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**BavSonic™ Single Lane
FXS Telephone Audio Interface
with BEAM
Installation and Service Manual**

BavSonic™ Universal Telephone Audio

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Important Safety Instructions

1. READ THESE INSTRUCTIONS
2. KEEP THESE INSTRUCTIONS
3. HEED ALL WARNINGS
4. FOLLOW ALL INSTRUCTIONS
5. DO NOT USE THIS APPARATUS NEAR WATER
6. CLEAN ONLY WITH A DRY CLOTH
7. DO NOT BLOCK ANY VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS
8. DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT
9. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES AND THE POINT WHERE THEY EXIT THE APPARATUS
10. ONLY USE ATTACHMENTS/ ACCESSORIES SPECIFIED BY THE MANUFACTURER
11. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY, SUCH AS POWER-SUPPLY CORD OR PLUG IS DAMAGED, LIQUID HAS BEEN SPILLED OR OBJECTS FALLEN INTO THE APPARATUS, THE APPARATUS HAS BEEN EXPOSED TO RAIN OR MOISTURE, DOES NOT OPERATE NORMALLY OR HAS BEEN DROPPED.

Additional Safety Instructions

WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRONIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

WARNING – AN APPARATUS WITH CLASS I CONSTRUCTION SHALL BE CONNECTED TO A MAINS SOCKET OUTLET WITH A PROTECTIVE CONNECTION.

THE MAINS PLUG IS USED AS A DISCONNECT DEVICE AND SHALL STAY READILY OPERABLE.

APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES SHALL BE PLACED ON THE APPRATUS.

BavSonic™ Universal Telephone Audio with BEAM Features

The BavSonic™ Universal telephone intercom interface module connects the intercom system of a remote drive-thru lane to the telephone system. This is a full duplex audio system for maximum intelligibility. The incoming and outgoing audio levels are adjustable in the interface by qualified service technicians.

The customers at the remote-drive-thru location can call the inside by depressing the CALL BUTTON. This initiates a call to the telephones that are programmed to receive them. The employees can access the remote lane from the telephones that are given access. If a customer presses the call button and the call is not answered in approximately one minute the call is terminated for 10 seconds then another attempt is made. This will happen five times at which point the interface will reset itself awaiting the next activation of the call button.

Telephone Interface Power and Site Requirements

Power is supplied to the interface through an 110V power cord and is protected by a non replaceable 1 amp fuse. The customer will supply the 110V power outlet as well as the connections from the telephone system to an area under the counter adjacent to the drive-thru window.

This system requires a standard POTS station port for each lane, and the phone system to be programmed to automatically “ring down” to stations in the pharmacy when the interface goes off hook. The telephone system hang up signal is expected to be LCFO (loop current feed open) for 750mS.

These items should be in place, and the phone system programmed, before installing the BavSonic™ Universal Telephone Interface.

This system works well with analog ports on VoIP phone systems.

Intercom Connections

There is an intercom board (base audio board) located at the drive-thru lane. Note that the base audio board must be calibrated for BEAM use. There will be a label on the base audio board specifying beam calibration. This board is connected to the telephone interface via standard CAT 5 wiring. Remote lanes have a Microfit connector for improved weather resistance. First lanes use a RJ45 plug which is terminated 568B. Each remote intercom board has a LED, which indicates that it is receiving power. The audio level adjustments on the base audio board are sealed after they are calibrated. The audio levels are adjusted in the interface.

Remote lane audio component connections are as follows: Plug J1 is for the speaker connection. The connector is a 3-position with positions 1 & 3 being the speaker. For the outside board, plug J2 is an 8-position Microfit, for the inside board, plug J2 is an 8-position RJ45. Plug J3 is for the call button connections. The connector is a 4-position with positions 2 & 3 being the button. Plug J4 is for the microphone connection. This connector is a 2-position.

Please see page 8 for an overall wiring diagram of the intercom section.

It is recommended to install the RJ45 connector directly onto the end of the CAT5 cable for the drive-thru lane. For situations where tooling is not available to attach the RJ45 to the end of the CAT5 cable for the window lane, we have included a wiring pigtail, (P/N 22066011, see page 9) that can be spliced onto the cable with the crimp connectors provided.

Installation with KSU type Telephone System

The Universal Telephone Audio Interface can be used in conjunction with most KSU type telephone systems. The following information is generic for most systems. If additional information is needed please consult the factory.

