

AUDIOCONTROL 12.8



# AUDIOCONTROL 12.8

Instruction manual



## AUDIOCONTROL12.8



## Safety First !

- Please check the carton box for any kind of damage on reception of the goods. In case of a damaged carton, please contact your dealer before opening the carton.
- !!!! Danger !!!! Exposure to high sound levels may cause a permanent hearing loss. Individuals vary considerably to sound pressure level induced hearing loss but nearly everyone will lose some hearing if exposed to high sound pressure levels for a sufficient amount of time. Therefore it is recommended that all persons exposed to equipment capable of producing high sound pressure levels, such as this device, be protected by hearing protection while installing or operating this unit.
- Read all documentation before operating your equipment.
- Keep all documentation for future reference.
- Save the carton and packing material even if the equipment has arrived in good condition.
- Should you ever need to ship the unit, use only the original factory packing.
- Do not spill water or other liquids into or on the unit.
- Make sure power outlets conform to the power requirements listed on the back of the unit.
- Do not use the unit if the electrical power cord is frayed or broken.
- Always operate the unit with the AC ground wire connected to the electrical system ground.
- Set level controls on amplifiers all the way down during power-

up to prevent speaker damage if there are high signal levels at the inputs.

- Do not connect the inputs / outputs of amplifiers or consoles to any other voltage source, such as a battery, mains source, or power supply, regardless of whether the amplifier or console is turned on or off.
- Power down & disconnect units from mains voltage before making connections.
- Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
- Do not operate equipment on a surface or in an environment which may distort the normal flow of air around the unit. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically “blown free” of dust.
- Do not remove the cover. Removing the cover will expose you to potentially dangerous voltages.
- Do not drive the inputs with a signal level higher than that required to drive equipment to full output.
- Do not run the output of any amplifier back into another input.
- In case of mal-function this device should be serviced by qualified service personnel only.
- The apparatus may not be exposed to dripping or splashing and no objects filled with liquids may be placed on the apparatus.
- The appliance coupler has to be readily operable to disconnect the device.



**CAUTION:** a clipped or distorted audio signal at the input (overload) will come out as a clipped or distorted signal at the output, regardless of the output level and DSP processing power applied to the signal. Clipping occurs when the signal and/or the applied gain is too high, due to incompatibility of the signal level, a faulty source, an impedance mismatch or a human error. Therefore, monitor incoming signals and do not overload the inputs. Adjust the output level(s) and gain settings of your source(s) if necessary. Due to the internal gain structure of the AudioControl, the output signals may clip even when the input signals are relatively low. Do not overamplify audio signals. Boosting certain frequency bands or overcompressing incoming audio signals may cause signal clipping, distortion and excessive noise at the output. If you have to add lots of gain, your incoming signal may be too weak. In some cases (microphones), this is unavoidable. AudioControl can help you to minimize the noise problem: add a noise gate in the signal path of noisy/weak audio sources and set the threshold so that no noise is heard when no signal is present.

## General description:

DSP powered audio matrix for small to medium sized audio applications, featuring advanced audio processing and routing control.

Out of box operation, intuitive configuration software with 2 operation levels, installer and expert.

### Applications:

- Retail
- Residential
- Education
- Houses of worship
- Hotels
- Meeting rooms
- AV rooms
- Offices
- ...

## Features:

- Easy configuration via graphic installer interface.
- Configurations can be saved/backed up on the computer and can be transferred to other AudioControl units.
- Stand alone operation: once configured, the unit will operate without a computer.
- Stand alone graphic installer interface: no need to connect the AudioControl unit: configure the unit offline, save the configuration and upload it to the unit when necessary.
- Upgradeable firmware (via RS232) for future additional features.
- Brushed aluminium panel.
- 12 analog inputs, 6 unbalanced using RCA connectors, 6 balanced using removable euroblock connectors.
- 4 digitally controlled analog gain levels on balanced inputs (microphone up to line level).
- Digital SPDIF input, can be assigned as 2 additional inputs, making it a 14 in 8 out unit! In this case no DSP processing can be assigned to the SPDIF input.
- Digital SPDIF input can be swapped with EQ and Dynamics of analog input 7 & 8. In this case DSP processing can be assigned to the SPDIF input.
- 8 unbalanced analog outputs using RCA connectors with switchable 15 dB output boost.
- Digital SPDIF output with 24 bit, 48 kHz fixed sampling rate assignable as a copy of a selected analog output (pair).



