ASP-MG2240

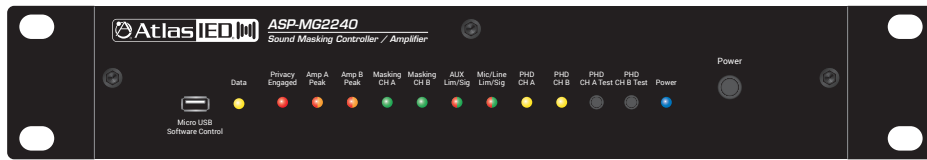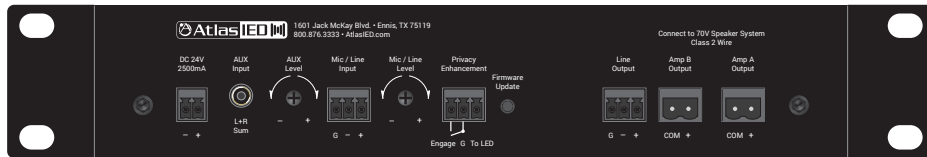## Amplified Sound Masking System

ASP-MG2240 Front

ASP-MG2240 Back

Features

- Amplified Masking Controller
- 2 Masking Zones
- 2 x 30-Watt Outputs for Distributed Audio Systems
- Analog White & Pink Noise Generators
- Balanced Line Output for 3rd Zone
- Speech Enhanced Privacy Mode (Adjustable +/- 12dB)
- Mic / Line Input for Paging with EQ & Limiter
- Auxiliary Input for BGM with EQ & Limiter
- Push Here Diagnostic (PHD) System Test Circuitry
- Assignable Balanced Line Output
- DSP Parameters EQ, HI & Lo Pass Filters, Limiter
- PC Software Control
- 24 / 7 Schedule for Each Output
- System Commissioning Ramp On Each Output
- GPIO Ports for Optional Speech Enhancement Activation Switch and Sign

Applications

The ASP-MG2240 is suited for applications requiring a secured speech environment, paging or background music (BGM) audio. The ASP-MG2240 is designed to provide detailed masking privacy for a wide range of acoustical environments including open office areas, conference rooms, huddle/meeting rooms, as well as delivering non-masking content to areas where needed.

General Description

The AtlasIED ASP-MG2240 is a two zone masking controller with integrated amplification. The compact design incorporates features including two-channels of amplification, separate analog masking generators with EQ, 24/7 scheduler, System Commissioning Ramp, balanced Mic/line input, auxiliary input for background audio, and a line output. The PC control software allows the user to customize the system to meet the installation requirements. Settings can be stored in the unit or in the PC for file back up or recall. The ASP-MG2240 offers industry leading preconfigured presets that are specific to common and advanced masking applications. These settings are based on AtlasIED proprietary Chanaud Masking Filters.

Precise sound masking is now quick to implement. The compact ASP-MG2240 can deliver quality audio in a single masking zone up to 7000 sq. ft. or can be spilt into two 3500 sq. ft. zones. This compact integrated solution features two internal 30-watt amplifier channels along with internal DSP with intuitive control software. This software makes setup fast because of the practical real life preset configurations that can be selected and modified for customization.

Speech Privacy Enhancement for conference rooms or medical offices is an economical solution to meet federal HIPAA law requirements. The ASP-MG2240 features a customizable speech privacy solution for any environment. When in a private meeting that requires speech privacy, a switch can be pressed to activate the "Speech Privacy Enhancement" mode. The masking signal level will increase to a pre-set level to enhance privacy one the button is pressed. A variety of optional Speech Privacy Enhancement signs are available to connect to the ASP-MG2240 that provide visual indication that a room is being used and that the speech privacy system is in use.

The ASP-MG2240 is an all-in-one solution for most environments. The ASP-MG2240 not only supplies speech privacy but also delivers paging and background music audio. Mic / line and AUX inputs each have a selectable five band EQ and Hi & Lo pass filters. For paging applications, the ASP-MG2240 incorporates a unique hi Q feedback filter specifically tailored to the vocal frequency range. Adjustable output limiters are in the audio chain to protect against system overdrive.

Many installations are incorrectly installed for a variety of reasons and are a leading cause of equipment failure. The ASP-MG2240 includes a patent pending automatic diagnostic system test, called the Push Here Diagnostic (PHD). The PHD button is designed to check the connected speaker lines for wiring and amplifier loading errors. This test can be activated once all speakers are connected and the circuit automatically verifies that the attached speakers' tap settings do not exceed the amplifier's rated power and the speaker wire is free from shorts.

