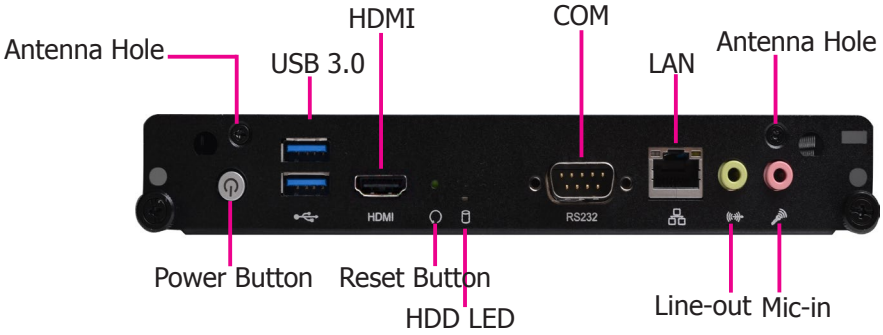
OPS150-CS Installation Guide

Note:
Throughout this guide the OPS150-CS may be referred to as the OPS Module.

DFI reserves the right to change the specifications at any time prior to the product's release. For the latest revision and more details of the installation procedure, please refer to the user's manual on the website.
www.dfi.com

Panel: OPS150-CS

Front View

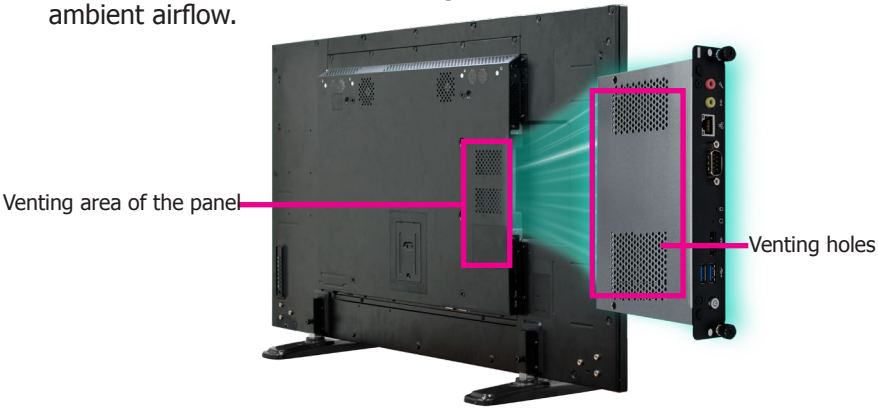


Rear View

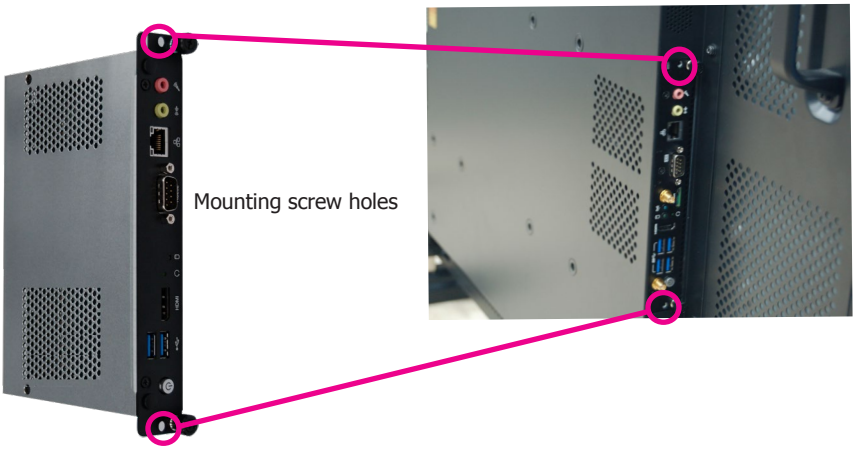
Installing the OPS150-CS into a Display

Integrating a computing system into a digital signage display is made easy by standardizing the connectors and signals between an OPS Module and an OPS-compliant display. Note that the OPS Module does not support hot swapping; do not power on the display before the installation is complete. Please use the following steps to install the OPS Module into the display panel:

1. Align the OPS Module with the slot of the display and slide the module into the slot. Note that the venting holes should face outward to allow ambient airflow.



