ATX LED

100% DC low voltage

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AL-WS-PWM2W

**Decorator switch style
Constant Voltage LED
PWM driver and dimmer for
tunable white or fixed white LEDs**

96 watt   WiFi   3-Way

Product Description - AL-WS-PWM2W wall switch

This switch operates just like any standard residential light switch – however it takes 12v or 24v DC instead of 120VAC, and directly drives up to 96 watts of LED strips without additional drivers.   This Decorator style switch in a standard residential style outline fits into any home, looks like any switch yet meets NEC article 411 for Low Voltage lighting.

Stand alone it operates as a simple switch for up to 24 ft of strip lights at 4 watts per ft.   Use a dual color 3 or 4 wire strip for tunable white projects. Use AWG 16/2 to connect to your LEDs for lowest loss. Use any 24 volt power supply with sufficient wattage for the strips you intend to use.   Note: with tunable white strips, only 50% of the max power needs to be calculated. Use AWG 16/3 to bring 24v and earth ground from a power brick (like the AL-PS-24v96w) to the switch. Daisy chain up to 100 watts on one home run – minimizes the number of home runs per project.

A proven rocker switch and brightness slider leverages mass production of decorator switches - now for low voltage applications – a casual user requires no training, no App, no Internet to use this switch.   Perfect, flicker free dimming from off to 0.1% to 100%. No network setup is required.   PWM assures excellent dimming. The max current of 8 Amps allows up to 96 watts per channel – two channels are provided for tunable white project – but the total for both remains 96 watts.

For 3-way operation – a simple 2 wire link with AWG24 or better allows 2, 3, or an unlimited number of switches to control one set of LED's.   Any single pole switch found at Home Depot can be used to add a 3-Way remote switch.   The AL-WS-M momentary switches is the best for multiple remote applications

To enable Home / Business automation – the AL-WS-PWM2W includes a WiFi interface to the free Wiz app or to Alexa or Google home voice control.   The AL-WS family includes many switch options.

AL-WS-PWM2	AL-WS-010v	AL-WS-Bath	AL-WS-DR1	AL-WS-M
DALI bus and 56 watts	DALI bus and 0-10v	Dual output for LED and Bath fans	Low cost 24 watt driver	Switch for 3-way Momentary

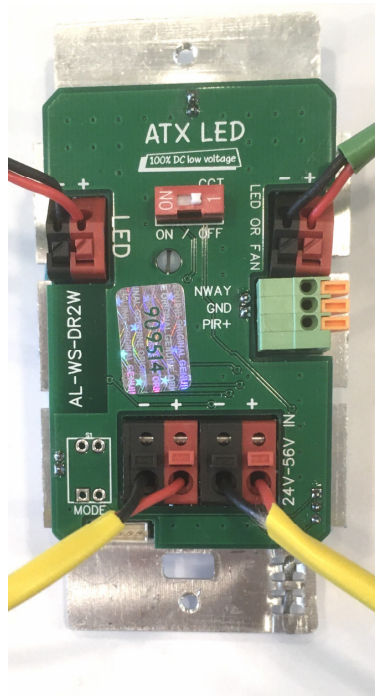|	
Power source and load	Spring loaded connectors (2 pairs) for AWG 16-20 wire – pass thru
LED constant voltage PWM operation	8 Amps per channel – 2 channels Spring loaded connectors (2 pairs)
LED protection	Detects 12v Constant Voltage LED strips and prevents over voltage
LED color temperate	Fixed or Tunable white
Input voltage range	12v or 24 volts (power for LEDs)
Standby power consumption	50 milliwatts (without WiFi) 200 milliwatts (with WiFI)
PWM Rate	Non visible – 500 Hz
Protection	Reverse protection and static protection, short circuit and overfoltage, hot swap
Operating Temperature	0°C ~ 50°C
Size	108H (metal) 70H x 34 D x 42 W mm
Dimming	100% to 0.1%
FCC and interference	All outputs are RF filtered for minimal interference
Maximum output voltage	Same as input
Maximum output current	8 Amps per channel
Hot Swap	Yes – can unplug and connect LEDs with power applied.
WiFi Interface	Wiz / Signify enabled – use the Wiz App for Alexa or Google or IFTTT
N-Way input	To simple contact for 3-Way
PIR+	8 volt power to a PIR sensor
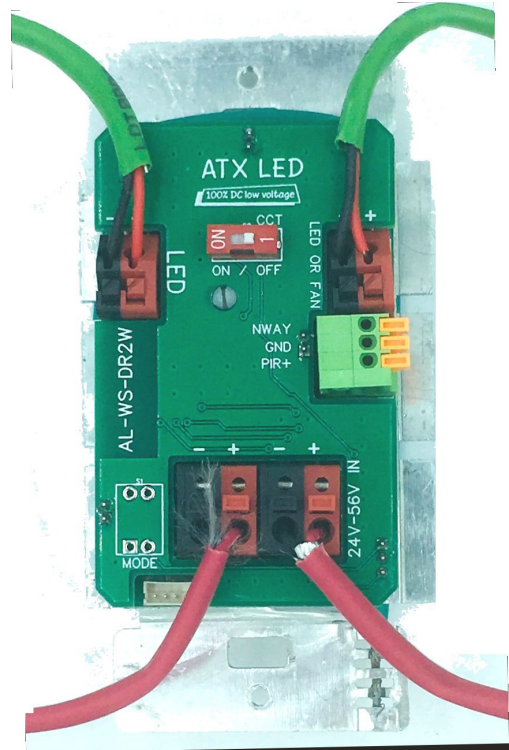
Wiring the AL-WS-PWM2W for up to 8 LEDs

