3V)	-	2	A	3
Inrush Panel Current	I_{panel_rush} (12V)	-	15	A	5
Inrush Backlight Current	I_{bkl_rush} (12V)	-	15	A	5
Audio Interface Continuous Current	I_{AUDIO_PWR}	-	2	A	3,6
Fan Continuous Current	I_{12V_FAN}	-	1	A	3,6
Storage Temperature	T_{st}	-30	+80	°C	
Operating Temperature	T_{op}	-20	+60	°C	4

Note (1): Within operating temperature range.

Note (2): Note that 12V backlight supply and 12V panel power is switched directly to V_{in} .

Therefore, V_{in} must be within the voltage limits of backlight converter and panel as well.

Note (3): The overall total input current (incl. panel, backlight, DSE and audio) must not exceed 8A.

Note (4): Please refer to the thermal derating of Prisma-4K-DSE.

Note (5): Measurement condition: Rising time = 500us

Note (6): The overall total current of audio and fan must not exceed 2A.

5 Electrical Specification

All measurements done at 25°C ambient temperature.

Item	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Note
Supply Voltage	V_{in}		11.0	12.0	13.0	VDC	1
Supply Voltage with external DC/DC regulator	V_{ext}		8	24	36	VDC	2
Standby Current	I_{in}	Board incl. DSE Module	-	35	-	mA	3, 4
Fan Power Output Voltage	V_{12V_FAN}	I_{12V_FAN}	$V_{in} - 0.1V$	-	V_{in}	VDC	
Fan PWM Frequency	F_{FAN}		500	-	16000	RPM	

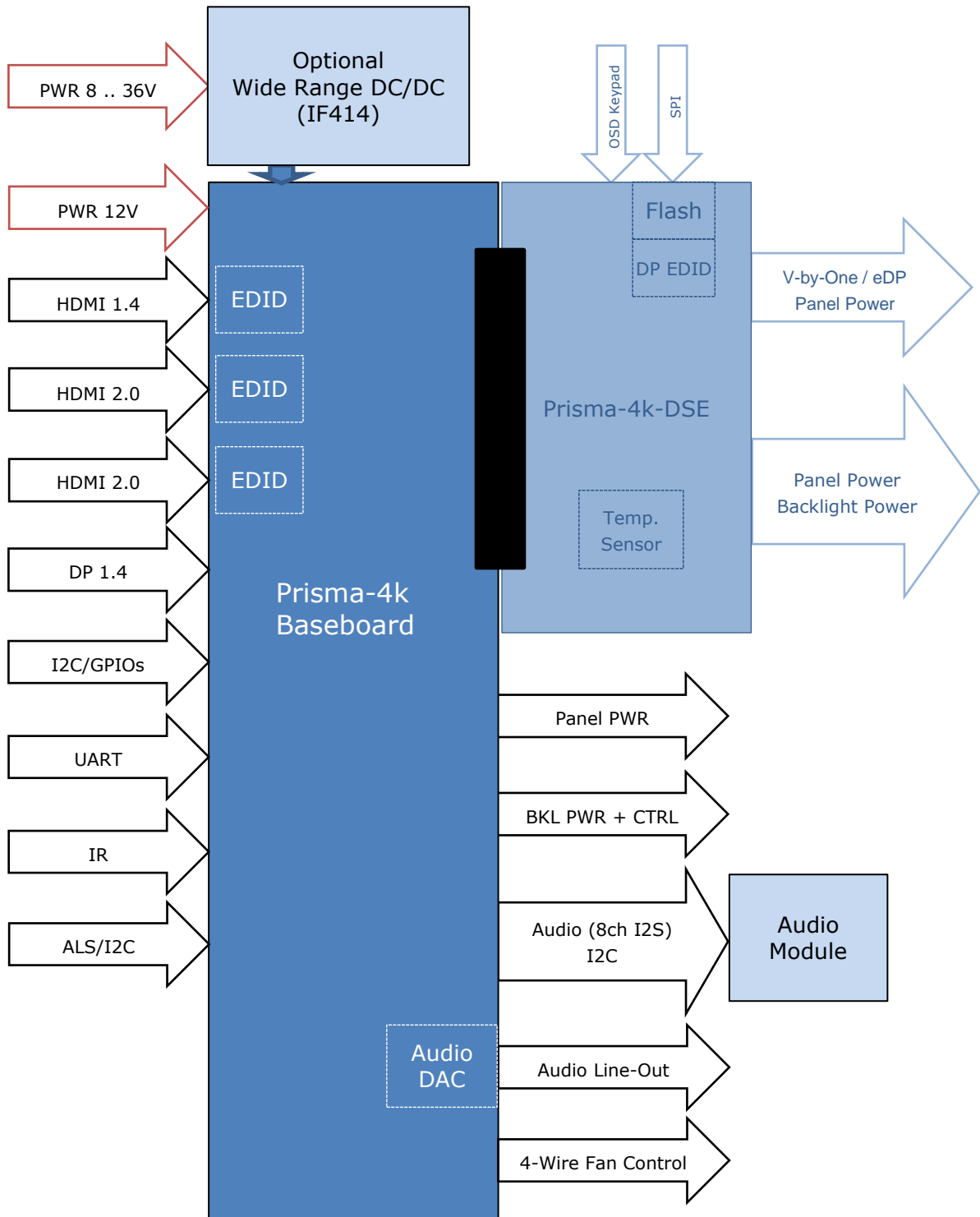
Note (1): Note that 12V backlight supply and 12V panel power is switched directly to V_{in} . Therefore, V_{in} must be within the voltage limits of backlight converter and panel as well.

