

# **XA100 OPT**

Receiving Card



## **Specifications**

## Change History

| Document Version | Release Date | Description               |
|------------------|--------------|---------------------------|
| V2.0.0           | 2026-08-07   | Updated the pins section. |
| V1.0.0           | 2026-08-07   | First release             |

## Introduction

The XA100 OPT is a 10G high-end receiving card developed by NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). The product features 10G optical port transmission capability and supports the exclusive Adaptive Thermal Compensation, Dynamic Booster, Full-Grayscale Calibration, and LED Image Booster 3.0 technologies of NovaStar. With various other functions such as Multi-Mode, Brightness Overdrive, Frame Rate Adaptive 3.0, Frame Rate Adaptive 2.0, Shutter Fit, HDR, Pixel Level Brightness and Chroma Calibration, Quick Adjustment of Dark or Bright Lines, 7-Color Multi-batch Adjustment, Low Latency, 3D, and 90° Image Rotation, this receiving card can greatly improve the brightness, grayscale and color performance from every aspect, offering users an ultimate visual experience with a uniform, smooth and lifelike image.

The product only supports the usage of NCP files, enabling users to conveniently and swiftly carry out tasks such as displaying content on the cabinets, upgrading firmware, and optimizing image quality.

The XA100 OPT uses DDR3 connectors for communication. It is small, flexible, highly integrated, and therefore convenient for cabinet structure design. It can handle up to 40 groups of parallel RGB data or 64 groups of serial data and also supports LVDS transmission.

For PWM driver ICs, the maximum load capacity per card is:

- 1024×512@60Hz (For 8-bit and 10-bit video sources)
- 620×512@60Hz (For 12-bit video sources)

## Certifications

RoHS

**If the product lacks the certifications required for sale in the destination country or region, please contact NovaStar promptly for confirmation or assistance. Otherwise, the customer**

shall bear any resulting legal risks and liabilities, and NovaStar reserves the right to seek compensation.

## Features

### Improvements to Display Effect

- Adaptive Thermal Compensation

Dynamically adjust the thermal compensation coefficients of the screen to address the issue of color cast caused by uneven heat dissipation across the screen.

- Dynamic Booster

Real-time analysis and dynamic adjustment are made to each frame to significantly improve the display contrast and image details for better visual experience, and effectively control and lower the display power consumption, extending the service life of the LED screen.

- Full-Grayscale Calibration

Work with NovaStar's high-precision calibration system and scientific-grade camera to generate unique calibration coefficients for each grayscale, ensuring uniformity of each grayscale and significantly improving the image quality.

- LED Image Booster 3.0 (Effects depend on driver IC)

- Color Management: Support standard (Rec.709 / DCI-P3 / Rec.2020) and custom color gamuts, enabling more precise colors on the screen.
- Precise Grayscale: Individually correct the 65,536 levels of grayscale (16bit) of the driver IC to fix the display problems at low grayscale conditions, such as brightness spikes, brightness dips, color cast and mottling. This function can also better assist other display technologies, such as 22bit+ and individual gamma adjustment for RGB, allowing for a smoother and uniform image.
- 22bit+: Improve LED screen grayscale by 64 times, with adjustable dithering range and low-grayscale dithering effect, preventing grayscale loss at low brightness and delivering richer details in dark areas for a more refined display.

- Multi-Mode

Apply different modes based on different display scenarios. This ensures that LED screens are able to achieve optimal display quality in various scenarios.

- Brightness Overdrive

Enhance the maximum brightness of the screen by balancing the uniformity, thus increasing the dynamic range and improving image contrast.

- Frame Rate Adaptive 3.0

Adjust the receiving card parameters in real time according to the input frame rate, so that the display effect at different frame rates (23 Hz to 240 Hz) is the best. This feature requires support from specific driver ICs.

- Frame Rate Adaptive 2.0

Adjust the receiving card parameters in real time according to the input frame rate, so that the display effect at specific frame rates is optimal.

- Shutter Fit

Automatically adjust the driver IC parameters according to the camera shutter angle to fix problems of black lines, grayscale addition, and grayscale loss during camera shooting in xR scenarios.

- HDR

- Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards.
- Support HLG.

- Pixel Level Brightness and Chroma Calibration

Work with NovaStar's calibration system to calibrate the brightness and chroma of each pixel, effectively eliminating differences and enabling high consistency for both brightness and chroma.

- Quick Adjustment of Dark or Bright Lines

The different brightness of seams caused by splicing of modules or cabinets can be corrected to improve the visual experience. The adjustment can be as fast as a few milliseconds.

- 7-Color Multi-batch Adjustment

Adjust the brightness and chroma of cabinets or modules across seven colors to reduce display discrepancies due to production batch variations.

- Low Latency

The latency of the video source at the receiving card end can be reduced to 1 frame (only when using modules with driver ICs with built-in RAM).

- 3D

Work with the controller that supports 3D function to enable 3D output.

- 90° Image Rotation

The display image can be rotated in multiples of 90° (0°/90°/180°/270°).

## Improvements to Maintainability

- Calibration Coefficient Management

The calibration coefficients can be uploaded, read back, saved to hardware, and erased.

- Automatic Module Calibration

After a new module with flash memory is installed to replace the old one, the calibration coefficients stored in the flash memory can be automatically uploaded to the receiving card when it is powered on, which ensures unchanged uniform display brightness and chroma.

- Uploading Calibration Coefficients

Upload calibration coefficients to the receiving card quickly or in a stable manner, with acceleration support if needed.

- Module Flash Management

For modules with flash memory, the information stored can be managed, allowing for the storage and readback of calibration coefficients and module IDs.

- One-click to Apply Calibration Coefficients in Module Flash

For modules with flash memory, when the Ethernet cable is disconnected, users can hold down the self-test button on the cabinet to upload the calibration coefficients in the module Flash to the receiving card.

- Mapping 1.1

The cabinet displays the Ethernet port, receiving card, and controller numbers in different colors, clearly showing the physical locations and connection topology of receiving cards.

- Temperature and Voltage Monitoring

Real-time monitoring of the temperature and voltage of the receiving card, without the need for other external devices.

- Bit Error Detection

Monitor the number of erroneous packets in the Ethernet data transmission of the receiving card to help troubleshoot network communication problems.

- Detection of Ethernet Cable Disconnections

Monitor the number of times the Ethernet cable to the receiving card is disconnected, assisting in identifying potential communication link issues.

- Status Detection of Dual Power Supplies

When two power supplies are used, their working status can be detected.

- LVDS Transmission (dedicated firmware required)

Low-voltage differential signaling (LVDS) transmission is used to reduce the number of data cables from the hub board to module, increasing the transmission distance and improving the signal transmission quality.

## Improvements to Reliability

- 10G Optical Port Transmission

10Gbps optical/electrical transmission eliminates the load capacity limitations of traditional Ethernet cables restricting display areas, streamlining system wiring for 4K/8K giant screens. It ensures consistent, ultra-high image quality while minimizing long-distance signal interference and deployment costs, delivering enhanced ease of deployment and reliability for ultra-large screens.

- Dual Card Backup and Status Monitoring

In an application requiring high reliability, two receiving cards can be mounted onto a single hub board for backup. When the primary card fails, the backup card can serve immediately to ensure uninterrupted operation of the display.

The working status of the primary and backup receiving cards can be monitored in real-time.

- Loop Backup

The receiving card and controller form a loop via the primary and backup line connections. When a fault occurs at a location of the lines, the screen can still display the image normally.

- Dual Backup of Configuration Parameters

The receiving card configuration parameters are stored in both the application area and factory area of the receiving card at the same time. Users usually use the configuration parameters in the application area. If necessary, users can restore the configuration parameters in the factory area to the application area.