See http://atxled.com/How2 for more examples
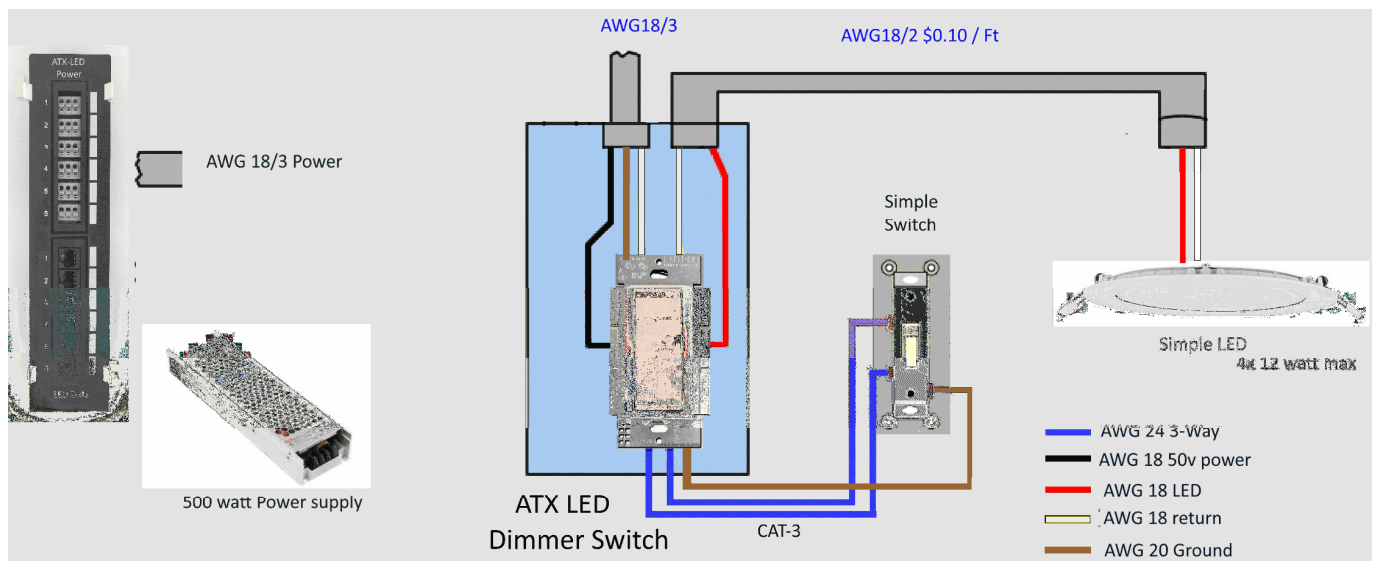
# Powering the AL-WS-PWM2W	
	Power the switch via the Power input connectors, 24v is recommended. You can feed from the input to the output up to 4 amps. Shown here is Red 18/2 for the power input and pass-thru to the next switch.

Basic wiring and operation

By default – the AL-WS-PWM2W operates stand alone – no WiFi connection is required. Connect the dual LED outputs to your LED's.   Input voltage is the same as the output voltage

Constant Voltage LED operation

Note that CV leds use resistors that waste about 20% of the energy – so more Lumens are possible with CC leds than CV – but if CV is what you have (Like LED strip lights) then CV must be used.