The telephone connections on the Universal Telephone Audio Interface are standard RJ45 jacks. There is an RJ45 patch cord with the interface that should be used to connect the Universal Telephone Audio Interface to the RJ45 connection of the telephone system.

The station port should be configured for loop start with LCFO (loop current feed open for 750mS) hang up signal.

Troubleshooting

The FXS telephone audio interface uses plain old telephone system (POTS) analog telephone technology to connect to an analog (CO) output. The CO line output needs to be a standard two-wire tip ring connection with loop start and LCFO (loop current feed open for 750mS) hang up signal.

There are three states that telephone line can be in.

- 1) With the interface on hook, the voltage on the telephone line should be approximately 24Vdc. Note that neither LED should be illuminated.
- 2) With the interface off hook, the voltage should be approximately 6.5Vdc on the telephone line. Note that the GREEN LED labeled OFF HOOK will be illuminated.
- 3) With interface on hook and 70Vac at 20 Hz ringing voltage on the telephone line the YELLOW LED located on the phone system jack labeled RINGING will be illuminated. Note that the interface automatically answers by going off hook after detecting 6 ringing cycles (300mS).

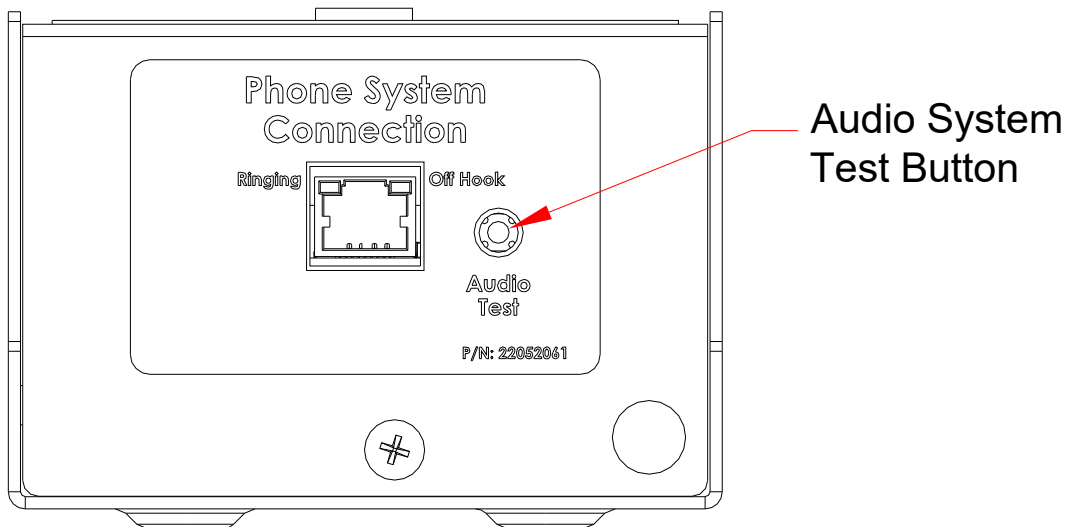
If any of these voltages are not present please consult the factory for assistance.

Warning

A slow flashing RED LED on the top of the interface, near the Intercom Connection port, indicates that the system is operating normally. If this LED is flashing fast it is an indication of a BEAM failure. Please consult the factory if the LED is flashing fast.

Self Test Procedure

This interface has a built in self test system. The interface does not need to be connected to the telephone system for testing. The customer audio components do need to be connected. Begin by pressing the Audio System Test Button shown in the following illustration. The green off hook LED will come on. Go to the outside and press the call button once. The outside microphone will then be connected to the outside speaker at reduced volume. If the call button is not pressed within 5 minutes of activating the test button the interface will reset itself. At the completion of testing the call button must be pressed a second time to turn the test mode off. Alternately the interface can be reset from the test mode inside by unplugging and plugging the AC line.



Adjusting the Audio Levels

This interface has an integral BEAM (Bavis Enhanced Audio Module) module which is a very powerful voice processing system. This system has both echo cancellation and background noise suppression.

There are adjustments for both incoming and outgoing audio levels inside the interface. A small screwdriver is required to make this adjustment. The adjusters are $\frac{3}{4}$ turn.