The ASP-MG2240 delivers 30W of power per distributed audio zone. The integrated amplifiers are more than 90% efficient and when combined with a 24 / 7 masking scheduler, the system has the perfect balance between audio performance and energy conservation. When the scheduler is set to minimum use, the ASP-MG2240 only draws 4.4-watts, during everyday use the average power consumption is only 19-watts, and under maximum use power consumption is 67-watts. The ASP-MG2240 is one the most energy efficient sound masking systems available today.

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System	
Type	Sound Masking Controller & Amplifier
Power Supply Type	External Inline 24V 2500mA Global
Amp Topology	Class D
Number of Fixed Inputs	2
Accessory Inputs	0
DSP Internal	Yes
Network	USB Interface
Optional Accessory Card Slot	NA
Output Power (Note 1)	
Total Power & Per Zone Power	60W Total Power, 2 Zone, 30W per Distributed Audio Zone (Cannot be Bypassed for 8Ω Operation)
Factory Default Settings (As Shipped)	
Amplifier Configuration	2 CH
Level Controls Assignment	Masking Fixed via Factory Preset, Mic & AUX Adjustable Rear Panel
I/O Matrix	Masking Generator 1 = Amp Output 1, Masking Generator 2 = Amp Output 2 Mic & AUX Routed to Output 1 & 2
Level Position	DSP Set to -10dBU, Rear Panel Level Control Set to 50%
EQ & Filters	Masking EQ - Customer filters for Above Ceiling Preset Mic = 120Hz HPF, AUX = 100Hz HPF
Limiter	0dB (Max Power)
GPIO Control Ports (Rear Panel)	Speech Privacy Engage, Privacy Sign Output
Auto Power Down (APD)	NA
24Hr / 7-Day Scheduler	Off
System Commissioning Ramp	Off
Inputs	
Input Quantity	2
Input Type (Line Balanced or Unbalanced)	Mic / Line Balanced & AUX L & R Summed Unbalanced
Input Impedance	40kΩ
Input Sensitivity	Mic 5mV, Line 500mV, AUX Variable 1V - 316mV
Maximum Input Level dBu & Vrms	Mic 50mV, Line 2V, AUX 2V
Input Connectors Type	Mic / Line 3.5mm Euro Block, AUX 3.5mm
Accessory Slot	NA
Level Control	
Rear Panel Manual	Mic / Line & AUX
GUI Control	Mic / Line, AUX, Masking
Status Indicators - Front Panel and GUI	
Power	Blue Indicator
Standby (Remote Turn ON)	NA
Output Signal	Green, CH 1/2
Output Peak Fault CH A	Red
Output Peak Fault CH B	Red
PHD Fault CH A	Red
PHD Fault CH B	Red
AUX Signal / Limit	Green
Mic / Line Signal / Limit	Green
Masking A	Green
Masking B	Green
Privacy Engage	Red

Front Panel Features	
Power Switch	Push, Latching
Push Here Diagnostics (PHD) Switch	Push, Momentary
USB	Micro USB
Rear Panel Features	
Power Input	24V DC, 2500mA, 2 Position, 3.5mm Euro Block, (Phoenix)
AUX Input	3.5mm Jack
Mic / Line	3 Position, 3.5mm Euro Block, (Phoenix)
AUX Level	Rotary Potentiometer
Mic / Line Level	Rotary Potentiometer
Privacy Engage	3 Position, 3.5mm Euro Block, (Phoenix)
Line Output	3 Position, 3.5mm Euro Block, (Phoenix)
CH A Amplifier Output	2 Position, 5.08mm Euro Block, (Phoenix)
CH B Amplifier Output	2 Position, 5.08mm Euro Block, (Phoenix)
Firmware Update Switch	Push, Momentary
DSP Features & Elements	
Scheduler	Separate 24Hr / 7-Day Scheduler for Masking A & B Outputs, 7 Day Battery Clock Back Up
Level Control	Level & Mic / Line, AUX, Masking A & B, Line Out
System Commissioning Ramp	Separate Commissioning Ramps for Masking A & B Outputs, 7 Day Battery Clock Back Up
Masking Noise	Pink and White Noise Analog Generators
Presets	10 Total Factory Presets - Open Ceiling, Above Ceiling, Below Floor, Factory 6 Available For Customer
Hi & Low Pass Filters	Mic / Line, AUX, Masking A & B
EQ	AUX & Line - 5 Parametric Filters, Masking 1/3 Octave
Delay	NA
Limiter	Mic / Line 0db - 15dB of Assignable Limiting
DSP Frequency Type	24bit
Interface Control Ports	
USB	Micro USB, ASP-MG2240 Software Required
Ethernet	No
WiFi	No
Bluetooth	No
GPIO Ports	
Location	Rear
GPIO Ports	Qty 1
Connection	Euro Block PHX Type 3.5mm, 3 Pins, Ground, +10VDC (Output After Engaged), C1
Functions	Speech Privacy Engage, Privacy Sign Output
Line Output	
Output Quantity	1
Input Type (Line Balanced or Unbalanced)	Balanced
Output Impedance	150Ω
Maximum Output Level dBu &Vrms	2V
Output Connector Type	3 Position, 3.5mm Euro Block, (Phoenix)

