

Distribution Amplifier

Model DA388

Installation and Operation

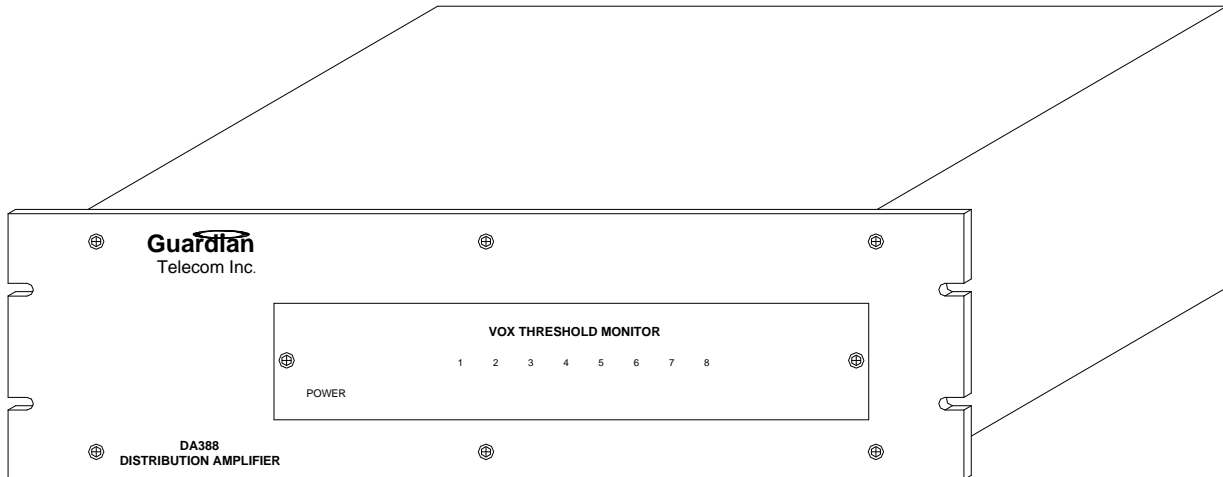


Table of Contents

Package Contents	2
Associated Equipment	2
Overview	3
Features	3
Theory Of Operation	3
Installing the DA388	9
Unit Operation	10
Engineering Specifications	12
Warranty	14
Disclaimer	14
Warning	14
Service Telephone Number	14
Feedback	14
Guardian Product Return	15

Table of Figures

Figure 1 - Output With VOX	4
Figure 2 - "C" Channel	4
Figure 3 - "B" Channel	5
Figure 4 - "A" Channel	5
Figure 5 - Dimensions	6
Figure 6 - Front Panel	6
Figure 7 - Rear Panel	7
Figure 8 - Typical System Line Diagram	8

Package Contents

One Model P8200 DA388 Distribution Amplifier
One Installation and Operation Manual

Associated Equipment

Model P8300 AS12 Amplifier Switch
Model P5970 AG17 Alarm Tone Generator

Overview

Distribution Amplifier

The DA388 Audio Distribution Amplifier is a line level pre-amplifier for use in public address systems. As part of an integrated system, the Distribution Amplifier recognizes audio inputs, voice signals, alarm tones, telephone access and background music. The Amplifier then boosts the signal before distribution. The DA388 is designed to prioritize audio input signals and distribute the signal to multiple power amplifiers without degrading audio quality.

The DA388 Audio Distribution Amplifier is one component in Guardian Telecom's full line of paging system products, which also include alarm tone generators and switch controlling equipment.

Features

- maintains signal quality
- distributes signals to multiple power amplifiers
- assigns priorities to audio input signals
- uses logic control to switch audio inputs to selected audio outputs
- configures the highest priority input signal as an override signal to all outputs
- output signals generate a VOX logic output signal
- two audio outputs mirror the highest priority audio inputs
- LED status indicators
- internal volume adjustments for each input and output
- compact - 19" rack mount - 3 rack units
- durable construction and epoxy finish

Theory Of Operation

The DA388 distribution amplifier is designed to provide a convenient means to route audio signals in a public address sound system. A simple audio distribution amplifier provides multiple outputs from a single input source with output signal buffering, compensation for signal levels and impedance matching. The DA388 has provision for up to three input signals with an internal prioritization of the signals and eight outputs that can be selectively controlled through the use of logic signals. Typical input signals that may be used are from sources such as PABX telephone paging, alarm generators, paging microphones and background music.

