

Alpha

Series

Installation Manual

ALPHA SERIES...Single Channel Communication

INTRODUCTION

An Alpha Series wired audio system consists of a single Master Station with one remote speaker and an optional monitor.

The system provides two-way communication with a single remote location and it may also monitor communication at a second remote station.

HALF DUPLEX OPERATION

In an Alpha Series system, audio is only possible in one direction at a time, either inbound from a Remote Station or outbound from the Master Station.

POWER SUPPLY

An Alpha Series system is powered by a 20 volt AC, 20VA UL Class 2 transformer.

WIRING

Connections to the Master Station are made at screw type terminals mounted directly on the Amp and Logic circuit board and to screw terminals behind the remote speaker grille.

PRESENCE DETECTION

The Alpha Series permits several types of presence detection devices for either vehicles or pedestrians at the remote location.

For example:

A *Momentary* Presence Detection

- ! Air Hose Pressure Switch
- ! Press For Service Switch (PFS)
- ! Loop Vehicle Detector Set for Momentary

A *Constant* Presence Detection

- ! Buried Inductive Loop Detector
- ! Ultra Sonic Detector (USD)

ANNUNCIATION

A customer's arrival at the remote location is announced by a lighted LED at the Master Station and a repetitive beep tone. The beep tone will be turned off when the "TALK" switch is depressed.

AUDIO ON AND OFF

The inbound audio can be programmed to be turned on automatically when a service request is made or manually when the "TALK" switch is pressed.

The system can be returned to *Standby* automatically when the vehicle moves away from the vehicle detector or manually when the "OFF" switch is pressed.

REMOTE STATION OPTIONS

Remote wired stations are available in a variety of durable assemblies for indoor or outdoor use. Some of these stations are ruggedized and weatherized to operate under the most adverse conditions.

REMOTE STATION MOUNTING OPTIONS

- ! Recessed in a wall, ceiling or panel
- ! On the surface of a wall, ceiling or panel
- ! Over a recessed junction box or access hole
- ! Behind a speaker cutout hole or grille enclosure
- ! On a wall or column outdoors
- ! On a counter post or under a pass-through valance

MASTER STATION MOUNTINGS OPTIONS

- ! Surface Mount
- ! Counter post, ceiling or valance suspension
- ! Table or Counter Top

ALPHA Series Options

MONITOR SPEAKER STATION - AR06 & AR07

A remote monitor speaker may be added to the system that will monitor both *inbound* and *outbound* audio.

FOOTSWITCH - AA01

The footswitch provides a hands free means to actuate the "TALK" switch.

HEADSET - AA04

A connection is possible to allow a headset to be worn near the master station to gain mobility as well as enhance voice comprehension and reduce ambient noise levels.

HANDSET - AA05

A connection is possible to allow a handset to be used instead of or in addition to the master station to increase voice comprehension and to reduce ambient noise levels.

WIRELESS INTERCOM INTERFACE - AA02

An interface switch and junction assembly will allow an Alpha Series Master Station to use the remote speaker and presence alert of another intercom and thus becoming a wired back-up intercom at the flip of a switch.

OPERATING PROCEDURES

STANDBY

When power is applied to the master station, the Alpha Series system goes into a *Standby* or *Ready* condition. Whenever the audio is automatically or manually switched off, the system returns to the *Standby* mode.

REMOTE STATION AUDIO

Audio operation at all remote locations is hands free. The presence detection electronics and the master station touch panel controls the path and direction of all communications.

MASTER STATION AUDIO CONTROL

When the "TALK" switch is depressed, the operator can talk and the remote station listens. When the switch is released, the remote station can talk and the master station operator can listen.

PRESENCE ALERT PROGRAMMING

Jumper plugs on the Amp and Logic Board can be configured to determine how the system operates;

1. Inbound audio may be programmed to turn on automatically with a presence request or turned on manually only.
2. Audio may be programmed to turn off automatically or manually by the "OFF" switch.

MOMENTARY DETECTION

(Manual Inbound Audio and Repetitive Beep)

1. A vehicle depressing an air hose or a pedestrian activating a "PRESS FOR SERVICE" switch at the remote location generates a momentary signal.
2. The audio remains off and the audible tone beeps continually at the master station.

3. Pressing the "TALK" switch on the Master Station touch panel opens the audio channel and terminates the beep tone.
4. After the Communication is terminated, the master station operator must press the "OFF" switch to Terminate audio operation and switch off the LED.

CONSTANT PRESENCE ALERT

(Automatic Inbound Audio and Repetitive Beep)

1. When an Ultra-Sonic, Inductive Loop or other type of constant presence detection is used, a detection signal is generated by a vehicle arrival after a short delay.
2. A repetitive beep tone sounds at the master station and the inbound audio is turned on automatically.
3. Pressing the "TALK" switch on the Master Station touch panel activates outbound audio.
4. Releasing the "TALK" switch changes the audio from outbound to inbound.
5. The Audio and the LED are turned off automatically when the presence signal is terminated by the vehicle departure.

MANUAL OPERATION

1. Pressing the "TALK" switch on the Master Station activates outbound audio regardless of presence detection status.
2. Releasing the "TALK" switch changes the audio from outbound to inbound.
3. The Audio and the LED are turned off by pressing the "OFF" switch on the Master Station.

ALPHA MASTER STATION MOUNTINGS

WALL SURFACE-MOUNTINGS

Cable should be installed and housing assembled before mounting the station.

1. Using the Alpha Master Housing as a template mark and drill four holes in the mounting surface.
2. If using wall mounting toggles it is usually necessary to provide for 2" of clearance behind mounting the surface.
3. Use the necessary screws and mounting hardware for the mounting surface and conditions under which the Alpha Master will be mounted.

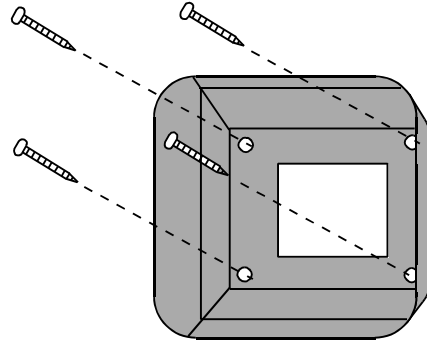


Figure 1

CEILING/COUNTER POST MOUNTING

The 12" #686, 24" #687, or the 36" #688 Mounting posts can be mounted either suspended down from a ceiling or valance or projecting up from a counter.