Output Terminals (Speaker)	
Output Connectors Type	5.08mm Euro Block, (Phoenix)
Number of Terminals	2
Output Connectors Fixed or Removable	Removable
Wire Size	14 AWG
Terminal Spacing	5.08mm
Current Rating	12A per Terminal
Wire Class Required	Class 2

Cooling	
Convection	Yes

Electrical Specifications (General)	
Masking Generator	Qty 2 Circuits Analog
Total Harmonic Distortion 1kHz and 1dB Below Rated Power	Typical, .2%
Frequency Response	50Hz - 15kHz (DSP Filters Set to Flat)
Signal to Noise Ratio	>90dB Below Rated Output (A-weighted)
Damping Factor (20Hz to 400Hz)	NA
Slew Rate	NA
Crosstalk	69dB @ 1KHz
Protection	Hi / Low Input Voltage, Thermal, Short, Over Current
Max Output Peak Voltage	100V (Meets Class 2 Low Voltage Wire Codes)
File Storage	Recall or Save to Device, Recall or Save to Computer

AC Power Requirements	
Operating Voltage	External Supply 110V-230V, 50/60Hz
Mains Interface	IEC C7 Receptacle to Inline Power Supply, To Amp - 24V DC Output 2 Position, 3.5mm Euro Block, (Phoenix)
Power Cord (Included)	2m, NEMA 1-15P Standard USA 2 Pin Plug to IEC C7 Receptacle with 18/2 SPT-2 Black Rated up to 10A 100V to 240V
Minimum Power-Up Voltage	100V
Maximum Operating Voltage	240V
Recommended AC Mains Current Requirements	3A

Power Consumption and Current Draw (Note 4)	Amps	Watts	BTU
Standby / APD Mode	NA	NA	NA
Idle Active / On	72mA	4.4W	15 BTU
Average Power, All Channels Driven (Note 2)	350mA	20.8W	71 BTU
Max Power, All Channels Driven (Note 3)	1.7A	118W	402 BTU

Dimensions and Weight	
Rack Mount Requirements	1 RU, 19"
Dimensions - Unit	W 10.5" x H 1.75" x D 11.25" (266mm x 44mm x 286mm)
Dimensions - Shipping	W 11" x H 5.5" x D 13.5" (279mm x 140mm x 344mm)
Weight - Unit	5.75 lbs. (2.6kg)
Weight - Shipping	8.8 lbs (4kg)

Agency Approvals	
North America Agency	UL, TUV, GMA (Power Supply)
Testing Standard North America	60065
FCC Class A (Conducted & Radiated Emissions)	Part 15 of the FCC Rules
RoHS / WEEE Compliant	Yes
CE	Yes

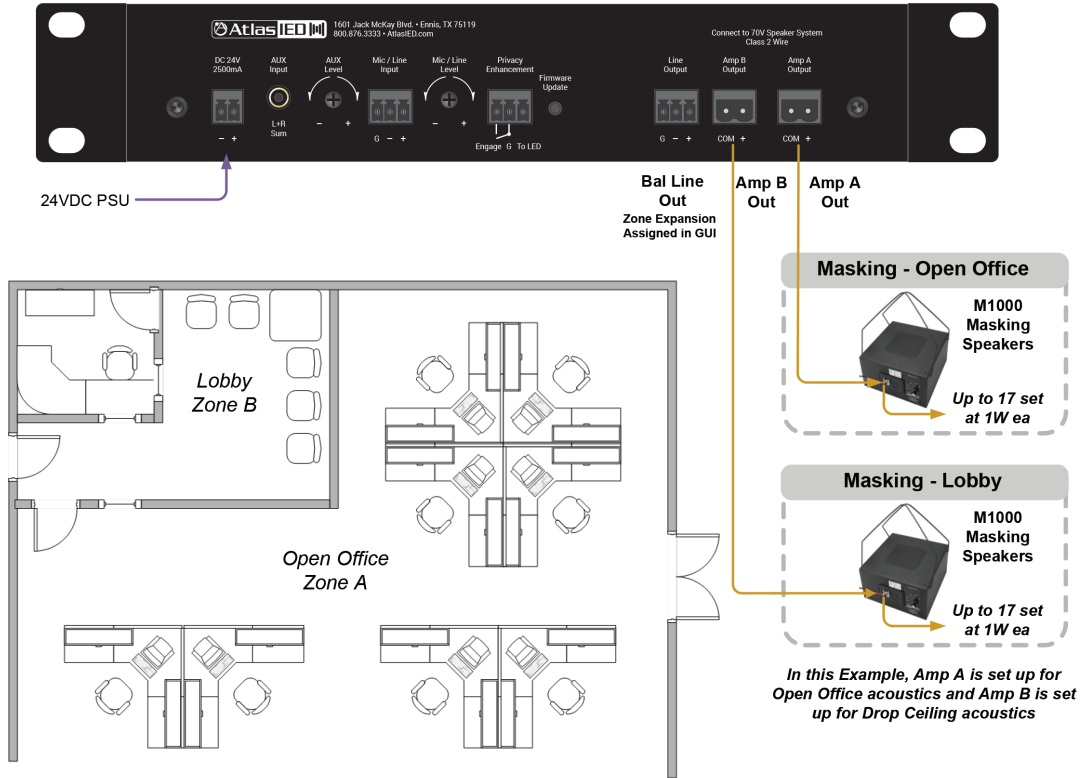| Optional Accessories	
ASP-MG2240S	Wired Enhanced Privacy Sign