The development of a public address system is designed upon the integration of many different system components that are combined to provide the features of the system. The DA388 has been designed to enhance the operation of Guardian Telecom custom designed products. Some of these products are; the automatic amplifier switch, the alarm tone generator and the speaker monitoring system. However, the DA388 is not restricted to use with these products, but is compatible with equipment from other manufacturers.

Audio Outputs

The DA388 has eight outputs that are level adjustable and have VOX logic outputs. (See Figure 1) These outputs may be grouped into two sets of four, each set having an additional output without VOX logic. (See Figure 2) These outputs are ideally suited for implementation with the Guardian Amplifier Switch (AS-12) that provides automated backup for a main amplifier failure event. The VOX logic outputs have threshold adjustments accessible from the front of the unit. The audio outputs are 600 ohm balanced and adjustable to 1.7 VRMS.

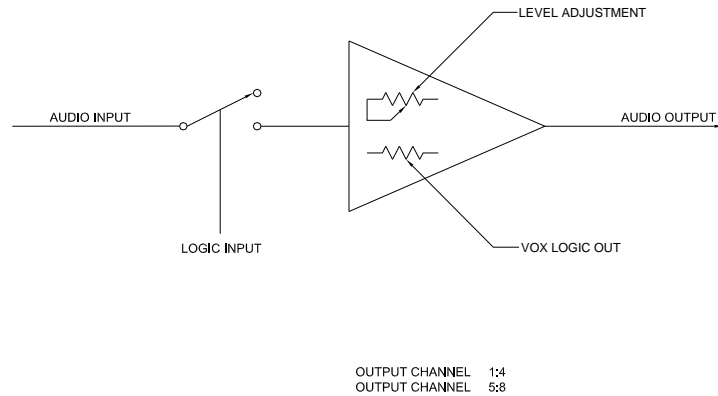


Figure 1 - Output With VOX

Audio Inputs

The "B & C" inputs of the DA388 are high impedance inputs and are level adjustable to accept a nominal 750 mV signal. The "C" input is the lowest priority input, which has a logic matrix control that can be used to route the input signal to any combination of outputs. The logic selection is a 5V TTL control that can be activated through normally open dry contacts or with an open collector output. The selection of outputs may be individually controlled by separate logic inputs or by a single separate control for all outputs. A single logic output is provided which has specific application for the Guardian speaker monitoring system.

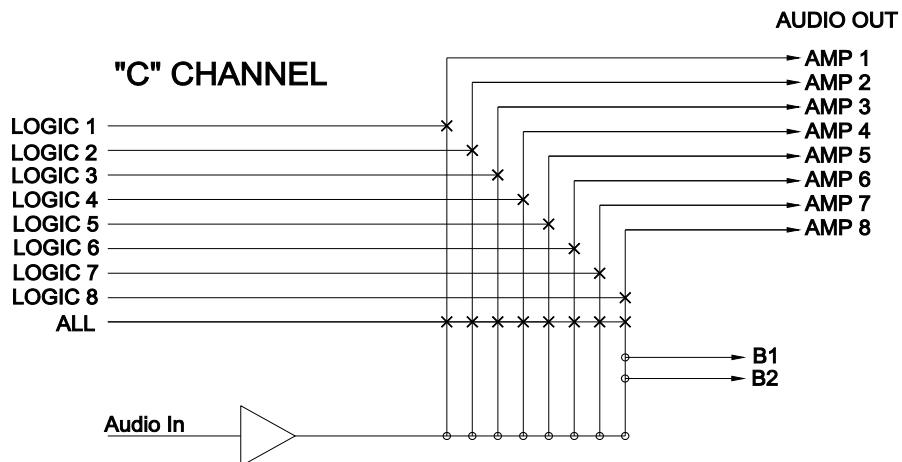


Figure 2 - "C" Channel

The "B" channel input has the same matrix logic control. The selection of the logic controls takes precedence over the input from the "C" channel and routes the signal from "B" channel to the selected output. The typical application may be for a PABX with up to eight paging zones or for an alarm generator to provide alerting signals to the specified outputs.