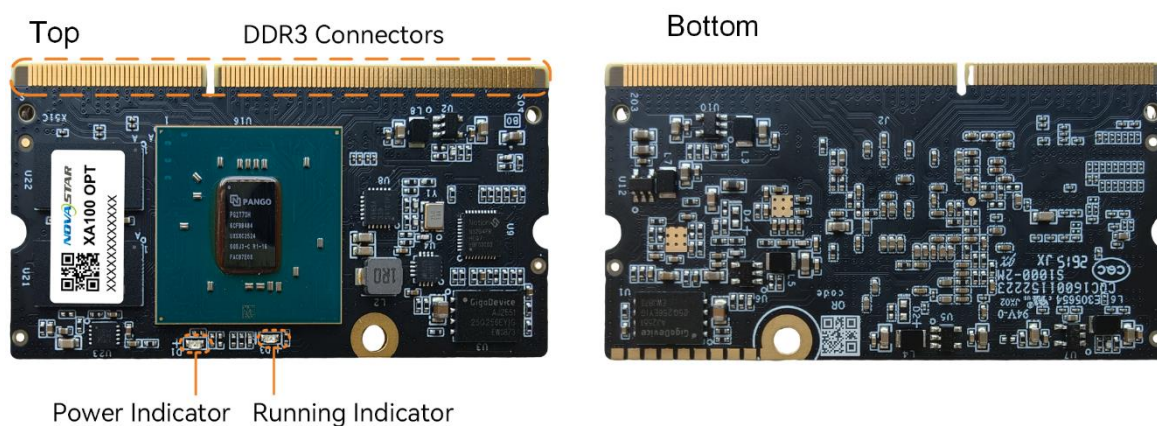
- Dual Program Backup

Two copies of the firmware program are stored in the receiving card at the factory to avoid the problem that the receiving card may get stuck abnormally during program update.

- One-click Firmware Program Learning

The cabinet firmware program and configuration parameters can be copied to other cabinets with one click in VMP to help quickly complete cabinet configuration.

## Appearance



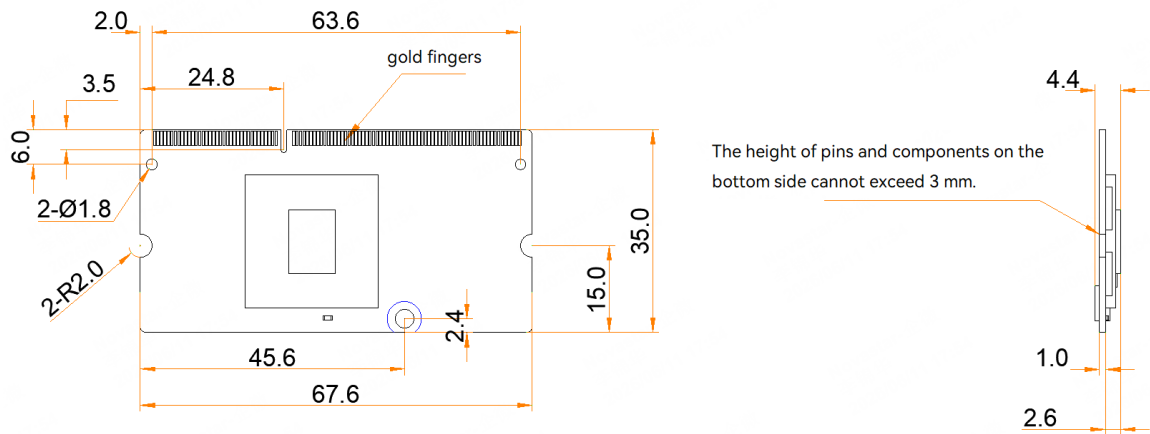
Product images are for reference only. The actual product may vary.

## Indicators

| Indicators        | Color | Status                            | Description                                                                                                           |
|-------------------|-------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Running indicator | Green | Flashing once every 1s (at 60 Hz) | The receiving card is functioning normally. Ethernet cable connection is normal, and video source input is available. |
|                   |       | Flashing once every 3s            | Ethernet cable connection is abnormal.                                                                                |
|                   |       | Flashing 3 times every 0.5s       | Ethernet cable connection is normal, but video source input is unavailable.                                           |
|                   |       | Flashing once every 0.2s          | The receiving card failed to load the program in the application area and is now using the backup program.            |
|                   |       | Flashing 8 times every 0.5s       | A redundancy switchover occurred on the Ethernet port and the loop backup has taken effect.                           |
| Power indicator   | Red   | Always on                         | The power input is normal.                                                                                            |

## Dimensions

The board thickness is not greater than 1.5 mm, and the total thickness (board thickness + thickness of components on the top and bottom sides) is not greater than 5.0 mm. The mounting holes are connected to signal ground (GND).



Tolerance:  $\pm 0.3$  Unit: mm

### Note

For molding or installation cutouts, please contact NovaStar for a higher-precision structural drawing.

## LVDS Pins



| JH2                                               |            |    |    |            |                                                   |
|---------------------------------------------------|------------|----|----|------------|---------------------------------------------------|
| Ground                                            | GND        | 1  | 2  | GND        | Ground                                            |
| SerDes signal input<br>(receiving card<br>output) | MGTP_TX1_N | 3  | 4  | MGTP_TX3_N | SerDes signal input<br>(receiving card<br>output) |
|                                                   | MGTP_TX1_P | 5  | 6  | MGTP_TX3_P |                                                   |
| Ground                                            | GND        | 7  | 8  | GND        | Ground                                            |
| SerDes signal<br>output (receiving<br>card input) | MGTP_RX1_N | 9  | 10 | MGTP_RX3_N | SerDes signal<br>output (receiving<br>card input) |
|                                                   | MGTP_RX1_P | 11 | 12 | MGTP_RX3_P |                                                   |
| Ground                                            | GND        | 13 | 14 | GND        | Ground                                            |
| SerDes signal input<br>(receiving card<br>output) | MGTP_TX2_N | 15 | 16 | MGTP_TX4_N | SerDes signal input<br>(receiving card<br>output) |
|                                                   | MGTP_TX2_P | 17 | 18 | MGTP_TX4_P |                                                   |

