

## WPA2X10

### 2 x 10W Audio Amplifier DC12-60V

### Waterproof IP67

The WONDOM WPA2X10 2 x 10W Waterproof Bluetooth v5.0 Amplifier provides 10 Watts RMS of clean audio power to any set of stereo speakers. The WPA2X10's waterproof capability works perfect for outdoor audio applications, such as in a garden, on a boat, under a porch/patio, etc. It also works great for indoor applications. The built-in mounting brackets enable it to mount under a desk, countertop, workbench, and under dashes for mobile audio applications.

#### Features:

##### Wide-Range Single-Supply Operation:

- DC 12V to 60V can be extended to 100V upon request, but exceeding 60V is strictly prohibited for the standard version.

##### Wide-Range Working Temperature

- Working temperature range is -30°C to 75°C

##### IP67 Waterproof Rating

- The IP code is defined by the international standard IEC 60529. The WPA2X10 is dust-tight and can withstand immersion in water up to 1 meter for 30 minutes

##### Compliance:

- FCC and CE certified for safety and regulatory standards



##### DC 12V to 60V

Our waterproof audio amplifier supports DC 12V to 60V. The standard version handle up to 60V. For 60V up to 100V needs, please contact customer service.



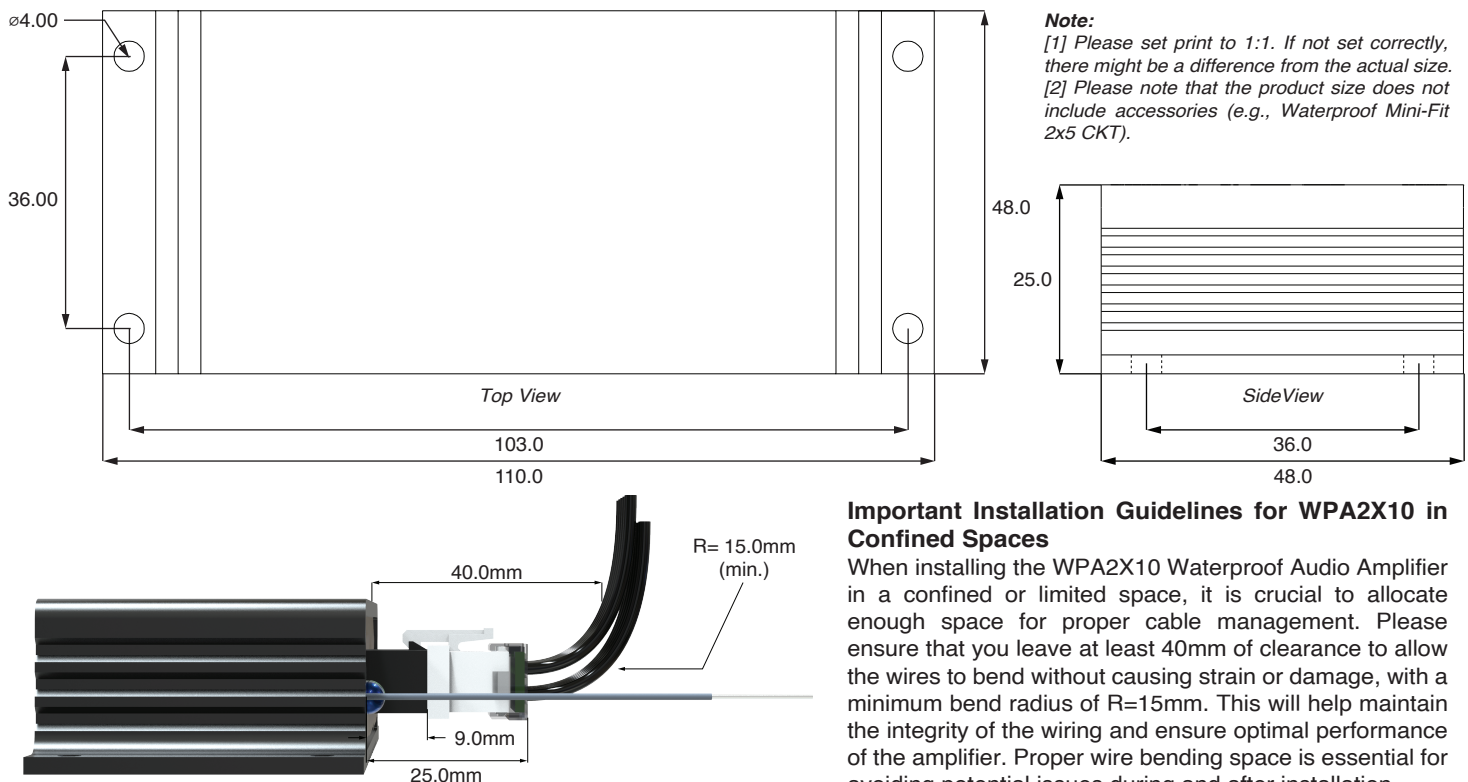
IP67 Waterproof and Dust Protection

### Specifications

Bluetooth Version	: v5.0	Output Channel	: 2 Channel(s)
Bluetooth Pairing Name	: WONDOM WPA2X10	Output Power	: 2 x 10 Watts
Supply Voltage	: DC 12-60V (Mini-Fit 2x5 CKT <sub>(COMPATIBLE)</sub> )	Product Size (mm)	: 110.0mm x 48.0mm x 25.0mm
Audio Input Source	: Bluetooth & Mini-Fit 2x5 CKT <sub>(COMPATIBLE)</sub>	Net Weight (g)	: 230g ± 10g

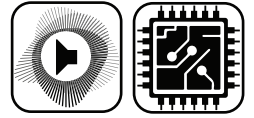
### Mechanical Drawing

(Nominal Dimensions, mm with Tolerance ±0.3 mm)



### Important Installation Guidelines for WPA2X10 in Confined Spaces

When installing the WPA2X10 Waterproof Audio Amplifier in a confined or limited space, it is crucial to allocate enough space for proper cable management. Please ensure that you leave at least 40mm of clearance to allow the wires to bend without causing strain or damage, with a minimum bend radius of R=15mm. This will help maintain the integrity of the wiring and ensure optimal performance of the amplifier. Proper wire bending space is essential for avoiding potential issues during and after installation.