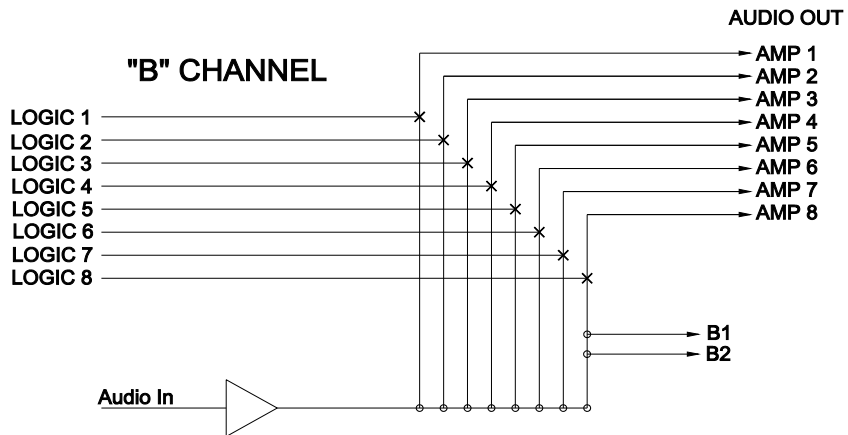


Figure 3 - "B" Channel

The "A" channel is a 600 ohm balanced input adjustable to 1 VRMS. It has a single logic input control that provides activation to all outputs and has priority over all other input signals.

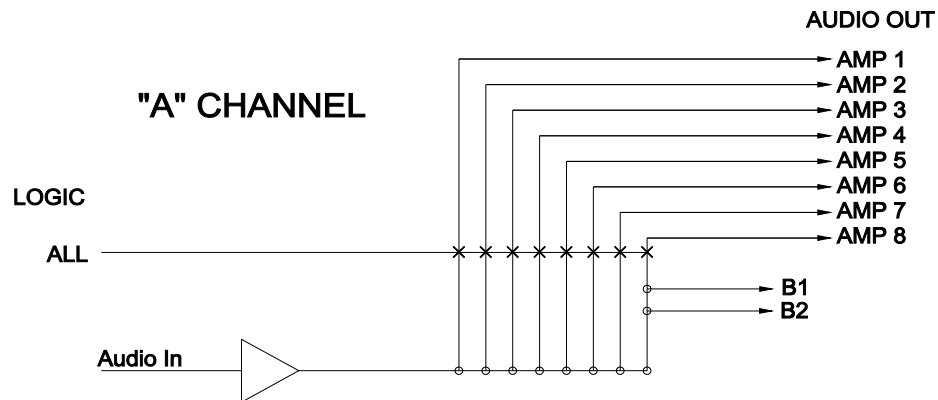


Figure 4 - "A" Channel

This input is suitable for a paging microphone or an alarm generator and provides emergency announcements over any other input activity.

The Guardian AG-17 alarm generator has internal voice override and can provide for a configuration incorporating alarms and voice override on "A" channel, PABX paging on "B" channel and background music on channel "C", as an example of system integration.

