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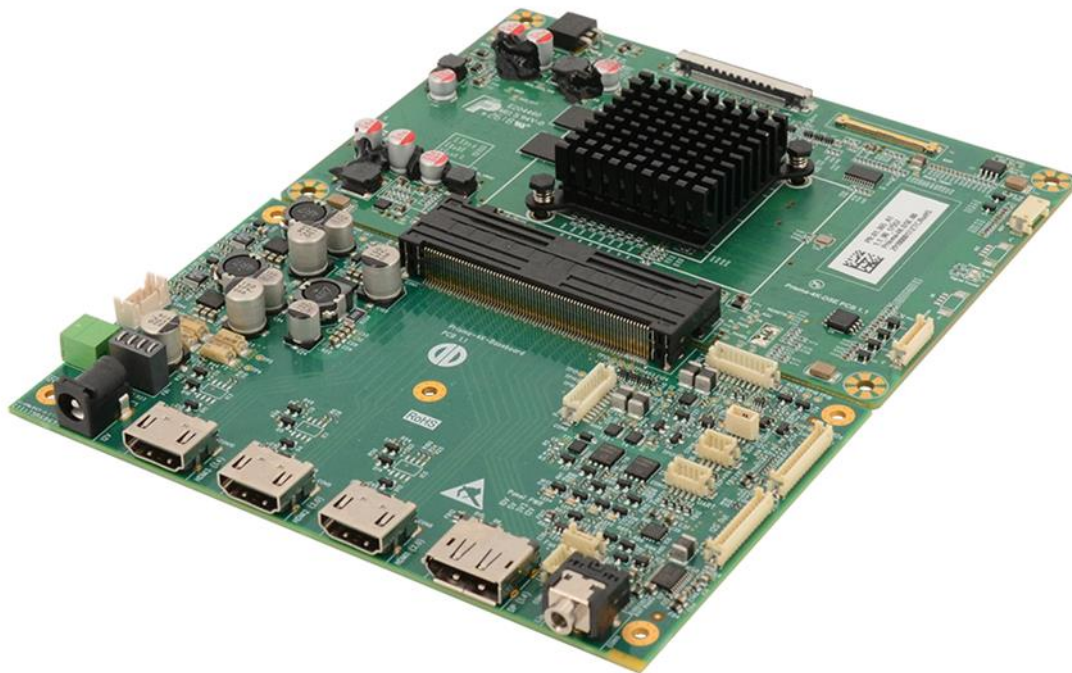
Datasheet

Distec

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 | |

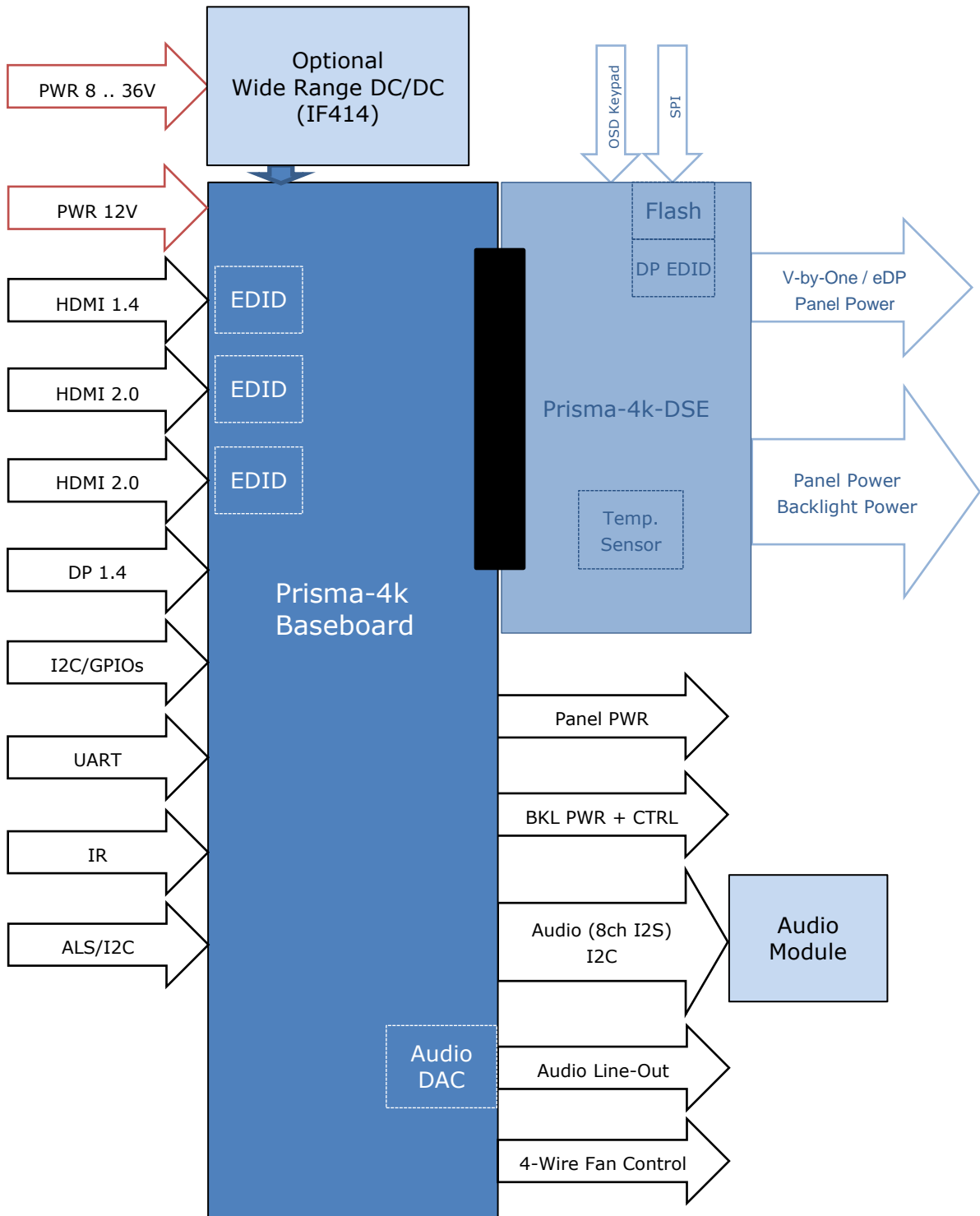
Note (1): Note that 12V backlight supply and 12V panel power is switched directly to V_{in} . Therefore, V_{in} must be within the voltage limits of backlight converter and panel as well.