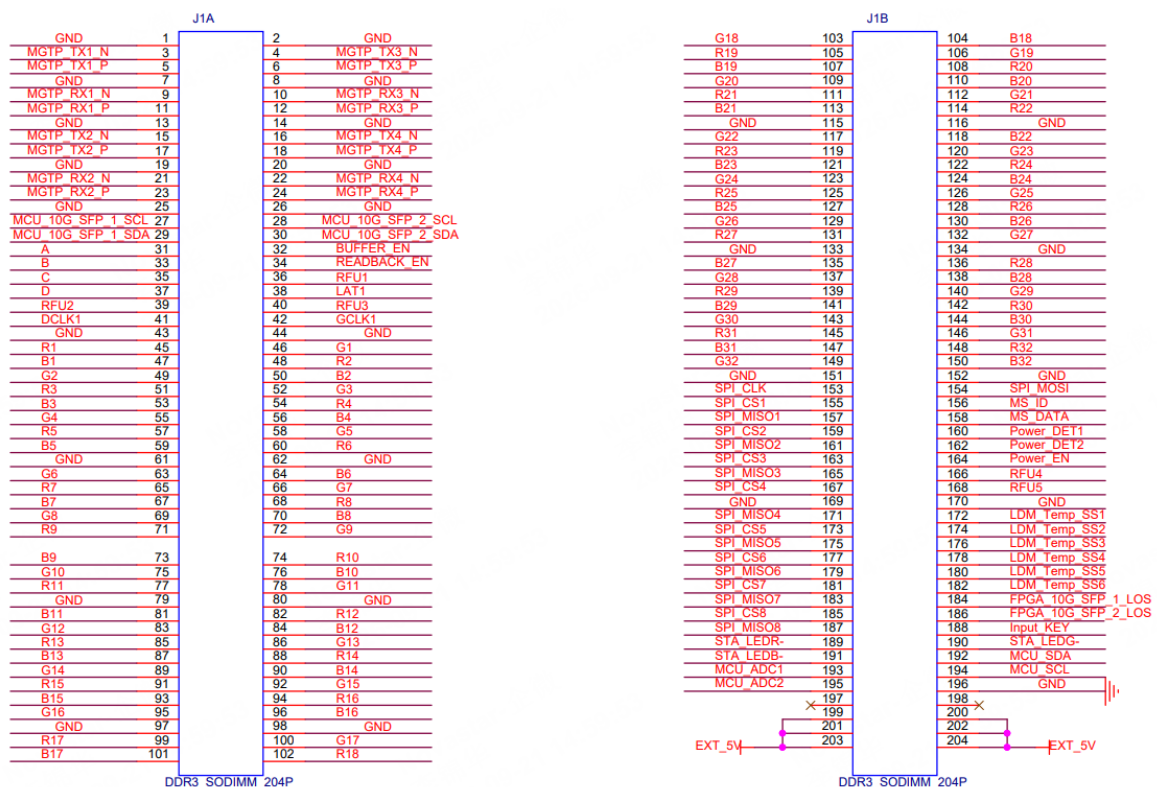
| JH2                                                     |                   |    |    |                   |                                                         |
|---------------------------------------------------------|-------------------|----|----|-------------------|---------------------------------------------------------|
| Ground                                                  | GND               | 19 | 20 | GND               | Ground                                                  |
| SerDes signal output (receiving card input)             | MGTP_RX2_N        | 21 | 22 | MGTP_RX4_N        | SerDes signal output (receiving card input)             |
|                                                         | MGTP_RX2_P        | 23 | 24 | MGTP_RX4_P        |                                                         |
| Ground                                                  | GND               | 25 | 26 | GND               | Ground                                                  |
| I <sup>2</sup> C clock configuration for optical port 1 | MCU_10G_SFP_1_SCL | 27 | 28 | MCU_10G_SFP_2_SCL | I <sup>2</sup> C clock configuration for optical port 2 |
| I <sup>2</sup> C data configuration for optical port 1  | MCU_10G_SFP_1_SDA | 29 | 30 | MCU_10G_SFP_2_SDA | I <sup>2</sup> C data configuration for optical port 2  |
| LVDS signal                                             | LVDS1.8_1_N       | 31 | 32 | LVDS1.8_27_N      | LVDS signal                                             |
|                                                         | LVDS1.8_1_P       | 33 | 34 | LVDS1.8_27_P      |                                                         |
|                                                         | LVDS1.8_2_N       | 35 | 36 | LVDS1.8_28_N      |                                                         |
|                                                         | LVDS1.8_2_P       | 37 | 38 | LVDS1.8_28_P      |                                                         |
|                                                         | LVDS1.8_3_N       | 39 | 40 | LVDS1.8_29_N      |                                                         |
|                                                         | LVDS1.8_3_P       | 41 | 42 | LVDS1.8_29_P      |                                                         |
| Ground                                                  | GND               | 43 | 44 | GND               | Ground                                                  |
| LVDS signal                                             | LVDS1.8_4_N       | 45 | 46 | LVDS1.8_30_N      | LVDS signal                                             |
|                                                         | LVDS1.8_4_P       | 47 | 48 | LVDS1.8_30_P      |                                                         |
|                                                         | LVDS1.8_5_N       | 49 | 50 | LVDS1.8_31_N      |                                                         |
|                                                         | LVDS1.8_5_P       | 51 | 52 | LVDS1.8_31_P      |                                                         |
|                                                         | LVDS1.8_6_N       | 53 | 54 | LVDS1.8_32_N      |                                                         |
|                                                         | LVDS1.8_6_P       | 55 | 56 | LVDS1.8_32_P      |                                                         |
|                                                         | LVDS1.8_7_N       | 57 | 58 | LVDS1.8_33_N      |                                                         |
|                                                         | LVDS1.8_7_P       | 59 | 60 | LVDS1.8_33_P      |                                                         |
| Ground                                                  | GND               | 61 | 62 | GND               | Ground                                                  |
| LVDS signal                                             | LVDS1.8_8_N       | 63 | 64 | LVDS1.8_34_N      | LVDS signal                                             |
|                                                         | LVDS1.8_8_P       | 65 | 66 | LVDS1.8_34_P      |                                                         |
|                                                         | LVDS1.8_9_N       | 67 | 68 | LVDS1.8_35_N      |                                                         |

| JH2         |              |     |     |              |             |
|-------------|--------------|-----|-----|--------------|-------------|
|             | LVDS1.8_9_P  | 69  | 70  | LVDS1.8_35_P |             |
| Reserved    | GPIO1_1V8    | 71  | 72  | GPIO3_1V8    | Reserved    |
|             | GPIO2_1V8    | 73  | 74  | GPIO4_1V8    |             |
| LVDS signal | LVDS1.8_10_N | 75  | 76  | LVDS1.8_36_N | LVDS signal |
|             | LVDS1.8_10_P | 77  | 78  | LVDS1.8_36_P |             |
| Ground      | GND          | 79  | 80  | GND          | Ground      |
| LVDS signal | LVDS1.8_11_N | 81  | 82  | LVDS1.8_37_N | LVDS signal |
|             | LVDS1.8_11_P | 83  | 84  | LVDS1.8_37_P |             |
|             | LVDS1.8_12_N | 85  | 86  | LVDS1.8_38_N |             |
|             | LVDS1.8_12_P | 87  | 88  | LVDS1.8_38_P |             |
|             | LVDS1.8_13_N | 89  | 90  | LVDS1.8_39_N |             |
|             | LVDS1.8_13_P | 91  | 92  | LVDS1.8_39_P |             |
|             | LVDS1.8_14_N | 93  | 94  | LVDS1.8_40_N |             |
|             | LVDS1.8_14_P | 95  | 96  | LVDS1.8_40_P |             |
| Ground      | GND          | 97  | 98  | GND          | Ground      |
| LVDS signal | LVDS1.8_15_N | 99  | 100 | LVDS1.8_41_N | LVDS signal |
|             | LVDS1.8_15_P | 101 | 102 | LVDS1.8_41_P |             |
|             | LVDS1.8_16_N | 103 | 104 | LVDS1.8_42_N |             |
|             | LVDS1.8_16_P | 105 | 106 | LVDS1.8_42_P |             |
|             | LVDS1.8_17_N | 107 | 108 | LVDS1.8_43_N |             |
|             | LVDS1.8_17_P | 109 | 110 | LVDS1.8_43_P |             |
|             | LVDS1.8_18_N | 111 | 112 | LVDS1.8_44_N |             |
|             | LVDS1.8_18_P | 113 | 114 | LVDS1.8_44_P |             |
| Ground      | GND          | 115 | 116 | GND          | Ground      |
| LVDS signal | LVDS1.8_19_N | 117 | 118 | LVDS1.8_45_N | LVDS signal |
|             | LVDS1.8_19_P | 119 | 120 | LVDS1.8_45_P |             |
|             | LVDS1.8_20_N | 121 | 122 | LVDS1.8_46_N |             |
|             | LVDS1.8_20_P | 123 | 124 | LVDS1.8_46_P |             |