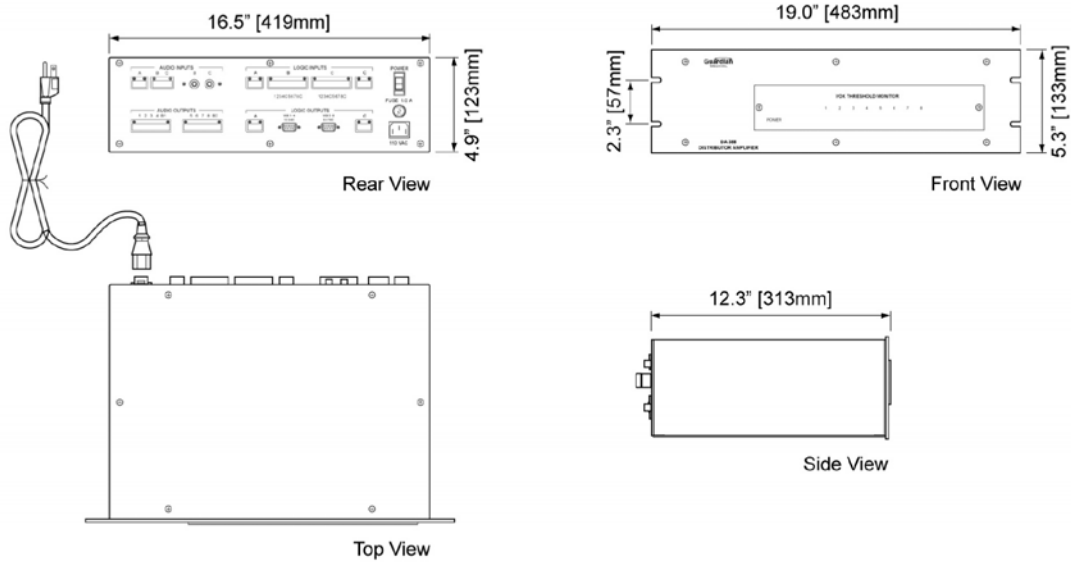


Figure 5 - Dimensions

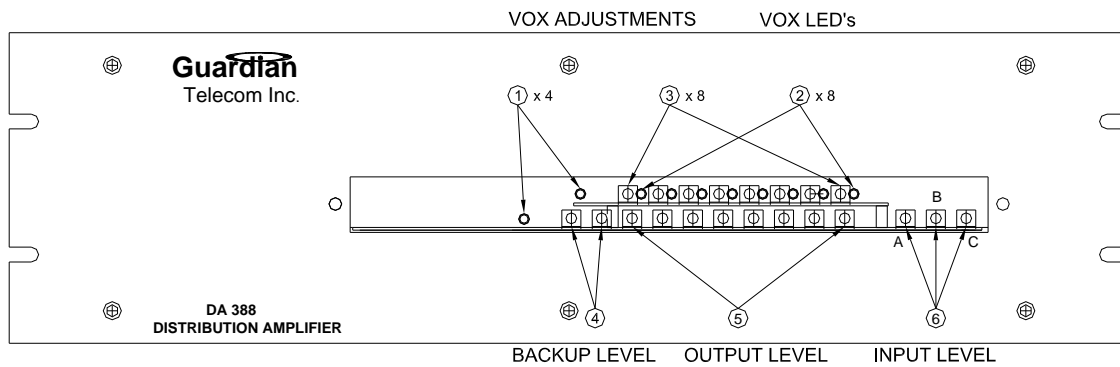


Figure 6 - Front Panel

1. Power LEDs (Amplifier, VOX)
2. VOX LEDs
3. VOX Threshold adjustments
4. Backup amplifier audio output level adjustment
5. Amplifier 1 to 8 audio output level adjustment
6. Input A, B & C audio level adjustments