## Operation Precautions

### Water Resistance and Temperature



## CAUTION

When using a WPA2X10 Outdoor Bluetooth v5.0 Amplifier in or around water and high temperature, what should I pay attention to?

#### Water Resistance

The information below applies to amplifier with IP67-Rated marked on the housing unit.

Water Resistance Under Daily Use		
Example of Daily Use	Hand washing	No
	Water-related place, on the pool	No
	Water splashing, rain	Yes
	Outdoor use in Arctic Circle	Yes

Even if an audio amplifier is water resistant, note the usage precautions describe below:

- Ensure the amplifier is securely mounted in a location where it is least likely to come into direct contact with water. If installing outdoors, consider using a weatherproof enclosure.

*By adhering to these precautions, you can enhance the longevity and reliability of your water-resistant audio amplifier in various environments.*

#### Heat Resistant

The WPA2X10 Heat Resistant Audio Amplifier is specifically engineered to perform under extreme temperature conditions. With an operating temperature range extending from -30°C to 75°C, this amplifier is well-suited for use in hot climates, including countries in the Middle East where temperatures frequently reach high levels.

Features	Description
Heat Resistance	Built to withstand high ambient temperatures without compromising performance
Outdoor Use	Suitable for hot climates, such as Middle Eastern countries
Industrial Use	Reliable in industrial settings with high temperatures

*By incorporating advanced materials and cooling mechanisms, the WPA2X10 amplifier effectively dissipates heat, preventing overheating and extending its lifespan.*

## IP67 Certification and Its Limitations

### Understanding Waterproof and Dust-tight Ratings for the WPA2X10

#### Waterproof

Even though the WPA2X10 has an IP67 certification, it is not designed for underwater operation. IP67 means that the unit can withstand temporary immersion in water. However, continuous or prolonged underwater use can damage the unit, compromising its functionality and safety. Additionally, the WPA2X10 can operate at temperatures as low as -30°C, making it very suitable for cold regions such as Alaska (USA), Canada, Norway, and Sweden.

