



AL-PSE-4D

Redundant Power Distribution Panel for 4 x 96 Watts Class 2 Power, DAbus data

Product Description - AL-PSE-4D

This structured wiring panel provides Class 2 power to 4 power outputs. Ideal for up to 60 light fixtures and up to 32 light switches.

No output can exceed the power supplied by any one input – input power is NOT consolidated, therefore regardless of the number of supplies attached, the output current per port remains Class 2 assuming that the input power supply is class 2 (100 watts) per NEC 2017 requirements.

It has four power inputs, with relay power failover management. It is housed in a case ideal for structured wiring panels. The power inputs are relay routed to 4 outputs providing failover.

It uses quick connect 5 pin, 5 amp rated connectors. The inputs are the DIN 4 connectors. Voltage range is 44 to 56 volts.. Earth connection is provided for static discharge management.

Ideally matched with 4 pcs of the AL-PS-51v96w, the AL-PSE-4D is a member of the ATX SML family for quick installation in Media Panels.

sml Format

This device is a member of the ATX LED sml family for Structured Media Panels. This allows 8 devices in a 14x14 panel. Other devices include our 51v 96w power supply, AL-PSE-8D distribution panel, ATX LED Hub a PoE Switch and more.

<http://atx-led.com>



LED status display

There are 2 LEDs per channel. The input LED is the presence of voltage on inputs A thru D. The output (left) LED indicates available current to that output. With no load, it is fully bright. As the load reaches the Class 2 limit of 2 amps – the LED will be off.

The 4 input voltages are monitored by an external device like the ATX LED Hub using pins 4 and 5 of the RJ45 connector

Failover Power

The Power Distribution has 4 inputs – apply the number of 48 or 51 volt power supplies to reach the power budget for the project. If a 300 watt project has 4 power supplies – then an outage will have no impact.

If a 400 watt project has one power supply fail – then 2 output connectors will have to share one 100 watt supply, and the other 2 will have 100 watts available for each. Status LEDs display the reserve power for each of the 4 outputs.. Use with solar installations is possible.

A (input) powers A output block directly

B (input) powers B output block directly

C (input) powers C output block directly

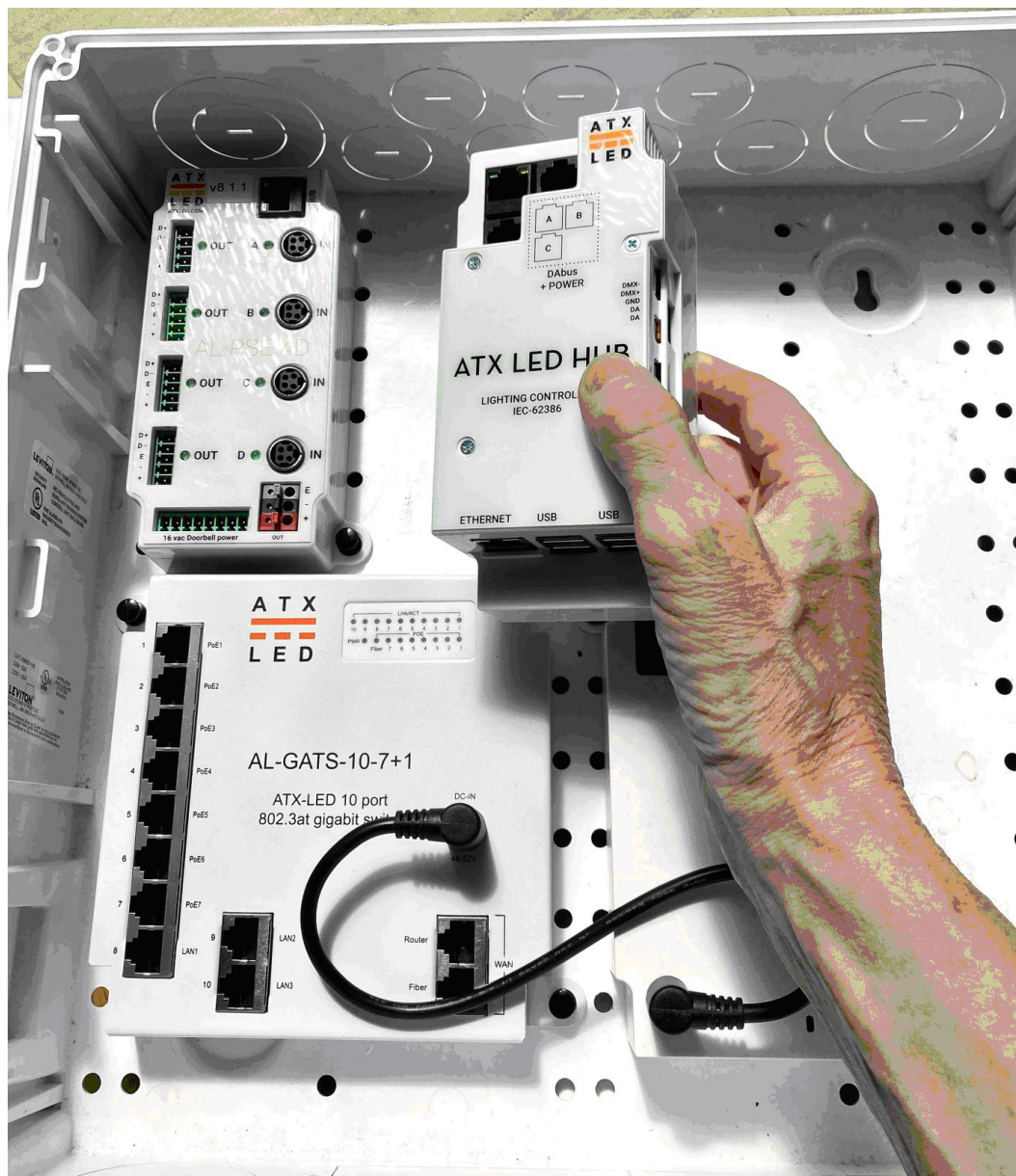
D (input) is the failover supply for A, B and C, and the supply for block D

