201 Grandin Road
Maineville, Ohio 45039
(513) 677-0500

BavSonic™ Single Lane Universal Telephone Audio with BEAM Installation and Service Manual

Revised: 08/16/2022
PN: 00686061

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 PARTICULARY 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.

Telephone system requires a standard loop start CO line for each lane, and the phone system to be programed to connect to the interface. This also is the customer's responsibility.

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

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

Intercom Connections

<u>Note:</u> If there is a separate Incoming Volume Control assembly installed onto the old system, that Volume Control assembly must be removed.

There is an intercom board (base audio board) located at the drive-thru lane. Note that the base audio 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. Note that positions 1 & 4 are 19vdc power with position 4 being positive. Plug J4 is for the microphone connection. This connector is a 2-position.

Please see page 10 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 *remote* lane*(s)*, we have included a Cat5 Audio Connection Kit, (P/N *22316991*) that can be *added* onto the cable *for plug-in connection capability*.

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 CO port should be programmed for loop start. If there is a programmable delay between off hook and connection of the audio path it should be adjusted to the minimum.

Revised 07/26/2019

Troubleshooting

The Universal Telephone Audio Interface uses a Subscriber Line Interface Circuit (SLIC) to provide a Central Office (CO) line output. The CO line output is a standard two-wire tip ring connection with loop start. This CO line output can be connected to a telecom test set, standard telephone or Key Service Unit (KSU) for testing.

There are three states that CO line output can be in. Note that these are nominal voltages taken from the center two pins of the "Telephone" connection.

1) A slow flashing RED LED on the top of the interface 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.
2) With the CO line connected and the receiver off hook, the voltage should be approximately 6.5Vdc. Note that a separate YELLOW LED labeled OFF HOOK is provided to monitor this condition. Without the CO line connected, shorting pins 2 & 3 together will cause the OFF HOOK LED to illuminate. (Caution if the intercom is connected the audio will most likely squeal due to feedback.)
3) With or without the CO line connected, the receiver on hook and the *GREEN* LED located on the phone system jack labeled RINGING illuminated, the voltage should be approximately 55Vac at 20 Hz.

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.

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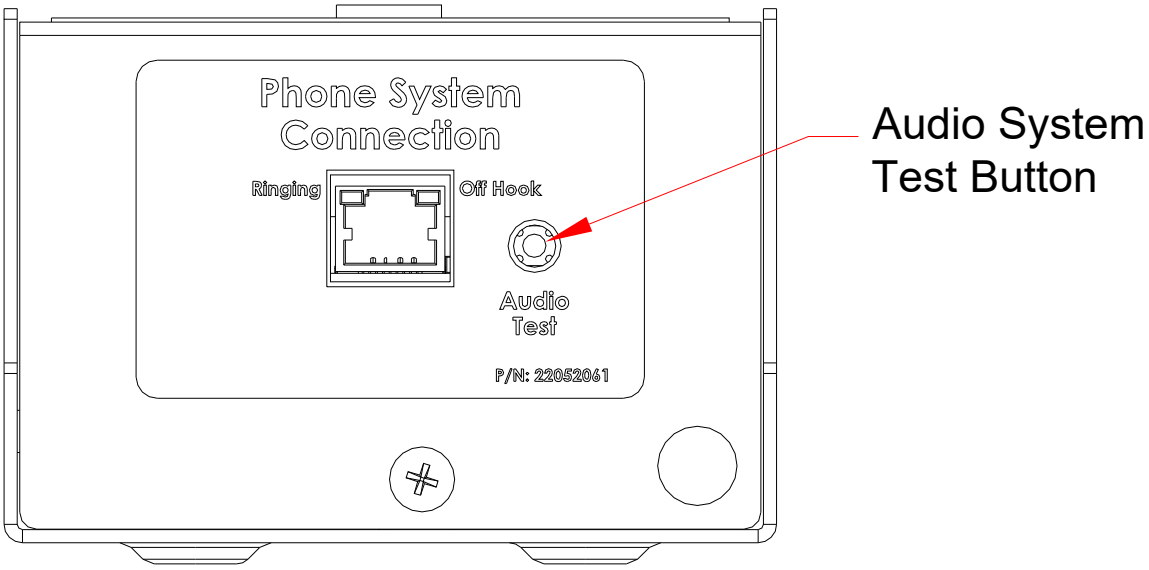
System Testing

The single lane Universal Telephone Audio Interface has a built-in test feature. The test feature works with the system connected to a telephone or not. Pressing the audio test activates the test mode. Pressing the call button causes the outside microphone to be connected to the outside speaker at half volume. This mode stays active for 5 minutes or until the telephone system goes off hook.