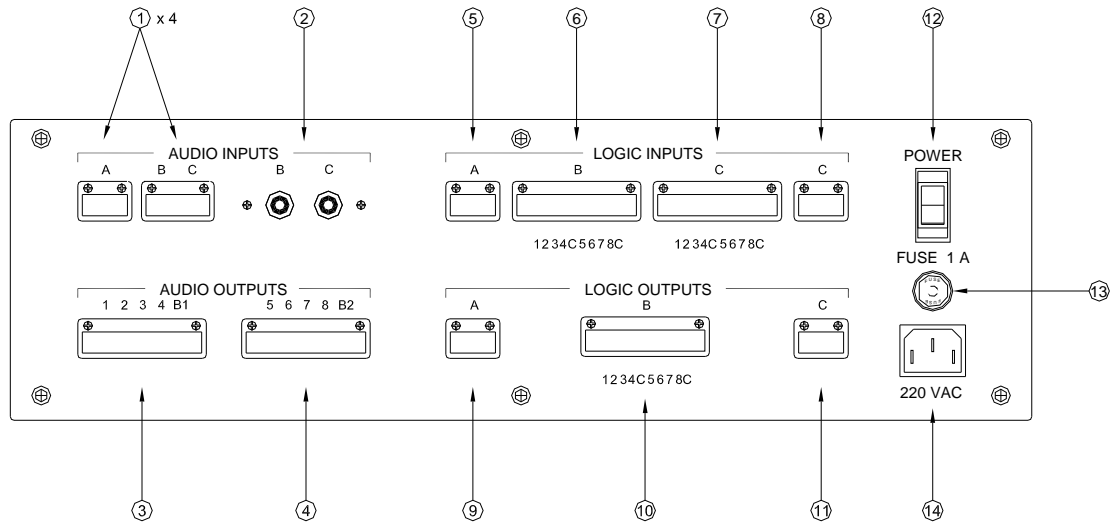


Figure 7 - Rear Panel

- | | |
|-----------------------------|--|
| 1. Audio inputs A,B & C | Combi-con connectors |
| 2. Audio inputs B & C | Phono jack |
| 3. Audio outputs 1 – 4 & B1 | Combi-con connectors |
| 4. Audio outputs 5 – 8 & B2 | Combi-con connectors |
| 5. Logic inputs A | Combi-con connectors, single control all outputs |
| 6. Logic inputs B | Combi-con connectors, matrix control 1 – 8 |
| 7. Logic inputs C | Combi-con connectors, matrix |
| 8. Logic inputs C | Combi-con connectors, single control all-outputs |
| 9. Logic outputs A | Combi-con connectors, (for future use) |
| 10. VOX outputs. 1 – 8 | Combi-con for amplifier switch |
| 11. Logic outputs C | Combi-con connectors, for speaker monitor system |
| 12. Power switch | |
| 13. Fuse holder | |
| 14. Power cord socket | Power input for 120/230 VAC |