1. Mark the drill points in the mounting surface using the #941 MOUNTING FLANGE DRILL TEMPLATE.
2. At the marked points, drill a 1.25" diam. hole and four 5/32" diam. screw holes.
3. Feed the end of the Mounting Post and its cable through the 1.25" mounting hole.
4. Press the #941 Mounting Flange through the surface.
5. Align the four mounting holes in the #941 Mounting Flange with the screw holes in the mounting surface (Fig. 2A).
6. Fasten the #941 Mounting Flange in place with the four #10 x 1" type AB screws.
7. Adjust the Post to its maximum desired height.
8. To prevent the Post from being pulled out of the #941 Mounting Flange, tighten the shaft collar around the Post at the point next to the mounting surface.
9. Mount the master station to the #671 Mounting Plate with the four #6-32 x 1/4" pan head screws (Fig. 2B).
10. The cabling travels through the Post and curves into the rear of the master station housing.
11. Make certain there is enough slack in the cable to allow movement of the post and that the post will not damage the cable in its farthest extension.

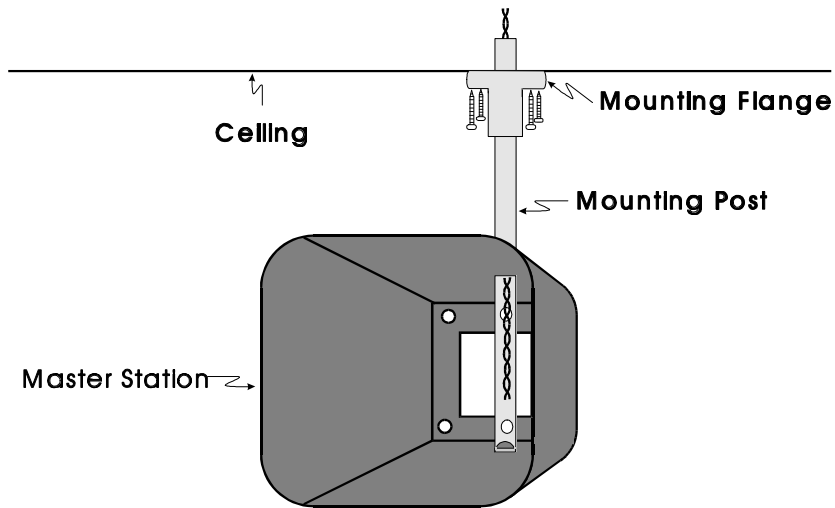


Figure 2A

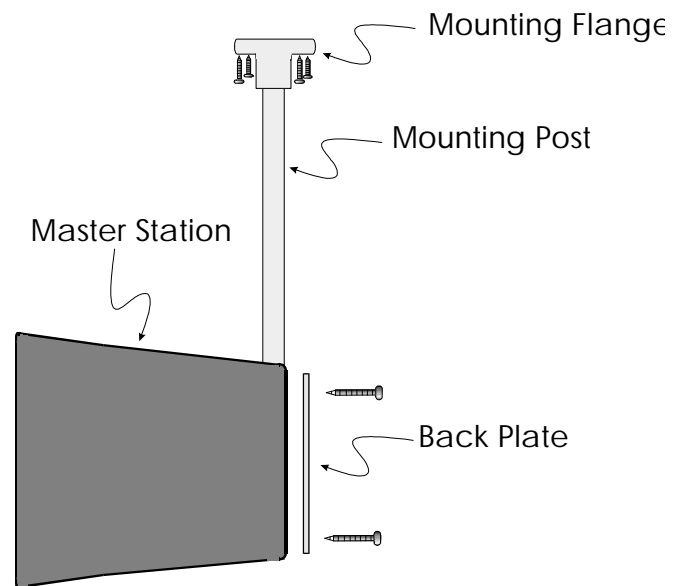


Figure 2B

MASTER STATION ASSEMBLY

AUDIO CABLE INSTALLATION AND TERMINATION

COMPONENT PARTS LIST

- 1 - #672 Grille & Control Assembly
- 1 - #902 Switch Panel
- 1 - #603 Amp & Logic PCB
- 1 - #670 Housing
- 1 - #259 20V Plug-In Dual Winding Xformer
- 1 - #691 10' Power Cable W/Fork Terminals

Marsh Products uses high performance audio cables. Therefore, if replacement of any cable is necessary, use only Marsh #320 (22awg 2-conductor), #340 (22awg 1-pair shielded), #360 (22awg 3-conductor shielded), or a direct equivalent.

CONDUIT

1. 3/4" or 1" rigid metal conduit is recommended for all indoor/outdoor cables.
2. No more than three (3) long-sweep bend elbows are permitted (solid 90 degree elbows are prohibited.)
3. Conduit must be uninterrupted by junction boxes.
4. The installing contractor should leave a 12awg wire or pull tap in the conduit.

WIRING CONSIDERATIONS

1. National Electrical Code 725.5 and 800.3 prohibits low voltage cable installation in any conduit, raceway, box or shaft which contains 115 volt wiring or any other Class 1 circuitry.
2. Splices, wire nuts, or similar connections are not permitted.

Note: *Contact the factory if audio cable lengths over 225 feet are required.*

CABLE CONNECTIONS

1. Place the end of a wire on top of the appropriate connector position (shield wire on center position) with the tip of the wire against the upper end of the terminal slot.
2. Center the "IDC" tool over the contact area so the wire is directed straight into the terminal.
3. Press the tool directly downward and perpendicular to the face of the connector until the wire is attached firmly onto the terminal contacts inside the "IDC" connector housing.
4. Examine the connection to be certain the wire is properly secured.

POWER TRANSFORMER

The Alpha Series is powered by the #259 Plug-In transformer which plugs into any standard 110 -120 VAC, 60 Hz outlet.