Should B not have power, power for B will come from D.

Should C not have power, power for C will come from D.

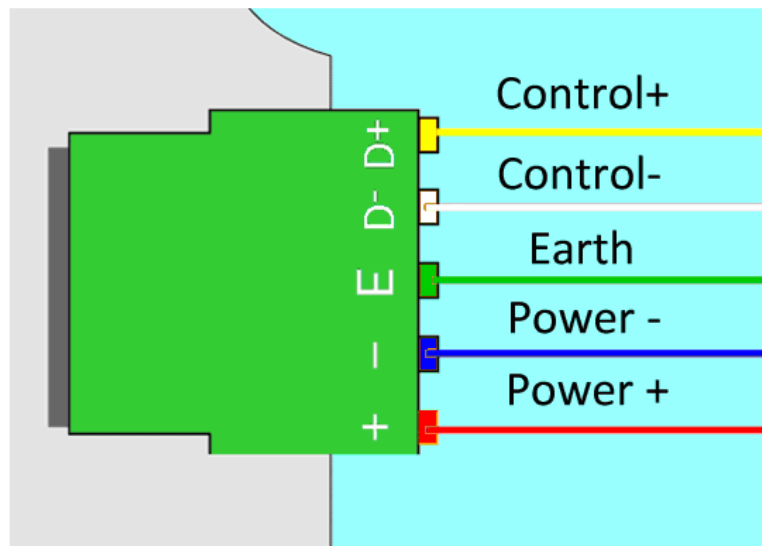
Should A not have power, power for A will come from D.

Should D not have power, power for D will come from either A, B or C – but only one. Operation with one power supply is possible.



Specifications

Power source	DIN4 (4 individual) connectors for the AL-PS-51v96w
Output Connectors	4 positions, 5 wires each. Wago 714-105 or KF12EKN-5P
PoE power output	1 KF246 type with power from output D – up to 96 watts power for PoE is taken from the power available on the D output
Hub power and data	RJ45 connector has 15 watts of power from any input, also DAbus signals
IEC 62386* interface	2 lines per output allow for DAbus data
Doorbell Camera Power	16 VAC output for up to 4 Doorbell Cameras and chimes
Failover – zero loss	Relays from 4 DC power inputs assures all outputs are live with low loss Should 3 of 4 power supplies fail, a Diode circuit will assure all outputs remain active – note: power is shared
Failover - emergency	
Failover Detection	Built in processor to assure failover and communicate status
Failover management	Processor can be enabled to broadcast a reduction in brightness to shared outputs
Input voltage range	44 to 56 volts (24 volt model available on request)
Current Limit	This device relies on the Class 2 current limit from the power source. For example: the AL-PS-51v96w. Only one Class 2 power supply per channel is permitted to be connected
Voltage measurement	The PSE-4D presents on pin 4 of the RJ45 a signal that allows the state of the 4 inputs to be measured by the ATX LED Hub.
Internal Power	250 milliwatts standby with all power inputs active
Protection	Reverse protection and static protection
Operating Temperature	0°C ~ 50°C
Size	70 mm x 147mm x 30mm plus 2x 10mm interleaving tabs on the 70mm side
Horizontal between tabs	76.2mm
Vertical between tabs	127mm
Hot Swap	Yes – can unplug and connect input power live
Earth Ground	Connection for earth grounding
Failover Detection	Cutover at less than 44 volts
Mouting Kit	Leviton 47615-NYL push pins
DIN Rail	Din Rail adapters are available.