The adjustment procedure is to have someone in a running vehicle in the drive-thru talking to the technician on the telephone. With the outgoing audio adjusted down, in small increments, turn the incoming audio level down. Normally there will not be any appreciable reduction in the sound level at the handset coming from the drive-thru lane. The AGC (automatic gain system) of the telephone system is automatically reducing the signal to an acceptable level. When the incoming sound level does decrease, increase the level slightly until the sound comes back up to the normal level. This setting will give the echo cancellation system maximum range. Then adjust the outgoing level for usable audio, not excessively loud. Excessive outgoing audio levels may cause distortion in the incoming audio.

In the early version of the SL FXS Telephone Audio Interface with BEAM, there are two configurations available for the BEAM system. Configuration selection is via a pin header and jumper located near the 6 position Microfit programming connector on the BEAM board. The standard configuration (0) is selected by having the shorting jumper installed on only one pin. Please consult with the factory for optional configuration (1) which is selected by having the shorting jumper installed on both pins.

In the current version of the interface there are four (4) configurations available. Selecting the configuration is performed by moving the jumpers on the headers marked as JP1 & JP2, (See the Current BEAM Configuration Jumper illustration). To determine which configuration is currently programmed in, without opening the enclosure, watch the flashes of the LED near the Intercom Connection port.

Configuration 1: One flash then pause. Each jumper is on only one pin of the JP1 and JP2 headers.

Bypass – Only used for Factory calibration. No alteration of the audio signal.

Configuration 2: Two flashes then pause. JP1 jumper is on both pins and JP2 jumper is on only one pin.

Normal – Echo Cancellation & Noise reduction.

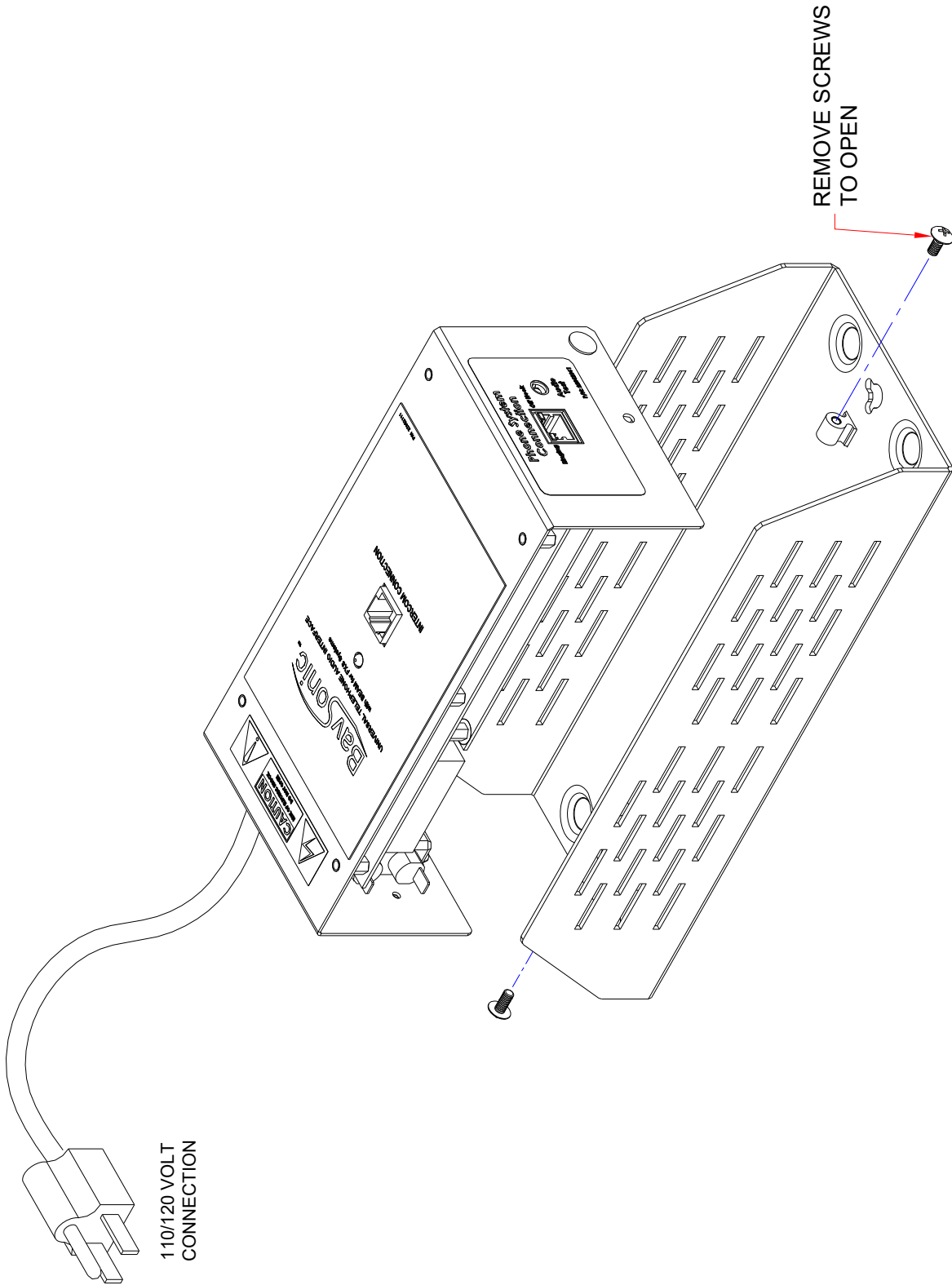
Configuration 3: Three flashes then pause. JP1 jumper is on only one pin and JP2 jumper is on both pins.