The #259 is a UL CLASS 2 type dual-winding transformer with thermal reset protection built in. However, any 16 volt AC, 20VA transformer may be used.

MOUNTING THE MASTER STATION HOUSING

In most cases, the Master Station should be mounted before the cables are installed. If it is not already mounted, refer to the mountings section before attaching cables.

INSTALLING CABLES

Note: *Alpha Series cables may be pulled from either direction. Screw-down terminals are used so that almost all cables can be installed from either end.*

1. Pull all cables either through the rear or bottom opening of the housing depending on the mounting being used.
2. Cut the cables to length after making certain that there are sufficient cable lengths to allow movement or access to equipment.
3. Remove approximately 1-1/4" of the cable jacket from each cable end.

INSTALLING THE POWER CABLE

1. Locate the #691 Power Cable and strip the insulation back 3/16" from both wires.
2. Insert the red wire into the far right position of the power connector and tighten the screw.
3. Insert the black wire into the center connector position and tighten the screw.

INSTALLING THE AUDIO CABLE

1. Locate the Audio Cable and strip the insulation back 3/16" from both wires.
2. Twist the audio common wire (black) and the shield wire together. (Solder them together for best results.)
3. Insert them both into the far left position of the audio connector and tighten the screw.
4. Insert the speaker signal wire (red) into the center connector position and tighten the screw.

INSTALLING A MONITOR SPEAKER CABLE (OPTIONAL)

1. Locate the Monitor Speaker Cable and strip the insulation back 3/16" from both wires.
2. If shielded cable is being used, either cut the shield wire off completely or twist the audio common wire (black) and the shield wire together. (Solder them together for best results.)
3. Insert the audio common into the ground position (far left) of the power connector and tighten the screw.

4. Insert the signal wire (red) into the monitor speaker (far right) audio connector position and tighten the screw.

INSTALLING FOOTSWITCH CABLE (OPTIONAL)

Before proceeding, see "Footswitch Package" section and "Prep the Footswitch Jack Kit and Cable".

1. Locate the #885 Footswitch Jack Cable and strip the insulation back 3/16" from both wires.
2. Insert the red wire into either position of the Foot Switch connector and tighten the screw.
3. Insert the black wire into the other connector position and tighten the screw.

INSTALLING PRESENCE DETECTION CABLE

There are two presence detection types; Momentary and Constant Presence. Momentary detection is either an "Air Hose" switch, a "Press For Service" switch, or a Marsh Products Loop Vehicle Detector set for momentary output. The constant presence type is either a "Loop Vehicle Detector", an "Ultra-Sonic Detector" or any other device which delivers a switch closure as long as the vehicle or pedestrian is present.

MOMENTARY TYPE

(Air Hose, "PFS switch or LVD)

1. Locate the Presence Alert Cable and remove the shield wire.
2. Strip the insulation back 3/16" from both remaining wires.
3. Insert the power common wire (red) into the far right position of the presence alert connector and tighten the screw.
4. Insert the vehicle detector signal wire (black) into the far left connector position and tighten the screw.

CONSTANT PRESENCE TYPE

(Loop Detector or "USD)

1. Locate the Presence Alert Cable and strip the insulation back 3/16" from both wires.
2. Insert the common wire (shield) into the "power common" (far right) position of the presence alert connector and tighten the screw.
3. Insert the power wire (red) into the "+15VDC out" (center) position of the presence alert connector and tighten the screw.

PROGRAMMING PRESENCE ALERT

By positioning the two shunts on the six-pin header (HD4), the audio can be "programmed" to turn on and off automatically upon arrival and departure of a vehicle.

- | | |
|----------------------------|------------|
| 1. Audio "OFF" - Automatic | pins 1 & 2 |
| Manual | pins 2 & 3 |
| 2. Audio "ON" - Automatic | pins 4 & 5 |
| Manual | pins 5 & 6 |

PROGRAMMING EXTERNAL MICROPHONE

Two additional programming headers (HD1 and HD3) are used when an external mic is required. Consult the factory for additional instructions.

ASSEMBLING THE MASTER STATION

1. Place the volume control shaft into the slot in the bottom of the housing.
2. Rock the grille assembly back until it rests against the mounting ledge inside the housing.
3. Test the beep tone and frequency and make any necessary adjustments prior to securing the grille to the housing.
4. Replace the four (4) black phillips head screws into the corners of the grille assembly.
5. Plug in the Transformer and the Master Station is ready for operation.

DISASSEMBLING THE MASTER STATION

1. Unplug the power transformer from the outlet.
2. Remove the four (4) phillips head screws from the corners of the grille assembly and set them aside.
3. Place thumb behind the volume control shaft on the bottom of the housing and fingers on top of the grille.
4. Pull the grille assembly straight forward and rock the top of the grille forward and downward when the circuit board components move clear of the housing.

REMOTE SPEAKER CONNECTIONS

AR01 - FLANGE & AR02 - FLUSH

Without PFS

1. Once cable has been pulled through conduit make sure there is enough left to reach menu board or post with slack to make speaker connections.
2. Strip back cable jacket approximately 1 1/2" and separate conductors. Strip conductors back 1/4" and tin (if BLK and Shield wire were tied together inside do same outside).
3. Connect red wire to the spkr/mic signal input of terminal block. Connect the black wire to the spkr/mic common position of terminal block. If shield and black wires are not connected together cut off shield at end of cable insulation. Do not connect to post or menu board (see figure 4 below).

With PFS

1. Follow above instructions for connecting speaker signal wires.
2. Run small jumper wire between spkr/mic common and power logic common positions of terminal block (see figure 4).
3. Connect shield to service request signal position of terminal block (when using a PFS switch the shield and black wires cannot be connected together inside). Inside connection of shield will be to Service Request/Vehicle Detection position of three position terminal block on inside unit (see figure 4).

