



# ETX-8X90 Computer-On-Module and ETXDB1 Carrier Board Reference

## Quick Guide

### Key Features:

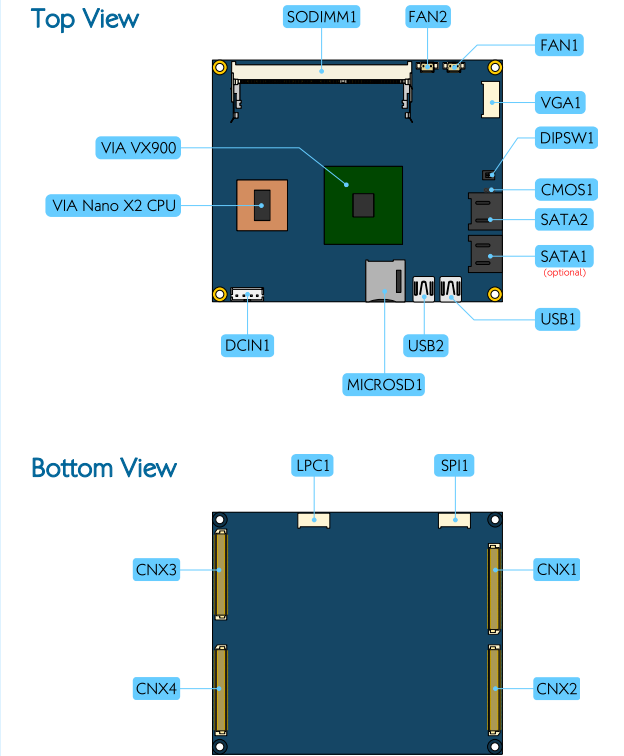
- 1.2GHz VIA Nano® X2 E-Series processor
- Support DDR3 800/1066 SODIMM memory
- Integrated VIA C-9 HD DX9 3D/2D graphics processor
- Display interface in CRT, 18/24-bit dual-channel LVDS panel
- Support standard and mini USB 2.0 ports
- Support Micro SD card slot

## ETX-8X90 Module Specifications

Core	
<b>Processor</b>	▪ 1.2GHz VIA Nano® X2 E-Series
<b>Chipset</b>	▪ VIA VX900 MSP
<b>System Memory</b>	▪ 1 x DDR3 800/1066 horizontal type SODIMM slot ▪ Support up to 4GB memory size
<b>BIOS</b>	▪ AMI BIOS ▪ 8Mbit SPI flash memory
<b>Operating System</b>	▪ Microsoft Windows 7 ▪ Microsoft Windows Xpe ▪ Microsoft Windows Embedded System System 7 ▪ Microsoft Windows CE 6.0 ▪ Linux (Debian, Ubuntu) ▪ VXWorks 6.9
Graphics and Video	
<b>Graphics processor</b>	▪ Integrated VIA C-9 HD DX9 3D/2D graphics with MPEG-2, WMV9, VC1, and H.264 video decoding accelerator
<b>Graphics memory</b>	▪ UMA, up to 512MB (BIOS setting)
<b>CRT Interface</b>	▪ 350MHz RAMDAC ▪ Support up to 2048 x 1536 resolution
<b>LCD Interface</b>	▪ Support dual-channel 18/24 bit LVDS panel
Ethernet	
<b>Chipset</b>	▪ Realtek RTL8139DL Ethernet controller
Storage	
<b>Micro SD card</b>	▪ Support Micro SD card slot (support OS boot on Linux Windows CE and VxWorks)