Extra Magic – Echo Cancellation, Noise reduction, & Speech boost.

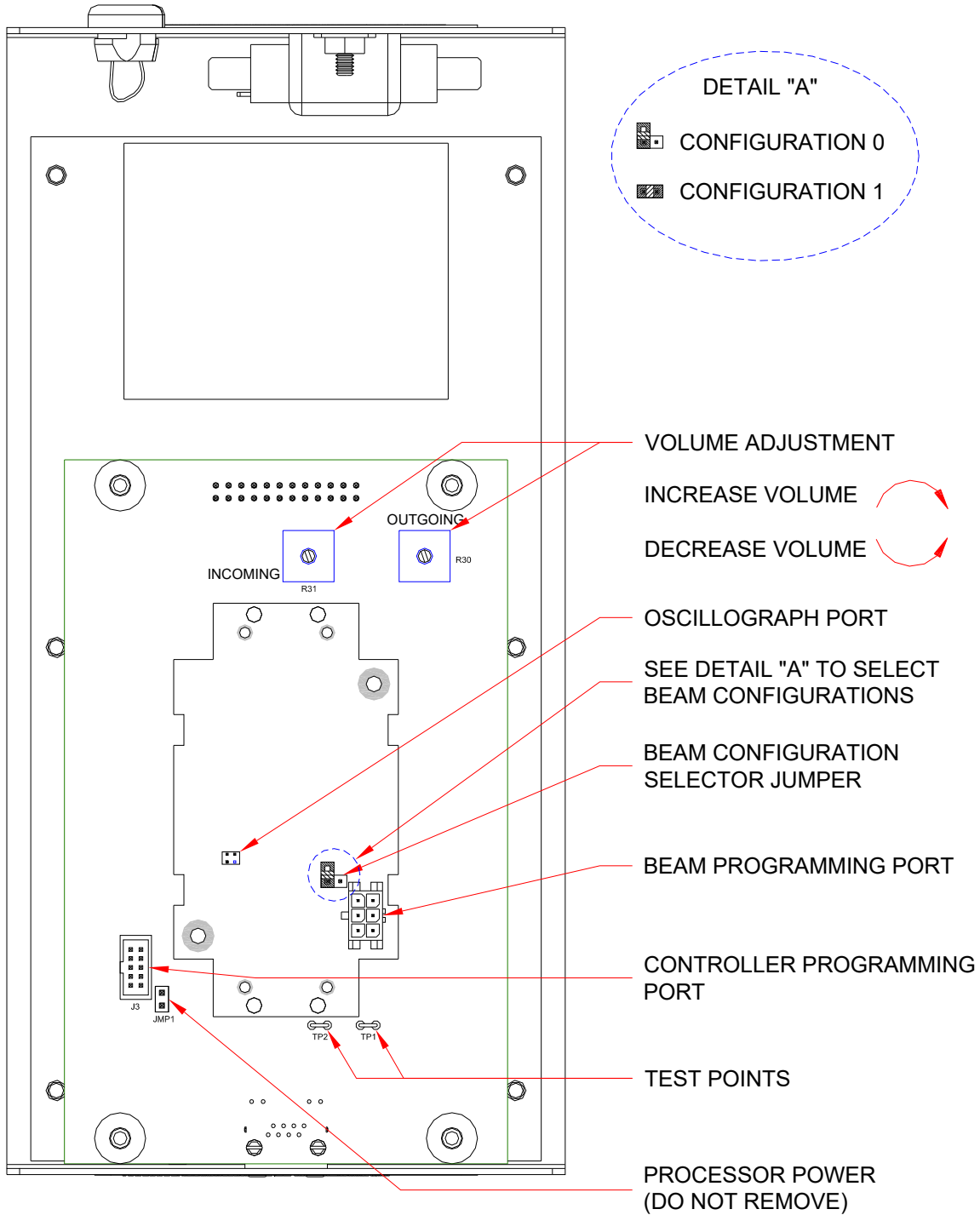
Configuration 4: Four flashes and pause. JP1 jumper is on both pins and JP2 jumper is on both pins.