WIRING DIAGRAM

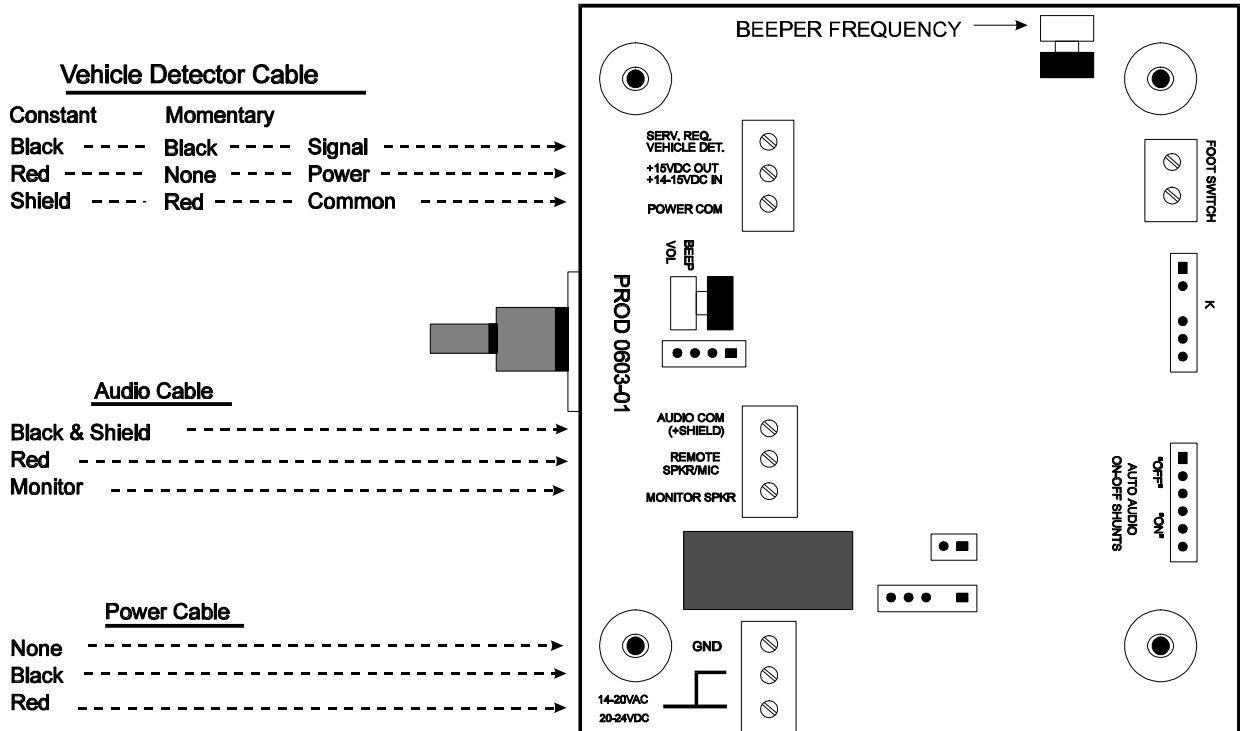


Figure 3

0601 Remote Speaker Board

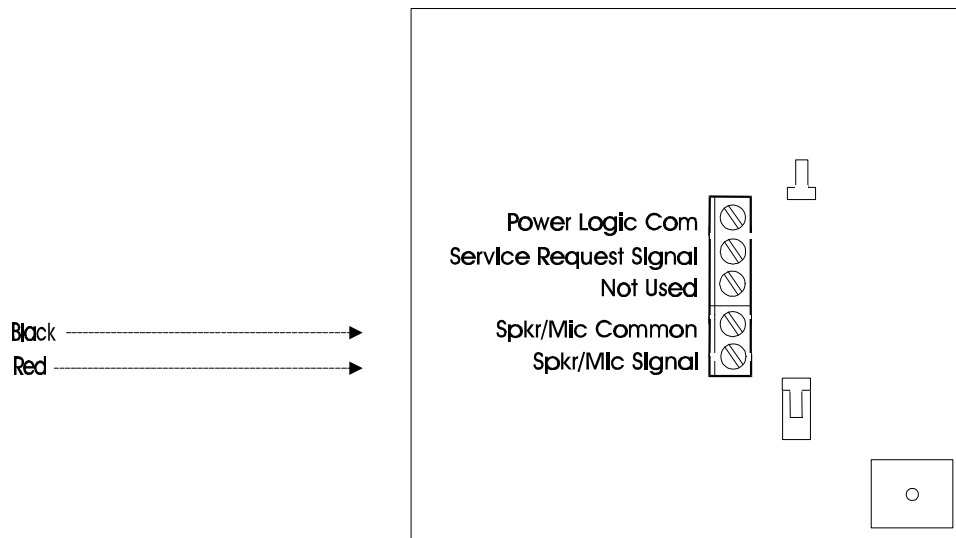


Figure 4

SYSTEM TEST

POWER AND INBOUND AUDIO

1. Press the "TALK" switch. The LED should light indicating there is power.
2. The LED will remain lit after the switch is released and there will be inbound audio coming from the remote speaker location.
3. When the "OFF" switch is pressed, the LED and the inbound audio should turn off.

OUTBOUND AUDIO

4. Check the audio with someone speaking in a normal voice three to four feet from the remote speaker. The operator should hear the voice loud and clear. The volume control on the bottom of the Master Station is the adjustment for inbound audio.
5. The volume control for outbound audio is located on the inside of the remote speaker housing. Test the outbound volume by speaking into the Master Station at arms length and from the footswitch position.
6. Perform the same test for every remote speaker location.

PRESENCE DETECTION

7. The LED (light) should turn on when a customer is present at the remote speaker location.
8. There should be an audible beep tone at the Master Station. The volume level and frequency of the tone can be increased or decreased by adjusting a small white volume control mounted on the circuit board inside the Master Station.
9. The remote stations speaker should be heard ("inbound" audio) after the "beep" tone.
10. If the system has a loop detector or USD, "Inbound" Audio and the LED should both turn off when the vehicle leaves. If the system has a momentary presence alert, such as hose or service switch, they should both remain on. This feature is programmable from inside the Master Station.

TROUBLESHOOTING GUIDE

This guide should help you keep your Alpha Series intercom system working. Replace defective parts as soon as possible. If you are unable to correct a problem call your service agent or Marsh Products, Inc.