2. Secure the module by attaching two screws on the front panel.

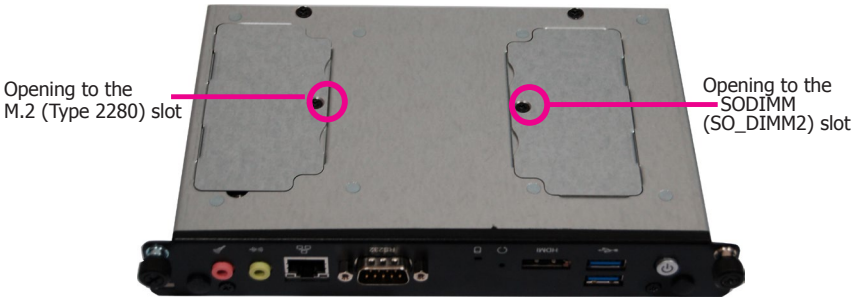


3. Power on the display panel. The OPS Module should be automatically powered on.

Note:
The location of the OPS slot may be at the side or at the bottom of the display panel depending on the design.

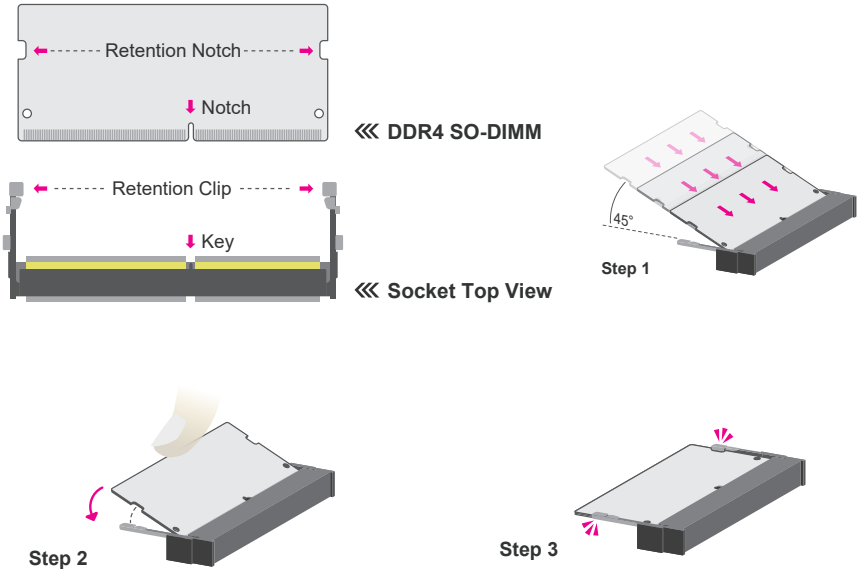
Installing a SODIMM and an M.2 Card

The OPS Module is equipped with two SODIMM slots (SO_DIMM1 & 2) in which one can be accessed from the back cover. An additional M.2 slot can also be accessed from the back cover without opening the system's chassis.



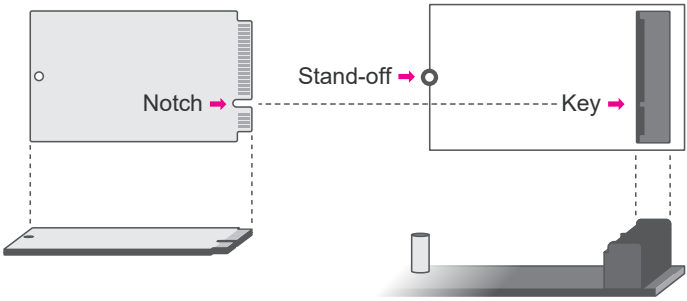
Installing a SODIMM

The system supports two DDR4 SODIMM (dual channel) sockets. To install a memory module, grasp the memory module by its edges and align the module's notch with the socket's notch; then insert the memory into the socket at an angle and push it down until you feel a click.

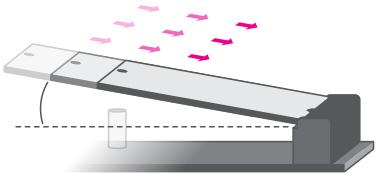


Installing an M.2 Card

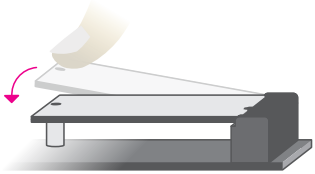
The onboard M.2 Type 2280 (M Key) supports both PCIe NVMe and SATA SSD modules. The other M.2 Type 2230 (E Key) on the top side of the main board provides PCIe & USB signals to accommodate common Wi-Fi and Bluetooth cards. To install an M.2 card, insert the bottom edge of the card into the connector, and then secure the card to the standoff with the provided mounting screw.