Quick Connect Power outputs

The KF12EKN 5 pin connector is provided to source 51 volts the Lighting system, on 4 outputs. Each output is connected to the corresponding DIN connector input, unless that input has no power. In case of missing power, internal relays will switch the input power to the outputs. The same connector also has the DAbus and earth ground.

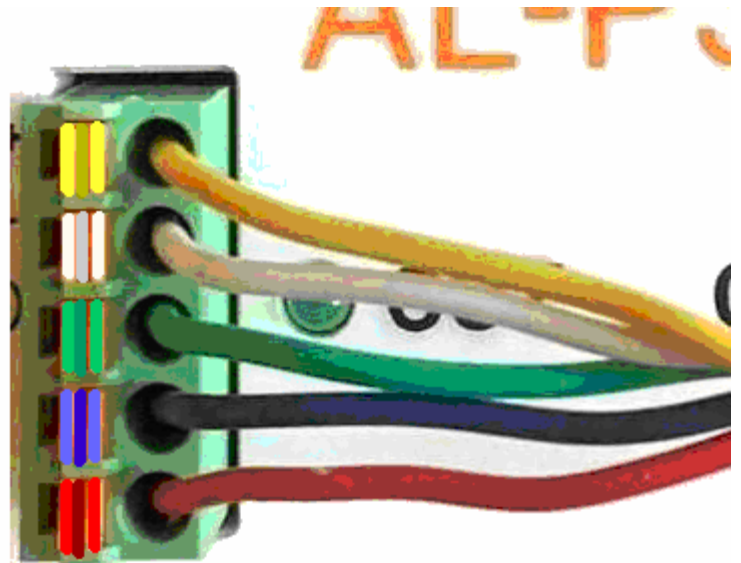
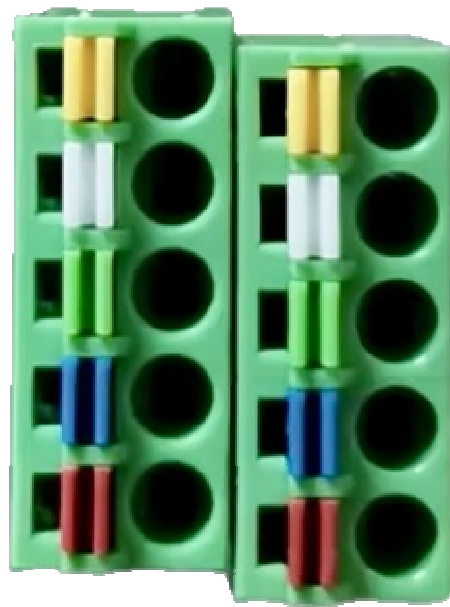
DA+ = Yellow