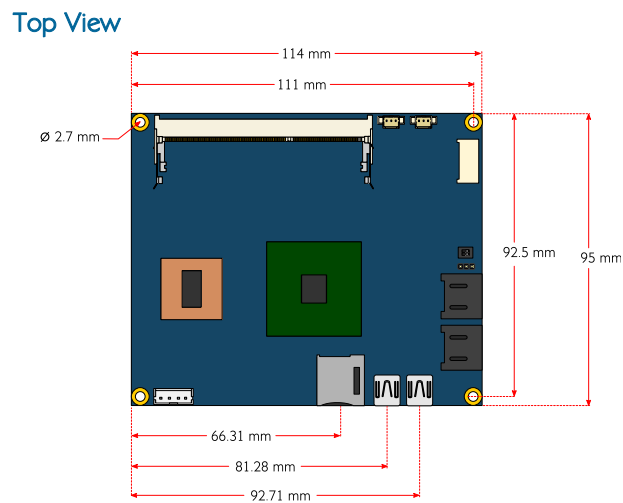
<b>Hard disk</b>	▪ Support two SATA 3.0Gbps connectors (SATA1 and SATA2 on module) ▪ Support two IDE connectors (IDE1 and IDE2 on carrier board)
<b>Note:</b>	The ETX-8X90 only supports two channel of storage. The IDE1 + SATA2 configuration is the default setting. The other configurations such as IDE1 + IDE2 (option 1) or SATA1 + SATA2 (option 2) are manufacturing options. For more details, please contact your local sales representative.
Input/Output	
<b>Audio</b>	▪ VT2021 Audio Codec
<b>LAN</b>	▪ 10/100Mbps Ethernet (RTL8139DL)
<b>USB</b>	▪ Support up to four USB 2.0 ports (on carrier board) ▪ Support two mini USB 2.0 ports (on module)
<b>LPT</b>	▪ Support one LPT port
<b>COM</b>	▪ Support two UARTs port
<b>Super IO</b>	▪ Fintek F71869ED
<b>IrDA</b>	▪ Support SIR
<b>Keyboard/Mouse</b>	▪ Support PS/2 keyboard and mouse
<b>Expansion Buses</b>	▪ Support SMBus interface ▪ Support I <sup>2</sup> C bus ▪ Support PCI 2.3, 32 bit/33MHz, 2 slots ▪ Support ISA bus (ETX 3.0 compliant) (DMA transfer not supported)
<b>Switch and Jumper</b>	▪ DIP switch (HDD selector switch) ▪ Clear CMOS jumper
Mechanical and Environment	
<b>Compliance</b>	▪ CE, FCC and RoHS
<b>ETX Compliance</b>	▪ ETX 3.02, compact module
<b>Dimension</b>	▪ 114mm x 95mm (4.45" x 3.7")
<b>Storage Temperature</b>	▪ -40°C ~ 70°C
<b>Operating Temperature</b>	▪ 0°C up ~ 60°C
<b>Operating Humidity</b>	▪ 0% ~ 95% (relative humidity; non-condensing)

## ETX-8X90 Module Layout Diagram

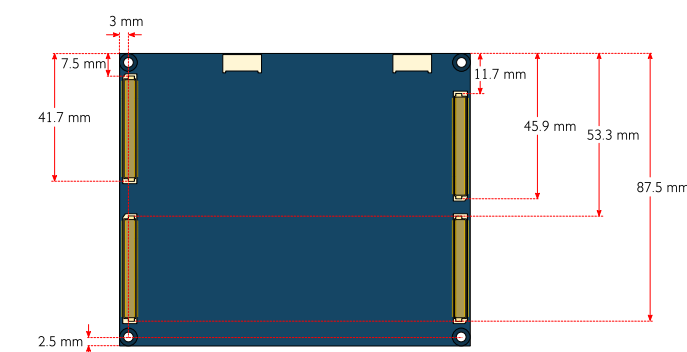


- Notes:**
1. As default, SATA2 connector is enabled and SATA1 connector is disabled. The SATA1 connector is a manufacturing option.
  2. The SATA connector pin 7 default setting is GND. The +5V supports is a factory option.
  3. DCIN1, VGA1, LPC1 and SPI1 connectors are reserved for debugging purposes only, and not for production used.