#### Dust-tight

The WPA2X10 is dust-tight, meaning it is completely protected against the ingress of dust. This ensures the internal components remain clean and operational even in dusty environments. Additionally, the WPA2X10 can operate at temperatures up to 75°C, making it very suitable for hot countries such as India, Saudi Arabia, Australia (particularly in regions like the Northern Territory, Western Australia, and Queensland), and many others. However, if the unit is exposed to direct heat for extended periods, it may cause the housing unit's color to fade.



#### WORKING TEMPERATURE

# -30°C

#### Application

The WPA2X10 is designed to operate reliably in extremely cold environments, down to -30°C. This makes it suitable for use in outdoor installations in cold climates, such as winter conditions in northern regions, ensuring consistent performance even in freezing temperatures.



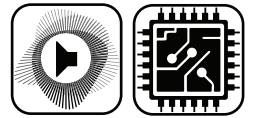
#### WORKING TEMPERATURE

# 75°C

#### Application

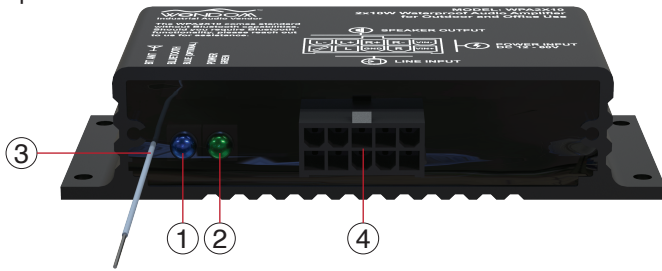
The WPA2X10 can also perform efficiently in hot environments, with a maximum working temperature of 75°C. This is ideal for applications in hot climates or areas with high ambient temperatures, such as deserts or tropical regions, ensuring stable operation without overheating.





## Port(s) Layout

Front panel of WPA2X10



### ① Blue LED Indicator:

The blue LED indicates the Bluetooth status of the WPA2X10. When the blue LED is blinking, the device is stay ON searching for a Bluetooth connection. Once a Bluetooth connection is successfully established, the blue LED will flash steadily to signify that the connection is stable and active.

### ② Green LED Indicator:

The green LED lights up to indicate that the WPA2X10 is receiving power. This confirms that the device is properly connected to a power source and is operational.

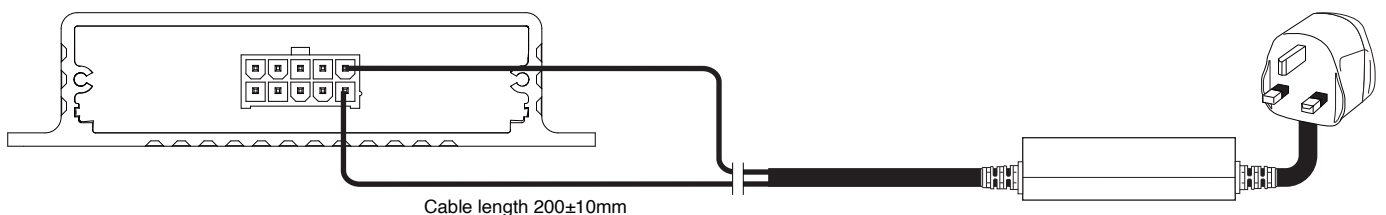
### ③ Bluetooth Antenna:

Enables wireless communication between the WPA2X10 amplifier and Bluetooth devices. It ensures stable connections, extends the range, and improves audio quality by transmitting and receiving Bluetooth signals.