NOTES:

1. Power level is measured as 1Hz Sine wave signal burst of 20 cycles (20mS) at 1% THD+N, followed by 480 cycles of a 1kHz sine wave at 10% of the max power, 30W per zone @ 140Ω load. Other power measurements are available upon requests.
2. Average Power consummed is defined as Pink Noise input signal applied to achieve 1/4 of the power rating.
3. Max Power consummed is defined as 1 KHz input signal applied to achieve the maximum power output before clipping into a specified load.
4. BTU is calculated by the AC Mains Power consumed minus the total power output measured at the specified load and condition, multiplied by 3.412.
   Example: 785 Watts from the AC Source - 600 Watts Total Output power = 185 x 3.412 = 631 BTU

Common Applications

Example 1 – Shows a common open office environment requiring two zones due to the differences in architectural material designs. Zone A is an open ceiling room and Zone B drop ceiling design. Both Zones require different masking tuning.

ASP-MG2240 Masking in 2 Zone Example

24VDC PSU

Bal Line Out
Zone Expansion Assigned in GUI

Amp B Out

Amp A Out

Lobby Zone B

Open Office Zone A

Masking - Open Office

M1000 Masking Speakers

Up to 17 set at 1W ea

Masking - Lobby

M1000 Masking Speakers

Up to 17 set at 1W ea

In this Example, Amp A is set up for Open Office acoustics and Amp B is set up for Drop Ceiling acoustics

Common Applications

Example 2 – Shows a two-zone application with a lobby, Zone B, and an open office, Zone A, design. Sound Masking is applied to both zones that require different tuning, paging to both zones, and background music to just Zone B.