Note: *If it has been determined that the System has been damaged by lightning, it is recommended that all cables and circuitry be replaced. Contact Marsh Products for a suggested parts replacement list. There is a possibility that the insurance company will reimburse the owner for replacement parts and labor.*

MASTER STATION DOES NOT WORK; LED DOESN'T LIGHT

1. No power to the Master Station.
 - a. Check the power cable and its' connections.
 - b. Check the circuit breaker and the 110V AC outlet.
 - c. Be sure the transformer is plugged in. Carefully check it for warmth. If it is cold, replace the transformer. If it is excessively HOT, call the Marsh Customer Service Department.
2. The Master Station has failed.
 - a. Replace the #603 board.
 - b. Replace the Master Station.

LED COMES ON BUT NO AUDIO

1. I/O cable is open or shorted.
 - a. Replace the Audio Cable.
 - b. The conduit from the remote location may have pinched or cut the cable. The conduit must be replaced.
2. Poor connections at the remote speaker.
 - a. Make certain the I/O cable is properly connected to the speaker housing.
 - b. Check the speaker within the housing to be sure it is functional and properly wired.
3. Check the connections at the Master Station. Is the I/O cable making good contact at the connector?
4. Master Station LED is constantly lit.
 - a. Footswitch is shorted. See footswitch problems.
 - b. Switch keyboard shorted. Replace Switch keyboard.

"OUTBOUND" BUT NO "INBOUND" AUDIO

1. Switch Panel Defective - Replace Switch Panel
2. Master Station Defective - Replace Master Station

"INBOUND" BUT NO "OUTBOUND" AUDIO

1. Remote Station volume control turned off or defective - Repair or replace Remote Speaker Assembly.
2. Switch Panel defective on Master Station - Replace Switch Panel
3. Remote Station Defective - Replace Remote Station
4. Master Station Defective - Replace Master Station.

HUM ON "INBOUND" AUDIO

1. Audio cable is not shielded properly.
 - a. Be sure the I/O cable shield is making good contact in the connector.
 - b. Check to make sure the I/O cable shield is insulated.

MASTER STATION WITH FOOTSWITCH HAS "INBOUND" OR "OUTBOUND" AUDIO ONLY, BUT NOT BOTH

1. #880 footswitch failure - Unplug the footswitch from the jack. If the master station works, replace the footswitch.
2. #885 Footswitch Jack failure
 - a. Check the continuity of the jack and it's wiring for opens and shorts.
 - b. Disconnect the footswitch jack wires. If the Master Station works, repair or replace the jack.

VEHICLE DETECTOR TURNS ON WITH NO VEHICLE PRESENT

1. Faulty or poor connection from loop to loop extension cable.
2. #650 Loop Vehicle Detector PCB failure - Replace the #650 PCB
3. Defective Detector Loop
4. Defective Loop Extension Cable

VEHICLE DETECTOR WILL NOT TURN ON WITH VEHICLE PRESENT

1. #650 Loop Vehicle Detector PCB failure
 - a. Check the connections at the #650 PCB
 - b. Replace the #650 PCB
2. Defective Detector Loop - Replace the loop with either a sawcut or a preformed loop.
3. Defective Loop extension Cable
 - a. Check the solder connections at the loop and reconnect if necessary.
 - b. Replace the Loop Extension Cable.

WHAT TO CHECK BEFORE CALLING FOR REPAIR ASSISTANCE

- | YES | NO | | YES | NO | |
|--------------------------|--------------------------|--|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does the LED (light) turn on when a customer is present at the remote speaker location? | <input type="checkbox"/> | <input type="checkbox"/> | Can the Master Station speaker be heard (Is there "Outbound Audio?") when the talk switch is depressed? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is there an audible beep tone at the Master Station? | <input type="checkbox"/> | <input type="checkbox"/> | Can the Master Station speaker be heard (Is there "Outbound Audio?") when the footswitch is depressed? |
| <input type="checkbox"/> | <input type="checkbox"/> | Can the remote station speaker be heard (Is there "inbound" audio?) after the "beep" tone? | <input type="checkbox"/> | <input type="checkbox"/> | Does the LED (light) and "Inbound" Audio turn off when the vehicle leaves? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is there "Inbound Audio" even if no "beep" tone occurs? | | | |

REAR MOUNTED SPEAKER HOUSING ASSEMBLY

These instructions assume access to an already installed mounting bracket or panel in the enclosure to complete the installation. If not, adapt the instructions to fit the situation.

1. (Fig. 3) Position a washer and nut at the center of the 1/8" x 27 NPT threaded tube.
2. From the back of the mounting bracket or plate, insert the tubing into the mounting hole.
3. Place the #443 rear-mounted speaker housing on the tube.
4. Fasten the housing with the remaining washer and nut.
5. Feed the 341 cable thru the tubing into the speaker housing.
6. Attach the cable (see AUDIO CABLE INSTALLATION AND TERMINATION).
7. Place the #938 Grille Assembly at the opening of the #443 Housing with the speaker terminals to the left.
8. Place the #938 grille assembly into the #443 housing with the volume control in the upper left corner.
9. Take care that no loose wiring gets between the speaker basket and the speaker cone.
10. Fasten the #938 grille assembly with the four corner screws.