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

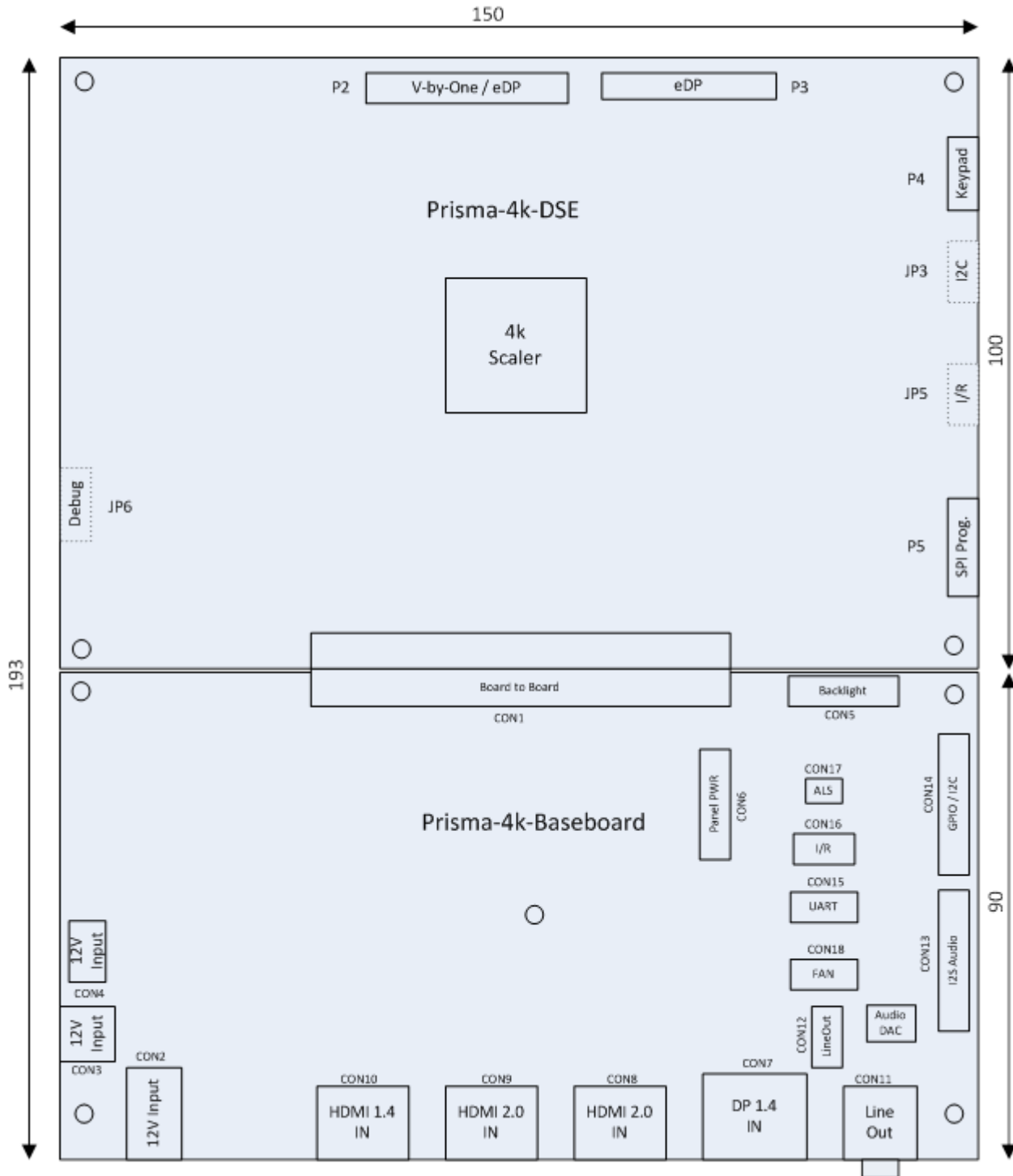
Note (3): With 12V supply voltage.