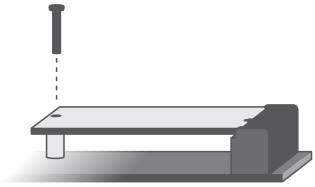
Step 1



Step 2



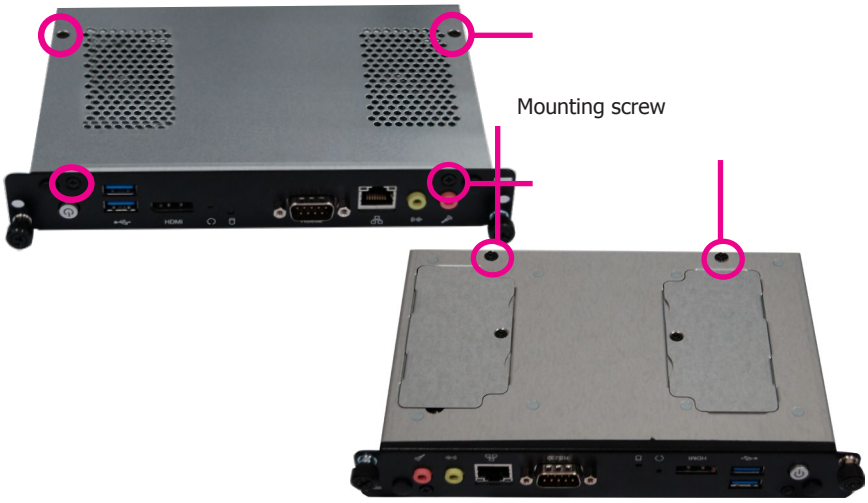
Step 3



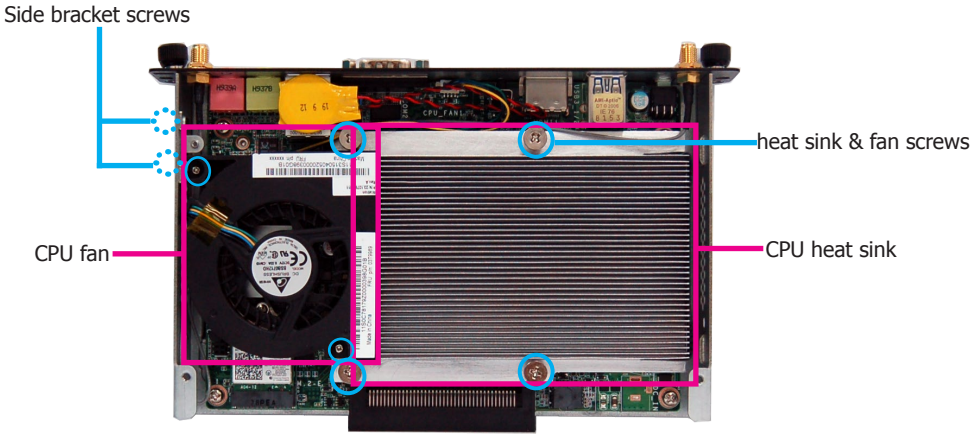
Removing the Chassis Cover

The OPS Module consists of a computing board in a wrapper chassis. Pease observe the following guidelines and follow the procedure to open the system.

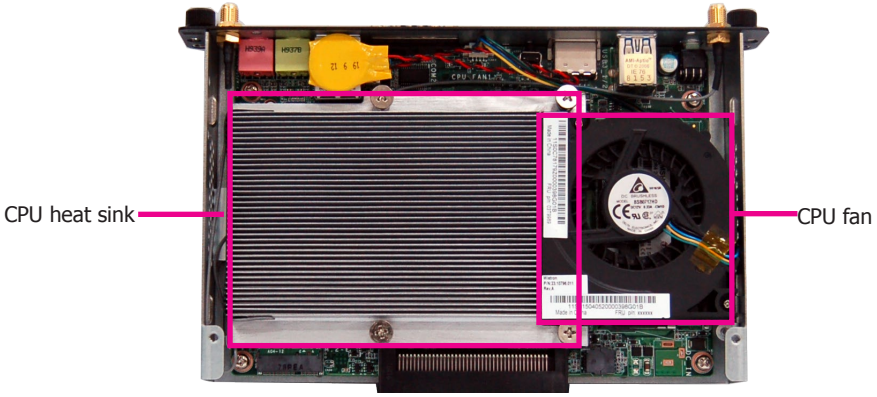
1. Make sure the system and all other peripheral devices connected to it have been powered-off.
2. Disconnect all power cords and cables.
3. The 4 mounting screws on the top and bottom cover of the system chassis, and the 2 screws that affix the front panel to the chassis should all be removed to open the system. Put these screws in a safe place for later use.