DA- = White

E = Green

-51v = Blue

+51v = Red

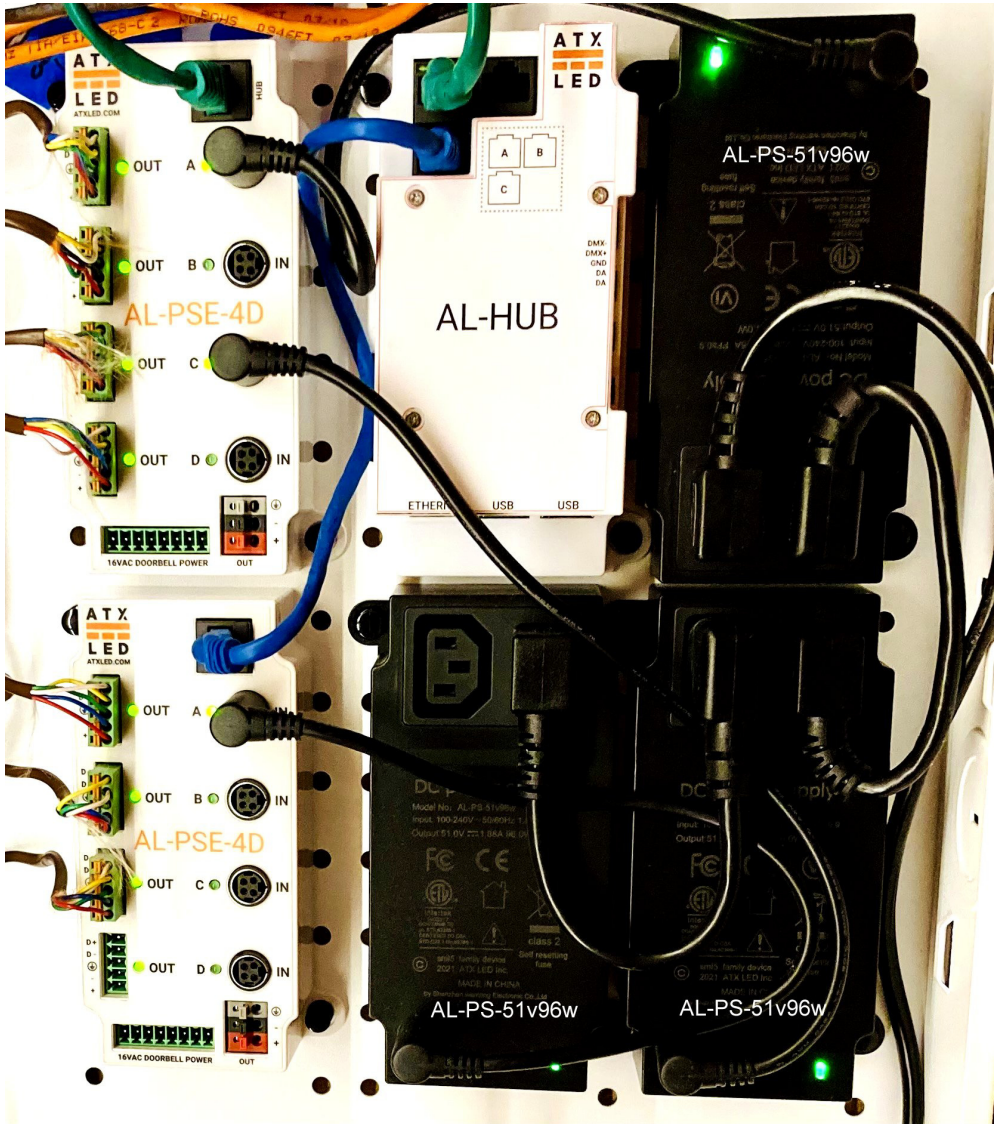


Earth Grounding

Earth grounding is recommended for static discharge of people using the wall switches. In a proper installation with the AL-51v96w power supply – the 120vac power socket should have an earth ground. That earth ground flows thru the DIN4 connector to the outputs. In cases where the AL-PS-51v96w is not used – connect a awg18 wire from the gray connector to an earth ground.


Compatible input power:
AL-PS-51v96w Power Brick

The AL-PS-51v96w power supply was designed for use with the AL-PSE-4D. It fits the SML standard case format.



Min. DIN 4 Pin

Pin Assignment

Min. DIN 4 Pin (female)		PIN No.	Output
		1	+Vo
		2	-Vo
		3	+Vo
		4	-Vo

Class 2 Safety

The AL-PSE-4D passes the power from a UL Listed, Class 2 power supply, thru the device out to the loads. The Class 2 specifications are preserved thru this device. Hardware lockouts prevent multiple inputs from being combined into power for one output. Earth ground is passed from the power supply to the output connectors to wire to the wall switches.

Doorbell Camera Power

Power up to 4 Ring™ or similar Doorbells - The AL-PSE-4D provides 24 VDC power for doorbell operation. This makes the low voltage cabinet the center of the home automation system. This output is a 450 mA current limited output.

PoE (51v) general purpose Power output

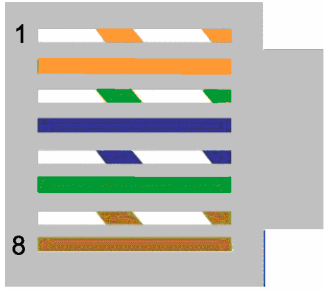
The KF246 connector (Red, Black, Gray) is provided to source 51 volts for 802.3at and similar PoE switches. This output is shared with the D output. It is always powered regardless of input power sources. It is intended to be used to power a PoE switch or other 48v device. Red is +51v, black is -51v, gray is earth ground.