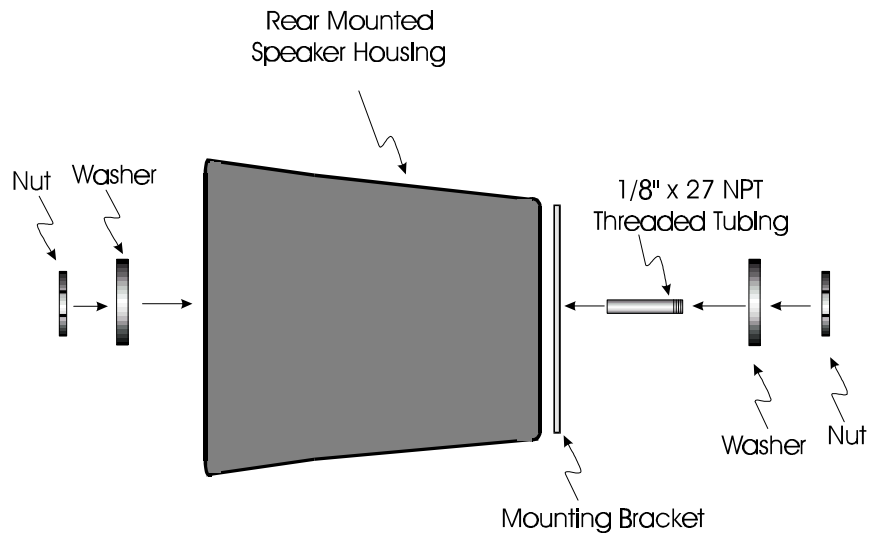


Figure 5

FLUSH MOUNT SPEAKER

These speaker types are designed to be mounted behind a cut-out in a panel or other enclosure.

Note: These speakers require 5" of clearance behind the mounting surface for proper installation.

1. Using the flush mounting speaker drill template placed on the mounting surface, mark the location of the four corner mounting holes first. Next mark the location of the four cut-out corner holes.
2. Drill the four corner mounting holes using a 3/16" diameter drill.
3. Drill the four cut-out corner holes using a 1/4" diam. drill.
4. Using a ruler, mark the cut-out area per the template.
5. Use a saber saw with proper blade to remove material from the cut-out area.
6. De-burr the edges of the cut-out area.
7. Place the 933 flush mounted housing on a flat surface with the hole plug down and the opening towards you (fig. 3).
8. Place the speaker assembly face down at the front of the housing with the speaker lead terminals to the left.
9. Route the cable(s) through the back of the housing to the speaker assembly terminal block.
10. Refer to the wiring instructions and make the proper connections to the terminal block.
11. Expose the front grille of the speaker assembly and remove the four corner screws.
NOTE: Do not lose the four plastic spacers between the grille and the speaker unit.
12. Insert the four screws into the corner holes of the mounting surface from the front.
13. Place the grille onto the four screws, and then place the four plastic spacers over the screws.
14. Place the speaker assembly onto the four screws with the speaker lead terminals to the left.
15. Take up any cable slack as you align the housing to the four screws.
16. Begin to tighten the screws into the housing alternating screws every five to six turns until the housing is tight and the speaker assembly is seated in the housing.

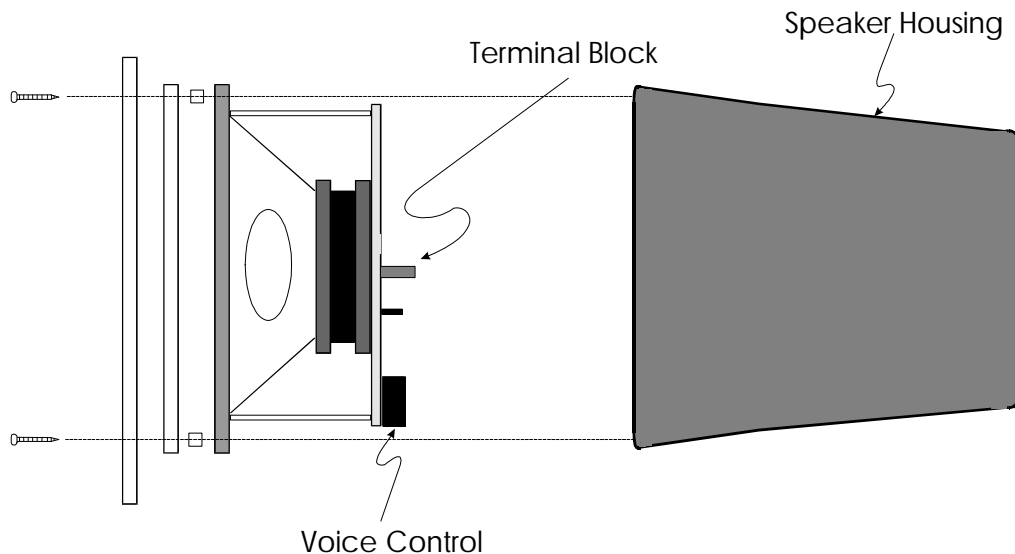


Figure 6

FLANGE MOUNTED REMOTE SPEAKER INSTALLATION

These speaker assemblies are designed to be installed into any material in which an opening can be cut (sheet rock, plaster, ceiling tile, drop ceiling, etc.)

Note: *These speaker assemblies require a 4.25" clearance behind the mounting surface for the speaker housing.*

1. Using the flange mounted speaker drill template, locate the mounting position and mark the four corner mounting holes first, followed by the four corners of the cut-out area.
2. Mark the boundaries of the cut-out area and remove all materials from this area.
3. Drill the four corner mounting holes using a 5/16" diam. drill.

Note: *If you are mounting the speaker in a solid surface, drill these holes at least 2" deep to permit insertion of the togglers. Remove any debris in these holes.*

2. If you are installing in a drop ceiling, drill these holes 9/64" diam.
4. Prepare the control cable(s) before proceeding. Refer to audio cable installation and termination.

5. Feed the control cables through the back of the 933 housing.
6. With the 969 speaker grille face down, make the proper connections to the terminal block and headers.
7. While pulling any slack back through the housing, insert the speaker grille assembly into the speaker housing and attach the grille assembly and housing using the four screws.
8. Hold the assembly in place inside the ceiling panel.
9. Insert a #6 x 1-1/4" type AB screw through the flange and through a mounting screw hole.
10. On the back of the ceiling panel, attach a toggler to the screw and tighten until the flange is tight against the front of the panel.
11. Repeat for each mounting screw.

FOR ALL OTHER MATERIALS:

12. Flatten the wings of the supplied togglers and insert them into the four mounting holes.
13. Holding the assembly in the cut-out, attach the flange to the surface using the four #6 x 1-1/4" type AB screws supplied.