4. Lift the cover up to open the system.
5. The SODIMM (SO_DIMM1) and M.2 (Type 2230) sockets can be accessed after removing the fan and heat sink.

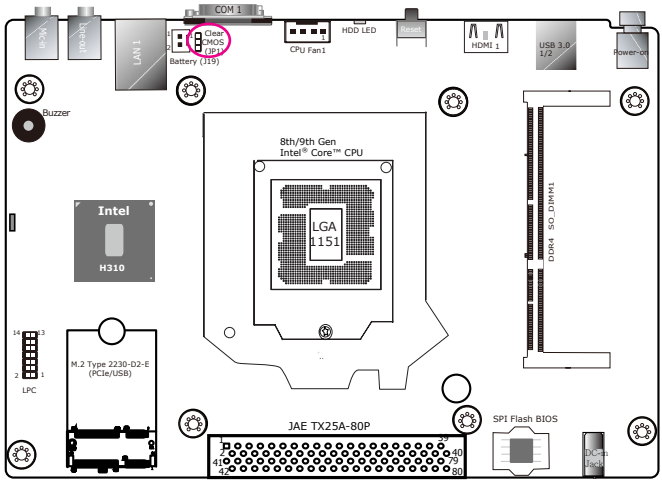


The system adopts a flexible design in which the CPU fan and heat sink can be placed in different orientation (see picture below) so that the opening of the fan can align with the venting holes of your panel. Remove the screws indicated in the above picture to switch their positions.

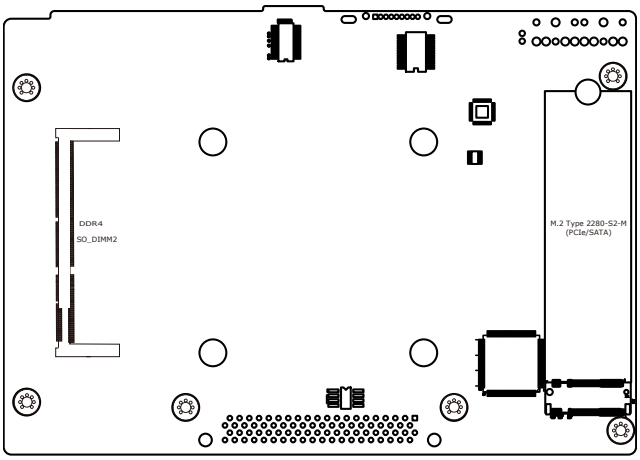


Board Layout and Jumper Settings: OPS150-CS

Top View



Bottom View



Clear CMOS	JP1
Normal (default)	1-2 On
Clear CMOS	2-3 On

Connector Pin Assignment

The OPS Module enables the integration of a pluggable module and a display panel by employing the defined interconnect based on the JAE and HRS combo plug and their receptacle connectors. The right angle blind mate plug connector (p/n: JAE TX25A-80P-LT-H1E) should be mated with the receptacle connector (p/n: JAE TX24A-80R-LT-H1E); together, they provide interfacing for the following functions:

Power: DC-IN +12V~+19V@12A max

Display Interface: 1*HDMI 2.0 (or DP, 4K at 60Hz)

Audio: left and right Channel

USB: 1*USB 3.0 and 2*USB 2.0

Control and Sensors: 1*UART and Consumer Electronics Control (CEC, note that the OPS150-CS does not support this function)

Control and Management Signals: the OPS Module power status, power-on via display panel, OPS Module detect, system fan control, and device reset.