- 8 dedicated wall control connectors (DIWAC).
- Polarity independent 2 wire connection between wall panel and AudioControl unit.
- DSP with 48 kHz internal processing sampling rate: parametric EQ, audio filtering and dynamics processing on the inputs.
- DSP with 48 kHz internal processing sampling rate: parametric EQ, audio filtering, compressor and limiter on the outputs.
- Integrated chime (ding-dong).
- Automatic sampling rate converter on the digital input: 8 - 24 bit/32 – 96 kHz.
- Paging microphone input (DIMIC product range), fully configurable paging.
- 1.2 millisecond propagation time from analog input to analog output.
- 8 paging priority levels.
- 3 x RS232 ports for easy integration with automation systems.
- LED display window for easy status overview of all audio signals, control signals, and communication ports.
- Universal integrated switching power supply: 88-264 VAC/47-63 Hz.
- Switchable ground lift.
- 1 rack unit high.
- Removable 19" rack ears.

AUDIOCONTROL12.8 is a highly versatile, fully configurable 12 in 8 out audio matrix with built in DSP processing. With the SPDIF inputs in use, you might even call it a 14 in 8 out unit !

Paging possibilities are virtually endless: a maximum of 120 addressable/programmable paging microphones/extenders can be connected, each with their own functionality and individual presets and up to 8 priority levels. A maximum of 8 microphones can be powered by the AudioControl unit, depending on cable length. When more units are in use, or when the cables cause substantial supply voltage drops (power loss), the microphones must be individually powered by a 24 VDC power supply (see manual of the connected DIMIC). The microphone push buttons can be programmed to page zones, zone groups, to play pre-recorded messages (with optional module installed), Or to control external devices such as door locks, lights or alarm sounders. The chime, when enabled, can be activated by pushing the call button on a paging mic station.

This page explains the out of the box behavior of the AUDIOCONTROL12.8. The complete manual can be downloaded from our website: [www.apart-audio.com](http://www.apart-audio.com)

### Standard factory configuration:

Input configuration:

- 5 stereo inputs: input 1(L) and 2(R), input 3(L) and 4(R), input 5(L) and 6(R), input 7(L) and 8(R), input 9(L) and 10(R).
- Input 11 = inactive.
- Input 12 = paging output (from DIMIC12). When a DIMIC 12 is connected, the audio from the microphone is internally routed through input 12 and input 12 becomes an output. Therefore, do not connect a signal to this input.

Output configuration:

- 4 stereo output zones: output pairs 1-2 = zone 1; 3-4 = zone 2; 5-6 = zone 3; 7-8 = zone 4
- Wall panel out 1-2-3-4 correspond to zone 1-2-3-4
- Wall panel out 5-6-7-8 correspond to zone 1-2-3-4
- Paging buttons: 1-2-3-4 are set up to page zone 1-2-3-4

Wall panel (DIWAC) configuration:

- Pushbuttons for source selection (source 1-5) and volume control

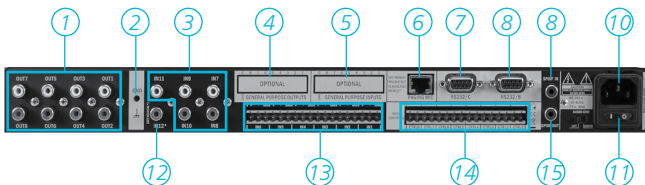
## Connecting the paging microphone (DIMIC product range)

Connect the DIMIC connector labelled "OUTPUT" to the AudioControl's "PAGING MIC" connector using a straight RJ45 cable. When a DIMIC range microphone is connected to the AudioControl unit, input 12 will be assigned to the DIMIC audio path and the audio signal coming through the RJ45 cable will be routed internally through input 12, the unbalanced RCA connector of input 12 becomes an output in that case. Therefore: do not connect anything to input 12 when a DIMIC microphone is in use. DIMIC12 standard configuration: push buttons 1-4 will select output zones 1-4. When pushing the "selective" or "all zones" button on the DIMIC, the chime will be activated, audio inputs will be muted in the selected zones and the microphone signal will be routed to the selected zones as long as the "selective" or "all zones" button is pushed in.

If you need to set up the unit for a custom application, please download the latest graphical installer interface software from our website: [www.apart-audio.com](http://www.apart-audio.com) and configure the unit with this software.

Connections:

Back panel:



1. Analog outputs 1-8 on RCA unbalanced.
2. GND screw.
3. Analog inputs 7-12 on RCA unbalanced.
4. Optional module slot.
5. Optional module slot.
6. Paging mic connector on RJ45. WARNING, this is not a computer network connection. Use this connector only with compatible microphones such as our DIMIC range of microphones/extenders. When a compatible microphone is plugged in, the microphone signal is injected through the RJ 45 connector is routed via the path of analog input number 12. The analog input number 12 RCA connector automatically becomes an analog microphone output for linking purposes. A maximum of 8 DIMIC microphones/extenders can be powered via the RJ45 connector by the AudioControl unit. The maximum

number of addressable microphones/extenders is 120 pieces, using additional external PSU for the mic units.

