

AMP203

User Manual



www.audac.eu

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Introduction

Dante mini stereo amplifier

The AMP203 is a revolutionary small amplifier, featuring a Dante audio input over IP providing a complete media networking solution to distribute uncompressed audio via standard Ethernet networks with near-zero latency while allowing all other data to be connected on the same network.

The output connector has been implemented using a 4-pin terminal block connector, featuring an output power of 30W per channel and 60W when bridged.

Using PoE (Power over Ethernet) the amplifier receives both power and signal through a single networking cable, this way flexibility is maximized while needed cabling is kept at a minimum.

The compact convection cooled enclosure eliminates any hum or buzz otherwise caused by a fan. Various optional mounting brackets are available making it ideal for mounting under a desk, in a closet or on the wall, 19" rack mounting hardware is available as well.

Precautions

READ FOLLOWING INSTRUCTIONS FOR YOUR OWN SAFETY

- ALWAYS KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE. NEVER THROW THEM AWAY
- ALWAYS HANDLE THIS UNIT WITH CARE
- CLEAN ONLY WITH DRY CLOTH
- HEED ALL WARNINGS AND FOLLOW ALL INSTRUCTIONS
- NEVER EXPOSE THIS EQUIPMENT TO RAIN, MOISTURE, ANY DRIPPING OR SPLASHING LIQUID. NEVER PLACE AN OBJECT FILLED WITH LIQUID ON TOP OF THIS DEVICE
- DO NOT INSTALL THIS UNIT NEAR ANY HEAT SOURCES SUCH AS RADIATORS OR OTHER APPARATUS THAT PRODUCE HEAT
- DO NOT PLACE THIS UNIT IN ENVIRONMENTS WITH A HIGH LEVEL OF DUST, HEAT, MOISTURE OR VIBRATION
- THIS UNIT IS DEVELOPED FOR INDOOR USE ONLY. DO NOT USE IT OUTDOORS
- PLACE THE UNIT ON A STABLE BASE OR MOUNT IT IN A STABLE RACK
- ONLY USE ATTACHMENTS & ACCESSORIES SPECIFIED BY THE MANUFACTURER.
- UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME
- CAREFULLY CHECK THE UNIT'S CONDITION AFTER UNPACKING. IF THERE IS ANY DAMAGE TO THE CARTON BOX OR THE UNIT ITSELF, INFORM YOUR VENDOR IMMEDIATELY.
- THE INSTALLATION, CONNECTION AND CONFIGURATION OF THE DEVICE SHOULD BE DONE BY QUALIFIED TECHNICIANS

CAUTION

- USE CABLES OF THE RIGHT GAUGE FOR CONNECTING LOUDSPEAKERS ON THE AMPLIFIED OUTPUTS
- USE CABLES WITH CLEAR COLOR CODING INDICATING THE POLARITY AND MAINTAIN THE SAME POLARITY THROUGHOUT THE WHOLE SYSTEM.
- ONLY USE THE CORRECT LOAD IMPEDANCE (MIN 2 OHM) WHEN CONNECTING LOUDSPEAKERS ON THE AMPLIFIED OUTPUTS. EXCEEDING THESE LIMITS COULD CAUSE FIRE OR OTHER FAILURES.
- DO NOT CONNECT INDUCTIVE LOADS DIRECTLY TO THE AMPLIFIED OUTPUTS
- AVOID ELECTRIC SHOCKS: POWER OFF THE AMPLIFIER WHEN CONNECTING



CAUTION – SERVICING

This product contains no user serviceable parts. Refer all servicing to qualified service personnel. Do not perform any servicing (unless you are qualified to do so.)



EC DECLARATION OF CONFORMITY

This product conforms to all the essential requirements and further relevant specifications described in following directives: 2014/30/EU (EMC) and 2014/35/EU (LVD)



WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

The WEEE marking indicates that this product should not be disposed with regular household waste at the end of its product life. This regulation is created to protect both the environment and human health.

This product is developed and manufactured with high quality materials and components which can be recycled and/or reused. Please dispose of this product at your local collection point or recycling centre for electrical and electronic waste. Do this to make sure that the product is recycled in an environmental friendly way, and help to protect the environment in which we all live.