| JH2         |              |     |     |              |             |
|-------------|--------------|-----|-----|--------------|-------------|
|             | LVDS1.8_21_N | 125 | 126 | LVDS1.8_47_N |             |
|             | LVDS1.8_21_P | 127 | 128 | LVDS1.8_47_P |             |
|             | LVDS1.8_22_N | 129 | 130 | LVDS1.8_48_N |             |
|             | LVDS1.8_22_P | 131 | 132 | LVDS1.8_48_P |             |
| Ground      | GND          | 133 | 134 | GND          | Ground      |
| LVDS signal | LVDS1.8_23_N | 135 | 136 | LVDS1.8_49_N | LVDS signal |
|             | LVDS1.8_23_P | 137 | 138 | LVDS1.8_49_P |             |
|             | LVDS1.8_24_N | 139 | 140 | LVDS1.8_50_N |             |
|             | LVDS1.8_24_P | 141 | 142 | LVDS1.8_50_P |             |
|             | LVDS1.8_25_N | 143 | 144 | LVDS1.8_51_N |             |
|             | LVDS1.8_25_P | 145 | 146 | LVDS1.8_51_P |             |
|             | LVDS1.8_26_N | 147 | 148 | LVDS1.8_52_N |             |
|             | LVDS1.8_26_P | 149 | 150 | LVDS1.8_52_P |             |
| Ground      | GND          | 151 | 152 | GND          | Ground      |
| Reserved    | GPIO1        | 153 | 154 | GPIO2        | Reserved    |
|             | GPIO3        | 155 | 156 | GPIO4        |             |
|             | GPIO5        | 157 | 158 | GPIO6        |             |
|             | GPIO7        | 159 | 160 | GPIO8        |             |
|             | GPIO9        | 161 | 162 | GPIO10       |             |
|             | GPIO11       | 163 | 164 | GPIO12       |             |
|             | GPIO13       | 165 | 166 | GPIO14       |             |
|             | GPIO15       | 167 | 168 | GPIO16       |             |
| Ground      | GND          | 169 | 170 | GND          | Ground      |
| Reserved    | GPIO17       | 171 | 172 | GPIO18       | Reserved    |
|             | GPIO19       | 173 | 174 | GPIO20       |             |
|             | GPIO21       | 175 | 176 | GPIO22       |             |
|             | GPIO23       | 177 | 178 | GPIO24       |             |
|             | GPIO25       | 179 | 180 | GPIO26       |             |

| JH2           |            |     |     |                    |                               |
|---------------|------------|-----|-----|--------------------|-------------------------------|
|               | GPI027     | 181 | 182 | GPI028             |                               |
|               | GPI029     | 183 | 184 | FPGA_10G_SFP_1_LOS | Optical link detection signal |
|               | GPI031     | 185 | 186 | FPGA_10G_SFP_2_LOS |                               |
|               | GPI033     | 187 | 188 | Input_KEY          | Test button                   |
| Tri-color LED | STA_LED-R- | 189 | 190 | STA_LED-G-         | Tri-color LED                 |
|               | STA_LED-B- | 191 | 192 | MCU_SDA            | I <sup>2</sup> C SDA          |
| ADC detection | MCU_ADC1   | 193 | 194 | MCU_SCL            | I <sup>2</sup> C SCL          |
|               | MCU_ADC2   | 195 | 196 | GND                | Ground                        |
| /             | NC         | 197 | 198 | NC                 | /                             |
| 5 V           | EXT_5V     | 199 | 200 | EXT_5V             | 5 V                           |
|               | EXT_5V     | 201 | 202 | EXT_5V             |                               |
|               | EXT_5V     | 203 | 204 | EXT_5V             |                               |

## 32 Groups of Parallel RGB Data



| JH1                                                           |                   |    |    |                   |                                                               |
|---------------------------------------------------------------|-------------------|----|----|-------------------|---------------------------------------------------------------|
| Ground                                                        | GND               | 1  | 2  | GND               | Ground                                                        |
| SerDes signal input<br>(receiving card<br>output)             | MGTP_TX1_N        | 3  | 4  | MGTP_TX3_N        | SerDes signal input<br>(receiving card<br>output)             |
|                                                               | MGTP_TX1_P        | 5  | 6  | MGTP_TX3_P        |                                                               |
| Ground                                                        | GND               | 7  | 8  | GND               | Ground                                                        |
| SerDes signal<br>output (receiving<br>card input)             | MGTP_RX1_N        | 9  | 10 | MGTP_RX3_N        | SerDes signal<br>output (receiving<br>card input)             |
|                                                               | MGTP_RX1_P        | 11 | 12 | MGTP_RX3_P        |                                                               |
| Ground                                                        | GND               | 13 | 14 | GND               | Ground                                                        |
| SerDes signal input<br>(receiving card<br>output)             | MGTP_TX2_N        | 15 | 16 | MGTP_TX4_N        | SerDes signal input<br>(receiving card<br>output)             |
|                                                               | MGTP_TX2_P        | 17 | 18 | MGTP_TX4_P        |                                                               |
| Ground                                                        | GND               | 19 | 20 | GND               | Ground                                                        |
| SerDes signal<br>output (receiving<br>card input)             | MGTP_RX2_N        | 21 | 22 | MGTP_RX4_N        | SerDes signal<br>output (receiving<br>card input)             |
|                                                               | MGTP_RX2_P        | 23 | 24 | MGTP_RX4_P        |                                                               |
| Ground                                                        | GND               | 25 | 26 | GND               | Ground                                                        |
| I <sup>2</sup> C clock<br>configuration for<br>optical port 1 | MCU_10G_SFP_1_SCL | 27 | 28 | MCU_10G_SFP_2_SCL | I <sup>2</sup> C clock<br>configuration for<br>optical port 2 |
| I <sup>2</sup> C data<br>configuration for<br>optical port 1  | MCU_10G_SFP_1_SDA | 29 | 30 | MCU_10G_SFP_2_SDA | I <sup>2</sup> C data<br>configuration for<br>optical port 2  |
| Row decoding<br>signal                                        | A                 | 31 | 32 | BUFFER_EN         | 245 driver IC<br>enable pin                                   |
|                                                               | B                 | 33 | 34 | READBACK_EN       | 245 direction<br>control signal                               |
|                                                               | C                 | 35 | 36 | RFU1              | Reserved                                                      |
|                                                               | D                 | 37 | 38 | LAT1              | Latch signal                                                  |
| Reserved                                                      | RFU2              | 39 | 40 | RFU3              | Reserved                                                      |
| Shift clock signal                                            | DCLK1             | 41 | 42 | GCLK1             | Grayscale Clock                                               |
| Ground                                                        | GND               | 43 | 44 | GND               | Ground                                                        |
| /                                                             | R1                | 45 | 46 | G1                | /                                                             |

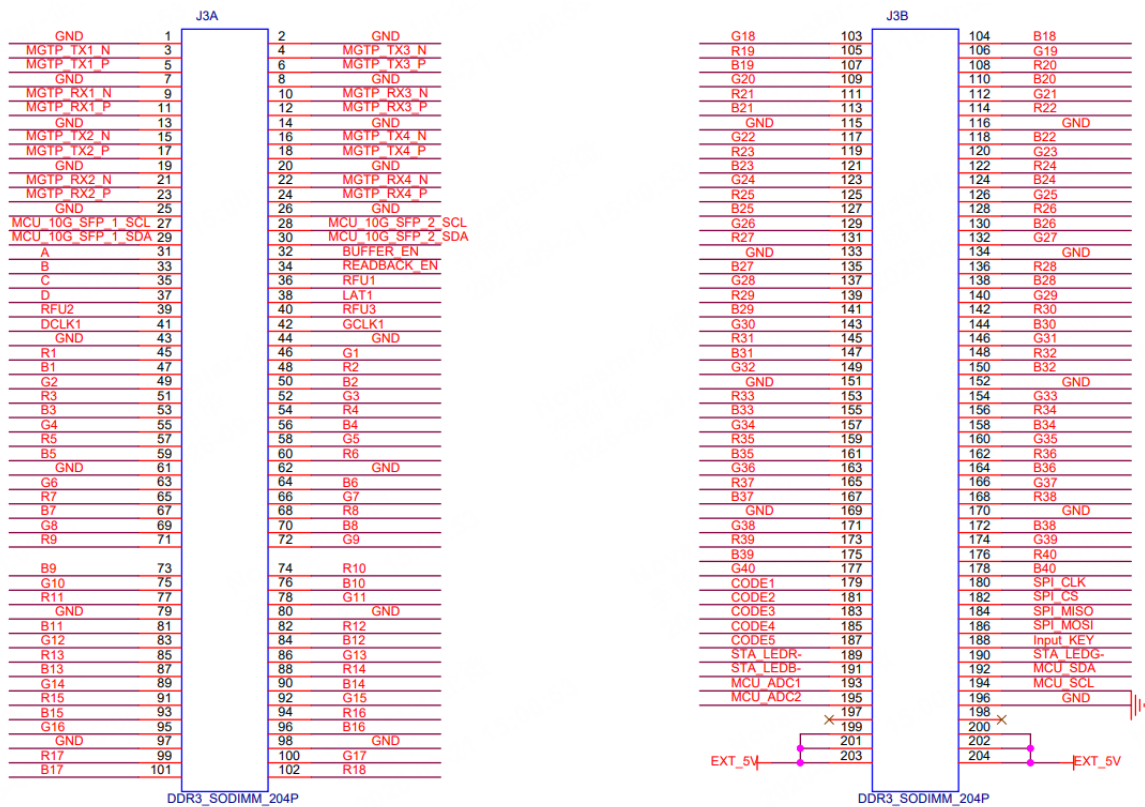
| JH1    |     |     |     |     |        |
|--------|-----|-----|-----|-----|--------|
|        | B1  | 47  | 48  | R2  |        |
|        | G2  | 49  | 50  | B2  |        |
|        | R3  | 51  | 52  | G3  |        |
|        | B3  | 53  | 54  | R4  |        |
|        | G4  | 55  | 56  | B4  |        |
|        | R5  | 57  | 58  | G5  |        |
|        | B5  | 59  | 60  | R6  |        |
| Ground | GND | 61  | 62  | GND | Ground |
| /      | G6  | 63  | 64  | B6  | /      |
|        | R7  | 65  | 66  | G7  |        |
|        | B7  | 67  | 68  | R8  |        |
|        | G8  | 69  | 70  | B8  |        |
|        | R9  | 71  | 72  | G9  |        |
|        | B9  | 73  | 74  | R10 |        |
|        | G10 | 75  | 76  | B10 |        |
|        | R11 | 77  | 78  | G11 |        |
| Ground | GND | 79  | 80  | GND | Ground |
| /      | B11 | 81  | 82  | R12 | /      |
|        | G12 | 83  | 84  | B12 |        |
|        | R13 | 85  | 86  | G13 |        |
|        | B13 | 87  | 88  | R14 |        |
|        | G14 | 89  | 90  | B14 |        |
|        | R15 | 91  | 92  | G15 |        |
|        | B15 | 93  | 94  | R16 |        |
|        | G16 | 95  | 96  | B16 |        |
| Ground | GND | 97  | 98  | GND | Ground |
| /      | R17 | 99  | 100 | G17 | /      |
|        | B17 | 101 | 102 | R18 |        |