Note: *Make sure to tighten each screw enough to spread the wings of the togglers.*

Mounting In A Wall or Solid Ceiling

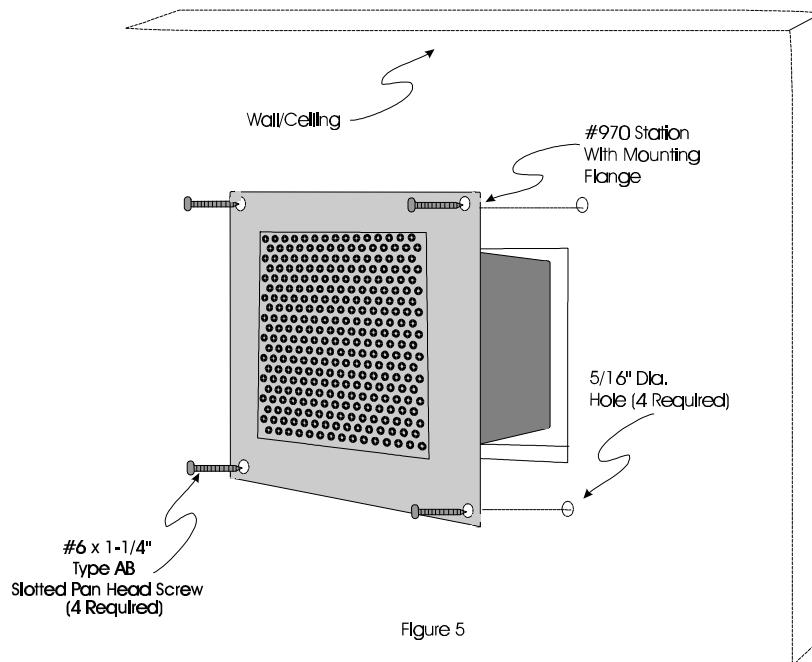
The mounting surface may be wall board, plaster, concrete block, brick, etc., however, the method explained is best suited to wallboard or plaster. Other surfaces may require the use of different mounting anchors or eliminating them entirely.

Note: For a drop ceiling, skip to step 14b.

- 14a. Drill four 5/16" diam. toggler holes as marked.
- 15a. Flatten the wings of the plastic togglers and insert them into each of the four holes.
- 16a. Draw the cable through the opening.
- 17a. Plug the cable connector into the header at the back of the 933 Housing. Be sure that all terminals are plugged into matching pins.
- 18a. Holding the 933 Housing inside the opening, fasten the station to the surface by inserting four #6 x 1- 1/4" screws into the togglers through the corner holes in the #969 Mounting Flange.

Drop Ceiling Installation

- 14b. Drill four 9/64" diam. screw holes.
- 15b. Hold the station in place inside the opening hole with the #969 Mounting Flange against the ceiling tile.
- 16b. Insert a #6-32 x 1-1/4" Type AB slotted pan head screw through each of the four holes in the #969 Mounting Flange and the holes in the ceiling tile.
- 17b. Fasten a wall anchor toggler to each screw protruding through the back of the ceiling tile and tighten until the #969 Mounting Flange is flush against the tile.
- 18b. Remove an adjacent ceiling tile and plug the control cable connector into the back of the station housing.



RUGGEDIZED REMOTE SPEAKER

MOUNTING ON A WALL OR COLUMN

The 442 Ruggedized Housing is supplied with mounting hardware for mounting through the center hole in the back of the chassis to a wall or column with rear access.

1. Select a position with sufficient clearance behind the mounting surface to allow 1/2" to 1- 1/2" of threaded tubing.
Note: If the speaker is to be mounted where rear access is not available, fasteners and anchors must be supplied by the contractor. Four 3/16" diam. holes at the back of the chassis may serve as alternative mounting holes and the 2" x 1/8" NPT threaded tube may or may not be needed.
2. Using the back of the chassis as a template, drill a 7/16" hole in the mounting surface.
3. Holding the chassis level horizontally, line up the center hole with the hole in the mounting surface, and press it in place.
4. Place a 1" flat washer and 5/8" diam. nut approximately 1/2" onto the 1/8" NPT threaded tubing and insert it through the chassis and into the hole in mounting surface.
5. Reaching inside through the access hole, tighten a 1" flat washer and 5/8" diam. hex nut onto the threaded tubing to secure the chassis in place.
6. Feed the audio cable from inside out through the threaded tubing into the chassis cavity.
7. The 442 Speaker Housing is shipped with two coupler headers, a 4-pin coupler for a "PFS" speaker and a 2-pin coupler for an installation with speaker only. (Choose the one that matches the number of positions on the housing connector to be installed and discard the other).

8. Plug the locking end of the coupler header into the station connector.
9. For audio cable operation, see AUDIO CABLE INSTALLATION & TERMINATION instructions.
10. When the connector is in place on the audio cable, drop the cable lead out over the left side of the chassis.
11. Press the acoustic foam (the large side toward the back) into the chassis cavity until it is 1" to 1-1/2" from the back of the chassis.
12. Position the grille assembly with the volume control toward the top side and fasten it to the chassis by means of the attached assembly screws.
13. Plug the coupler (header) into the cable connector.

CAUTION: This connector is non-locking and should be handled carefully.

14. Tuck the connected pair behind the acoustic foam and depress the foam against the rear of the chassis to suspend it up off the bottom. Be sure that connectors, cable and loose wiring do not rest on the bottom of the chassis or between the speaker basket and the speaker cone.
15. Slip the housing over the chassis with the rain shield visor to the front and on the top.
16. Fasten the housing to the chassis with six 6/32 x 3/8" Phillips pan-head screws (two on top and four on the bottom).
17. Secure the "CUSTOMER SERVICE HERE" arrow either above or below the speaker station if wanted.

