XA50 Pro

Receiving Card

Specifications

Change History

Document Version	Release Date	Description
V1.0.3	2024-07-19	• Updated the product introduction. • Updated the certification information. • Updated the description for the Mapping feature. • Updated the dimensions diagram. • Updated the heat dissipation instructions.
V1.0.2	2024-06-07	• Added descriptions for NCP. • Added descriptions for heat dissipation. • Updated the feature name for thermal compensation. • Removed individual gamma adjustment for RGB, settings of a pre-stored image in receiving card, and configuration parameter readback from product features.
V1.0.1	2024-05-10	• Updated the legends in the appearance diagram. • Removed image rotation at any angle from product features. • Removed the diagram for 32 groups of parallel RGB data.
V1.0.0	2024-04-10	First release

Introduction

The XA50 Pro a high-end 5G receiving card in the new-generation control system COEX series of Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). For 8bit and 10bit video sources and PWM driver ICs, a single XA50 Pro supports resolutions up to 1024×512@60Hz. For 12bit video sources, a single XA50 Pro supports resolutions up to 620×512@60Hz.

This receiving card supports the exclusive Adaptive Thermal Compensation, Dynamic Booster, Full-Grayscale Calibration, and Image Booster technologies of NovaStar. With other various functions, such as Multi-Mode, Brightness Overdrive, Seam Correction with Mobile Phones, Frame Rate Adaptive 3.0, Shutter Fit, HDR, Pixel Level Brightness and Chroma Calibration, Quick Adjustment of Dark or Bright Lines, 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 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 XA50 Pro 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.

Certifications

RoHS, EMC Class A.

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim 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 the C3200 scientific grade camera to generate unique calibration coefficients for each grayscale, ensuring uniformity of each grayscale and dramatically improving the image quality.

- Image Booster (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 the LED screen grayscale by 64 times to avoid grayscale loss due to low brightness and allow for a smoother image with more details in dark areas.

- 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.

- Seam Correction with Mobile Phones

  The brightness discrepancies in seams caused by splicing modules or cabinets can be automatically or manually adjusted via mobile phone software, enhancing the overall visual experience. (Requires working with the TU series products)

- 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.

- 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 high-precision 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 in milliseconds.

- Low Latency

  The latency of video source on the receiving card end can be reduced to 1 frame (only when using modules with driver IC 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 very fast, read back, and saved to hardware.

- 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.

- Module Flash Management

  For modules with flash memory, the information stored in the memory can be managed. The calibration coefficients and module ID can be stored and read back.

- Quick Uploading of Calibration Coefficients

  Upload the calibration coefficients quickly to the receiving cards to improve efficiency.

- 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 memory of the module to the receiving card.

- Mapping 1.1

  The cabinets can display the controller number, receiving card number, and Ethernet port information, allowing users to easily obtain the 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

Real-time monitoring of the communication of the Ethernet port on the receiving card. It records the number of error data packets, which helps users identify faults and troubleshoot network communication 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

- 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 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.