### ④ Mini-Fit 2x5 CKT:

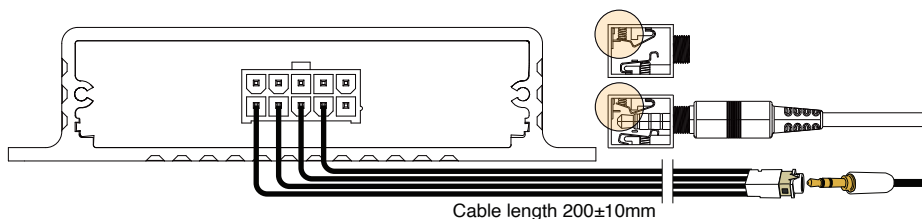
#### • Power Input

The main power supply connects to this port as it provides the necessary power to operate the amplifier, accepting a DC input voltage range of 12V to 60V. This wide voltage range allows for flexible power supply options, from smaller portable batteries to larger power adapters.



#### • Line Input

This port is used for connecting external audio sources. It supports line-level audio input from devices such as smartphone, computers, or other audio sources. By default, the WPA2X10 outdoor audio amplifier prioritizes Bluetooth for audio input. If a 3.5mm line input is detected, it will switch to the 3.5mm audio source as the priority.



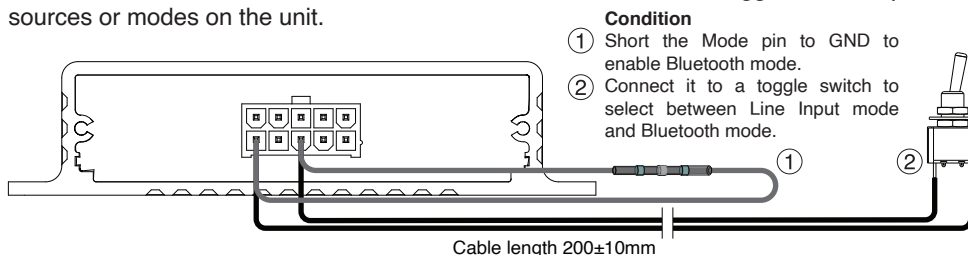
Note:

[1] For line input, if you use a connector other than a 3.5mm jack, such as an RCA cable, a selection switch must be added. The WPA2X10 can only detect a 3.5mm audio input by default. Without the switch, it will not be able to change from Bluetooth to Line Input. If you use any other line-in connector, the selection switch is essential for proper input detection.

[2] The 3.5mm port connection is not included as a standard accessory.

#### • External Selection Switch

This connector is used to connect the WPA2X10 unit to an external toggle switch. It provides a connection point for selecting input sources or modes on the unit.



#### Condition

- ① Short the Mode pin to GND to enable Bluetooth mode.
- ② Connect it to a toggle switch to select between Line Input mode and Bluetooth mode.

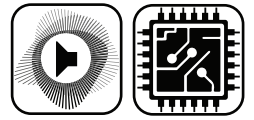
Note:

1. For input selection using a toggle switch:

- ON, High = Line In mode: Activates line input detection.
- OFF, Low = Bluetooth mode: Default input mode when the switch is OFF.

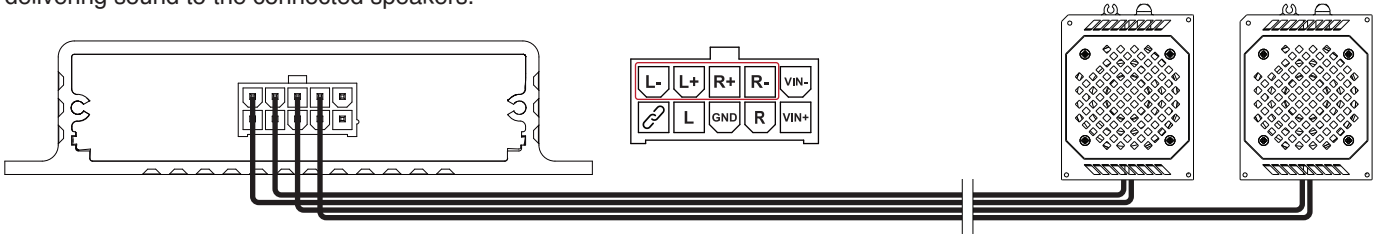
Example: RCA connectors require the switch for line input as they lack auto-detection.