Reduced Outgoing Audio – There is Echo cancellation and noise reduction with the outgoing audio volume level reduced.

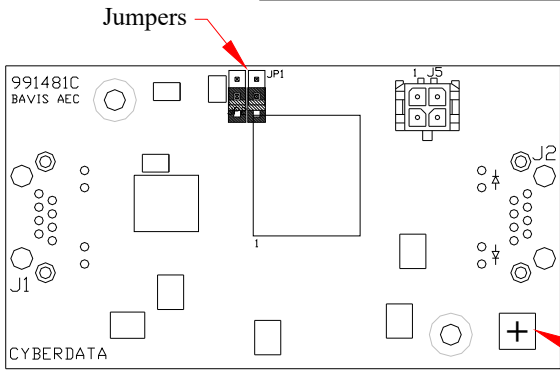
Opening the Interface Enclosure



Early Version Configuration Jumper



Current BEAM Configuration Jumper



Configuration 1

One flash then pause.

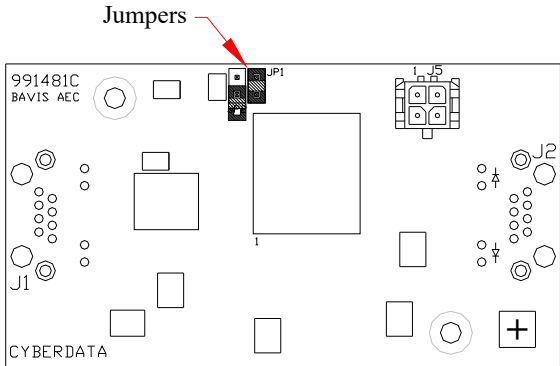
With Plus (+) Sign Sticker:

Bypass - only used for factory calibration. No Magic.

With Minus (-) Sign Sticker:

BavSonic 3/2 Mode

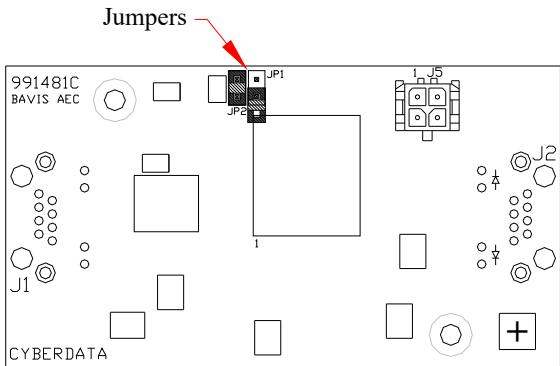
+ or - Sticker



Configuration 2

Two flashes then pause.

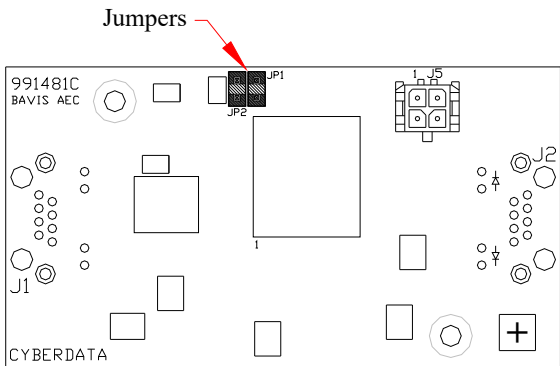
Normal - Echo cancellation & noise reduction.



Configuration 3

Three flashes then pause.

Extra Magic - Echo cancellation, noise reduction & speech boost.