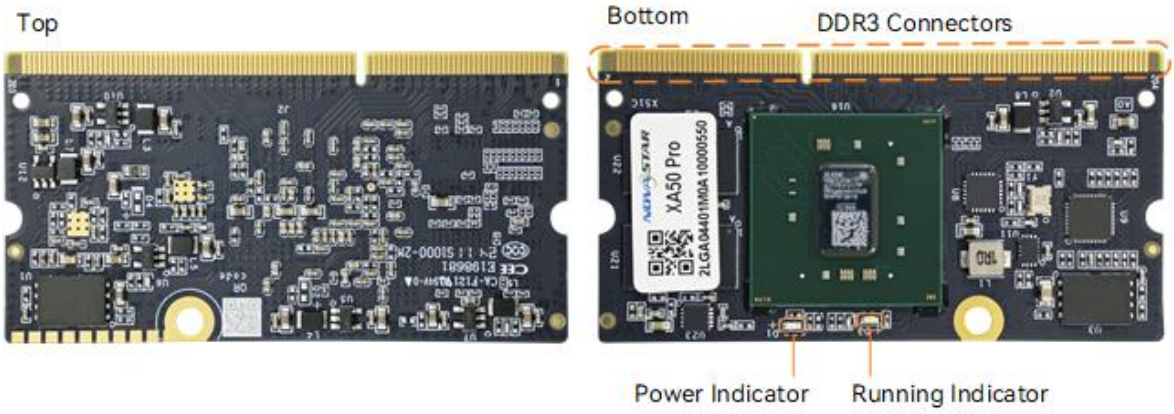
- Dual Program Backup

  Two copies of 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 file can be copied to other cabinets with one click to help quickly complete cabinet configuration.

Appearance



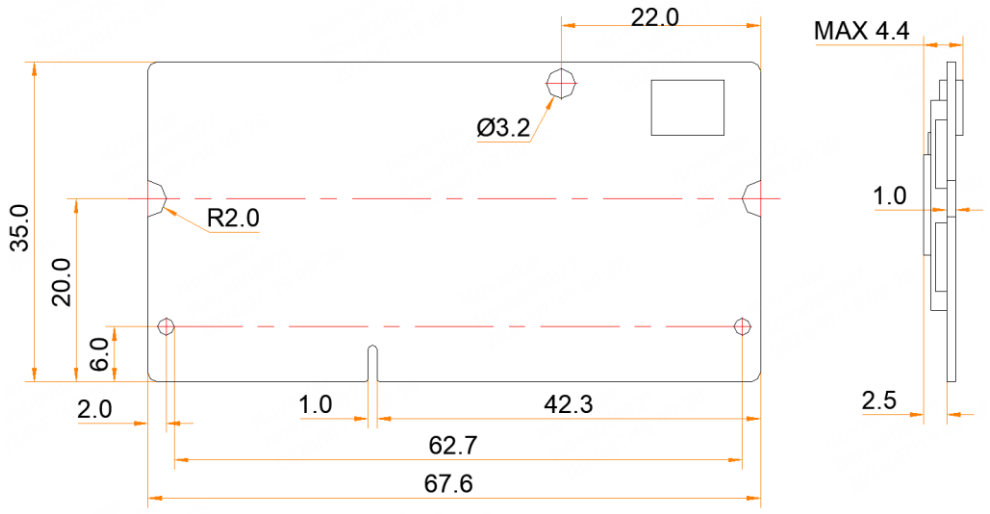
All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Indicator

Indicators	Color	Status	Description
Running indicator	Green	Flashing once every 1s	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. Ground connection (GND) is enabled for mounting holes.