Momentary or On/Off Main Switch operation

The main switch of the device can be either On/Off type or Momentary. On/Off has the dimmer on the right, Momentary is installed with the dimmer on the left. The difference is that each press of the Momentary style causes the light to turn On/Off.

Functions – Momentary Main switch

If your AL-WS-PWM2 has a Momentary switch then use this table. Note – the slider should be on the left

Function	Seconds	How to trigger
On / Off	0.5 max	Push the switch down for under ½ second. The light will turn on and off each time you press.
Adjust Color Temperature	< 45	Hold the button down – move the slider. The Slider now controls the color temperature – each time you move the slider – the 45 second timeout is extended.
Reset to defaults: - Recalibrate the LED currents - Set switches to On/Off style	45	Press and hold the button for 45 seconds. The switch will enter self calibration mode the next time the light is turned on. Self Calibration will also be done if the number of LEDs attached changes. The switch method will change back to On/Off type
Restore to Momentary Operation	< 0.5 x 5	After factory default, press the button 5 times with less than 0.5 seconds each to change from On/Off to Momentary operation.
Put WiFi into pairing mode	Until light level change	Set the slider to minimum dim, press and hold the switch down for about 7 seconds – the lights will step up to 50% and the WiFi chip will enter pairing mode. If already connected to wifi – nothing happens.

Functions – On/Off style Main switch

If your AL-WS-PWM2 has an Up/Down On/Off switch then use this table. Note – the slider should be on the right.

Function	"Flips"	How to trigger
Wrong Switch type: Changing to Momentary	5	After a factory reset - press a momentary switch 5 times briefly to program the device for momentary operation. Both the built-in and remote switches can be either On/Off or momentary. The face plate can be exchanged in the field if needed.
Adjust Color Temperature		If the LED is off – move the slider. The light will turn on and you can adjust the color temperature. After adjusting the color temperature – turn the switch ON, and you can adjust the brightness. Turn the switch off and the color temperature and brightness will be saved.
Reset to defaults: - waiting to calibrate - switches are On/Off type	8	Set the dim to low dim. Turn the switch on for 2 seconds. Now off and on 8 times, quickly, leaving it on after the last flip. The brightness will change to 50%, then go off The switch will enter self calibration mode and the lights will flash.
Restart WiFi pairing if requested by the App.	5	Set the dim to low dim. Turn the switch on for at least 2 seconds. Now turn off briefly off and on 5 times, quickly, leaving the switch up on the 5th flip.

Remote Switch Functions – Momentary style

The remote (3-Way) switch can be either momentary or On/Off.   If it is the momentary style, then use this table.

Function	Seconds pressed	How to trigger
On / Off	0.5 max	Push the switch down for under ½ second. The light will turn on and off each time you press.
Remote Dimming	< 10	Press and hold the button to dim down, then up. To dim down again, release and press. Do not hold longer than 15 seconds.
Return to On/Off style	45 seconds	Should the switch get confused and act in momentary mode when the physical switch is On/Off – simply leave On for 45 seconds and the system will correct the error.
Changing from On/Off to Momentary	0.5 x 5	If a AL-WS-PWM2 with a momentary switch is operating in On/Off style – then press the rocker 5 times briefly – it will switch to Momentary operation.

Remote Switch Functions – On/Off style

Function	"Flips"	How to trigger
Remote Dimming		Not supported
Changing from On/Off to Momentary	5	If a AL-WS-PWM2 with a momentary switch is operating in On/Off style – then press the rocker 5 times briefly – it will switch to Momentary operation.
Return to On/Off style	45 seconds	Should the switch get confused and act in toogle mode when the switch is On/Off – simply leave On for 15 seconds and the system will correct the error.

Default Operation – WiFi enabled

By default – the AL-WS-PWM2W operates stand alone – no WiFi connection is required. Connect one or two LED outputs to your LED's.

WiFi as Remote Switch

WiFi commands to the light operate as a kind of 3-way switch.   The WiFi command override the physical switch settings.   If the On/Off type of switch is used – then the physical Up/Down will not represent the On/Off status of the bulb. Therefore, if the light is turned on or off with WiFi, the next flip of either the built-in or remote 3-way switch will turn the light off or on as intended.   For this reason – some people prefer the momentary switch for the main and remote switches.   The type can be changed by the end user.

CCT selection (Color Temperature)

The Red slide switch selects between fixed color temperature and tunable white operation.   Turn the switch OFF for fixed color installations, turn the switch ON for tunable white. Tunable White LEDs can be adjusted from 2700K to 5000K and are connected as shown in our wiring diagram.   If you are in CCT (tunable white) mode and use 8 fixed color LEDs, you will see odd behavior, the lights will not be all at the same dim level.   Change the switch and reboot.