## ETX-8X90 Module Dimensions



## Bottom View



## ETXDB1 Carrier Board Specifications

<b>Model Name</b>	▪ ETXDB1
<b>Rear I/O Connector</b>	▪ 1 x VGA port ▪ 1 x COM port ▪ 4 x USB 2.0 ports ▪ 1 x 10/100Mbps Ethernet port (RJ-45)
<b>Onboard Connector and Slot</b>	▪ 4 x ETX connectors ▪ 1 x ISA slot (compatible with ISA ETX 3.02) ▪ 2 x IDE connectors ▪ 2 x PCI slots (compatible with PCI 2.3, 32bit/33MHz) ▪ 1 x LVDS connector (compatible with TIA/EIA-644) - Pixel clock up to 85MHz - Support panel resolution up to WXGA 1366 x 768 - Supports one or two-channel 18-bit/ 24-bit LVDS panel ▪ 1 x Backlight connector ▪ 1 x ATX power connector ▪ 1 x RTC battery slot
<b>Onboard Pin Header</b>	▪ 1 x LPT pin header ▪ 1 x Keyboard and Mouse pin header ▪ 1 x COM pin header ▪ 1 x Front Panel pin header (for HDD LED, Power LED, Switch and Speaker) ▪ 1 x Front Audio pin header ▪ 1 x SMBus pin header ▪ 1 x I <sup>2</sup> C pin header ▪ 1 x SIR (infrared) pin header
<b>Onboard Jumper</b>	▪ 1 x Backlight and Panel power select jumper

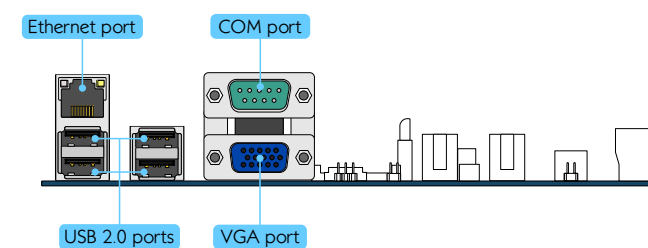
<b>Onboard Speaker</b>	▪ 1 x Buzzer speaker
<b>Form Factor and Dimension</b>	▪ Mini-ITX ▪ 6 layers ▪ 17cm x 17cm (6.7" x 6.7")
<b>Operating Temperature</b>	▪ 0°C ~ 60°C
<b>Operating and Storage Humidity</b>	▪ 95% relative humidity

## Board Storage Channel Configuration

	ETXDB1 (Carrier Board)		ETX-8X90 (Computer-On-Module)	
	IDE1	IDE2	SATA1	SATA2
Default settings	Enable	Disable	Disable	Enable
Manufacturing option 1	Enable	Enable	Disable	Disable
Manufacturing option 2	Disable	Disable	Enable	Enable

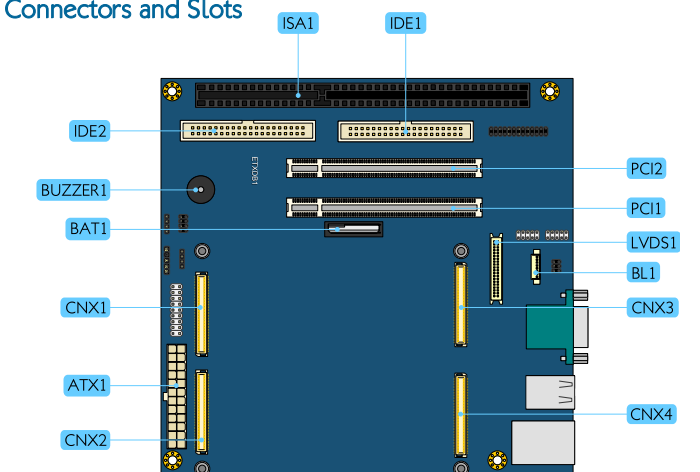
## ETXDB1 Carrier board External I/O Connectors