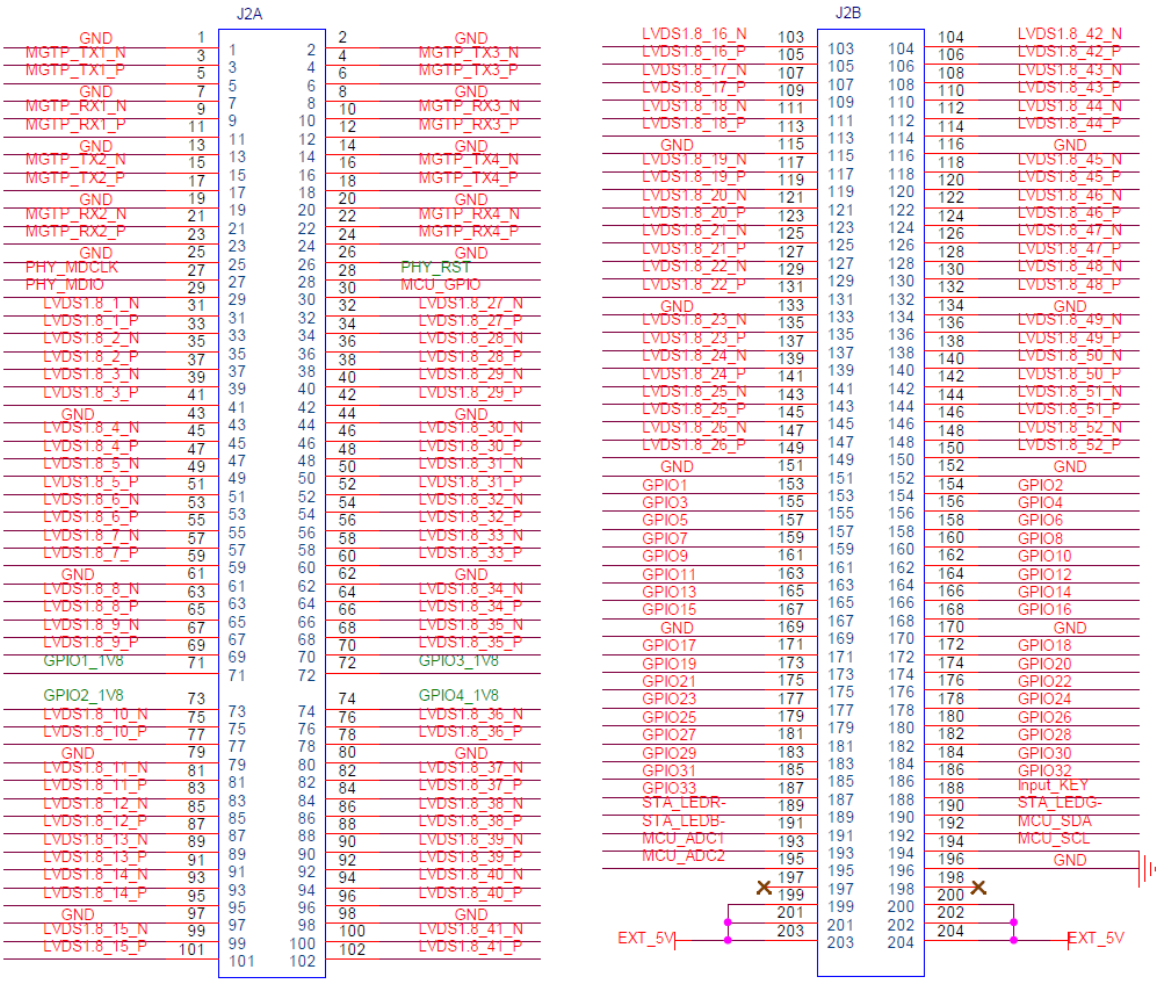
Tolerance: ±0.3 Unit: mm

Note

To make molds or trepan mounting holes, please contact NovaStar for a higher-precision structural drawing.

Pins

LVDS Pins



LVDS Pin Definitions					
/	GND	1	2	GND	/
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	
/	GND	7	8	GND	/
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	
/	GND	13	14	GND	/