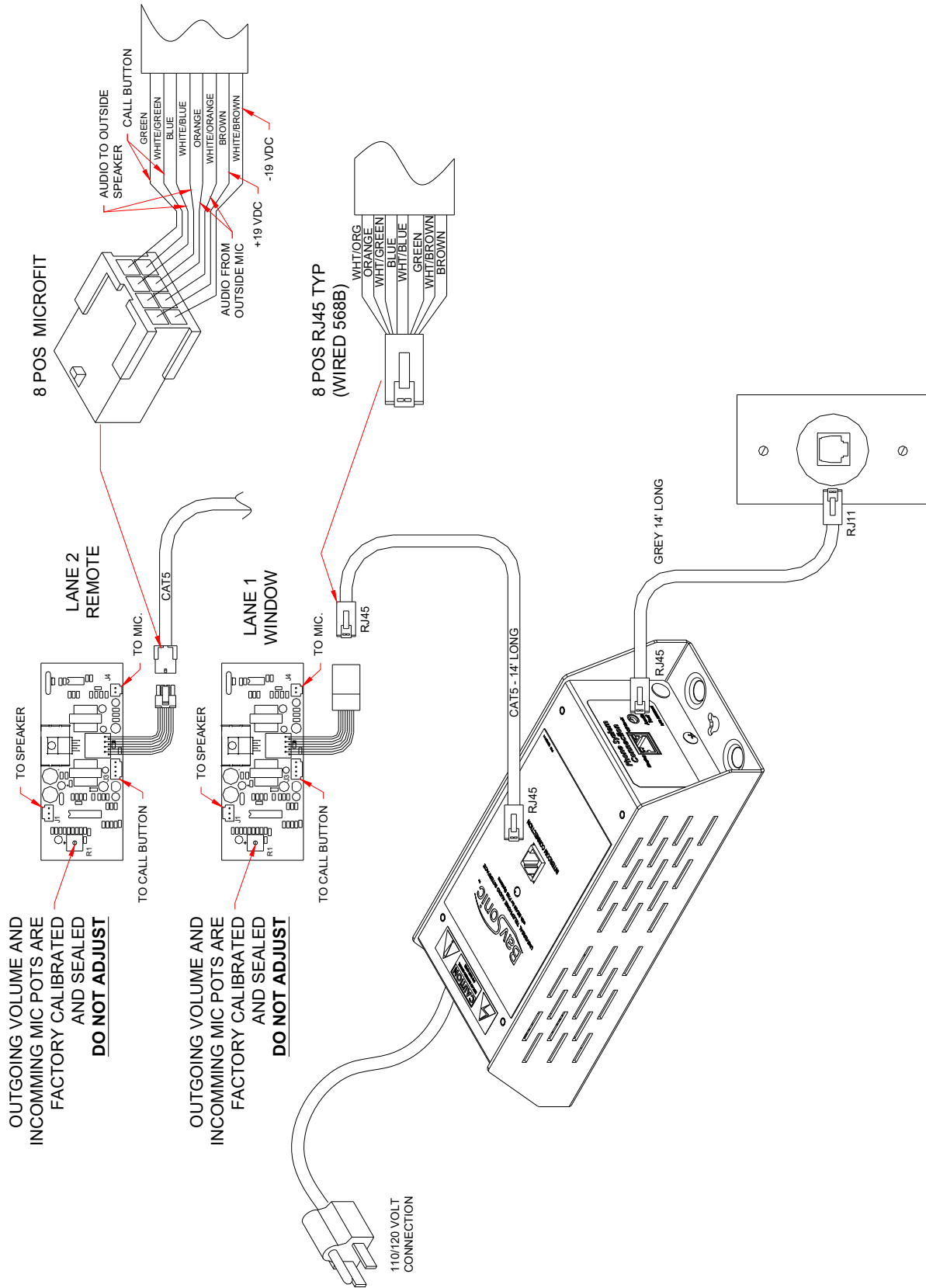
Configuration 4

Four flashes then pause.

Reduced Outgoing Audio - Echo cancellation, noise reduction & low outgoing audio.

If the audio cannot be adjusted satisfactorily please consult with the factory.