2. The external toggle switch is not included as a standard accessory.



### • Speaker Output

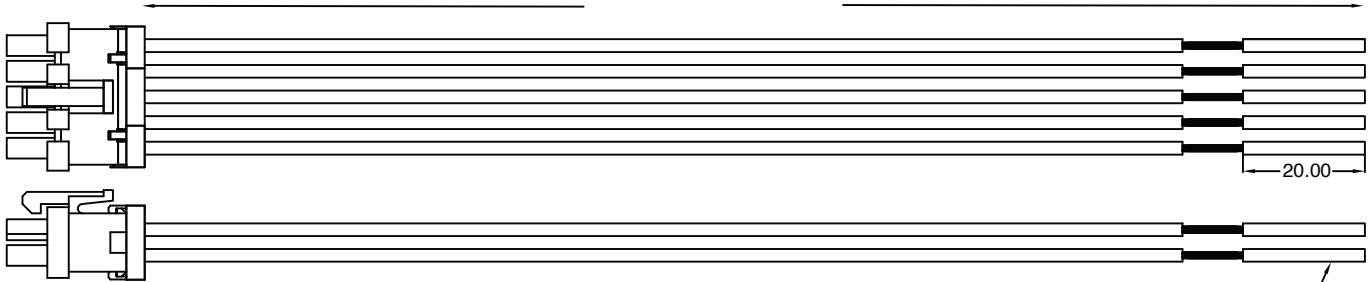
This connector is used to connect the speakers to the WPA2X10 unit. It provides a connection point for the audio output signals, delivering sound to the connected speakers.



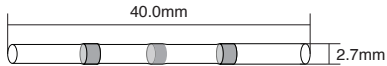
## Standard Accessories

### Waterproof Connector Cable Layout for WPA2X10

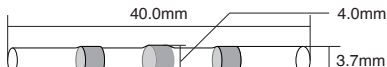
Cable length 200.0±10.0mm



#### Waterproof Sleeve (First Layer)



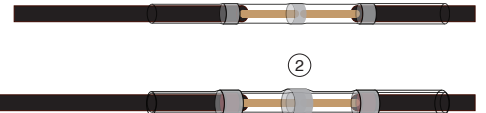
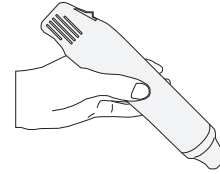
#### Waterproof Sleeve (Second Layer)



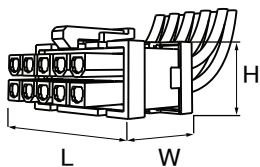
We provide 12 pieces of each waterproof sleeve (first layer and second layer) for 10 wires, with 2 extra pieces included. These sleeves are recommended for outdoor installations to ensure waterproof protection.

Partially strip approximately 20mm of insulation at the end of the cable

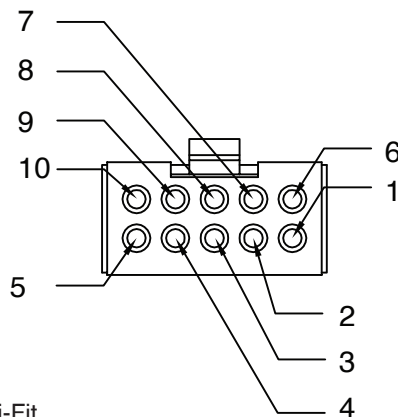
- 1 Connect the two wires by inserting the stripped ends into the first waterproof sleeve, and use a hot air gun to shrink it.
- 2 Cover the connection with the second waterproof sleeve to secure and seal it, then use the hot air gun to shrink it.