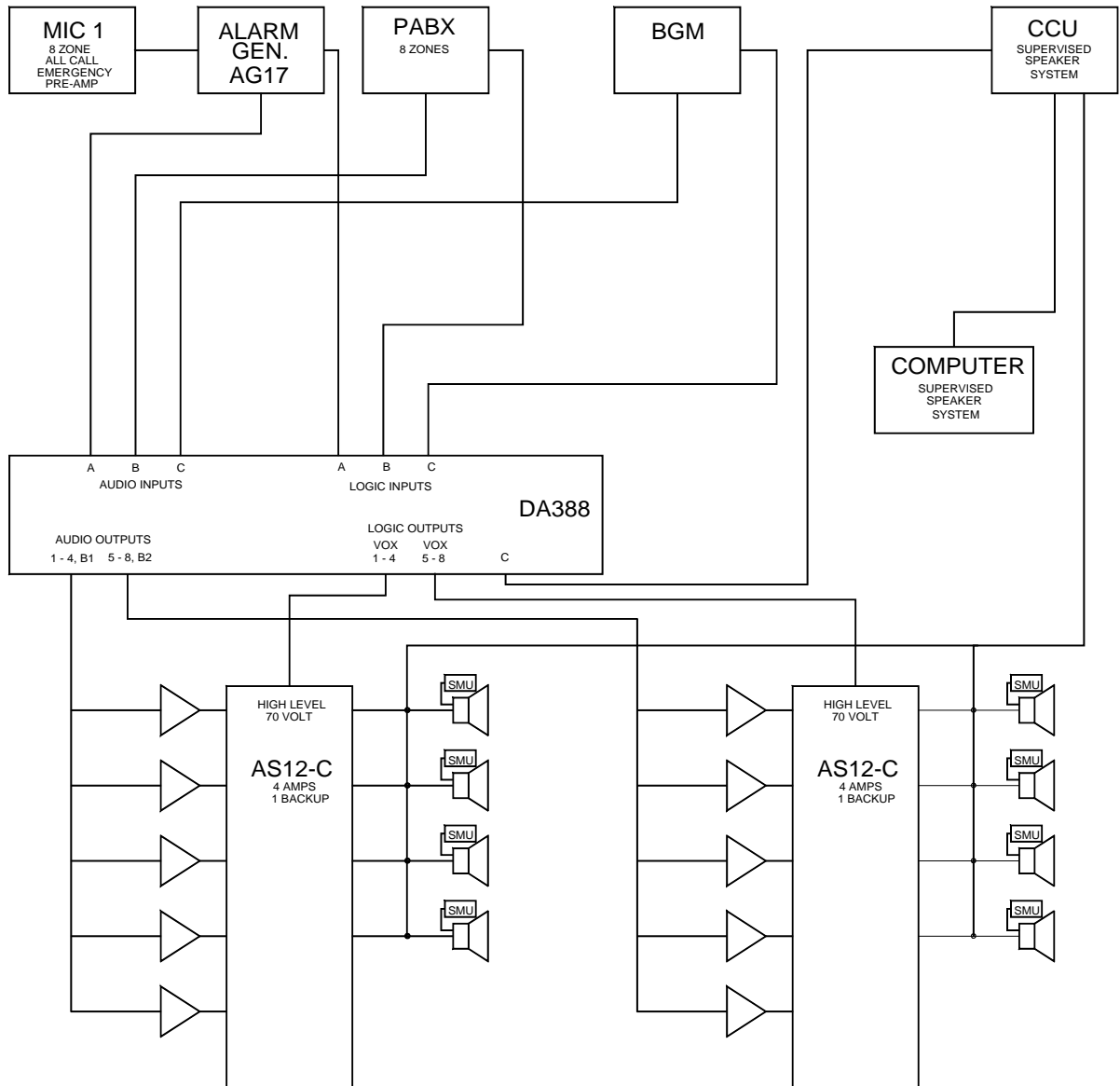


Figure 8 - Typical System Line Diagram

Installing the DA388

- Carefully plan input and output connections.
 - Identify input and output devices.
 - Prioritize inputs.
 - Plan output connections to correspond with input priorities.
- Follow all appropriate electrical codes for the installation.
- Inspect the product for shipping damage.
- Do not open or attempt to open the DA388 unit. There are no user serviceable parts inside the unit. All adjustments are accessible under the removable plexiglass front panel.
- Choose a location on a standard 19" equipment rack with 3 rack units (3U) of available space.
- Do not apply power to the DA388 before connecting input and output devices.
- Ensure all devices that will be connected to the DA388 are turned off.
- Use the following sequence when wiring connections:
 - Audio Input
 - Audio Output
 - Input logic
 - Output logic
- Refer to your individual input/output/priority plan and wire all required connections as follows:
 - Remove quick disconnect connector (Phoenix Combi-Con).
 - Wire the connector.
 - Plug the connector back into the unit.
- When connections are complete, apply power to the DA388.
- Apply power to all input devices.

Tip: Familiarize yourself with unit capabilities and functions.

See: Typical Installation drawing and Unit Operation details.

Tip: Input #1 is the highest priority.

Tip: If the product is damaged, notify the carrier immediately.

Tip: Unauthorized modifications void the product warranty.

See: Front and Rear Panel drawings above for overall dimensions.

See: Unit Operation for more details.

See: Unit Operation for wiring caution on Logic Output.

See: Unit Operation below.

Unit Operation

Inputs

The DA388 has three audio inputs and three sets of logic inputs.

- Audio input #A is 600 Ohm balanced input with a maximum input signal level of 180mV RMS.
- Audio input #B and #C are 10 K Ohm balanced inputs with a maximum input level of 750mV RMS.
- All three inputs have individual volume controls for balancing levels into the DA388.

Logic

Logic inputs control the signal routing when pulled to ground through an open collector circuit or a contact closure from a switch.