### Rear Panel I/O

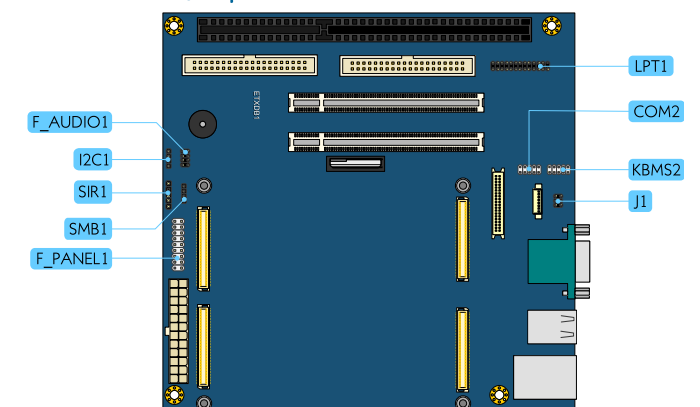


## ETXDB1 Carrier Board Layout Diagram

### Connectors and Slots



### Pin headers and Jumpers

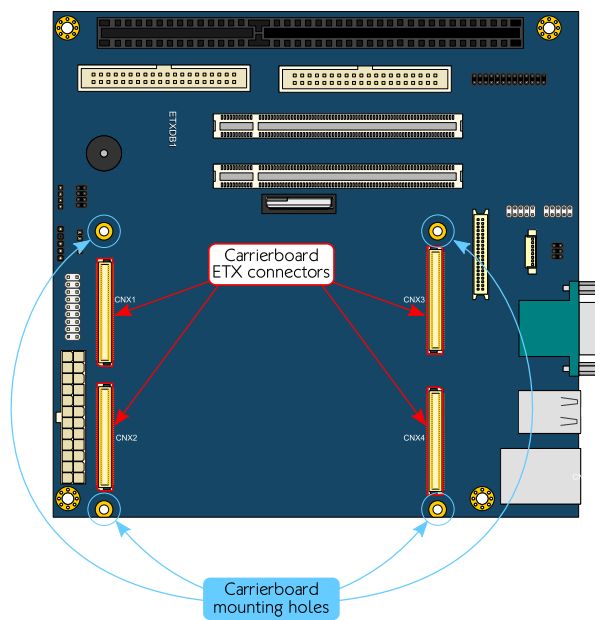


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## Mounting ETX-8X90 onto the ETXDB1 carrier board

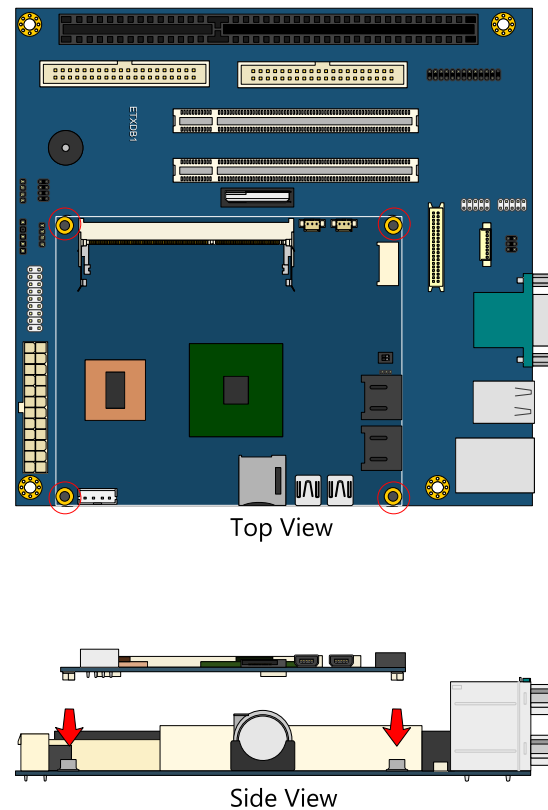
### Step 1

Align the four ETX connectors and mounting hole of the ETX-8X90 module into the ETX connectors and mounting holes on the ETXDB1 carrier board.



### Step 2

Gently press down the ETX-8X90 module until the four ETX connectors have been fully inserted into the ETX connectors on the ETXDB1 carrier board.

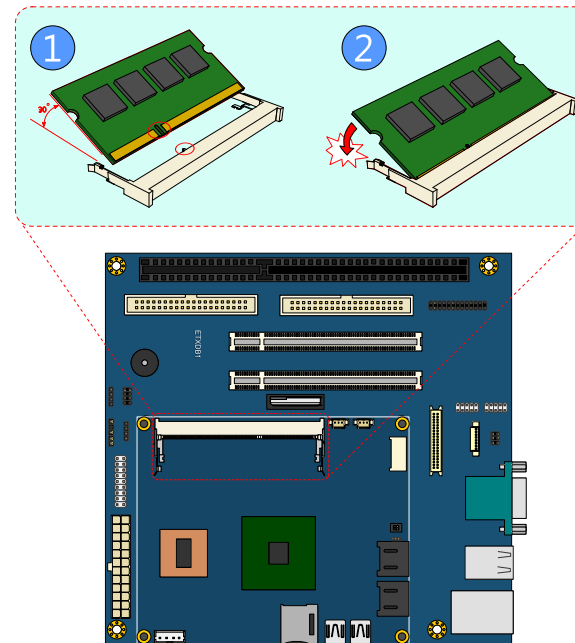


### Step 3

Align the notch on the memory module with the notch on the SODIMM slot. Insert the memory module into the slot at 30 degrees angle.