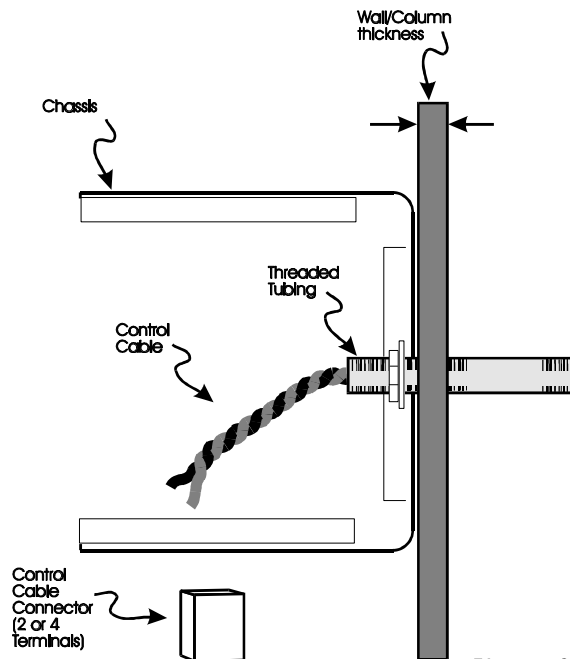


Figure 8

INDOOR REMOTE/MONITOR SPEAKER

1. Separate the 936 Speaker Assembly from the 444 Housing.
2. Place the 444 Housing Assembly on a flat surface with the opening toward you and the volume control at the bottom.
3. Set the Speaker/Grille Assembly face down with the speaker terminals toward the opening of the housing.
4. Pull the audio cable through the hole in the back of the 444 housing.
5. Strip cable back approximately 1 1/2". Sseparate conductors. Strip each conductor back 1/4" and tin.
6. Connect red wire to spkr/mic signal position of two position terminal block on 602 pcb. Connect black wire to spkr/mic common position of two position terminal block on 602 pcb (see figure 9).
7. Plug the 2-position header (C) wired to the speaker into the 2-position connector (D) wired to the volume control inside the housing.
8. Pull the speaker cable back through the hole in the back of the housing until about an inch of cable remains inside the housing.
9. Put a strain relief on the cable at the hole and lock the cable into the housing.
10. Place the speaker assembly inside the opening of the housing, with the small rectangular surface on the face of the assembly toward the side of the housing opposite the volume control. Rotate the speaker assembly one quarter turn clockwise before placing it into the housing for best placement of wiring inside the housing. Make sure there are no loose wires between the speaker basket and the speaker cone.
11. Fasten the speaker assembly in place with the four #6 flat head screws.
12. Mount the Speaker Station using one of the Alpha Series Mounting packages.

0602 Indoor Remote Monitor System

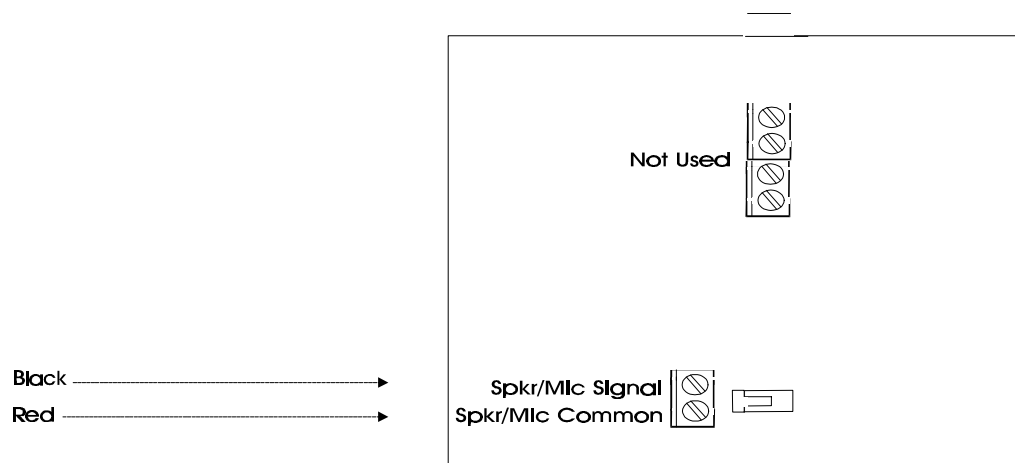


Figure 9

FOOTSWITCH PACKAGE

The footswitch Package is made up of an 880 Footswitch, an 885 Footswitch Jack Kit, and a 2-conductor cable. A ten foot cable is standard, however, longer cable may be used to fit the installation.

1. Remove the 1/4" phone jack from its housing. Be sure the paper insulator tubing remains in the housing.
2. Feed the end of the 2-conductor cable through the non-threaded end of the housing, and push the plastic housing up the cable for working clearance. For connection to master unit refer to figure 3.
3. Strip the cable jacket back approximately 3/4".
4. Strip the insulation from each wire 1/2".
5. Screw the red wire to the short terminal and the black wire to the long terminal of the jack.
6. Clamp the winged strain relief of the long terminal around the end of the cable jacket.
7. Screw the housing back on the phone jack threads.
8. Fasten the mounting clip to its mounting location with three #6 x 1/2" Phillips self-threading screws.
9. Press the phone jack into the mounting clip.
10. Plug the 1/4" footswitch plug into the phone jack.

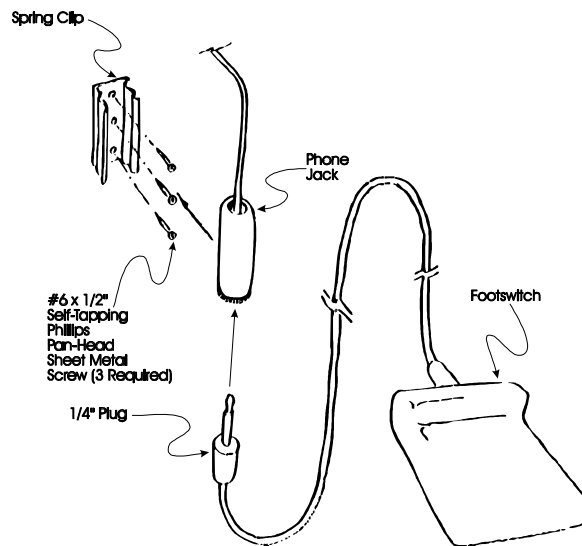


Figure 10

MARSH
PRODUCTS, INC
Spectrum Companies Int'l Ltd

336 McKee Street
Batavia IL 60510
Tel • 630-879-8008
Fax • 630-879-8072

www.MarshProducts.com