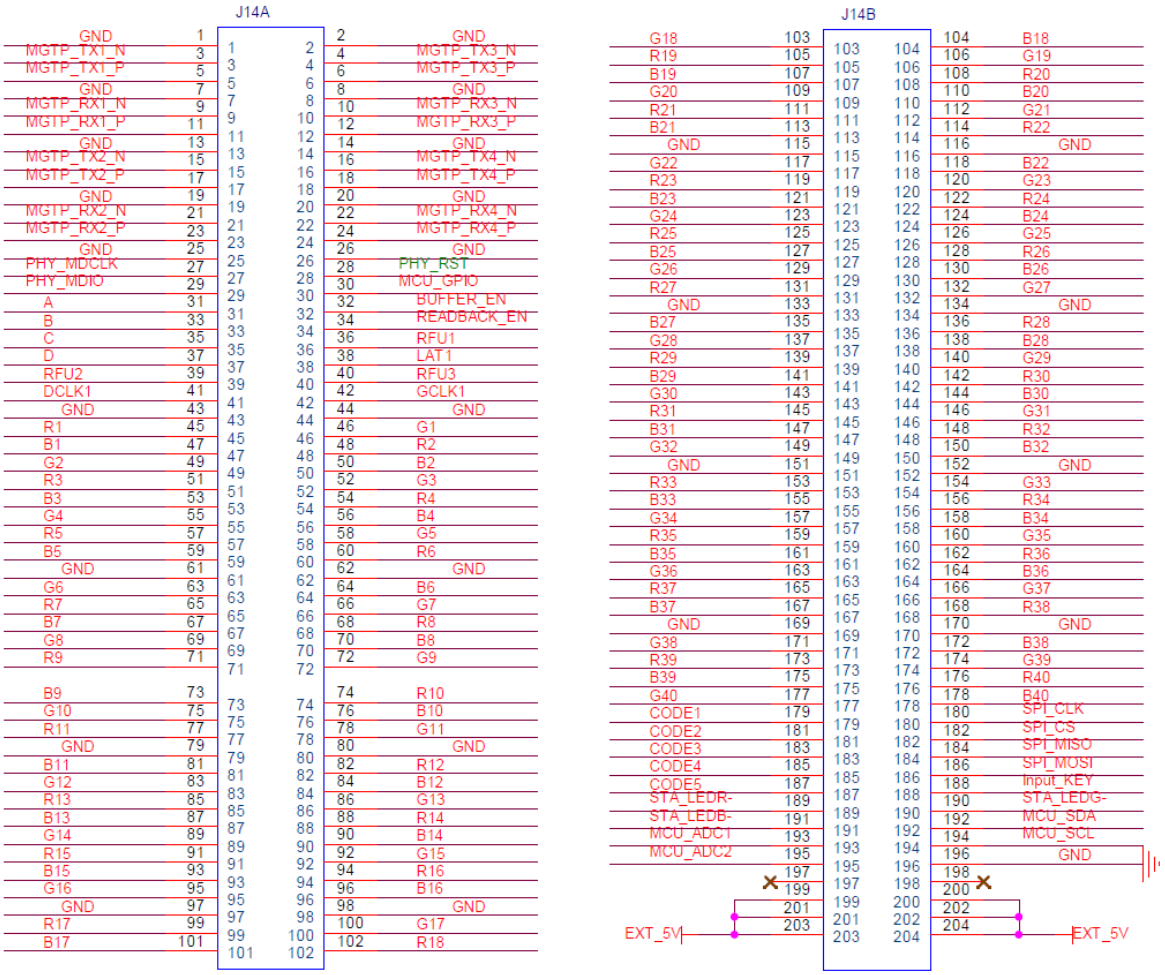
LVDS Pin Definitions					
SerDes signal input (receiving card output)	MGTP_TX2_N	15	16	MGTP_TX4_N	SerDes signal input (receiving card output)
	MGTP_TX2_P	17	18	MGTP_TX4_P	
/	GND	19	20	GND	/
SerDes signal output (receiving card input)	MGTP_RX2_N	21	22	MGTP_RX4_N	SerDes signal output (receiving card input)
	MGTP_RX2_P	23	24	MGTP_RX4_P	
/	GND	25	26	GND	/
PHY configuration clock	PHY_MDCLK	27	28	PHY_RST	PHY reset
PHY configuration data	PHY_MDIO	29	30	MCU_GPIO	Reserved
LVDS signal	LVDS1.8_1_N	31	32	LVDS1.8_27_N	LVDS signal
	LVDS1.8_1_P	33	34	LVDS1.8_27_P	
LVDS signal	LVDS1.8_2_N	35	36	LVDS1.8_28_N	LVDS signal
	LVDS1.8_2_P	37	38	LVDS1.8_28_P	
LVDS signal	LVDS1.8_3_N	39	40	LVDS1.8_29_N	LVDS signal
	LVDS1.8_3_P	41	42	LVDS1.8_29_P	
/	GND	43	44	GND	/
LVDS signal	LVDS1.8_4_N	45	46	LVDS1.8_30_N	LVDS signal
	LVDS1.8_4_P	47	48	LVDS1.8_30_P	
LVDS signal	LVDS1.8_5_N	49	50	LVDS1.8_31_N	LVDS signal
	LVDS1.8_5_P	51	52	LVDS1.8_31_P	
LVDS signal	LVDS1.8_6_N	53	54	LVDS1.8_32_N	LVDS signal
	LVDS1.8_6_P	55	56	LVDS1.8_32_P	
LVDS signal	LVDS1.8_7_N	57	58	LVDS1.8_33_N	LVDS signal
	LVDS1.8_7_P	59	60	LVDS1.8_33_P	
/	GND	61	62	GND	/