The system can also be tested, or used, by plugging an Analog Telephone into the center of the Phone System Connection port. The system will then be a Stand Alone intercom system.



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 included, to make this adjustment. The adjustment pots are ¾ 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 *first* version of the SL FXO 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 *second* 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 *Second Version* 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.

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Setting the Configuration in the Current Version

The current version of the interface can be identified by either a "V3" sticker on the green label, or by a black bar/stripe across the green label near its bottom. Also, the jumpers for JP1 & JP2 are missing.

In the current version of the interface there are four (4) configurations available. Selecting the configuration is performed by pressing and holding in the "Audio System Test" button for more than two seconds, (see illustration on page 5). Keep the test button held in and the software will cycle through the different configurations. To determine which configuration is being cycled through, watch the flashes of the LED near the Intercom Connection port on the front face of the cover. Once the desired configuration flashes, release the Audio Test button.

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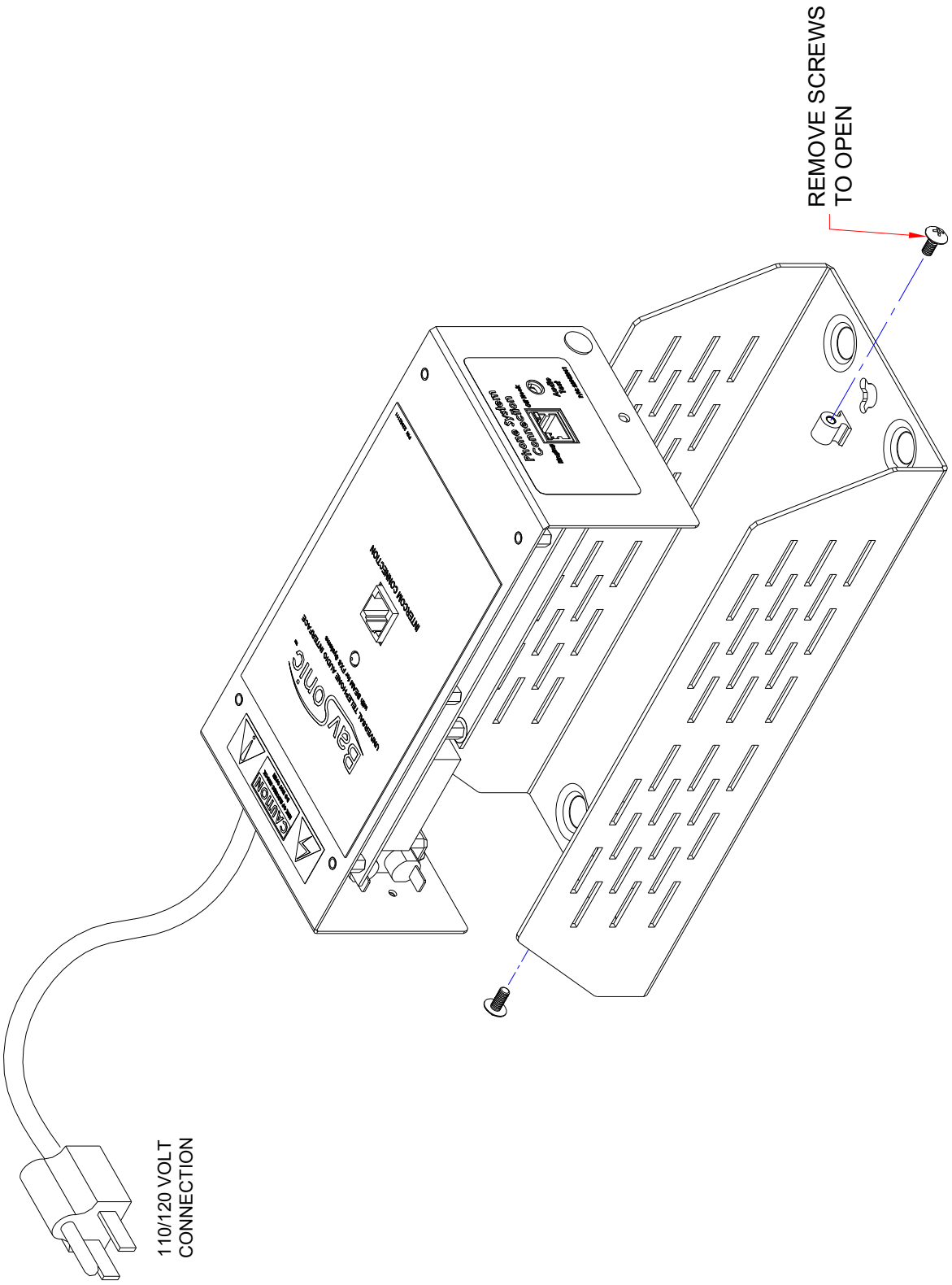
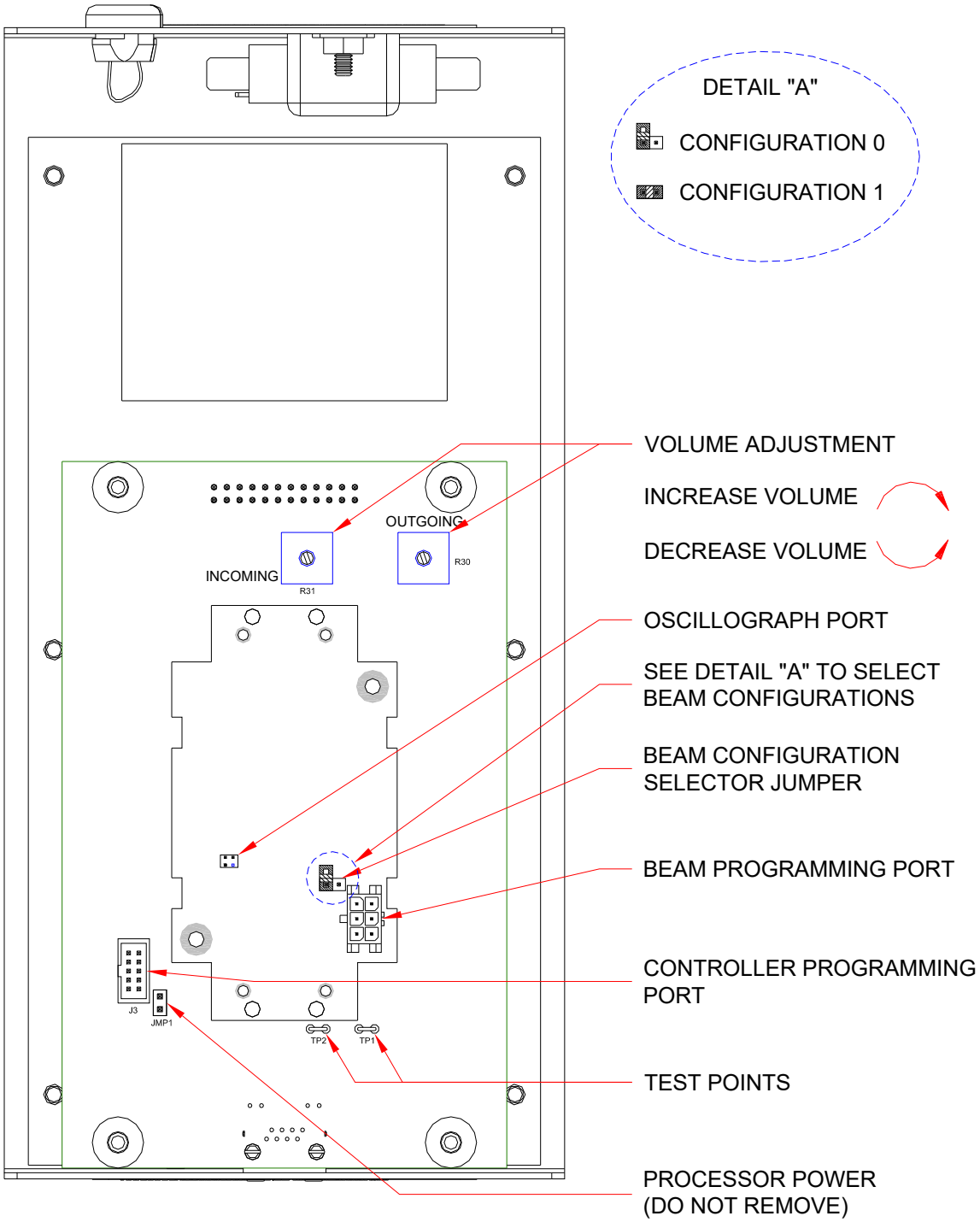
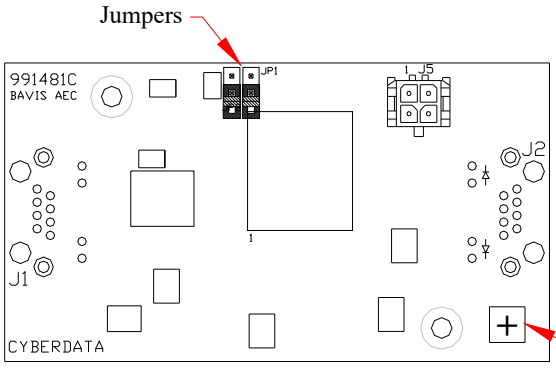
Opening the Interface Enclosure