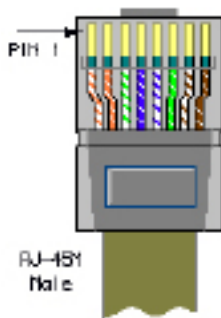
Chapter 1

Connections and connectors

CONNECTION STANDARDS

The in- and output connections for AUDAC audio equipment are performed corresponding to international wiring standards for professional audio equipment.

RS485 (RJ45)



Pin 1	White–Orange	Not used
Pin 2	Orange	Not used
Pin 3	White–Green	+24V DC
Pin 4	Blue	RS485 A
Pin 5	White–Blue	RS485 B
Pin 6	Green	GND
Pin 7	White–Brown	Not used
Pin 8	Brown	Not used

Ethernet (POE):

Used for connecting the AMP203 in your Ethernet network with PoE (power over Ethernet). The AMP203 complies with the IEEE 802.3 bt standard, which can draw a power up to 100 Watt from the networking equipment.

The maximum output power is depending on the power delivered by the network infrastructure. In case the network infrastructure is not capable of delivering sufficient power to the amplifier, use a PoE injector, or apply an external 24 V DC power supply to the AMP203.

While CAT5E network cable infrastructure is sufficient for handling the required bandwidth, it is recommended to upgrade the network cabling to CAT6A or better cabling to achieve the best possible thermal and power efficiency throughout the system when drawing higher powers over PoE.

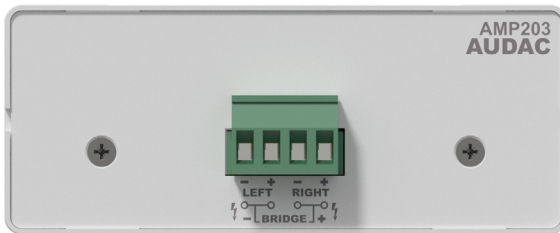
RS485 & TCP/IP

The AMP203's RS485 and TCP/IP ports accept the same commands. The complete command set is available in the AMP203MK2 commands user manual which is freely available on www.audac.eu

Chapter 2

Overview AMP203

Front panel



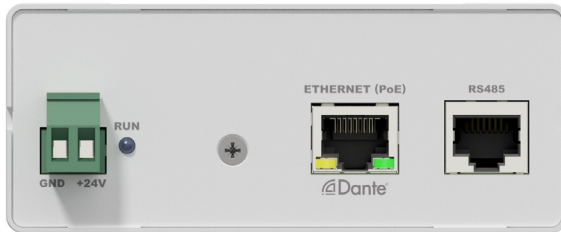
AMP203 Front panel

The front panel includes the speaker output connections. They are implemented using 4-pin terminal block connectors and allow stereo output connections as well as parallel bridging.

In stereo mode, the AMP203 delivers a continuous output power of 2 x 30 Watts, while both channels can be bridged resulting in a continuous output power of 60 Watt to a single load.

A detailed description about how the connections shall be made, can be found in the next chapter of this instruction manual (Chapter 3: AMP203 connectivity).

Rear panel



AMP203 Rear panel

All the control and configuration ports are located on the rear panel of the AMP203, including the (optional) 24 Volts power connection.

1) 24 Volts power connection

The 24 Volts power supply connection is located on the left side of the AMP203's rear panel. This power connection is an optional connection, only to be used in applications where the networking infrastructure is not capable of delivering (sufficient) power over PoE. When using this power inlet, mind the polarity when connecting the power supply.

2) Run LED:

This LED shows the operation mode / current status of the device. When the AMP203 is operational and running normally, the Run LED will illuminate continuously.

When powering up / booting the system, the Run LED will blink rapidly. The booting process will take roughly about 30 seconds when powering up the system (Blinking rapidly means there is no valid IP configuration available).

When the Run LED is blinking slowly (1s intervals) it means the device is being updated currently.

3) Ethernet connection:

The Ethernet connection is the essential connection for the AMP203. Both audio transmission (Dante/AES67) as well as control signals and power (PoE) are distributed over the Ethernet network. This input shall be connected with your network infrastructure. The LED's accompanied with this input are indicating the network activity.