- Audio input #A:
 - has the highest priority
 - is controlled by a single logic input
 - activates all audio outputs
 - overrides all other inputs
- Audio inputs #B and #C:
 - each have eight logic inputs
 - select a single output or combination of outputs to receive the audio signal
 - #B has priority over #C

Audio input #C has a single logic input for activation of all outputs

Outputs

Outputs on the DA388 include:

- ten 10 K Ohm, balanced, audio outputs
- eight VOX outputs
- Two open collector logic outputs

Ten audio outputs are activated by logic control.

- Eight are externally controlled and two are internally controlled.
- There are internal volume adjustments for each output.

Tip: Logic inputs associated with the audio inputs activate the audio outputs.

Tip: Individual volume adjustments enable different amplifiers in a single system to maintain required speaker levels.

- Two internally controlled outputs receive audio from the highest priority input signal.
- The open collector logic output on the DA388 activates when there is a logic signal on input #A or #B.

Each of the eight externally controlled outputs generates a VOX logic output signal.

- Threshold adjustments for each VOX logic output determine the minimum audio level necessary to turn the VOX logic on and off.
- VOX logic outputs are open drain circuits. When the logic gate is **ON** an LED on the front panel of the DA388 illuminates.

***Tip:** A VOX logic control signal is a logic signal that gates on when an audio signal is present and gates off when there is no audio signal.*

Engineering Specifications	
<i>Electrical Requirements</i>	
INPUT VOLTAGE	120 VAC (240 VAC AVAILABLE WITH FACTORY ORDER)
MAXIMUM CURRENT CONSUMPTION	250 mA
FUSE	1 AMP; 3AG
<i>Audio Performance</i>	
<i>Audio Inputs</i>	
<i>Input A</i>	
MAXIMUM VOLTAGE	180 mV
INPUT IMPEDANCE	600 OHMS BALANCED
<i>Inputs "B" & "C"</i>	
MAXIMUM VOLTAGE	750 mV
INPUT IMPEDANCE	10K OHMS
<i>Audio Outputs</i>	
<i>8 Audio Outputs (External Control)</i>	
MAXIMUM VOLTAGE	1.5 VRMS
OUTPUT IMPEDANCE	10 K OHMS BALANCED
FREQUENCY RESPONSE	300HZ-20KHZ
<i>Output level controls</i>	
<i>2 Backup Outputs (Internal Control)</i>	
MAXIMUM VOLTAGE	1.5 VRMS
OUTPUT IMPEDANCE	600 OHMS BALANCED
FREQUENCY RESPONSE	300HZ-20KHZ
<i>Logic Performance</i>	
<i>Logic Inputs</i>	
"A" INPUT	5V TTL LOGIC
MATRIX (B) CHANNEL INPUT	5V TTL LOGIC
MATRIX (C) CHANNEL INPUT	5V TTL LOGIC
"C" CHANNEL ALL SELECT	5V TTL LOGIC
RECOMMENDED ACTIVATING DEVICES:	DRY CONTACT RELAY / OPEN COLLECTOR OUTPUT/OPEN DRAIN OUTPUT
<i>Logic Outputs</i>	
1 CCU DISABLE OUTPUT "C"	

VOX Logic Outputs	
8 VOX ACTIVATED LOGIC OUTPUTS	
8 VOX SENSITIVITY CONTROL POTS	
Displays	
POWER ON LED	A OR C DEPENDING ON VOX BOARD INSTALLATION
8 VOX TRIGGERED LEDES	
Mechanical	
BODY CONSTRUCTION	16 GAUGE STEEL
FACE PLATE CONSTRUCTION	10 GAUGE STEEL
DIMENSIONS	419 X 313 X 123 MM (16.5 X 12.3 X 4.9 IN.)
FACEPLATE DIMENSIONS	483 X 133.3MM (19 X 5.3 IN.)
NET WEIGHT	6.4 KG (14 LBS.)
MOUNTING	EIA RACK MOUNT - THREE RACK UNITS (3U)
CONNECTION AUDIO AND LOGIC	PHOENIX MINI-COMBICON LOGIX OB-9
PAINT	EPOXY POWDER COAT

Warranty

Guardian Telecom warrants your product to be free of defects in material and workmanship for a period of one year. Guardian Telecom will repair or replace any defective unit that is under warranty free of charge.