| JH1                        |         |     |     |          |                  |
|----------------------------|---------|-----|-----|----------|------------------|
|                            | G18     | 103 | 104 | B18      |                  |
|                            | R19     | 105 | 106 | G19      |                  |
|                            | B19     | 107 | 108 | R20      |                  |
|                            | G20     | 109 | 110 | B20      |                  |
|                            | R21     | 111 | 112 | G21      |                  |
|                            | B21     | 113 | 114 | R22      |                  |
| Ground                     | GND     | 115 | 116 | GND      | Ground           |
| /                          | G22     | 117 | 118 | B22      | /                |
|                            | R23     | 119 | 120 | G23      |                  |
|                            | B23     | 121 | 122 | R24      |                  |
|                            | G24     | 123 | 124 | B24      |                  |
|                            | R25     | 125 | 126 | G25      |                  |
|                            | B25     | 127 | 128 | R26      |                  |
|                            | G26     | 129 | 130 | B26      |                  |
|                            | R27     | 131 | 132 | G27      |                  |
| Ground                     | GND     | 133 | 134 | GND      | Ground           |
| /                          | B27     | 135 | 136 | R28      | /                |
|                            | G28     | 137 | 138 | B28      |                  |
|                            | R29     | 139 | 140 | G29      |                  |
|                            | B29     | 141 | 142 | R30      |                  |
|                            | G30     | 143 | 144 | B30      |                  |
|                            | R31     | 145 | 146 | G31      |                  |
|                            | B31     | 147 | 148 | R32      |                  |
|                            | G32     | 149 | 150 | B32      |                  |
| Ground                     | GND     | 151 | 152 | GND      | Ground           |
| Clock signal of serial pin | SPI_CLK | 153 | 154 | SPI_MOSI | SPI interface    |
| CS signal of serial        | SPI_CS1 | 155 | 156 | MS_ID    | Dual card backup |

| JH1                              |            |     |     |                    |                                                    |
|----------------------------------|------------|-----|-----|--------------------|----------------------------------------------------|
| pin                              |            |     |     |                    | identifier signal                                  |
| Module flash data storage output | SPI_MISO1  | 157 | 158 | MS_DATA            | Dual card backup connection signal                 |
| CS signal of serial pin          | SPI_CS2    | 159 | 160 | Power_DET1         | Dual power supply detection signal                 |
| Module flash data storage output | SPI_MISO2  | 161 | 162 | Power_DET2         |                                                    |
| CS signal of serial pin          | SPI_CS3    | 163 | 164 | Power_EN           | Power enable signal                                |
| Module flash data storage output | SPI_MISO3  | 165 | 166 | RFU4               | Reserved                                           |
| CS signal of serial pin          | SPI_CS4    | 167 | 168 | RFU5               |                                                    |
| Ground                           | GND        | 169 | 170 | GND                | Ground                                             |
| Module flash data storage output | SPI_MISO4  | 171 | 172 | LDM_Temp_SS1       | Module temperature detection chip selection signal |
| CS signal of serial pin          | SPI_CS5    | 173 | 174 | LDM_Temp_SS2       |                                                    |
| Module flash data storage output | SPI_MISO5  | 175 | 176 | LDM_Temp_SS3       |                                                    |
| CS signal of serial pin          | SPI_CS6    | 177 | 178 | LDM_Temp_SS4       |                                                    |
| Module flash data storage output | SPI_MISO6  | 179 | 180 | LDM_Temp_SS5       |                                                    |
| CS signal of serial pin          | SPI_CS7    | 181 | 182 | LDM_Temp_SS6       |                                                    |
| Module flash data storage output | SPI_MISO7  | 183 | 184 | FPGA_10G_SFP_1_LOS | Optical link detection signal                      |
| CS signal of serial pin          | SPI_CS8    | 185 | 186 | FPGA_10G_SFP_2_LOS |                                                    |
| Module flash data storage output | SPI_MISO8  | 187 | 188 | Input_KEY          | Test button                                        |
| Tri-color LED                    | STA_LED-R- | 189 | 190 | STA_LED-G-         | Tri-color LED                                      |

| JH1           |           |     |     |         |                      |
|---------------|-----------|-----|-----|---------|----------------------|
|               | STA_LEDB- | 191 | 192 | MCU_SDA | I <sup>2</sup> C SDA |
| ADC detection | MCU_ADC1  | 193 | 194 | MCU_SCL | I <sup>2</sup> C SCL |
|               | MCU_ADC2  | 195 | 196 | GND     | Ground               |
| /             | NC        | 197 | 198 | NC      | /                    |
| 5 V           | EXT_5V    | 199 | 200 | EXT_5V  | 5 V                  |
|               | EXT_5V    | 201 | 202 | EXT_5V  |                      |
|               | EXT_5V    | 203 | 204 | EXT_5V  |                      |

## 40 Groups of Parallel RGB Data



| JH3                                         |            |   |   |            |                                             |
|---------------------------------------------|------------|---|---|------------|---------------------------------------------|
| Ground                                      | GND        | 1 | 2 | GND        | Ground                                      |
| SerDes signal input (receiving card output) | MGTP_TX1_N | 3 | 4 | MGTP_TX3_N | SerDes signal input (receiving card output) |
|                                             | MGTP_TX1_P | 5 | 6 | MGTP_TX3_P |                                             |
| Ground                                      | GND        | 7 | 8 | GND        | Ground                                      |