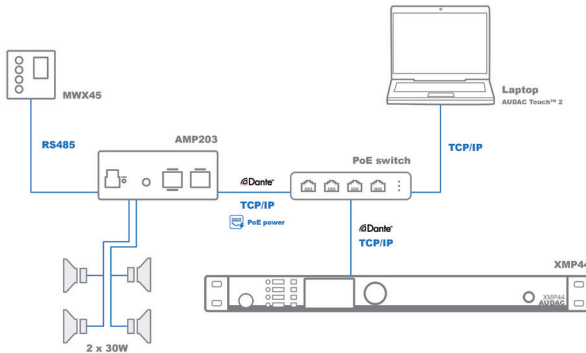
4) RS485:

The RS485 input connection allows the AMP203 for being implemented with any RS-485 compatible control device, including home or industrial automation systems or optionally available wall panels.

Chapter 3

AMP203 Quick start guide

This chapter guides you through the setup process for a basic AMP203 project where an external Dante source is connected to the network (e.g. AUDAC XMP44). The control of the system is done through an external wall panel or Audac Touch 2.



Overview of the AMP203 setup

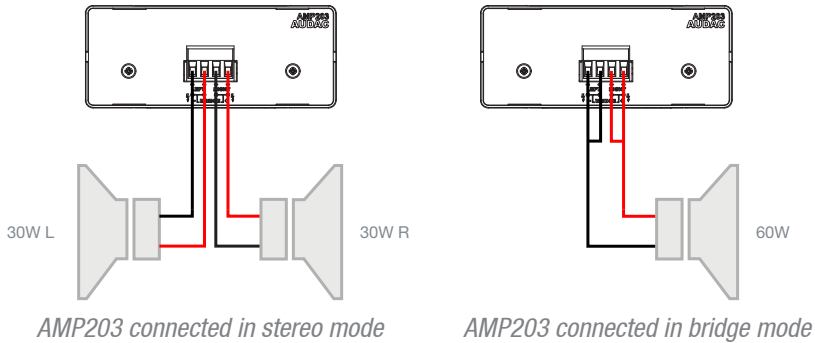
Connecting the AMP203

1) Connecting the AMP203 to your network

Connect your AMP203 to a PoE powered Ethernet network with a Cat5E (or better) networking cable. In case the available Ethernet network is not PoE compatible, an additional (optional) external power supply shall be applied to the 24 V DC input connection. The operation of the AMP203 can be monitored through the blue 'Run' indicator LED in the unit, which illuminates continuously when operational.

2) Connecting speakers

The speakers shall be connected to the terminal block output connector. Depending on the setup, two speakers can be connected in stereo setup, or one speaker can be connected in mono/bridge configuration. Typical wiring applications are shown in the following diagrams. A maximum output power of 2 x 30 Watt can be delivered in stereo mode, while 60 Watt can be delivered in mono/bridge mode.



NOTE

For further information regarding the output powers delivered to various load impedances, check Chapter 6: Technical specifications from this instruction manual.

Configuring the AMP203

1) Dante controller

Once all connections are made, and the AMP203 is operational, the routing for the Dante audio transfer can be made.

For configuration of the routing, the Audinate Dante Controller software shall be used. The use of this tool is extensively described in the Dante controller user guide which can be downloaded from both audac (www.audac.eu) or Audinate (www.audinate.com) websites.

In this document, we quickly describe the most basic functions to get you started. Once the Dante controller software is installed and running, it will automatically discover all the Dante compatible devices in your network. All devices will be shown on a matrix grid with on the horizontal axis all the devices with their receiving channels shown and on the vertical axis all the devices with their transmitting channels. The shown channels can be minimized and maximized by clicking the '+' and '-' icons.

Linking between the transmitting and receiving channels can be done by simply clicking the cross points on the horizontal and vertical axis. Once clicked, it only takes a few seconds before the link is made, and the cross point will be indicated with a green checkbox when successful. To give custom names to the devices or the channels, double click the device name whereafter the device view window will pop up. The device name can be assigned in the 'Device config' tab, while the transmitting and receiving channel labels can be assigned under the 'Receive' and 'Transmit' tabs.

Once any changes are made to linking, naming or any other, it is automatically stored inside the device itself without requiring any save command. All settings and linkings will be automatically recalled after power off or re-connection of the device.

Besides the standard and essential functions described in this document, the Dante Controller software also includes many additional configuration possibilities that might be required depending on your application requirements. Consult the complete Dante controller user guide for more information.

2) AMP203 settings

Once the Dante routing settings are made through the Dante controller, other settings of the AMP203 itself can be configured using the Audac Touch 2 application, which can be freely downloaded and operated from various platforms. This is very intuitive to be operated and automatically discovers all available compatible products in your network. Available settings include volume, input selection, as well as advanced configurations such as output power limiters and much more.