**Color Code:** Black  
**American Wire Gauge:** 18 AWG  
**Metric Gauge:** 0.82 mm<sup>2</sup>



W : 20.4mm  
H : 15.2mm  
L : 24.9mm



**Female Connector on** : Molex Mini-Fit  
**WPA2X10** 2x5 CKT (COMPATIBLE)

Pin	Function	Pin	Function
1	DC Supply (+)	6	DC Supply (-)
2	Right	7	Right Speaker (-)
3	Ground	8	Right Speaker (+)
4	Left	9	Left Speaker (+)
5	Mode Short (BT) Open (LIN)	10	Left Speaker (-)

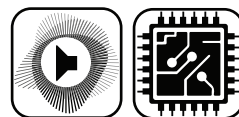
#### Note:

[1] The heat-shrinkable identification sleeves for the cable harness are fitted over the second layer of waterproof sleeves for proper identification. If any are missing, please check the top silkscreen of the WPA2X10 for the correct placement.



## CAUTION

Use only the 5x2 position waterproof connector with the cable from our standard accessories. If the standard accessories are missing, the connector will no longer be waterproof.



## Recommended Speakers for WPA2X10 Outdoor Audio Amplifier

 <p><b>Product Name</b> SUFR8515</p> <p><b>Parameter</b> 8 ohm 15W</p> <p><b>Size</b> 3"x 2" (80mm x 50mm) External Frame</p> <p><b>SKU</b> AA-SP15119</p>	 <p><b>Product Name</b> SUFR5015</p> <p><b>Parameter</b> 12 ohm 15W</p> <p><b>Size</b> 2" x 2" (50mm x 50mm) Basket</p> <p><b>SKU</b> AA-SP15115</p>	 <p><b>Product Name</b> SUFR6325</p> <p><b>Parameter</b> 4 ohm 25W</p> <p><b>Size</b> 2.5" x 2.5" (65mm x 65mm) Basket</p> <p><b>SKU</b> AA-SP15121</p>	 <p><b>Product Name</b> SUFR7010</p> <p><b>Parameter</b> 4 ohm 10W</p> <p><b>Size</b> 2.75" x 2.75" (70mm x 70mm) Basket</p> <p><b>SKU</b> AA-SP15136</p>	 <p><b>Product Name</b> SUBS11580</p> <p><b>Parameter</b> 2 ohm 40W</p> <p><b>Size</b> 4.5" Diameter (Ø115mm) Diaphragm</p> <p><b>SKU</b> AA-SP15124</p>
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For more information, scan the QR code to visit our website. You'll find detailed specifications, user manuals, and additional resources to help you get the most out of your WPA2X10 Outdoor Audio Amplifier.

Alternatively, visit our website directly at [www.wondom.com/products/1/5](http://www.wondom.com/products/1/5)

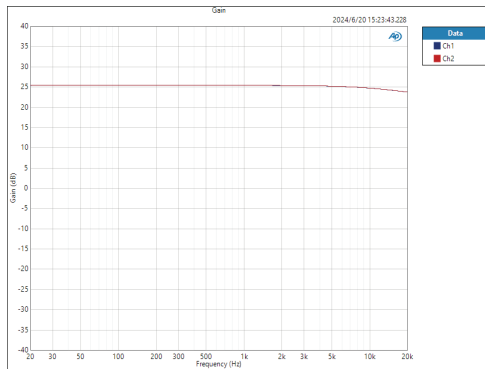
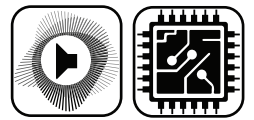
## Electrical and Audio Specifications

Electrical and audio performance specifications are typical at +25°C and powered by 24V DC. All parameters are subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Unit
Maximum Power Output	@1kHz, THD+N 10%	-	2x10	-	W
Operating Voltage	@1kHz, 4Ω	12	24	60	V
Idle Power	24V	-	1.2	-	W
Switching Frequency	24V, 4Ω @ 1kHz	-	480	-	kHz