First Version Configuration Jumper



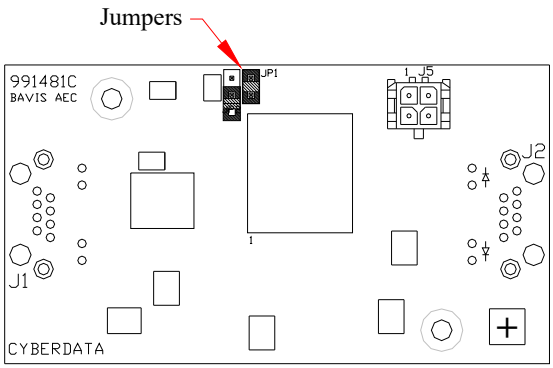
Second Version BEAM Configuration Jumper



Configuration 1
One flash then pause.

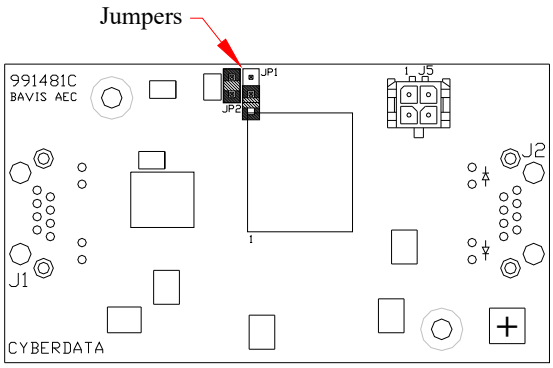
With Plus (+) Sign Sticker:
Bypass - only used for factory calibration. No Magic.

With Minus (-) Sign Sticker:
BavSonic 3/2 Mode



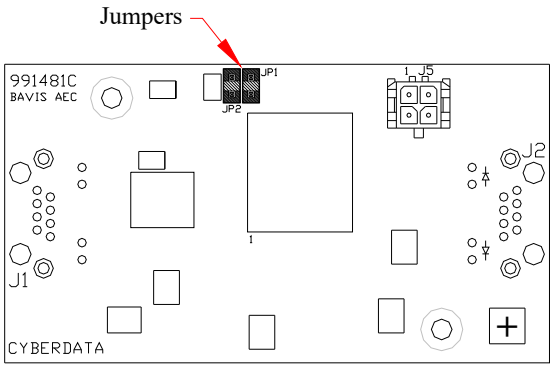
Configuration 2
Two flashes then pause.