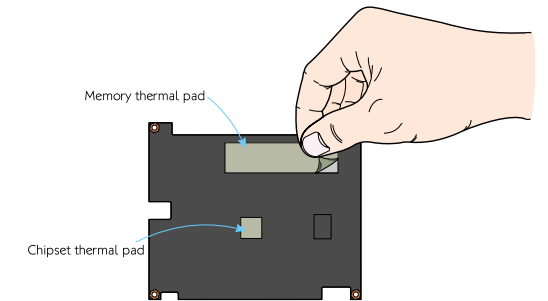
### Step 4

Push down until the memory module snaps into place. The memory slot has two locking mechanisms that will click once the memory module has been fully inserted.



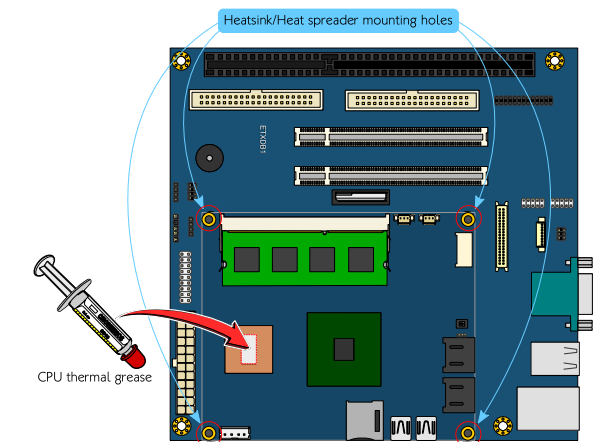
### Step 5

Flip over the heatsink/heat spreader. Remove the plastic cover of the thermal pad of the memory and chipset.



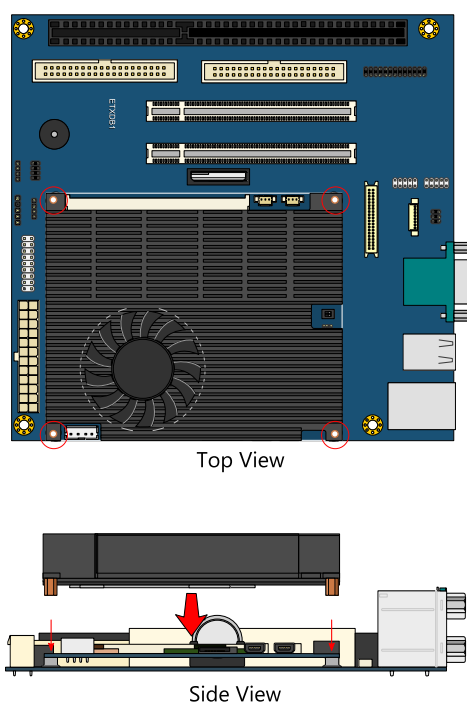
### Step 6

Apply the thermal grease/paste onto the surface of the CPU. Then align the heatsink/heat spreader over the mounting holes on the ETX-8X90 module.



### Step 7

Gently install the heatsink/heat spreader. Make sure to install it in proper orientation. The thermal pads underneath the heatsink/heat spreader should position above the memory and chipset respectively.