LVDS Pin Definitions					
LVDS signal	LVDS1.8_8_N	63	64	LVDS1.8_34_N	LVDS signal
	LVDS1.8_8_P	65	66	LVDS1.8_34_P	
LVDS signal	LVDS1.8_9_N	67	68	LVDS1.8_35_N	LVDS signal
	LVDS1.8_9_P	69	70	LVDS1.8_35_P	
Reserved (1.8 V)	GPIO1_1V8	71	72	GPIO3_1V8	Reserved (1.8 V)
	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	
/	GND	79	80	GND	/
LVDS signal	LVDS1.8_11_N	81	82	LVDS1.8_37_N	LVDS signal
	LVDS1.8_11_P	83	84	LVDS1.8_37_P	
LVDS signal	LVDS1.8_12_N	85	86	LVDS1.8_38_N	LVDS signal
	LVDS1.8_12_P	87	88	LVDS1.8_38_P	
LVDS signal	LVDS1.8_13_N	89	90	LVDS1.8_39_N	LVDS signal
	LVDS1.8_13_P	91	92	LVDS1.8_39_P	
LVDS signal	LVDS1.8_14_N	93	94	LVDS1.8_40_N	LVDS signal
	LVDS1.8_14_P	95	96	LVDS1.8_40_P	
/	GND	97	98	GND	/
LVDS signal	LVDS1.8_15_N	99	100	LVDS1.8_41_N	LVDS signal
	LVDS1.8_15_P	101	102	LVDS1.8_41_P	
LVDS signal	LVDS1.8_16_N	103	104	LVDS1.8_42_N	LVDS signal
	LVDS1.8_16_P	105	106	LVDS1.8_42_P	
LVDS signal	LVDS1.8_17_N	107	108	LVDS1.8_43_N	LVDS signal
	LVDS1.8_17_P	109	110	LVDS1.8_43_P	
LVDS signal	LVDS1.8_18_N	111	112	LVDS1.8_44_N	LVDS signal
	LVDS1.8_18_P	113	114	LVDS1.8_44_P	

LVDS Pin Definitions					
/	GND	115	116	GND	/
LVDS signal	LVDS1.8_19_N	117	118	LVDS1.8_45_N	LVDS signal
	LVDS1.8_19_P	119	120	LVDS1.8_45_P	
LVDS signal	LVDS1.8_20_N	121	122	LVDS1.8_46_N	LVDS signal
	LVDS1.8_20_P	123	124	LVDS1.8_46_P	
LVDS signal	LVDS1.8_21_N	125	126	LVDS1.8_47_N	LVDS signal
	LVDS1.8_21_P	127	128	LVDS1.8_47_P	
LVDS signal	LVDS1.8_22_N	129	130	LVDS1.8_48_N	LVDS signal
	LVDS1.8_22_P	131	132	LVDS1.8_48_P	
/	GND	133	134	GND	/
LVDS signal	LVDS1.8_23_N	135	136	LVDS1.8_49_N	LVDS signal
	LVDS1.8_23_P	137	138	LVDS1.8_49_P	
LVDS signal	LVDS1.8_24_N	139	140	LVDS1.8_50_N	LVDS signal
	LVDS1.8_24_P	141	142	LVDS1.8_50_P	
LVDS signal	LVDS1.8_25_N	143	144	LVDS1.8_51_N	LVDS signal
	LVDS1.8_25_P	145	146	LVDS1.8_51_P	
LVDS signal	LVDS1.8_26_N	147	148	LVDS1.8_52_N	LVDS signal
	LVDS1.8_26_P	149	150	LVDS1.8_52_P	
/	GND	151	152	GND	/
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	