NOTE

The maximum input power of the amplifier is factory default configured to 15 Watt to avoid overload to the PoE equipment. Depending on the network infrastructure the maximum power drawn can be adjusted here to a maximum of 95 Watt. In case the available output power/sound pressure levels are insufficient, verify these values according to the network infrastructure limitations

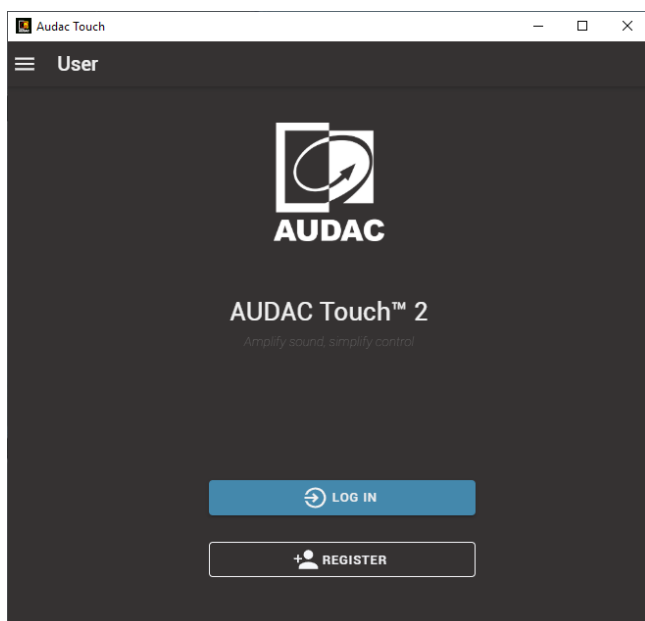
Chapter 4

Audac Touch™ 2

The AMP203 can be configured and controlled through the Audac Touch™ 2 application which is freely available for Android, iOS, Windows, Linux and MacOS. Using this freely available solution, application specific dashboards can be created and customized, allowing the control of multiple devices from one single application.

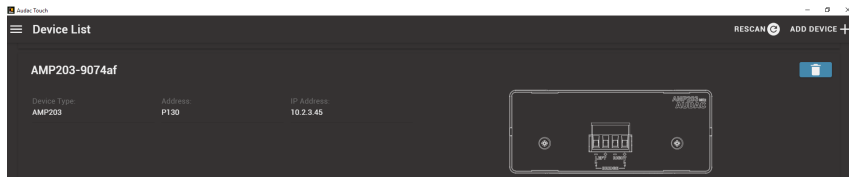
Login screen

When launching the AUDAC Touch™ 2 application, you have to log-in through your Audac Touch™ credentials. If you don't have an account yet, press the 'Register' button for creating a new account.

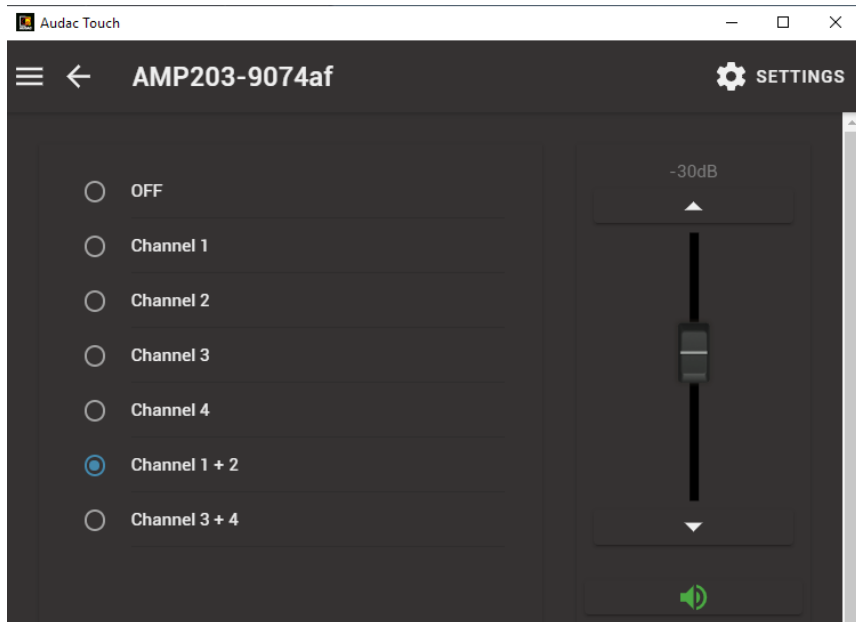


Device List

Click on the menu icon in the top left corner to let the menu appear. From the menu select “device list”. The device list is an overview of all devices which have been discovered since you created your account. Every time you start up the audac touch application, it automatically scans your network and adds discovered devices to the list.