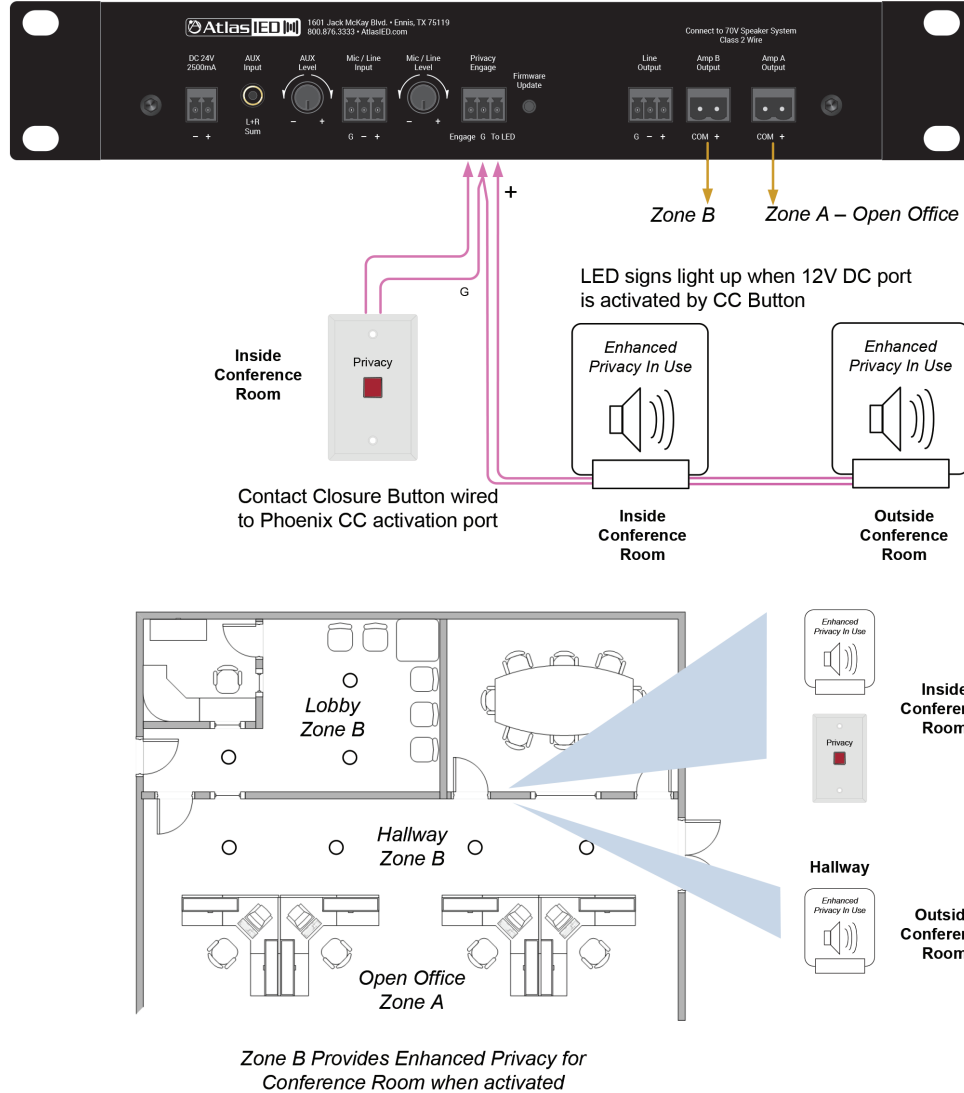### ASP-MG2240 Masking in 2 Zone with BGM and Paging
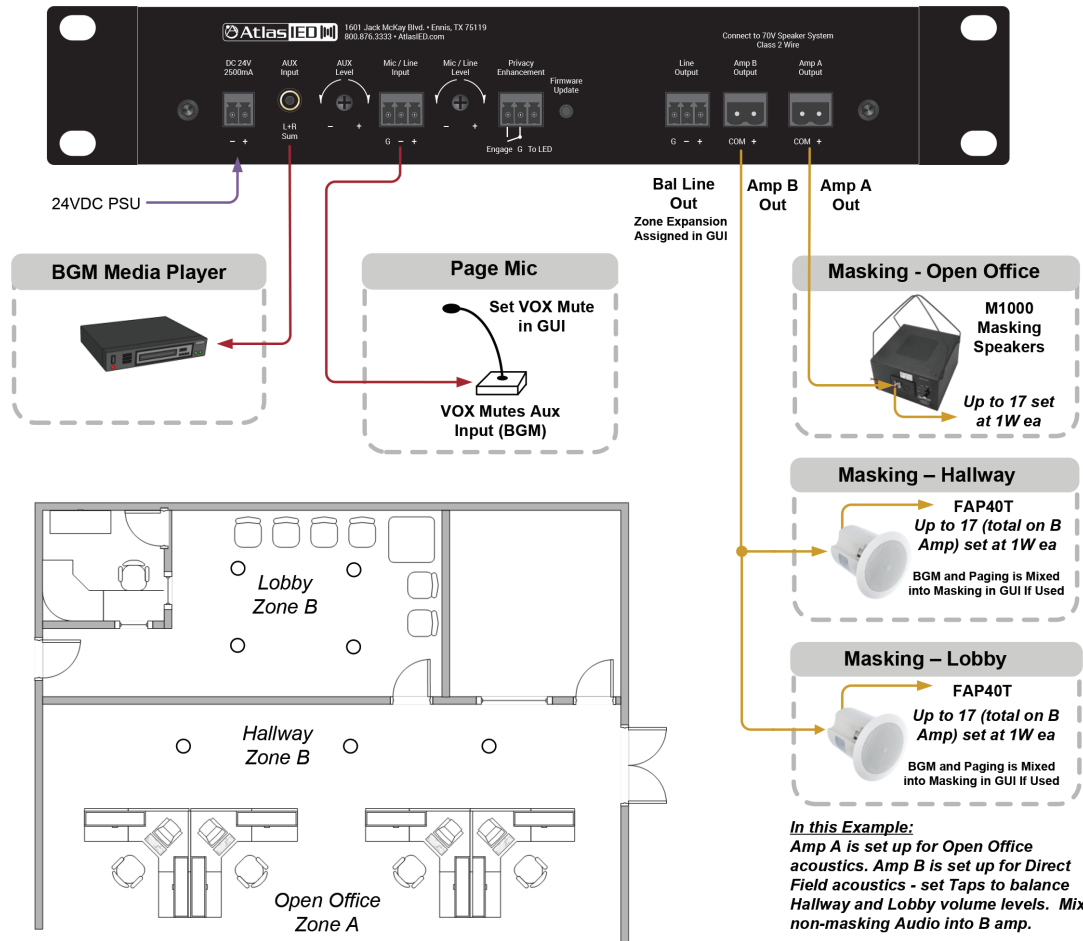
24VDC PSU