Failover redundancy

Onboard logic shunts the available input power to the outputs. In the event that there are fewer active input supplies to feed the loads, the ATX LED hub can reduce the max power to assure load balancing. This will affect all lights globally since the topology is unknown.

Topology

The ATX LED hub can determine the topology of the wired connections.

 <p>Hub Connector</p>	<table><tr><th>Pin</th><th>Function</th></tr><tr><td>1</td><td>DA +</td></tr><tr><td>2</td><td>DA – (gnd)</td></tr><tr><td>3</td><td>+Vtest</td></tr><tr><td>4</td><td>+ V (350 mA)</td></tr><tr><td>5</td><td>Sense Voltage</td></tr><tr><td>6</td><td>Ground</td></tr><tr><td>7</td><td>Ground</td></tr><tr><td>8</td><td>Ground</td></tr></table> <p>RJ45 pinout</p>	Pin	Function	1	DA +	2	DA – (gnd)	3	+Vtest	4	+ V (350 mA)	5	Sense Voltage	6	Ground	7	Ground	8	Ground
Pin	Function																		
1	DA +																		
2	DA – (gnd)																		
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5	Sense Voltage																		
6	Ground																		
7	Ground																		
8	Ground																		

RJ45 Connector and Status LEDs

The RJ45 connector is used to power the ATX LED hub and provide DALI data, it provides passive PoE. Do not plug a laptop or router into this connector. The Orange LED indicates that DALI power is available. It will flash with traffic. The Green LED indicates that internal power is operational. The Sense Voltage function provides a voltage between 1.5v and 22.5v, depending on the number of attached power supplies. A alone is 12v, B alone is 6v, C alone is 3v and D alone is 1.5v, add the voltages to determine the number and location of connected supplies. Vtest is an 18k resistor to +51v

Failover

The AL-PSE-4D will operate with from 1 to 4 power supplies attached. For full 400 watt operation, 4 power supplies are needed. In the event that any input is not present (or fails) then the power will be routed to all 4 output connectors.

Suggested use:

The Top input (A) is for the reserve power or battery power in off-grid applications. Power from A will be routed to the other outputs if any power is missing. As B, C and D are powered, their output power will come directly from that input. If B, C or D is missing, then the output power for B, C, D will be shared with A.

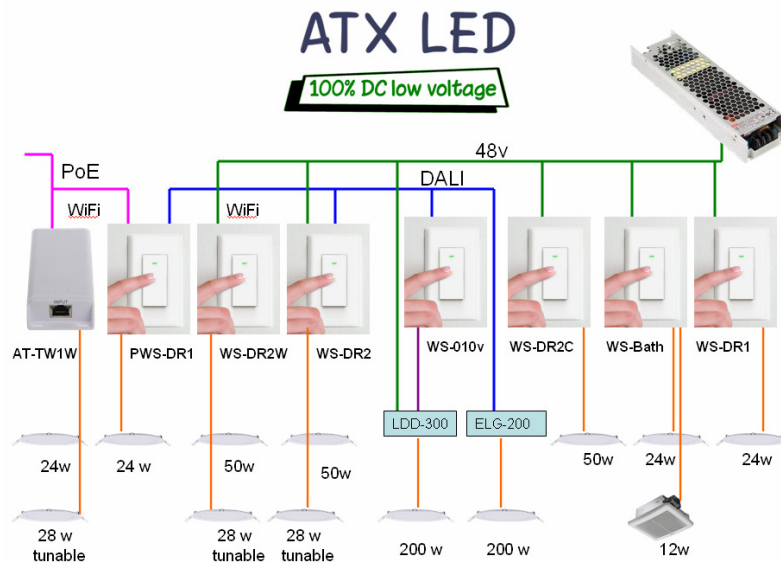
If A power is missing, then the failover will come from B, C or D sequentially. The AL-PSE-4D will route input power to all outputs, and calculate the sharing.

LED Status Display

Each Input/Output pair has 2 status LEDs. These green LEDs show the status as follows:

Input LED	Output LED	Status
Off	Off	Doorbell power is shorted
On	Off	Output is overloaded
Off	On *	Output has power from a failover input
On	On *	Operation Normal

* the output LEDs dim indicate percentage of load available. At 100 watts, they are off



Ordering part numbers

Model	UPC Code
AL-PSE-4NR	
AL-PSE-4D	
AL-PSE-4M	722512407350