LVDS Pin Definitions					
	GPIO15	167	168	GPIO16	
/	GND	169	170	GND	/
Reserved	GPIO17	171	172	GPIO18	Reserved
	GPIO19	173	174	GPIO20	
	GPIO21	175	176	GPIO22	
	GPIO23	177	178	GPIO24	
	GPIO25	179	180	GPIO26	
	GPIO27	181	182	GPIO28	
	GPIO29	183	184	GPIO30	
	GPIO31	185	186	GPIO32	
	GPIO33	187	188	Input_KEY	Test button
Tri-color LED	STA_LEDR-	189	190	STA_LEDG-	Tri-color LED
	STA_LEDB-	191	192	MCU_SDA	I2C SDA
ADC detection	MCU_ADC1	193	194	MCU_SCL	I2C SCL
	MCU_ADC2	195	196	GND	/
/	NC	197	198	NC	/
/	EXT_5V	199	200	EXT_5V	/
	EXT_5V	201	202	EXT_5V	
	EXT_5V	203	204	EXT_5V	

40 Groups of Parallel RGB Data



40 Groups of Parallel RGB Data Pin Definitions					
/	GND	1	2	GND	/
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	
/	GND	7	8	GND	/
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	
/	GND	13	14	GND	/
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	

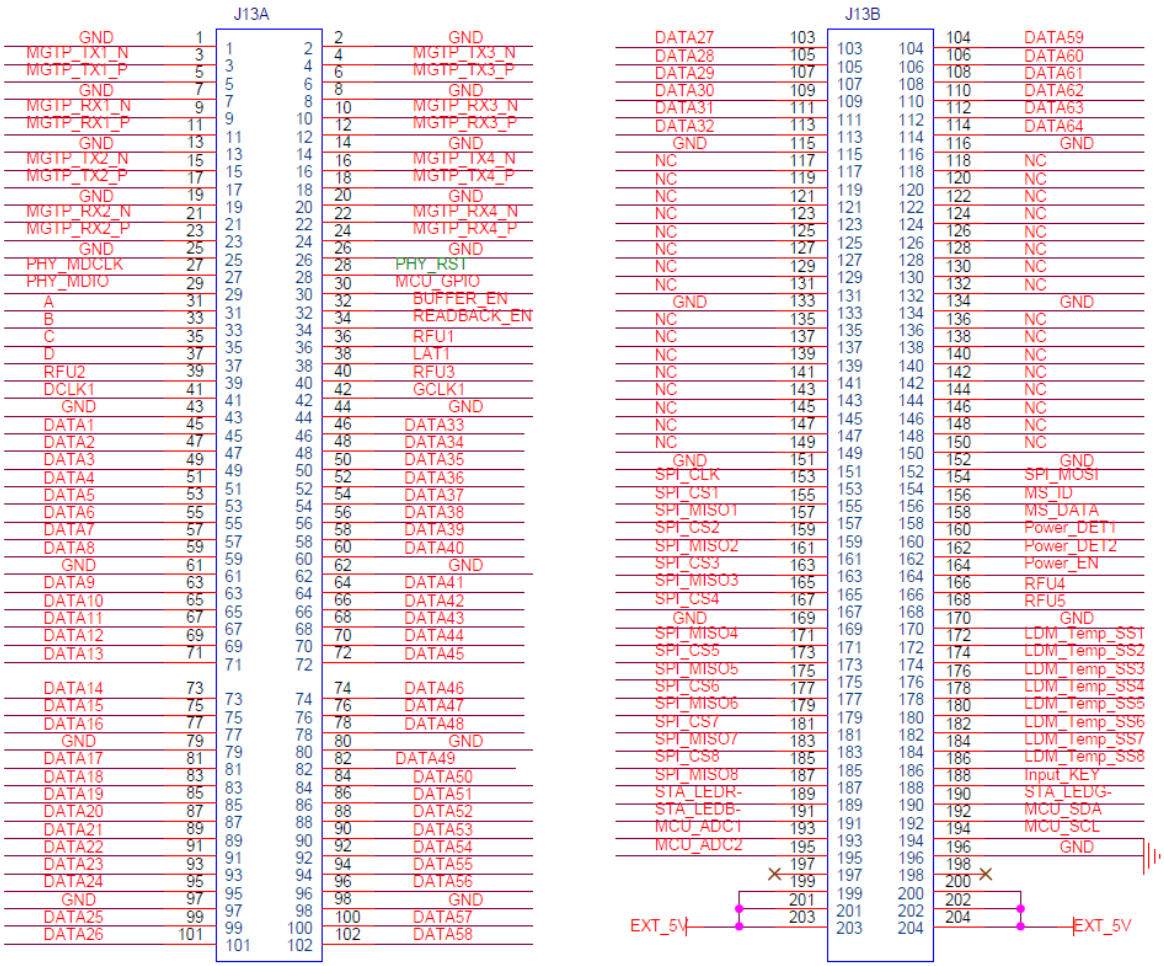
40 Groups of Parallel RGB Data Pin Definitions					
/	GND	19	20	GND	/
SerDes signal output (receiving card input)	MGTP_RX2_N	21	22	MGTP_RX4_N	SerDes signal output (receiving card input)
	MGTP_RX2_P	23	24	MGTP_RX4_P	
/	GND	25	26	GND	/
PHY configuration clock	PHY_MDCLK	27	28	PHY_RST	PHY reset
PHY configuration data	PHY_MDIO	29	30	MCU_GPIO	Reserved
Line 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	DCLK1	41	42	GCLK1	Grayscale clock.
/	GND	43	44	GND	/
/	R1	45	46	G1	/
	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	
/	GND	61	62	GND	/
/	G6	63	64	B6	/