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

6 Interfaces

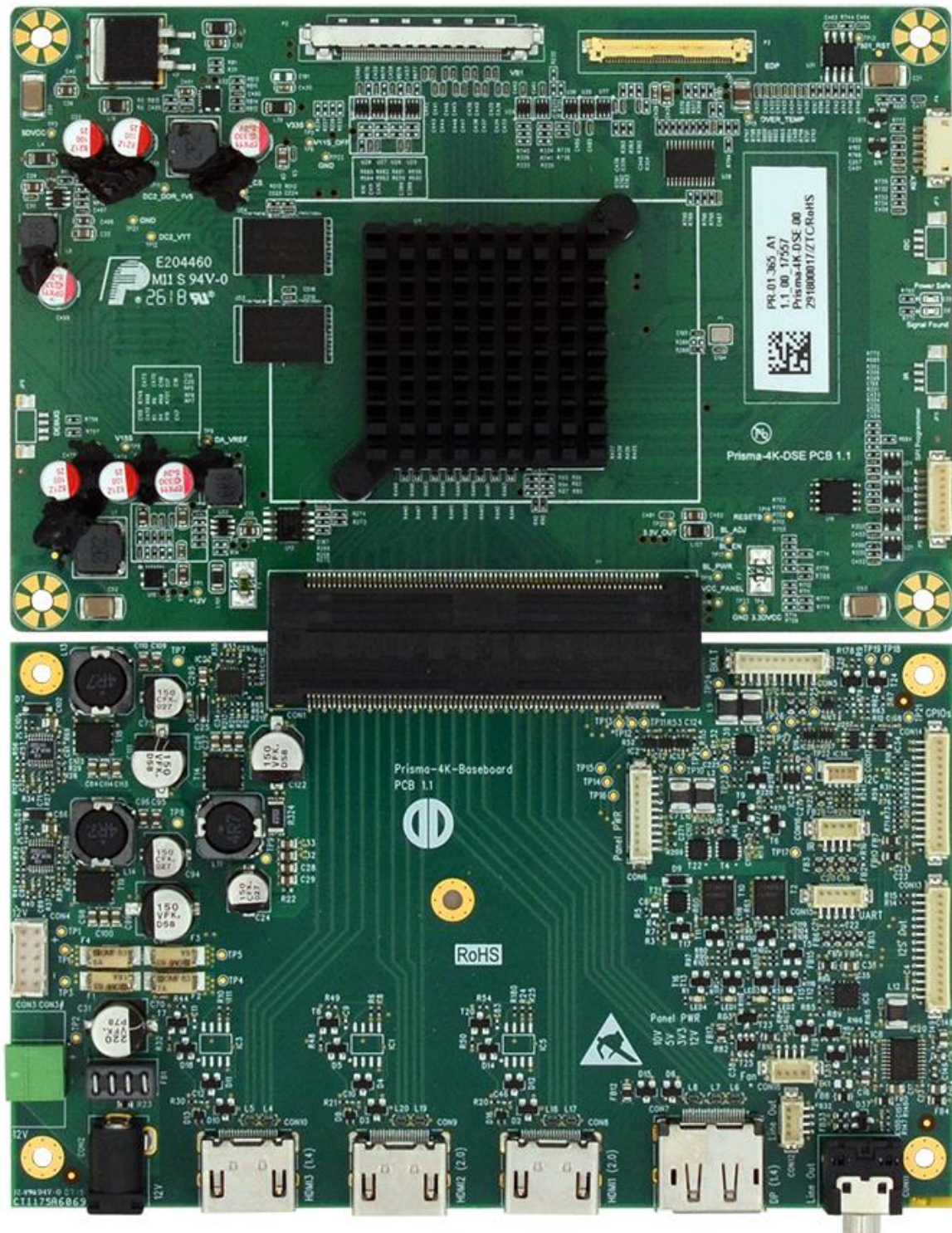


7 Connector Placement and Dimensions

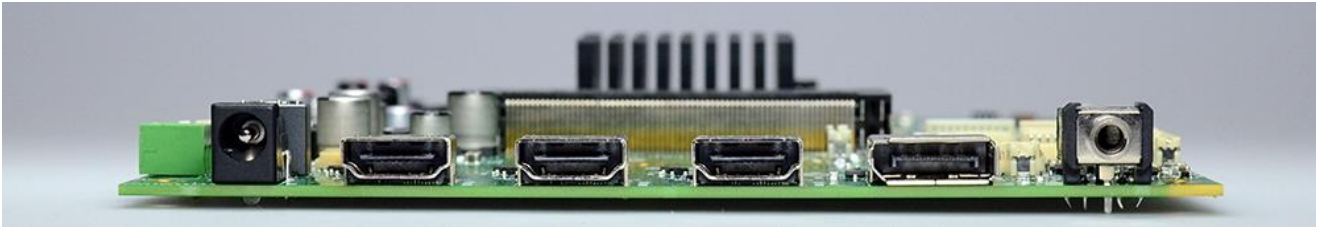


- Max. component height on TOP: 13.0mm
- Max. component height on BOTTOM: 5.5mm

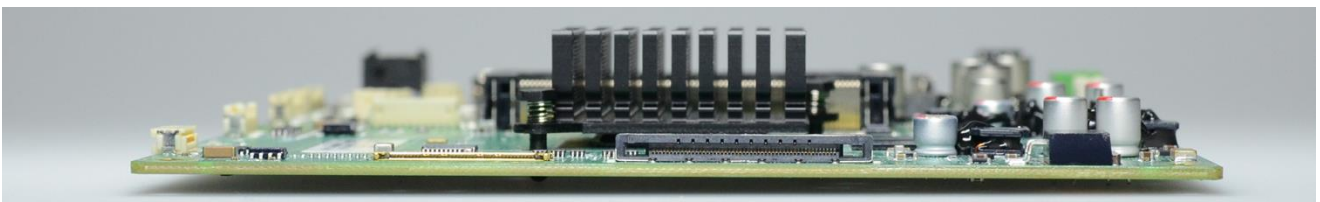
7.1 Top view



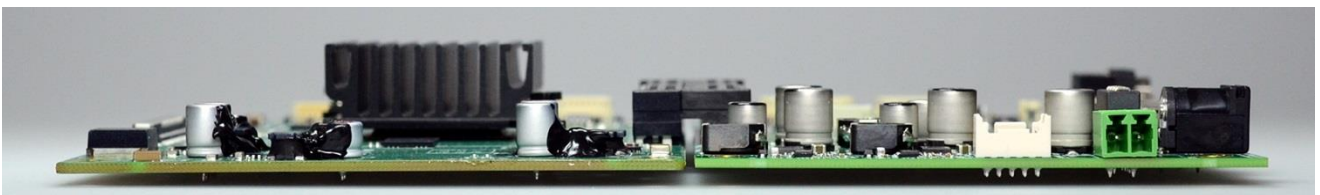
7.2 Front view



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.

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, the UK and the USA. For more information please contact:

Headquarters

Germany



FORTEC Elektronik AG

Augsburger Str. 2b
82110 Germering

Phone: +49 89 894450-0
E-Mail: info@fortecaq.de
Internet: www.fortecaq.de

Fortec Group Members

Austria



Distec GmbH Office Vienna

Nuschinggasse 12
1230 Wien

Phone: +43 1 8673492-0
E-Mail: info@distec.de
Internet: www.distec.de

Germany



Distec GmbH

Augsburger Str. 2b
82110 Germering

Phone: +49 89 894363-0
E-Mail: info@distec.de
Internet: www.distec.de

Switzerland



ALTRAC AG

Bahnhofstraße 3
5436 Würenlos

Phone: +41 44 7446111
E-Mail: info@altrac.ch
Internet: www.altrac.ch

United Kingdom



Display Technology Ltd.

Osprey House, 1 Osprey Court
Hichingbrooke Business Park
Huntingdon, Cambridgeshire, PE29 6FN

Phone: +44 1480 411600
E-Mail: info@displaytechnology.co.uk
Internet: www.displaytechnology.co.uk

USA



Apollo Display Technologies, Corp.

87 Raynor Avenue,
Unit 1 Ronkonkoma,
NY 11779

Phone: +1 631 5804360
E-Mail: info@apolloDisplays.com
Internet: www.apolloDisplays.com