Bal Line Out
Zone Expansion Assigned in GUI

Amp B Out

Amp A Out

BGM Media Player

Page Mic
Set VOX Mute in GUI
VOX Mutes Aux Input (BGM)

Masking - Open Office
M1000 Masking Speakers
Up to 17 set at 1W ea

Masking – Hallway
FAP40T
Up to 17 (total on B Amp) set at 1W ea
BGM and Paging is Mixed into Masking in GUI If Used

Masking – Lobby
FAP40T
Up to 17 (total on B Amp) set at 1W ea
BGM and Paging is Mixed into Masking in GUI If Used

Lobby Zone B

Hallway Zone B

Open Office Zone A

In this Example:
Amp A is set up for Open Office acoustics. Amp B is set up for Direct Field acoustics - set Taps to balance Hallway and Lobby volume levels. Mix non-masking Audio into B amp.

Common Applications

Example 3 – Shows a conference room that requires speech privacy during certain meetings and a visual indicator to know the Speech Enhancement is active.
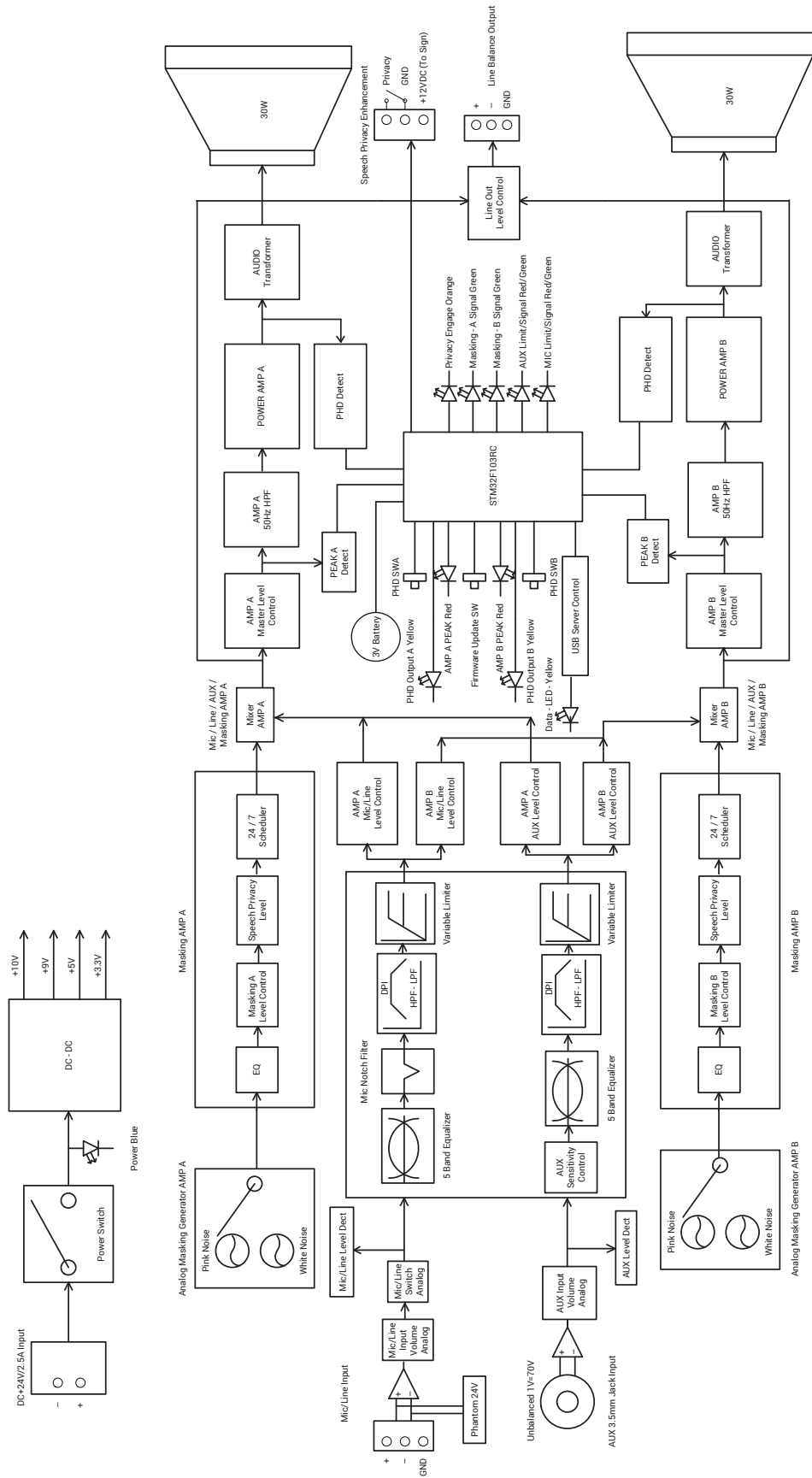
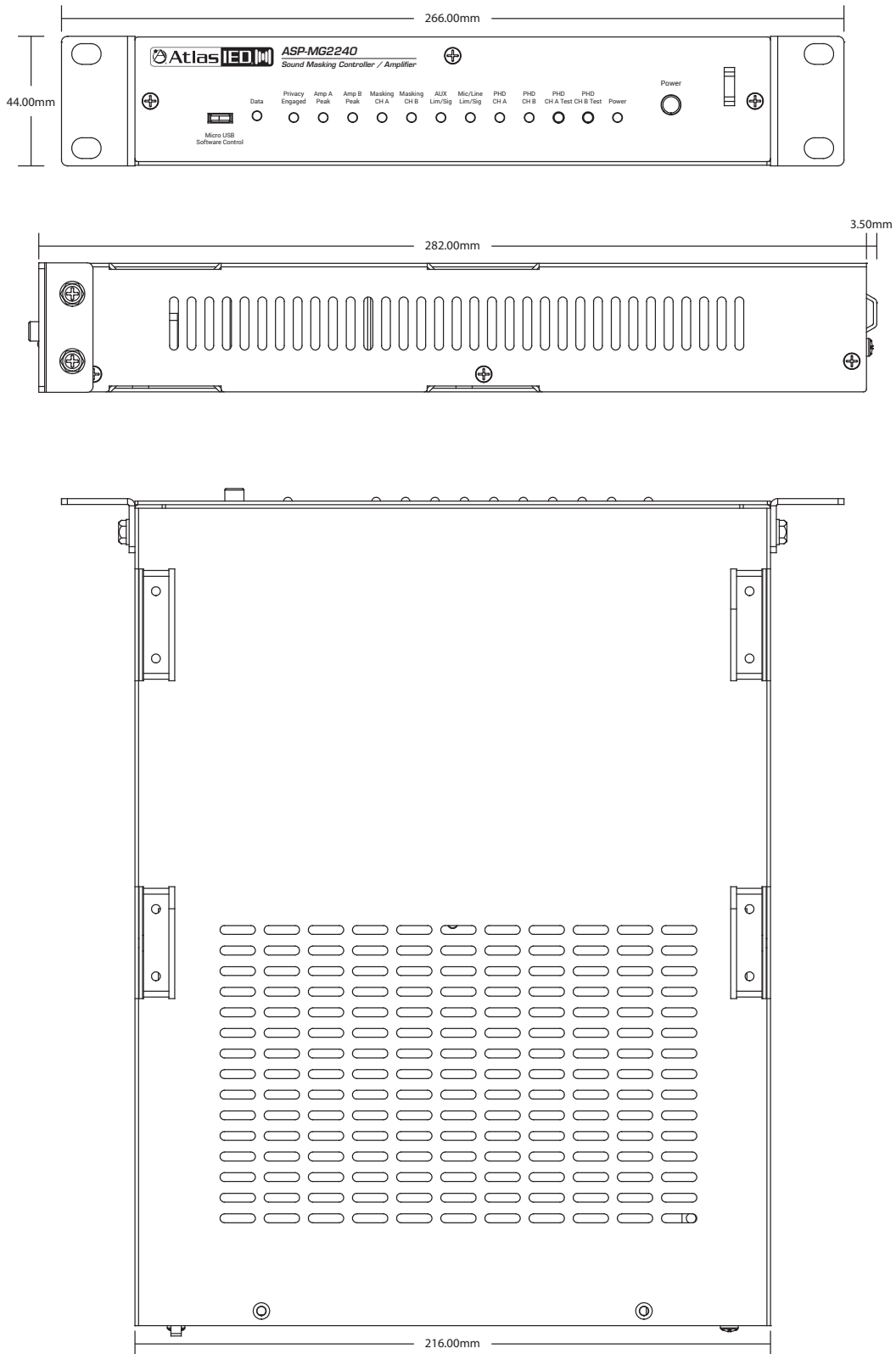### Wired Privacy Signs for Conference Room with ASP-MG2240

LED signs light up when 12V DC port is activated by CC Button

Contact Closure Button wired to Phoenix CC activation port

Zone B Provides Enhanced Privacy for Conference Room when activated

Block Diagram

30W

30W

Speech Privacy Enhancement

Privacy
GND
+12VDC (To Sign)