40 Groups of Parallel RGB Data Pin Definitions					
	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	
/	GND	79	80	GND	/
/	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	
/	GND	97	98	GND	/
/	R17	99	100	G17	/
	B17	101	102	R18	
	G18	103	104	B18	
	R19	105	106	G19	
	B19	107	108	R20	
	G20	109	110	B20	
	R21	111	112	G21	
	B21	113	114	R22	
/	GND	115	116	GND	/

40 Groups of Parallel RGB Data Pin Definitions					
/	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	
/	GND	133	134	GND	/
/	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	
/	GND	151	152	GND	/
/	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	
	B37	167	168	R38	

40 Groups of Parallel RGB Data Pin Definitions					
/	GND	169	170	GND	/
/	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	CS signal of serial pin
	CODE3	183	184	SPI_MISO	Module flash data storage output
	CODE4	185	186	SPI_MOSI	Module flash data storage input
	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	I2C SDA
ADC detection	MCU_ADC1	193	194	MCU_SCL	I2C SCL
	MCU_ADC2	195	196	GND	/
/	NC	197	198	NC	/
/	EXT_5V	199	200	EXT_5V	/
	EXT_5V	201	202	EXT_5V	
	EXT_5V	203	204	EXT_5V	

64 Groups of Serial Data



64 Groups of Serial Data Pin Definitions					
/	GND	1	2	GND	/
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	
/	GND	7	8	GND	/
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	
/	GND	13	14	GND	/
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	