This warranty is null and void if any non-authorized modifications have been made to this product, or if it has been subjected to misuse, neglect, or accident. This warranty covers bench repairs only; such repairs must be made at Guardian Telecom or an authorized service depot. Guardian Telecom is not responsible for costs incurred for on-site service calls, freight, or brokerage.

A return authorization must be obtained prior to warranty claims or repairs.

Disclaimer

The products covered by this manual are designed for use in Industrial Environments and/or Hazardous Locations. Due to the range of possible applications for these instruments the manufacturer will not be responsible for damages or losses of any kind suffered as a result of the use of this product, including consequential damages.

Warning

This device has no user serviceable internal components; the only maintenance possible is the replacement of the fuse – which is available from the back panel.

Service Telephone Number

1-800-363-8010

Guardian Telecom provides a customer service telephone number which is toll-free within North America. If you need assistance when installing or operating this product, please call the toll-free telephone number between regular business hours (8:00AM-5:00PM), Mountain Standard Time. If you are calling outside of regular business hours, please leave a detailed message, and a member of Guardian Telecom's Service Department will return your call as soon as possible. If your product requires service, Guardian personnel will supply you with an RMA (return materials authorization) number over the telephone or through our web site product return page. This number must be included with your return address and the name of the person to contact.

**Guardian Telecom Inc.
7552 - 10th Street N.E.
Calgary, Alberta, Canada T2E 8W1
Toll-free 1-800-363-8010
Ph. (403) 258-3100
Fax. (403) 253-4967
www.guardiantelecom.com**

Feedback

Guardian Telecom continually strives to make reliable, durable, and easy to use products. If you, as an installer or user of our equipment, have any suggestions for improvements to this or any of our products or documents, including this manual, we would appreciate hearing from you.

Guardian Product Return
<p>Guardian products have been quality tested and are in full working order when shipped from the factory, given the rugged nature of these products shipping is not expected to damage a unit. In the unlikely event of a malfunction, Guardian follows the three step procedure below.</p>
<p><i>Step I - On-Site Correction</i></p>
<ul style="list-style-type: none"> • The most common source of difficulties with a new product is improper installation in one of two ways: incorrect wiring connections or connection to an incorrect power source. • Product wiring needs to be properly connected to the on-site wiring. Correct wiring instructions are shown in the user manual included with the product.
<p><i>Step II - Return Materials Authorization (RMA)</i></p>
<ul style="list-style-type: none"> • When a product has been installed following user manual instructions, and the unit fails to operate, the user must contact Guardian Telecom to obtain authorization to return the product. This can be done by completing a RMA form online at www.guardiantelecom.com, or by calling the service telephone number given in this manual. • After providing information on the product, the owner and the nature of the problem, Guardian will issue a RMA number, to be shown on documentation returned with the product. • In addition to the RMA number, shipping documents should include name, address and telephone number of the owner along with contact information for the person responsible for the repair and/or the user who identified the malfunction. • (Where a product is being returned for repair from outside of Canada, customs documentation must show the product's serial number, date of export [date of purchase], and a notation that the equipment is: ("Canadian goods returning").
<p><i>Step III - Factory Authorized Service</i></p>
<ul style="list-style-type: none"> • Once received, each product is carefully inspected and tested. If the product is under warranty, repairs are completed and the product returned to the owner, generally within five working days of receipt by the factory. • A product that has been subjected to misuse, neglect or accident or is beyond the warranty period will be evaluated. The service department will provide the owner's representative with a repair cost estimate. Once approved, repairs are completed and the product returned, generally within five working days.



Guardian Telecom Inc.
7552 10th Street NE
Calgary, Alberta, Canada T2E 8W1
Toll-free 1-800-363-8010
Ph. (403) 258-3100
Fax. (403) 253-4967
www.guardiantelecom.com
E-mail: sales@guardiantelecom.com
(Click to open message box)

Industrial Communications Worldwide