The following table lists the pin assignments of the 80-pin JAE connector:

Pins	Pin Assignment	Description	I/O(1)	Pins	Pin Assignment	Description	I/O
40	+12V~+19V	Power	-	80	GND	Ground	-
39	+12V~+19V	Power	-	79	GND	Ground	-
38	+12V~+19V	Power	-	78	GND	Ground	-
37	+12V~+19V	Power	-	77	GND	Ground	-
36	+12V~+19V	Power	-	76	GND	Ground	-
35	+12V~+19V	Power	-	75	GND	Ground	-
34	+12V~+19V	Power	-	74	PWR_STATUS	PowerGood	OUT(OC)(2)
33	+12V~+19V/NC	Power/NC	-	73	PS_ON#	Pluggable Signal ON	IN
32	GND	Ground	-	72	PB_DET	Pluggable Board Detect	OUT
31	DVI0_HPD	DVI-D	IN	71	Not Available	Not Available	I/O
30	DVI0_DDC_CLK	DVI-D	I/O	70	AZ_LINEOUT_R	Audio-R ch	OUT
29	DVI0_DDC_DATA	DVI-D	I/O	69	AZ_LINEOUT_L	Audio-L ch	OUT
28	GND	Ground	-	68	GND	Ground	-

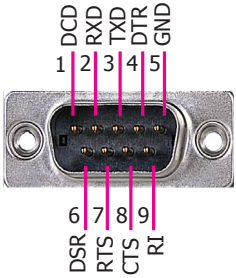
27	TMDS0_2+	DVI-D	OUT	67	USB_PP0	USB	I/O
26	TMDS0_2-	DVI-D	OUT	66	USB_PN0	USB	I/O
25	GND	Ground	-	65	GND	Ground	-
24	TMDS0_1+	DVI-D	OUT	64	USB_PP1	USB	I/O
23	TMDS0_1-	DVI-D	OUT	63	USB_PN1	USB	I/O
22	GND	Ground	-	62	GND	Ground	-
21	TMDS0_0+	DVI-D	OUT	61	USB_PP2	USB	I/O
20	TMDS0_0-	DVI-D	OUT	60	USB_PN2	USB	I/O
19	GND	Ground	-	59	GND	Ground	-
18	TMDS0_CLK+	DVI-D	OUT	58	StdA_SSTX+	USB3.0	OUT
17	TMDS0_CLK-	DVI-D	OUT	57	StdA_SSTX-	USB3.0	OUT
16	GND	Ground	-	56	GND	GND	-
15	DDP_HPD	DisplayPort	IN	55	StdA_SSRX+	USB3.0	IN
14	DDP_AUXP	DisplayPort	I/O	54	StdA_SSRX-	USB3.0	IN
13	DDP_AUXN	DisplayPort	I/O	53	GND	Ground	-
12	GND	Ground	-	52	UART_TXD	UART 3.3V	OUT
11	DDP_0P	DisplayPort	OUT	51	UART_RXD	UART 3.3V	IN
10	DDP_0N	DisplayPort	OUT	50	SYS_FAN	System Fan Control	OUT
9	GND	Ground	-	49	RSVD	Reserved	-
8	DDP_1P	DisplayPort	OUT	48	RSVD	Reserved	-
7	DDP_1N	DisplayPort	OUT	47	RSVD	Reserved	-
6	GND	Ground	-	46	RSVD	Reserved	-
5	DDP_2P	DisplayPort	OUT	45	RSVD	Reserved	-
4	DDP_2N	DisplayPort	OUT	44	RSVD	Reserved	-
3	GND	Ground	-	43	RSVD	Reserved	-
2	DDP_3P	DisplayPort	OUT	42	RSVD	Reserved	-
1	DDP_3N	DisplayPort	OUT	41	RSVD	Reserved	-

Notes:

(1) The I/O column definition is in reference to the OPS pluggable board.
(2) OC= Open Collector.

The COM port on the front panel of the OPS Module provides serial communication. The following illustration shows the pin assignments of the COM port:

COM 1 (RS232)



The OPS Module also provides pin headers for miscellaneous connectivity. The following tables list the pin assignments of these connectors:

CPU Fan 1 (CN43)

Pins	Pin Assignment
4	Speed Control
3	Sense
2	Power
1	Ground

LPC (J14)

Pins	Pin Assignment	Pins	Pin Assignment
7	L_AD3	14	5V
6	3V3	13	5VSB
5	L_FRAME#	12	GND
4	L_AD0	11	INT_SERIRQ
3	L_RST#	10	Key
2	L_AD1	9	L_AD2
1	L_CLK	8	GND

Physical Dimension

The overall dimensions of the OPS Module exclusive of the front panel frame is 180 x 30 x 119 mm (W x H x D). The following illustration shows the dimensions of the OPS Module.