64 Groups of Serial Data Pin Definitions					
/	GND	19	20	GND	/
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	
/	GND	25	26	GND	/
PHY configuration clock	PHY_MDCLK	27	28	PHY_RST	PHY reset
PHY configuration data	PHY_MDIO	29	30	MCU_GPIO	Reserved
Line 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	DCLK1	41	42	GCLK1	Grayscale clock.
/	GND	43	44	GND	/
/	DATA1	45	46	DATA33	/
	DATA2	47	48	DATA34	
	DATA3	49	50	DATA35	
	DATA4	51	52	DATA36	
	DATA5	53	54	DATA37	
	DATA6	55	56	DATA38	
	DATA7	57	58	DATA39	
	DATA8	59	60	DATA40	
/	GND	61	62	GND	/
/	DATA9	63	64	DATA41	/

64 Groups of Serial Data Pin Definitions					
	DATA10	65	66	DATA42	
	DATA11	67	68	DATA43	
	DATA12	69	70	DATA44	
	DATA13	71	72	DATA45	
	DATA14	73	74	DATA46	
	DATA15	75	76	DATA47	
	DATA16	77	78	DATA48	
/	GND	79	80	GND	/
/	DATA17	81	82	DATA49	/
	DATA18	83	84	DATA50	
	DATA19	85	86	DATA51	
	DATA20	87	88	DATA52	
	DATA21	89	90	DATA53	
	DATA22	91	92	DATA54	
	DATA23	93	94	DATA55	
	DATA24	95	96	DATA56	
/	GND	97	98	GND	/
/	DATA25	99	100	DATA57	/
	DATA26	101	102	DATA58	
	DATA27	103	104	DATA59	
	DATA28	105	106	DATA60	
	DATA29	107	108	DATA61	
	DATA30	109	110	DATA62	
	DATA31	111	112	DATA63	
	DATA32	113	114	DATA64	
/	GND	115	116	GND	/

64 Groups of Serial Data Pin Definitions					
/	NC	117	118	NC	/
	NC	119	120	NC	
	NC	121	122	NC	
	NC	123	124	NC	
	NC	125	126	NC	
	NC	127	128	NC	
	NC	129	130	NC	
	NC	131	132	NC	
/	GND	133	134	GND	/
/	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	
/	GND	151	152	GND	/
Clock signal of serial pin	SPI_CLK	153	154	SPI_MOSI	Module flash data storage input
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	SPI_MISO2	161	162	Power_DET2	

64 Groups of Serial Data Pin Definitions					
storage output					
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	
/	GND	169	170	GND	/
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	LDM_Temp_SS7	
CS signal of serial pin	SPI_CS8	185	186	LDM_Temp_SS8	
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	I2C SDA
ADC detection	MCU_ADC1	193	194	MCU_SCL	I2C SCL
	MCU_ADC2	195	196	GND	/

64 Groups of Serial Data Pin Definitions					
/	NC	197	198	NC	/
/	EXT_5V	199	200	EXT_5V	/
	EXT_5V	201	202	EXT_5V	
	EXT_5V	203	204	EXT_5V	

Specifications

Maximum Resolution	1024×512@60Hz (For 8bit and 10bit video sources) 620×512@60Hz (For 12bit video sources)	
Electrical Parameters	Input voltage	DC 3.8 V to 5.5 V
	Rated current	1 A
	Rated power consumption	5 W
Operating Environment	Temperature	−20°C to +70°C
	Humidity	10% RH to 90% RH, non-condensing
Storage Environment	Temperature	−25°C to +125°C
	Humidity	0% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	67.6 mm × 35.0 mm × 4.3 mm
	Net weight	10.4 g Note: It is the weight of a single receiving card only.
Packing Information	Packing specifications	An antistatic bag and anti-collision foam are provided for each receiving card. Each packing box contains 40 receiving cards.
	Packing box dimensions	381.0 mm × 123.0 mm × 196.0 mm

Note

The amount of current and power consumption may vary depending on various factors such as product settings, usage, and environment.

When using the product, please ensure to use an aluminum heatsink plate with dimensions greater than 250.0 mm × 250.0 mm × 3.0 mm, or other methods that offer equivalent heat dissipation performance. Additionally, confirm that the material of the cabinet meets the necessary thermal requirements.

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