Note (2): Available as add-on board (IF414) that can be directly connected to the power connector CON3.

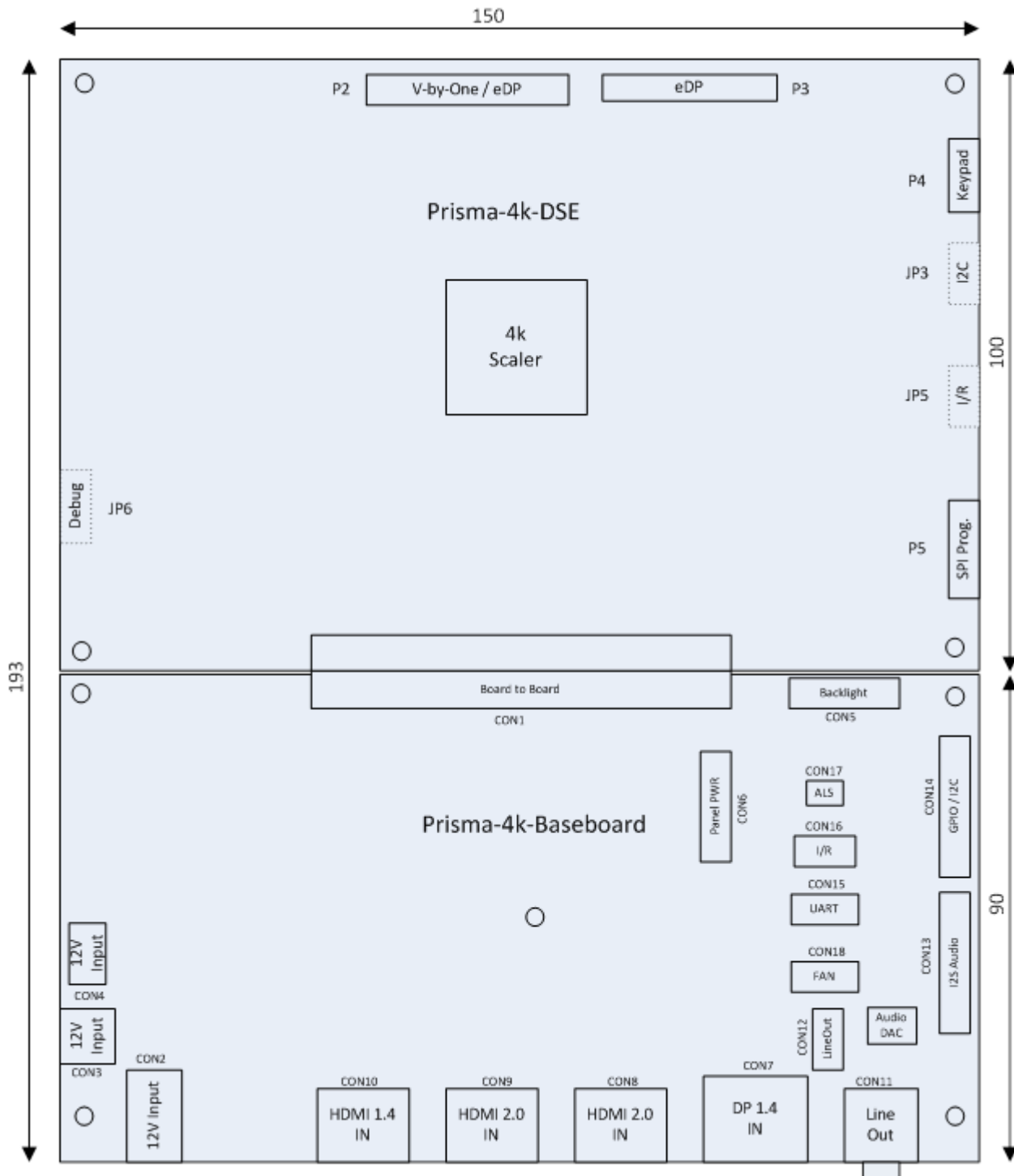
Note (3): With 12V supply voltage.