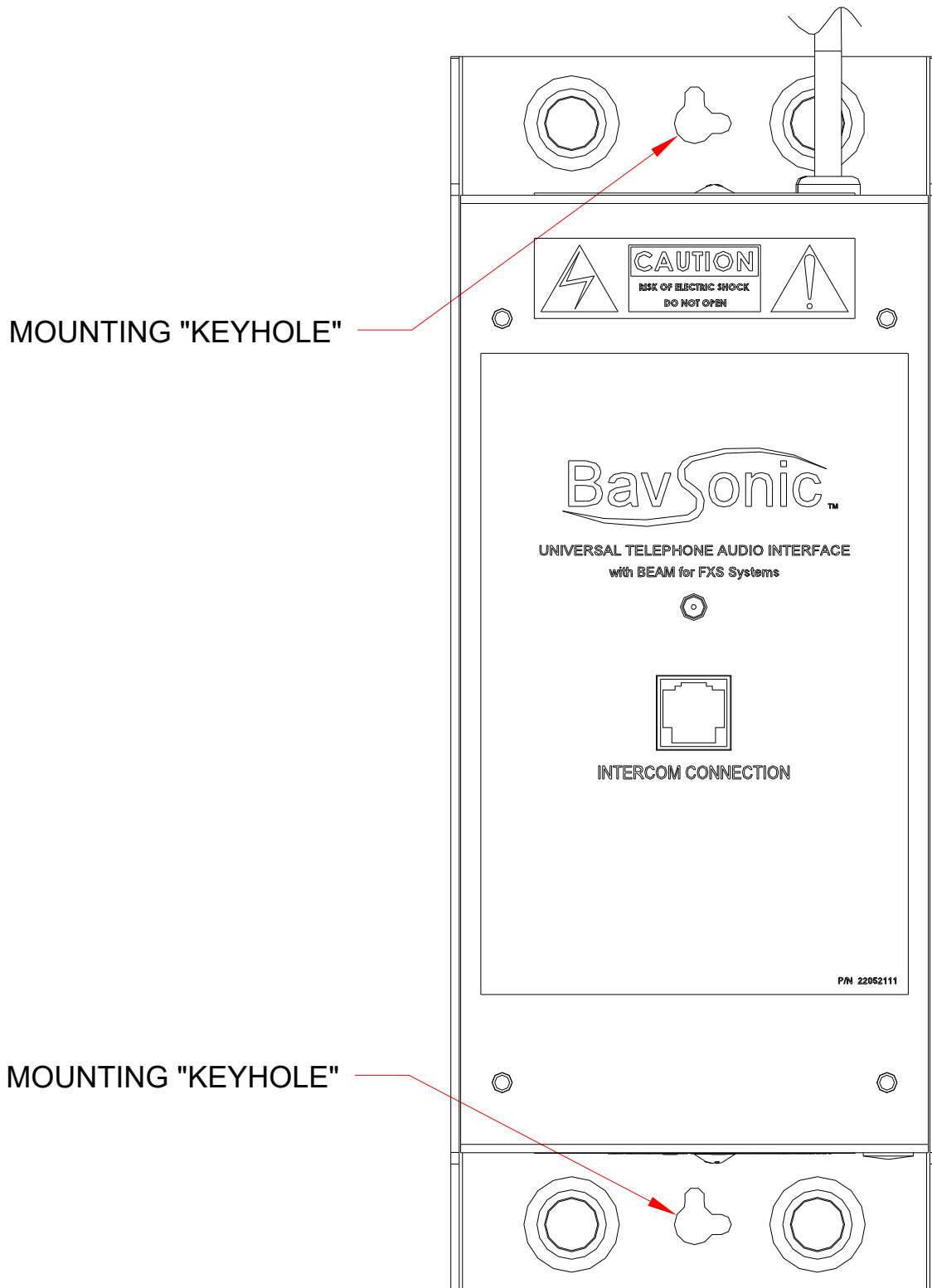
Intercom Wiring Diagram



Revised 06/02/20

Mounting the Interface

There are two “Keyhole” slots in the base of the assembly’s housing to mount the interface.



Installation and Service Tool List for Audio

1/8" And 3/8" Flathead Screwdrivers
#0 And #2 Phillips Screwdrivers
1/16" And 3/32" Allen Wrenches
1/2" Open-End Wrench
1/4", 5/16", 11/32", 3/8", And 1/2" Nut Drivers
Wire Cutters
Wire Strippers
Wire Crimpers
RJ45 Connector Crimpers & Connectors
Volt Meter
Electric Drill
Drill Bits
Level
7/8" Unibit
Fish Tape

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