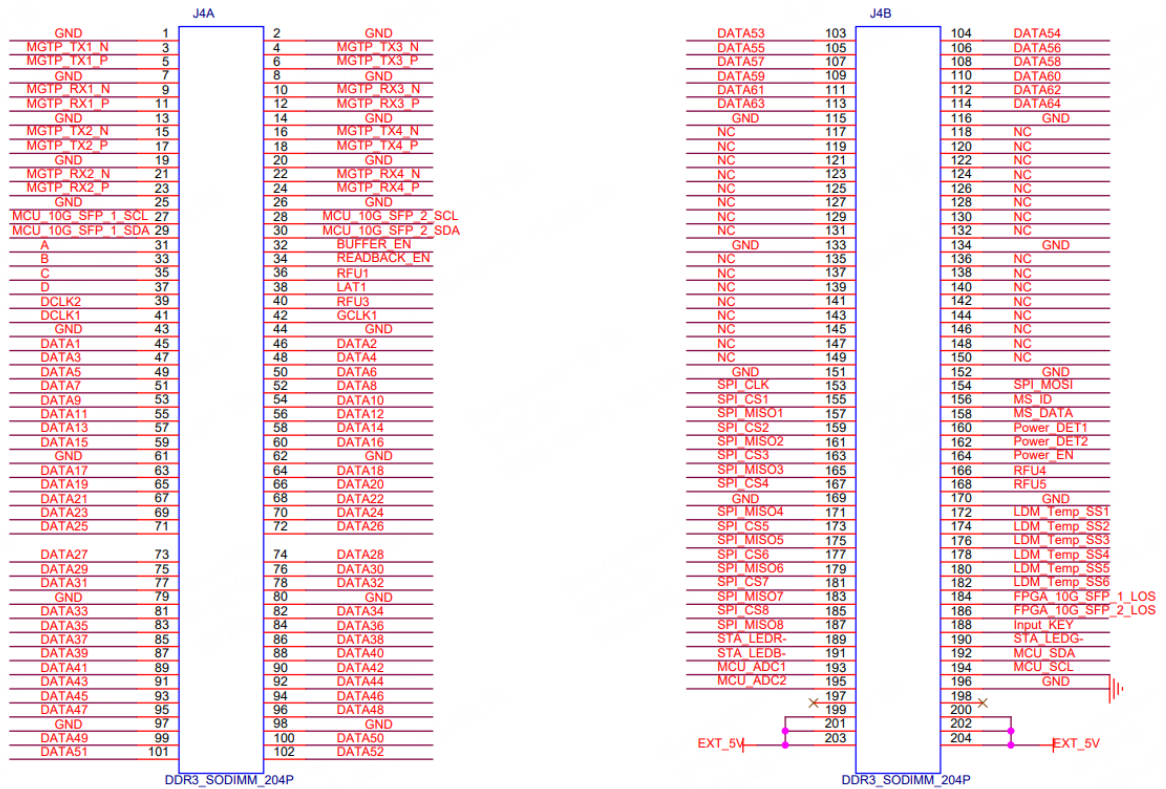
| JH3                                                     |                   |    |    |                   |                                                         |
|---------------------------------------------------------|-------------------|----|----|-------------------|---------------------------------------------------------|
| SerDes signal output (receiving card input)             | MGTP_RX1_N        | 9  | 10 | MGTP_RX3_N        | SerDes signal output (receiving card input)             |
|                                                         | MGTP_RX1_P        | 11 | 12 | MGTP_RX3_P        |                                                         |
| Ground                                                  | GND               | 13 | 14 | GND               | Ground                                                  |
| SerDes signal input (receiving card output)             | MGTP_TX2_N        | 15 | 16 | MGTP_TX4_N        | SerDes signal input (receiving card output)             |
|                                                         | MGTP_TX2_P        | 17 | 18 | MGTP_TX4_P        |                                                         |
| Ground                                                  | GND               | 19 | 20 | GND               | Ground                                                  |
| SerDes signal output (receiving card input)             | MGTP_RX2_N        | 21 | 22 | MGTP_RX4_N        | SerDes signal output (receiving card input)             |
|                                                         | MGTP_RX2_P        | 23 | 24 | MGTP_RX4_P        |                                                         |
| Ground                                                  | GND               | 25 | 26 | GND               | Ground                                                  |
| I <sup>2</sup> C clock configuration for optical port 1 | MCU_10G_SFP_1_SCL | 27 | 28 | MCU_10G_SFP_2_SCL | I <sup>2</sup> C clock configuration for optical port 2 |
| I <sup>2</sup> C data configuration for optical port 1  | MCU_10G_SFP_1_SDA | 29 | 30 | MCU_10G_SFP_2_SDA | I <sup>2</sup> C data configuration for optical port 2  |
| Row decoding signal                                     | A                 | 31 | 32 | BUFFER_EN         | 245 driver IC enable pin                                |
|                                                         | B                 | 33 | 34 | READBACK_EN       | 245 direction control signal                            |
|                                                         | C                 | 35 | 36 | RFU1              | Reserved                                                |
|                                                         | D                 | 37 | 38 | LAT1              | Latch signal                                            |
| Reserved                                                | RFU2              | 39 | 40 | RFU3              | Reserved                                                |
| Shift clock signal                                      | DCLK1             | 41 | 42 | GCLK1             | Grayscale Clock                                         |
| Ground                                                  | GND               | 43 | 44 | GND               | Ground                                                  |
| /                                                       | R1                | 45 | 46 | G1                | /                                                       |
|                                                         | B1                | 47 | 48 | R2                |                                                         |
|                                                         | G2                | 49 | 50 | B2                |                                                         |
|                                                         | R3                | 51 | 52 | G3                |                                                         |
|                                                         | B3                | 53 | 54 | R4                |                                                         |

| JH3    |     |     |     |     |        |
|--------|-----|-----|-----|-----|--------|
|        | G4  | 55  | 56  | B4  |        |
|        | R5  | 57  | 58  | G5  |        |
|        | B5  | 59  | 60  | R6  |        |
| Ground | GND | 61  | 62  | GND | Ground |
| /      | G6  | 63  | 64  | B6  | /      |
|        | R7  | 65  | 66  | G7  |        |
|        | B7  | 67  | 68  | R8  |        |
|        | G8  | 69  | 70  | B8  |        |
|        | R9  | 71  | 72  | G9  |        |
|        | B9  | 73  | 74  | R10 |        |
|        | G10 | 75  | 76  | B10 |        |
|        | R11 | 77  | 78  | G11 |        |
| Ground | GND | 79  | 80  | GND | Ground |
| /      | B11 | 81  | 82  | R12 | /      |
|        | G12 | 83  | 84  | B12 |        |
|        | R13 | 85  | 86  | G13 |        |
|        | B13 | 87  | 88  | R14 |        |
|        | G14 | 89  | 90  | B14 |        |
|        | R15 | 91  | 92  | G15 |        |
|        | B15 | 93  | 94  | R16 |        |
|        | G16 | 95  | 96  | B16 |        |
| Ground | GND | 97  | 98  | GND | Ground |
| /      | R17 | 99  | 100 | G17 | /      |
|        | B17 | 101 | 102 | R18 |        |
|        | G18 | 103 | 104 | B18 |        |
|        | R19 | 105 | 106 | G19 |        |
|        | B19 | 107 | 108 | R20 |        |
|        | G20 | 109 | 110 | B20 |        |

| JH3    |     |     |     |     |        |
|--------|-----|-----|-----|-----|--------|
|        | R21 | 111 | 112 | G21 |        |
|        | B21 | 113 | 114 | R22 |        |
| Ground | GND | 115 | 116 | GND | Ground |
| /      | G22 | 117 | 118 | B22 | /      |
|        | R23 | 119 | 120 | G23 |        |
|        | B23 | 121 | 122 | R24 |        |
|        | G24 | 123 | 124 | B24 |        |
|        | R25 | 125 | 126 | G25 |        |
|        | B25 | 127 | 128 | R26 |        |
|        | G26 | 129 | 130 | B26 |        |
|        | R27 | 131 | 132 | G27 |        |
| Ground | GND | 133 | 134 | GND | Ground |
| /      | B27 | 135 | 136 | R28 | /      |
|        | G28 | 137 | 138 | B28 |        |
|        | R29 | 139 | 140 | G29 |        |
|        | B29 | 141 | 142 | R30 |        |
|        | G30 | 143 | 144 | B30 |        |
|        | R31 | 145 | 146 | G31 |        |
|        | B31 | 147 | 148 | R32 |        |
|        | G32 | 149 | 150 | B32 |        |
| Ground | GND | 151 | 152 | GND | Ground |
| /      | R33 | 153 | 154 | G33 | /      |
|        | B33 | 155 | 156 | R34 |        |
|        | G34 | 157 | 158 | B34 |        |
|        | R35 | 159 | 160 | G35 |        |
|        | B35 | 161 | 162 | R36 |        |
|        | G36 | 163 | 164 | B36 |        |
|        | R37 | 165 | 166 | G37 |        |