Note (4): Input 4k-video on DP or HDMI, no panel and no other peripheral devices connected.

6 Interfaces

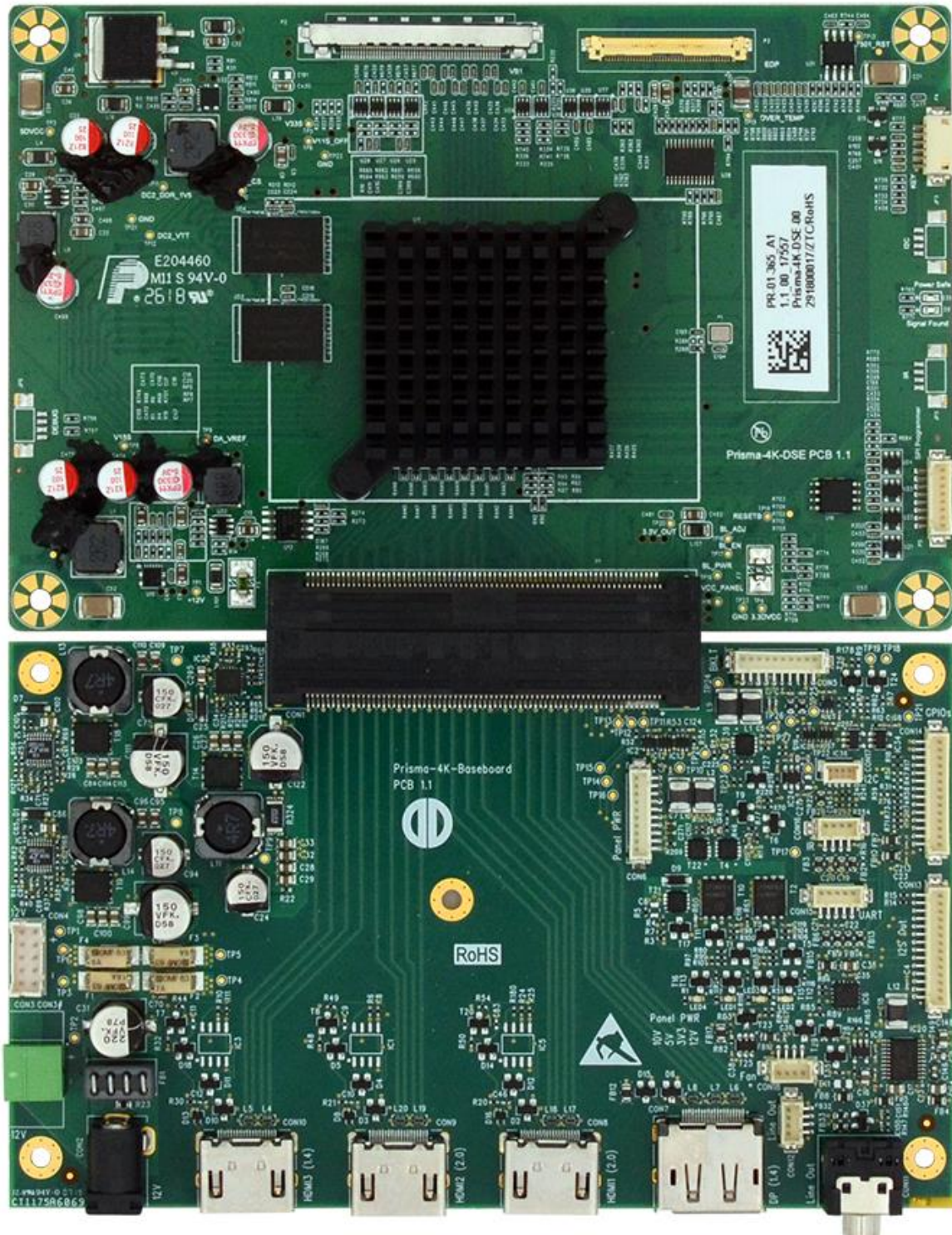


7 Connector Placement and Dimensions

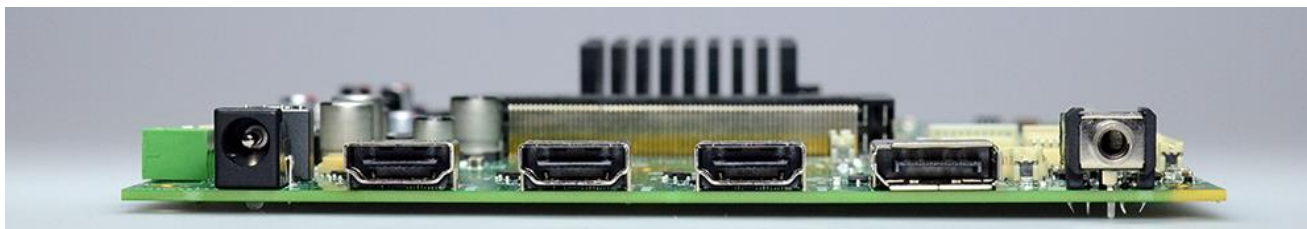


- Max. component height on TOP: 13.0mm
- Max. component height on BOTTOM: 5.5mm

7.1 Top view



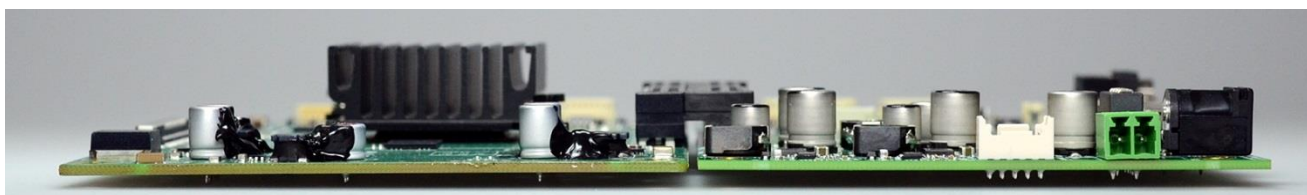
7.2 Front view



7.3 Rear view



7.4 Side view



8 Hardware Information

Prisma-4k-Advanced consists of two components (DSE and Baseboard). The Prisma-4K-DSE has to be configured for a specific panel. The Prisma-4K-Baseboard is run-time configurable by connecting to the Prisma-4K-DSE.

Part Number	Description	Available for Order	Note
PR-01-365_A2	PRISMA-4K-DSE-00 4K2K scaler module	No	1
PR-01-366	PRISMA-4K-BASEBOARD-00	No	1
PR-01-460	PRISMA-4K-ADVANCED-00	No	2
PA-42-XXX	PRISMA-4K-ADVANCED	Yes	2

Note 1: Please refer to the datasheets of both components for more detailed information.

Note 2: Contact your local sales representative for the order number that fits to your desired panel.

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