Normal - Echo cancellation & noise reduction.



Configuration 3
Three flashes then pause.

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

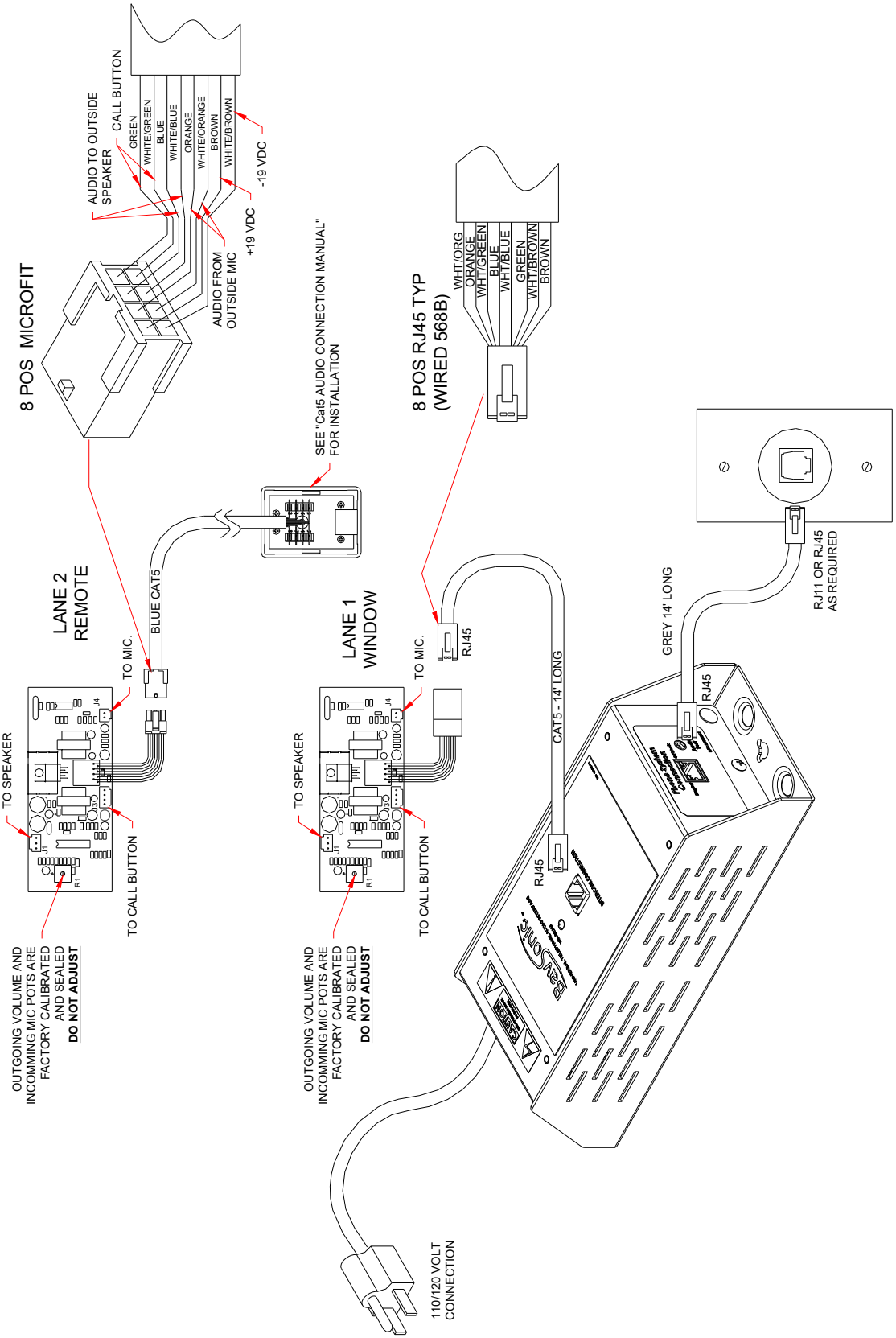


Configuration 4
Four flashes then pause.