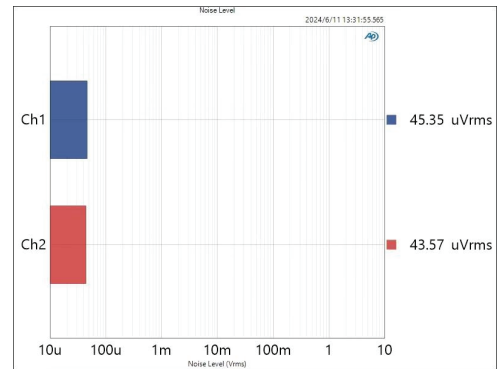
Parameter	Conditions	Min.	Typ.	Max.	Unit
Amp Gain	Line In @ 24V, 4Ω	-	24.4	-	dB
SNR	Line In 2x 10W @ 24V A-weighting	-	101	-	dB
THD + N	Line In 2x 10W @ 24V A-weighting	-	0.1	-	%
Output Noise Level	Line In A-weighting, Input Connected to GND	-	46	-	uV
	Bluetooth A-weighting, Input Connected to GND	-	40	-	uV
Input Impedance		-	10	-	kΩ
DC Offset		-	30	-	mV





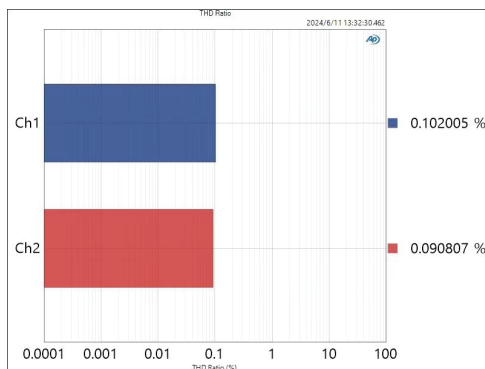
Frequency Response

**Conditions:**  
Input Signal Voltage = 100mV RMS  
Rload = 4Ω



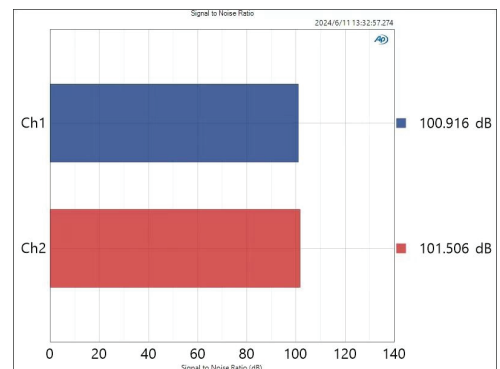
Noise Level

**Conditions:**  
Input short to GND  
Rload = 4Ω A-weighting



THD + N Ratio

**Conditions:**  
Pout = 1W  
Rload = 4Ω



Signal to Noise Ratio

**Conditions:**  
THD = 1%  
Rload = 4Ω A-weighting

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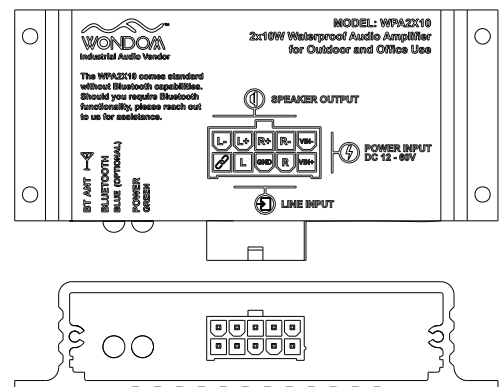
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(Please use phone calls or email instead of WhatsApp  
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### About the Manual

This manual displays general installation guidelines. However, please note that proper installation of wired cables for the WPA2X10 outdoor audio amplifier board requires qualified experience. If you do not have the knowledge and tools to successfully perform this installation, we strongly recommend consulting an authorized WONDOM dealer about your installation options. Keep all instructions and sales receipts for reference.