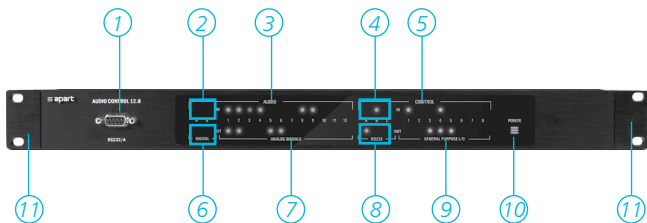
7. **RS232 connector C:** connect to a compatible automation unit.
8. **RS232 connector B:** connect to a compatible automation unit.
9. **SPDIF digital input:** stereo (2 ch) digital input on cinch connector: 8-24 bit/32-96 kHz with automatic sampling rate converter. The SPDIF input can be configured as additional input. In this case no dynamics or EQ processing are possible. Alternatively, they can be rerouted as a digital replacement for two analog inputs with full processing: in this case the analog inputs will not have EQ and dynamics.
10. **Power switch:** power the unit on and off
11. **Power inlet:** connect the power cord here
12. **Input number 12 doubles** as a microphone output for the DIMIC series. When a compatible microphone is connected on the RJ45 paging mic connector, input number 12 is automatically assigned as a paging mic output and can not be used for other purposes !!!
13. **Analog inputs 1-6 on euroblock balanced:** these inputs have a wide gain range and are compatible with microphone and line level signals. The analog gain is controlled digitally via the graphic installer interface in 4 fixed steps: -13 dB, +0 dB, +19 dB or + 35 dB. Digital trim: 0 to +20 dB on all inputs for easy level matching.
14. **Wall controller 1-8 connector.** The wall controllers (DIWAC) can be freely assigned to any output (zone). Only one controller per connector is allowed, resulting in a maximum of 8 wall

controllers per AudioControl. You can assign multiple wall controllers to one zone, but you cannot exceed the limit of 8 controllers per audio control unit. The wall controllers cannot be daisy chained: each controller must be connected to its dedicated connector on the audio control.

15. **SPDIF output on cinch connector:** stereo digital output. 24 bit/48 kHz fixed bit depth/sampling rate. The SPDIF outs will act as a digital copy of one assignable zone, mono or stereo.

*IMPORTANT: when the SPDIF output is configured as a copy of a mono zone, the left and right SPDIF output signals will be identical.*

### Front panel:



1. **RS232/A port:** serial port for easy access via the front panel to all programming/control functions.
2. **SPDIF input A/B (left/right) signal indication led:** light up green when a sufficiently strong input signal is present, orange at high input level, and red near clipping level.

3. **Audio input 1-12 signal indication led:** light up green when a sufficiently strong input signal is present at input 1-12, orange at high input level, and red near clipping level.
4. **RS232 A-C activity indicators:** these blue leds light up when RS232 commands are being received on RS232 port A-C.
5. **Control General purpose input 1-8 indicator leds:** optional.
6. **SPDIF output A/B (left/right) signal indication led:** light up green when a sufficiently strong output signal is present, orange at high output level, and red near clipping level.
7. **Audio output 1-8 signal indication led:** light up green when a sufficiently strong output signal is present at output 1-8, orange at high output level, and red near clipping level.
8. **RS232 A-C activity indicators:** these blue leds light up when RS232 commands are being sent on RS232 port A-C.
9. **Control General purpose output 1-8 indicator leds:** optional.
10. **Power led:** lights up when mains power is present and the unit has been switched on. The main power switch is located at the back of the unit.
11. **Removable rack ears left and right.**



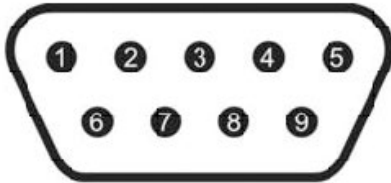
## RS232:

All you need is a serial cable (straight, no null modem cable !!!) and a working serial port on your computer. Alternatively, a standard USB to RS232 converter will do the job.