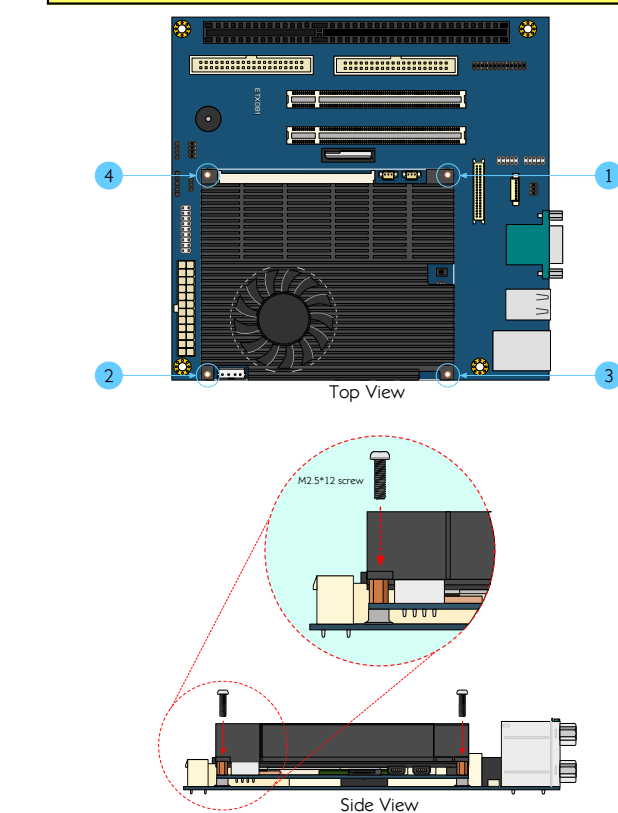
### Step 8

Connect the CPU fan jack to the fan connector (FAN1).

### Step 9

Secure the ETX-8X90 module with the heatsink/heat spreader by screwing and tightening four M2.5\*12 screws in sequence (torque is 2.5~2.6 kgfcm).

**Note:**  
Be sure to follow the sequence shown below when tightening the screws, otherwise it may cause damage to the device.



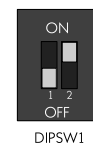
## ETX-8X90 Module Switch and Jumper

### Clear CMOS Jumper



Clear CMOS settings	Pin 1	Pin 2	Pin 3
Normal Operation (default)	Short	Short	Open
Clear CMOS	Open	Short	Short

### HDD Selector Switch



IDE1 + SATA2 HDD settings	Switch 1	Switch 2
IDE1 HDD not install	On	N/A
IDE1 HDD install	Off	N/A
IDE1 + IDE2 HDD settings	Switch 1	Switch 2
IDE1 and IDE2 HDD not install	On	On
IDE1 HDD not install and IDE2 HDD install	On	Off
IDE1 HDD install and IDE2 HDD not install	Off	On
IDE1 and IDE2 HDD install	Off	Off

### Notes:

1. The IDE1 + SATA2 configuration is the default setting.
2. The IDE1 + IDE2 (option 1) or SATA1 + SATA2 (option 2) configurations are manufacturing options.
3. The HDD Selector Switch (DIPSW1) is not applicable to SATA HDD configuration.

## ETXDB1 Carrier board Pin headers Definition and Jumpers Settings

### Front Audio Pin Header

Pin	Signal	Pin	Signal
1	AUXAR	2	AGND
3	AUXAL	4	MICIN
5	SNDR	6	NC
7	SNDL	8	AGND

### Serial Infrared Pin Header

Pin	Signal
1	+5V
2	Key
3	IRRX
4	GND
5	IRTX

### PC Pin Header

Pin	Signal
1	+5V /+3V (optional)
2	CLK
3	DAT
4	GND

### SMBus Pin Header

Pin	Signal
1	+3V
2	CLK
3	DAT
4	GND

### Front Panel Pin Header

Pin	Signal	Pin	Signal
1	Power LED+	2	+5V
3	Power LED+	4	HDD LED-
5	Power LED-	6	Power button
7	+5V	8	GND
9	NC	10	Reset
11	NC	12	GND
13	Speaker-	14	+5V
15	Key	16	NC

### LPT Pin Header

Pin	Signal	Pin	Signal
1	-STB	2	-AFD
3	D0	4	-ERR
5	D1	6	-INIT
7	D2	8	-SLIN
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	-ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SCLT	26	Key

### Keyboard & Mouse Pin Header

Pin	Signal	Pin	Signal
1	+5VSUS	2	+5VSUS
3	NC	4	Key
5	GND	6	GND
7	KB_DT	8	MS_DT
9	KB_CK	10	MS_CK

### COM Pin Header

Pin	Signal	Pin	Signal
1	DCD2-	2	RXD2-
3	TXD2-	4	DTR2-
5	GND	6	DSR2-
7	RTS2	8	CTS2
9	RI2	10	Key

### Backlight and Panel Power Select Jumper

Backlight voltage settings	Pin 1	Pin 3	Pin 5
+12V	Short	Short	Open
+5V	Open	Short	Short
Panel voltage settings	Pin 2	Pin 4	Pin 6
+3.3V	Short	Short	Open
+5V	Open	Short	Short

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