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



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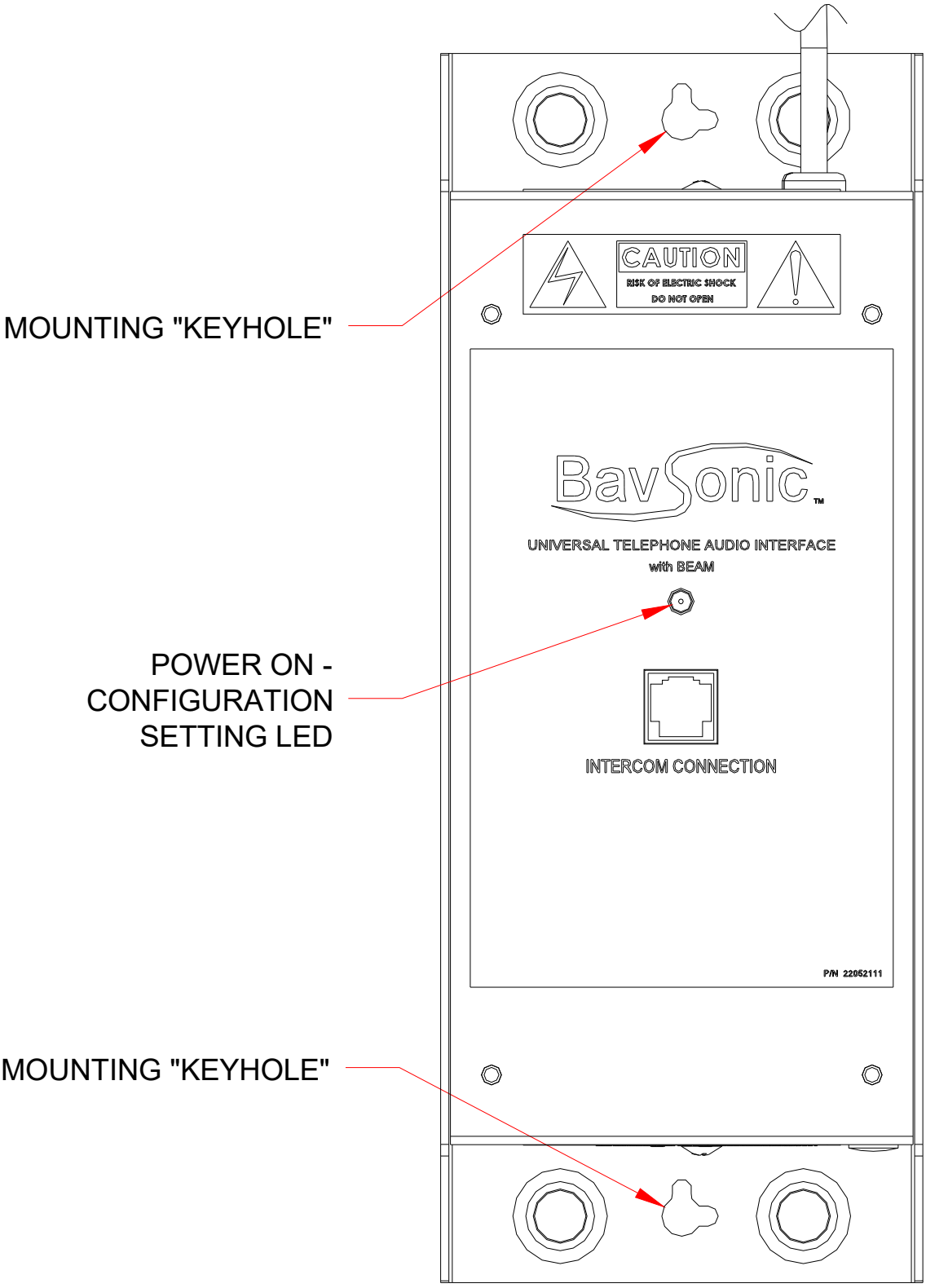
Mounting the Interface

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
Loctite

Revised

ECN	Date
17483	07/11/2016
18692	09/08/2017
19191	04/03/2018
20432	07/25/2019
20838	06/02/2020
22738	08/16/2022