**IMPORTANT:** Consult the manual of your USB to serial converter and make sure the drivers for the converter or integrated serial port are successfully installed before starting the AudiControl graphical installer interface program. Check your device manager on your computer and make sure there are no unknown or disabled communication devices in the list (usually these communication devices are listed under COM PORTS). The program will automatically scan all available com ports on your computer and will automatically configure the serial port the audio control is connected to. No further user action is required for making the connection. No specific drivers are needed for the AudioControl unit, because all communication with the computer is done via RS232 commands.

Despite the fact that serial ports are becoming rare on modern computers, they are still commonly used in home/office automation and control systems. There are many benefits to using serial ports: the protocol is very reliable and does not depend on operating system driver policies or restrictions.

For your reference, serial port parameters are as follows: baudrate 19200, 8 databits, 1 stopbit, no parity. The serial cable used for communicating with AudioControl is a straight through, one to one serial cable (do not use a null modem cable). If you experience any communication problems, first check the RS232 A/B/C in/out leds on the front panel. These should flash (briefly) when commands are sent/received successfully. When the leds remain unlit at all times, no connection has been made and you will be unable to configure the unit.



Communication with AudioControl via RS232 is done with simple ASCII Commands and Replies. The RS232A port settings (front panel) are 19200 Baud, 8 databits, no parity and 1 stop bit. Serial ports RS232 B and C (rear panel) can be configured via the graphic installer interface program.

Pin 2: TX data: data transmission output

Pin 3: RX data: data reception input

Pin 5: GND: ground

Other pins are not used.

## Specifications:

Analog input and output	
Balanced inputs 1 – 6	
Input impedance pad enabled (+13dBV input sensitivity)	2 k $\Omega$
All other gain settings	6 k $\Omega$
Phantom power	24 VDC, individually selectable
Digital gain trim	0 – 20 dB
Max input level @ Gain stage 1 (attenuator)	+18 dBV
Max input level @ Gain stage 2 (no gain)	+9 dBV
Max input level @ Gain stage 3 (low gain)	-10 dBV
Max input level @ Gain stage 4 (high gain)	-26 dBV
SNR of Gain stage 1 (attenuator)	100dB un-weighted
SNR of Gain stage 2 (no gain)	100dB un-weighted
SNR of Gain stage 3 (low gain)	89dB un-weighted
SNR of Gain stage 4 (high gain)	77dB un-weighted
Unbalanced inputs 7 – 12	
Input impedance	10 k $\Omega$
Digital gain trim	0 - 20 dB
Max input level	+18 dBV
SNR	100dB un-weighted

Unbalanced outputs 1 – 8	
Output impedance	< 100 $\Omega$
Digital gain trim	-12dB to +6dB
Max output level	+5 dBV, with output boost possible to +20dBV
SNR	93dB un-weighted
SNR with output boost	97.5dB un-weighted
THD + N	0,005% un-weighted
THD + N with output boost	0,03% un-weighted
Channel separation	
SPDIF in to analog output	97 dB @ 1 kHz, 75 dB @ 20 kHz, @ nominal output level
Unbalanced inputs to analog output	92 dB @ 1 kHz, 82 dB @ 20 kHz, @ nominal output level
Balanced inputs to analog output	95 dB @ 1 kHz, 82 dB @ 20 kHz, @ nominal output level
Digital input and output	
Input	SPDIF 2 channel. 8 – 24 bit, 32 – 96 kHz sampling rate with sampling rate converter
Output	SPDIF 2 channel. 24 bit, 48 kHz fixed sampling rate
Control section	
RS232A port settings	19200 Baud, 8 databits, no parity and 1 stop bit
RS232 B and C settings	selectable via GII: baudrate: 600, 1200, 2400, 4800, 9600, 19200, 38400

	8 databits, no parity and 1 stop bit.
8 wall panel connections	euroblock 2 wire
<b>General</b>	
Front panel indicators	
	24 multi colour audio signal leds
	22 control indicator leds
	Power indicator led
Power supply	
	88 – 264 VAC / 50-60 Hz
	Max 75 W
DSP and AD/DA specifications	
	48 kHz sampling rate
	1.2 ms latency from analog input to analog output
	Frequency response: 20Hz to 20 kHz +- 1dB
Dimensions and weight	
W x D x H	484 x 316 x 44 mm
Net weight	3.8 kgs
Remote interfaces	
Up to 120 DIMIC1/DIMIC12/ DIMIC12S via RJ45	max 8 units via internal power supply, depending on wire length
	Up to 8 DIWAC wall control panels (2 wire interface)
	1 serial port on front panel for configuration using the GII (graphic installer interface)

	2 serial ports on the back to control external equipment
	Optional expansion card
	Designed in Belgium and built in Europe



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Apart-Audio specifications are subject to change without notice.