| JH3               |           |     |     |           |                            |
|-------------------|-----------|-----|-----|-----------|----------------------------|
|                   | B37       | 167 | 168 | R38       |                            |
| Ground            | GND       | 169 | 170 | GND       | Ground                     |
| /                 | G38       | 171 | 172 | B38       | /                          |
|                   | R39       | 173 | 174 | G39       |                            |
|                   | B39       | 175 | 176 | R40       |                            |
|                   | G40       | 177 | 178 | B40       |                            |
| Flash control pin | CODE1     | 179 | 180 | SPI_CLK   | Clock signal of serial pin |
|                   | CODE2     | 181 | 182 | SPI_CS    | SPI interface              |
|                   | CODE3     | 183 | 184 | SPI_MISO  |                            |
|                   | CODE4     | 185 | 186 | SPI_MOSI  |                            |
|                   | CODE5     | 187 | 188 | Input_KEY | Test button                |
| Tri-color LED     | STA_LEDR- | 189 | 190 | STA_LEDG- | Tri-color LED              |
|                   | STA_LEDB- | 191 | 192 | MCU_SDA   | I <sup>2</sup> C SDA       |
| ADC detection     | MCU_ADC1  | 193 | 194 | MCU_SCL   | I <sup>2</sup> C SCL       |
|                   | MCU_ADC2  | 195 | 196 | GND       | Ground                     |
| /                 | NC        | 197 | 198 | NC        | /                          |
| 5 V               | EXT_5V    | 199 | 200 | EXT_5V    | 5 V                        |
|                   | EXT_5V    | 201 | 202 | EXT_5V    |                            |
|                   | EXT_5V    | 203 | 204 | EXT_5V    |                            |

## 64 Groups of Serial Data



| JH4                                               |            |    |    |            |                                                   |
|---------------------------------------------------|------------|----|----|------------|---------------------------------------------------|
| Ground                                            | GND        | 1  | 2  | GND        | Ground                                            |
| SerDes signal input<br>(receiving card<br>output) | MGTP_TX1_N | 3  | 4  | MGTP_TX3_N | SerDes signal<br>input (receiving<br>card output) |
|                                                   | MGTP_TX1_P | 5  | 6  | MGTP_TX3_P |                                                   |
| Ground                                            | GND        | 7  | 8  | GND        | Ground                                            |
| SerDes signal<br>output (receiving<br>card input) | MGTP_RX1_N | 9  | 10 | MGTP_RX3_N | SerDes signal<br>output (receiving<br>card input) |
|                                                   | MGTP_RX1_P | 11 | 12 | MGTP_RX3_P |                                                   |
| Ground                                            | GND        | 13 | 14 | GND        | Ground                                            |
| SerDes signal input<br>(receiving card<br>output) | MGTP_TX2_N | 15 | 16 | MGTP_TX4_N | SerDes signal<br>input (receiving<br>card output) |
|                                                   | MGTP_TX2_P | 17 | 18 | MGTP_TX4_P |                                                   |
| Ground                                            | GND        | 19 | 20 | GND        | Ground                                            |
| SerDes signal<br>output (receiving<br>card input) | MGTP_RX2_N | 21 | 22 | MGTP_RX4_N | SerDes signal<br>output (receiving<br>card input) |
|                                                   | MGTP_RX2_P | 23 | 24 | MGTP_RX4_P |                                                   |

| JH4                                                     |                   |    |    |                   |                                                         |
|---------------------------------------------------------|-------------------|----|----|-------------------|---------------------------------------------------------|
| Ground                                                  | GND               | 25 | 26 | GND               | Ground                                                  |
| I <sup>2</sup> C clock configuration for optical port 1 | MCU_10G_SFP_1_SCL | 27 | 28 | MCU_10G_SFP_2_SCL | I <sup>2</sup> C clock configuration for optical port 2 |
| I <sup>2</sup> C data configuration for optical port 1  | MCU_10G_SFP_1_SDA | 29 | 30 | MCU_10G_SFP_2_SDA | I <sup>2</sup> C data configuration for optical port 2  |
| Row decoding signal                                     | A                 | 31 | 32 | BUFFER_EN         | 245 driver IC enable pin                                |
|                                                         | B                 | 33 | 34 | READBACK_EN       | 245 direction control signal                            |
|                                                         | C                 | 35 | 36 | RFU1              | Reserved                                                |
|                                                         | D                 | 37 | 38 | LAT1              | Latch signal                                            |
| Shift clock signal                                      | DCLK2             | 39 | 40 | RFU3              | Reserved                                                |
|                                                         | DCLK1             | 41 | 42 | GCLK1             | Grayscale Clock                                         |
| Ground                                                  | GND               | 43 | 44 | GND               | Ground                                                  |
| /                                                       | DATA1             | 45 | 46 | DATA2             | /                                                       |
|                                                         | DATA3             | 47 | 48 | DATA4             |                                                         |
|                                                         | DATA5             | 49 | 50 | DATA6             |                                                         |
|                                                         | DATA7             | 51 | 52 | DATA8             |                                                         |
|                                                         | DATA9             | 53 | 54 | DATA10            |                                                         |
|                                                         | DATA11            | 55 | 56 | DATA12            |                                                         |
|                                                         | DATA13            | 57 | 58 | DATA14            |                                                         |
|                                                         | DATA15            | 59 | 60 | DATA16            |                                                         |
| Ground                                                  | GND               | 61 | 62 | GND               | Ground                                                  |
| /                                                       | DATA17            | 63 | 64 | DATA18            | /                                                       |
|                                                         | DATA19            | 65 | 66 | DATA20            |                                                         |
|                                                         | DATA21            | 67 | 68 | DATA22            |                                                         |
|                                                         | DATA23            | 69 | 70 | DATA24            |                                                         |
|                                                         | DATA25            | 71 | 72 | DATA26            |                                                         |

| JH4    |        |     |     |        |        |
|--------|--------|-----|-----|--------|--------|
|        | DATA27 | 73  | 74  | DATA28 |        |
|        | DATA29 | 75  | 76  | DATA30 |        |
|        | DATA31 | 77  | 78  | DATA32 |        |
| Ground | GND    | 79  | 80  | GND    | Ground |
| /      | DATA33 | 81  | 82  | DATA34 | /      |
|        | DATA35 | 83  | 84  | DATA36 |        |
|        | DATA37 | 85  | 86  | DATA38 |        |
|        | DATA39 | 87  | 88  | DATA40 |        |
|        | DATA41 | 89  | 90  | DATA42 |        |
|        | DATA43 | 91  | 92  | DATA44 |        |
|        | DATA45 | 93  | 94  | DATA46 |        |
|        | DATA47 | 95  | 96  | DATA48 |        |
| Ground | GND    | 97  | 98  | GND    | Ground |
| /      | DATA49 | 99  | 100 | DATA50 | /      |
|        | DATA51 | 101 | 102 | DATA52 |        |
|        | DATA53 | 103 | 104 | DATA54 |        |
|        | DATA55 | 105 | 106 | DATA56 |        |
|        | DATA57 | 107 | 108 | DATA58 |        |
|        | DATA59 | 109 | 110 | DATA60 |        |
|        | DATA61 | 111 | 112 | DATA62 |        |
|        | DATA63 | 113 | 114 | DATA64 |        |
| Ground | GND    | 115 | 116 | GND    | Ground |
| /      | NC     | 117 | 118 | NC     | /      |
|        | NC     | 119 | 120 | NC     |        |
|        | NC     | 121 | 122 | NC     |        |
|        | NC     | 123 | 124 | NC     |        |
|        | NC     | 125 | 126 | NC     |        |
|        | NC     | 127 | 128 | NC     |        |