Click on one of the devices in the list to open the device's page. The first time a device is opened a password will be prompted. In the case of the AMP203, the factory default administrator password is 'AMP203'. After entering the correct password the device page will be shown with all available controls. The channels shown in the input selection list are corresponding with the linked inputs through the Dante controller, while the volume slider allows adjusting the overall output volume of the amplifier.



Settings

By clicking the settings button in the top right corner on the devices page the device settings can be changed. The settings for the AMP203 are divided into the following categories: Device, Inputs, Power, Network, Authentication.

Settings >> Device

Device/Zone name

The device name can be configured here. The device name can be any kind of freely selectable name. It is also the name which is visible in the Dante controller.

TouchLink™ zone

A TouchLink™ zone number can be assigned here. Touchlink™ is a unique system whereby multiple amplifiers within one zone can be linked with each other, so they react to user as one zone.

TouchLink™ can be used to create virtual zones by linking multiple devices with each other. A typical application example is a large area where multiple AMP203's (or other TouchLink™ compatible devices) are installed in one large open space. When they are virtually linked, all devices with the same TouchLink™ assigned number will follow each others' settings (such as volume, input, muting, ...).

It means, if they are all installed throughout the same area, they all will be simultaneously operated by one single control (e.g. volume fader) from the AUDAC Touch™ 2 application. Additionally, a wall panel which is physically connected to one of the linked devices will automatically control all the linked devices.

A number shall be assigned as a TouchLink™ zone ID (e.g. 1, 2, 3, ...) and all devices with the identical TouchLink™ zone ID will virtually work as one zone.

Address

Here the device's address can be set. This address is needed to communicate with the right device if commands will be sent over a serial or UDP connection.

Setup wall panel

This resets the wall panel's zone settings information, when an optional wall panel is being used. It is recommended when experiencing any trouble with a wall panel, or when the wall panel has been used in another type of setup before. It resets the wall panel settings to zone 1, making sure it can communicate with the AMP203.

Broadcast Enabled

This enables broadcasting instead of multicasting. (Warning: enabling broadcast generates extra network traffic on all devices within the same subnet.) This can be done if your network equipment does not support multicasting.

Settings >> Input

Input gain

The gain for each available input signal can be adjusted individually within a range of -20 dB and +20 dB.

Set enable inputs

Each input channel can be individually enabled and disabled. Disabling inputs will make them disappear from the inputs selectable in the Audac Touch™ 2 widgets, and they also won't be selectable from any connected wall panel or peripheral.

Settings >> Power

Set power

The maximum input power of amplifier can be configured here (the power which is drawn from the PoE equipment). It is factory default configured to 15 Watt to avoid overload to the PoE equipment. Depending on the network infrastructure the maximum power drawn can be adjusted here to a maximum of 95 Watt. In case the available output power / sound pressure levels are insufficient, verify these values according to the network infrastructure limitations.

Other settings such as loudspeaker impedance settings and bridging enabling / disabling also has to be configured here.

Settings >> Network

The currently configured network settings are displayed here. In case any specific network configurations or preferences have to be made (e.g. fixed IP address), these settings have to be adjusted through the Dante controller software tool.

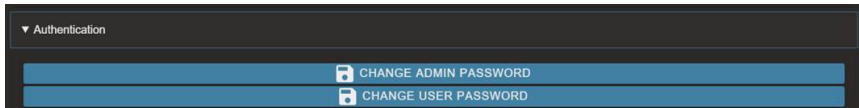
Settings >> Authentication

Change admin password

The administrator password can be changed here. The factory default administrator password is 'AMP203'. The administrator password gives access to all functions and settings of the amplifier.

Change user password:

The user password can be changed here. The factory default user password is 'user'. The user password only gives access to the standard operational functions of the amplifier such as volume adjustments and input selection.