Slider Operation

The Slider for dimming has 3 functions in this device.

A) it changes the brightness of the LEDs when the switch is ON.

B) it changes the color temperature if you have CCT enabled. Moving the slider with the light OFF changes the color temperature. Turn the switch on to exit color temperature operation

C) it returns the switch to UP = ON operation.   If the main switch is UP and you move the slider, the lights will turn on. This compensates for the 3-way effect that leaves the switch with the light on when the switch is down.

3-Way Options and wiring

N-Way wire input connection

The N-Way input has several functional options. A simple low cost switch or alarm contact can be used to activate this.   The options are: 3-Way, and split.

3-Way Operation (On/Off remote switch)

Simply connect an AWG24 (solid CAT-3 or better is recommended) between the N-WAY pins and a remotely installed standard On/Off wall switch. If more control switches are needed – use a dual pole 3-Way setup, 4-Way is also possible. No controller is required; an unlimited number of switches can control one light. See our online application note for 3-Way switching. The N-Way input is has an internal pull-up – so a connection to ground will change state. The state of the N-Way input is XOR'd with the physical switch. See our 3-Way instruction manual (http://atxled.com/pdfr) for details.

Note: install the upside down. Turning the switch UP opens the circuit and turns the light on if the main switch is down.   See the Momentary vs On/Off tables above for more info

Door Jam Operation

A simple Normally Open door alarm switch can be wired to the N-Way input. Then – when the door opens – the light will go on.

Split Operation

In split operation, the main switch controls the left output, and the N-Way controls the right output.   So one switch can control two separate lights.   Se the Red "Split" switch to ON to enable split operation.

Wiz Connected Light App Setup

Install the Wiz app on your phone. Create a home, create a room, and then click to add a light.   Enter pairing mode using the method above. Note – if the device has been paired before – you will have to enter pairing mode twice for this to work.   Once in pairing mode – it will take up to 2 minutes to complete. Note – you will need at least one operating SSID (wifi network) on 2.4ghz for this device to work. Also note – in step 4 – wifi network name – click on the "eye" icon to see your SSID Password and insure that it is correct.
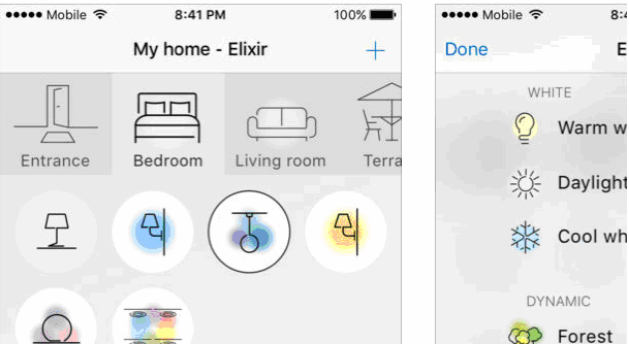

WiZ App 4+
TAOlight Company Limit... >

★★★★☆ (8)   ⁺OPEN

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iPhone

Search for Wiz Connected
in the App store – install it

Cancel   **Create a home**   Save

A fresh new home for your
WiZ devices.
Please give it a name.

My Home

Rooms Room type

🏠	Attic	>
	Balcony	>
	Bar	>
	Basement	>
🛁	Bathroom	>

Live Oak - WiZ ⊕

New light detected. Let's start pairing.

Demo Thr...   Demo One   Demo Two

WiZ CC

Use the + button connect
(this this does not appear –
try a 2.4 ghz network)

Click on the (+) symbol

Cancel Add devices

Which type of device do you want to install?

Light	Smart Plug
Wi-Fi Switch	Bluetooth Remote

Click on the "WiFi-Switch" tab

‹ Back Connect to Wi-Fi

My_WiFi

Please enter your Wi-Fi password.
Make sure it is a 2.4GHz network.

Password 👁

Continue

Enter your WiFI Password

‹ Back **Add new light** Adding lights to Demo Three 1 Turn OFF your lights 2 Turn ON your light 3 Tap on "Start" **Start** Power off/on then click start	**Cancel** **Searching lights** Searching for lights. Please don't power them off. Wait for the search to finish
Searching lights WiZ CC **Finish** New device found	**Live Oak - WiZ** Demo Thr... Demo One WiZ CC You can now control the light. Next step is in the Amazon Alexa App to add this light to voice control

ATX LED Product family