+   Line Balance Output
–
GND

Line Out
Level Control

AUDIO
Transformer

AUDIO
Transformer

POWER AMP A

PHD Detect

Privacy Engage Orange
Masking - A Signal Green
Masking - B Signal Green
AUX Limit/Signal Red/Green
MIC Limit/Signal Red/Green

STM32F103RC

PHD Detect

POWER AMP B

AMP A
50Hz HPF

AMP B
50Hz HPF

PEAK A
Detect

PHD SWA

AMP A PEAK Red

Firmware Update SW

AMP B PEAK Red

PHD SWB

USB Server Control

PEAK B
Detect

AMP A
Master Level
Control

3V Battery

PHD Output A Yellow

PHD Output B Yellow

Data - LED - Green

AMP B
Master Level
Control

Mixer
AMP A

Mixer
AMP B

Mic / Line / AUX /
Masking AMP A

Mic / Line / AUX /
Masking AMP B

24 / 7
Scheduler

AMP A
Mic/Line
Level Control

AMP B
Mic/Line
Level Control

AMP A
AUX Level Control

AMP B
AUX Level Control

24 / 7
Scheduler

Speech Privacy
Level

Variable Limiter

Variable Limiter

Speech Privacy
Level

Masking A
Level Control

DPI
HPF - LPF

DPI
HPF - LPF

Masking B
Level Control

Masking AMP A

Masking AMP B

EQ

Mic Notch Filter

AUX
Sensitivity
Control

EQ

5 Band Equalizer

5 Band Equalizer

Analog Masking Generator AMP A

Pink Noise

White Noise

Mic/Line Level Dect

AUX Level Dect

Pink Noise

White Noise

Analog Masking Generator AMP B

+10V
+9V
+5V
+3.3V

DC - DC

Power Blue

Power Switch

Mic/Line Level Dect

Mic/Line
Switch
Analog

Mic/Line
Input
Volume
Analog

AUX Input
Volume
Analog

DC+24V/2.5A Input

–   +

Mic/Line Input

Phantom 24V

+   –

+
–
GND

Unbalanced 1V-70V

AUX 3.5mm Jack Input

Dimensional Drawings

Architect and Engineer Specifications

The AtlasIED ASP-MG2240 shall be a 1RU-half rack wide DSP Sound Masking Controller processor with two zone integrated Amplifier and one assignable Balanced Line output. The ASP-MG2240 shall deliver 30W of power per channel into a 70V distributed audio system. The ASP-MG2240 shall provide one Balanced Mic / Line and one AUX L & R Summed Unbalanced inputs. Two independent analog pink or white noise generators for Masking A & B shall be assignable sources. The Mic/Line inputs shall provide Mic 50mV, Line 500mV, and AUX variable 316mV – 1V input sensitivity. Each of the Mic / Line and AUX inputs shall have independent input level control on rear panel. All inputs and outputs except the AUX input, shall be rear panel plug-in Euro / Phoenix type connectors. The AUX input on rear panel shall be a 3.5mm stereo (summed) jack. DSP Equalization shall be $^1/_3$ octave for Masking A&B and 5 Band parametric filters with Limiter for Mic / Line / AUX sources. The Masking A & B, Mic / Line and AUX shall have Hi & Low Pass Filters.

The ASP-MG2240 shall have a USB PC interface with Windows® programming software. The software shall provide an intuitive GUI interface for mixing sources and easy setup of processor controls and DSP settings. 6 User and 4 Factory proven presets shall be available to recall/store processor settings. Factory Presets for applications shall be Open Ceiling, Above Ceiling, Below Floor, and Factory. The GUI interface shall provide a 24/7 scheduler to improve masking efficiency. An "Enhanced Privacy" system shall be provided with contact closure activation via 3-way Phoenix connector on the rear panel. The connector shall include a 12VDC LED driver output for an Enhanced Privacy display sign. Enhanced Privacy configuration Settings shall be available in the software GUI. The ASP-MG2240 shall provide Push Here Diagnostic test for confirming proper speaker loads. The ASP-MG2240 shall provide front panel LED monitoring indication of Mic / Line / AUX Signal-Limit; Masking Generator A & B Signal; Output Signal Peak-Fault Channel A & B; PHD Fault Channel A & B; Privacy Engaged; and Power. Frequency Response shall be 50Hz-15kHz (with DSP set to Flat). Dynamic Range shall be greater than 90dB below rated output (A-Weighted). Power Consumption shall be less than 20W average under normal use. Dimensions shall be 1.75" high, 10.5" wide, & 11.25" deep. Weight shall be 5.75 lbs. Warranty coverage shall be 1-year. The unit shall be CE marked, RoHS / WEEE, TUV, GMA (power Supply) compliant and UL certified. The ASP-MG2240 shall meet low voltage wiring standards. The Sound Masking Controller & Amplifier shall be an AtlasIED ASP-MG2240.