| JH4                              |           |     |     |              |                                    |
|----------------------------------|-----------|-----|-----|--------------|------------------------------------|
|                                  | NC        | 129 | 130 | NC           |                                    |
|                                  | NC        | 131 | 132 | NC           |                                    |
| Ground                           | GND       | 133 | 134 | GND          | Ground                             |
| /                                | NC        | 135 | 136 | NC           | /                                  |
|                                  | NC        | 137 | 138 | NC           |                                    |
|                                  | NC        | 139 | 140 | NC           |                                    |
|                                  | NC        | 141 | 142 | NC           |                                    |
|                                  | NC        | 143 | 144 | NC           |                                    |
|                                  | NC        | 145 | 146 | NC           |                                    |
|                                  | NC        | 147 | 148 | NC           |                                    |
|                                  | NC        | 149 | 150 | NC           |                                    |
| Ground                           | GND       | 151 | 152 | GND          | Ground                             |
| Clock signal of serial pin       | SPI_CLK   | 153 | 154 | SPI_MOSI     | SPI interface                      |
| CS signal of serial pin          | SPI_CS1   | 155 | 156 | MS_ID        | Dual card backup identifier signal |
| Module flash data storage output | SPI_MISO1 | 157 | 158 | MS_DATA      | Dual card backup connection signal |
| CS signal of serial pin          | SPI_CS2   | 159 | 160 | Power_DET1   | Dual power supply detection signal |
| Module flash data storage output | SPI_MISO2 | 161 | 162 | Power_DET2   |                                    |
| CS signal of serial pin          | SPI_CS3   | 163 | 164 | Power_EN     | Power enable signal                |
| Module flash data storage output | SPI_MISO3 | 165 | 166 | RFU4         | Reserved                           |
| CS signal of serial pin          | SPI_CS4   | 167 | 168 | RFU5         |                                    |
| Ground                           | GND       | 169 | 170 | GND          | Ground                             |
| Module flash data storage output | SPI_MISO4 | 171 | 172 | LDM_Temp_SS1 | Module temperature                 |

| JH4                              |           |     |     |                    |                                 |
|----------------------------------|-----------|-----|-----|--------------------|---------------------------------|
| CS signal of serial pin          | SPI_CS5   | 173 | 174 | LDM_Temp_SS2       | detection chip selection signal |
| Module flash data storage output | SPI_MISO5 | 175 | 176 | LDM_Temp_SS3       |                                 |
| CS signal of serial pin          | SPI_CS6   | 177 | 178 | LDM_Temp_SS4       |                                 |
| Module flash data storage output | SPI_MISO6 | 179 | 180 | LDM_Temp_SS5       |                                 |
| CS signal of serial pin          | SPI_CS7   | 181 | 182 | LDM_Temp_SS6       |                                 |
| Module flash data storage output | SPI_MISO7 | 183 | 184 | FPGA_10G_SFP_1_LOS | Optical link detection signal   |
| CS signal of serial pin          | SPI_CS8   | 185 | 186 | FPGA_10G_SFP_2_LOS |                                 |
| Module flash data storage output | SPI_MISO8 | 187 | 188 | Input_KEY          | Test button                     |
| Tri-color LED                    | STA_LEDR- | 189 | 190 | STA_LEDG-          | Tri-color LED                   |
|                                  | STA_LEDB- | 191 | 192 | MCU_SDA            | I <sup>2</sup> C SDA            |
| ADC detection                    | MCU_ADC1  | 193 | 194 | MCU_SCL            | I <sup>2</sup> C SCL            |
|                                  | MCU_ADC2  | 195 | 196 | GND                | Ground                          |
| /                                | NC        | 197 | 198 | NC                 | /                               |
| 5 V                              | EXT_5V    | 199 | 200 | EXT_5V             | 5 V                             |
|                                  | EXT_5V    | 201 | 202 | EXT_5V             |                                 |
|                                  | EXT_5V    | 203 | 204 | EXT_5V             |                                 |

## Specifications

|                    |                                                                                                                                                                                                                      |                   |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Maximum Resolution | For PWM driver ICs, the maximum load capacity per card is: <ul style="list-style-type: none"> <li>• 1024×512@60Hz (For 8-bit and 10-bit video sources)</li> <li>• 620×512@60Hz (For 12-bit video sources)</li> </ul> |                   |
| Electrical         | Input voltage                                                                                                                                                                                                        | DC 3.8 V to 5.5 V |

|                         |                          |                                                                                                                                                                                                                      |
|-------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters              | Rated current            | 1.1 A                                                                                                                                                                                                                |
|                         | Rated power consumption  | 5.5 W                                                                                                                                                                                                                |
| Operating Environment   | Temperature              | -20°C to +65°C<br> Warning<br><b>A heatsink and structural cooling must be employed to meet this temperature range requirement.</b> |
|                         | Humidity                 | 10% RH to 90% RH, non-condensing                                                                                                                                                                                     |
| Storage Environment     | Temperature              | -40°C to +85°C                                                                                                                                                                                                       |
|                         | Humidity                 | 0% RH to 95% RH, non-condensing                                                                                                                                                                                      |
| Physical Specifications | Size                     | 67.6 mm × 35.0 mm × 4.4 mm                                                                                                                                                                                           |
|                         | Net weight               | 9.9 g<br>Note: It is the weight of a single receiving card only.                                                                                                                                                     |
| Packing Information     | Packaging specifications | An antistatic bag and anti-collision foam are provided for each receiving card. Each packaging box contains 40 receiving cards.                                                                                      |
|                         | Packaging box dimensions | 381.0 mm × 196.0 mm × 124.0 mm                                                                                                                                                                                       |

 Note

Actual power consumption may vary depending on product settings, usage, environmental conditions, and other factors.

## Precautions for Plugging and Unplugging Optical Links

When equipment is operating online, individually hot-plugging a fiber optic patch cord will cause a transient fluctuation in the optical power at the receiving end of the optical module, which may lead to transmission bit errors or even data packet loss.

 Caution

Recommendation: When performing plugging and unplugging optical link, the optical module and the fiber optic patch cord should be plugged and unplugged together as a single unit to avoid plugging and unplugging the fiber optic patch cord individually.

## Heat Dissipation Design Guide

- Heat Dissipation Requirements

- Receiving card heat dissipation: Heat dissipation design must be performed before using the receiving card. It is recommended to adopt a cabinet shell-contact heat dissipation solution, with aluminum alloy as the preferred material for the heat dissipation components. The dimensions of the heat dissipation structural components should preferably be no less than 250.0 mm x 250.0 mm x 3.0 mm (this is a reference dimension and may be adjusted based on actual design conditions; the heat dissipation performance should meet the test acceptance criteria).
- Optical module heat dissipation: It is recommended to use industrial-grade optical modules, and NovaStar-compatible optical module materials should be prioritized. During the design, the heat dissipation design for the optical modules should be properly implemented based on the cabinet's cooling environment, and the heat dissipation performance should meet the test acceptance criteria.

- Test Acceptance Criteria

The heat dissipation test acceptance criteria mainly include the board temperature, receiving card FPGA chip temperature, and optical module surface temperature.

- Board temperature: Check the temperature via the VMP software. Ensure that the operating temperature does not exceed 65°C.
- Receiving card FPGA chip temperature: Measure the temperature using a thermocouple. Ensure that the operating temperature does not exceed 85°C.
- Optical module surface temperature: Measure the temperature using a thermocouple. Ensure that the operating temperature does not exceed 65°C for commercial-grade optical modules, and 80°C for industrial-grade optical modules.

- Additional Notes

For specific heat dissipation design guide, please contact NovaStar technical support engineers.

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| [support@novastar.tech](mailto:support@novastar.tech)