Chapter 5

Peripheral connections

In addition to the controllable functions through Audac Touch™ 2, additional wall control panels can be locally connected (e.g. MWX45 wal panels). This allows basic control functions such as volume control and input selection.

When multiple units are configured through TouchLink™, all units within the same configured zone will be responding.

The wall panels shall be connected to the RS485 input connection through CAT5E (or better) cabling. Cable lengths up to 300 meters can be achieved and daisy chaining is possible through connecting multiple wall panels in parallel.

Chapter 6

Additional information

IP Basics

Many AUDAC products are controllable by Ethernet. The Ethernet connection which is used on the AUDAC products is TCP/IP based like 99% of the computer networks. There are some basics that you need to know to successfully make a TCP/IP Ethernet connection.

The data in TCP/IP networks is always sent in packages, all these packages must be delivered to a unique address, just like the mailman delivers mail to your home mailbox. In TCP/IP networks, this address is called the “IP address”. The IP address is always a number in the following format “192.168.000.001”. As you can see, this address consists of 4 separate numbers ranging from “000” to “255”.

In simple terms, only the last number of an IP address can be different within a network, so there is a maximum of 256 unique addresses within a network, ranging from “xxx.xxx.xxx.000” to “xxx.xxx.xxx.255”. The first three numbers have to be the same to make communication between several devices possible. Otherwise, the devices can not communicate with each other.

Example:

Device 1:	IP address:	192.168.000.001
Device 2:	IP address:	192.168.000.002
Device 3:	IP address:	192.168.001.003

In this example, Device 1 can communicate with Device 2, but not with Device 3, because the first three numbers have to be the same. These first three parts are called the “IP range”, so the devices have to be in the same “IP range” to communicate with each other.

The “IP ranges” of home and office networks are defined by the network administrator, this means that the IP range of your home or office network can be different from another network. Dante based AUDAC products get their IP address from a DHCP server. If there is no DHCP server available, they will use a link local address. If your network is using a different IP range, the AUDAC products will not be accessible from your network. You can change the IP address of the AUDAC products to make them work properly in your network. For Dante based AUDAC products this can be done using the DANTE controller.

Of course, to make changes to the settings menu of the AUDAC products, you need to have access to the user interface. This can be done by temporarily giving your computer an IP address within the IP range of the AUDAC product, for example, “192.168.0.193”. After the IP address of your computer is within the IP range of the product, the user interface is accessible and the IP address of the product can be changed to an IP address within the IP range of your network. If the IP address of the product is within the IP range of your network, you can change the IP address of your computer to its former IP address and the product should work properly in your home or office network. Ask your network administrator for help if you are not familiar with networks.

Summary

- All devices must have a unique IP address
- All devices must be within the same IP range

Technical specifications

Inputs	Audio	Type Connectors	Dante/AES67 (4 Channels) RJ45 with indicator LEDs	
	Other	Type Connectors	RS-485 RJ45	
Output	Type		1 x Stereo loudspeaker	
	Connectors		4-pin Terminal Block ~ 5.08 mm	
	Impedance		Min Load of 2 Ohm (Bridge) / 4 Ohm (Stereo)	
	Power			2 x 30 Watt @ 8 Ohm Stereo
				2 x 30 Watt @ 4 Ohm Stereo
			1 x 30 Watt @ 8 Ohm Bridge	
			1 x 60 Watt @ 4 Ohm Bridge	
			1 x 60 Watt @ 2 Ohm Bridge	
THD+N Crosstalk			< 0.015% (@ 1 kHz)	
			> -98 dB	
Power consumption	Standby		3 Watt	
	Idle		6.6 Watt	
	Nominal ^(1/8 MUP)		10.6 Watt	
	MUP		80 Watt	
Efficiency	1/8 MUP		70%	
	MUP		81%	
			NOTE: 'MUP' stands for Maximum Undistorted Power	
Auto power down	Minimum signal		-61 dB	
	Timing		30 Seconds	
Power supply			PoE 802.3bt 24V DC max. 3.75A (optional)	
Dimensions (W x H x D)			108 x 44 x 164 mm	
Weight			0.70 Kg	
Packaging			Carton box	
Shipping weight & Volume			0.8 Kg – 0.0078 Cbm	
Compatible devices	MWX45		Digital wall controller	
Optional Accessories	MBS1xx		Mounting brackets	

