

DRAFT



wireless | IQ™

Wireless Drive-Thru Audio system

Installation Instructions

HM Electronics, Inc.
14110 Stowe Drive
Poway, CA 92064 USA

Phone: 1-800-848-4468
Fax: 858-552-0172
Website: www.hme.com
Email: support@hme.com

HME# 400G587 Rev J 1/8/15

Table of Contents

1.	EQUIPMENT DESCRIPTION.....	1
1.1	Wireless IQ Base Station	2
1.1.1	External Features.....	2
1.2	COMMUNICATOR®s.....	4
1.2.1	Features and Controls.....	4
1.2.2	How to Wear the COMMUNICATOR®	4
1.2.3	How to Use the COMMUNICATOR® Controls	5
1.2.4	COMMUNICATOR® Registration	5
1.2.5	Battery Removal and Replacement	7
1.3	Battery Charger	8
2.	PREPARATION FOR INSTALLATION.....	9
2.1	Tools Required.....	9
2.2	Battery Charger Setup and Battery Charging	9
2.2.1	Battery Charger Setup for Use In the United States	9
2.2.2	Battery Charger Setup for Use Outside the United States	10
2.2.3	Battery Charging.....	10
2.3	Interference Prevention	11
2.3.1	Radio Frequency (RF) Interference.....	11
2.3.2	Electrical Interference	12
3.	EQUIPMENT INSTALLATION.....	13
3.1	Base Station Installation.....	13
3.1.1	Walk Test for Best Transmission/Reception	14
3.1.2	Mount Base Station on Wall	15
3.1.3	Install Remote Antenna Kit (if needed).....	15
3.2	Cable Pulling.....	17
3.3	Outside Speaker and Microphone Installation and Cable Connections	17
3.3.1	Microphone Installation	18
3.3.2	SP2500LP Low-Profile Speaker Installation.....	19
3.4	Optional SP2000A Speaker/Microphone Installation.....	20
3.5	Optional External Vehicle Detector Installation	21
3.6	Optional HME Vehicle Detector Board (VDB) Installation	21
3.7	External Message Repeater Installation	22
4.	EQUIPMENT SETUP.....	23
4.1	Internal Message Repeater Setup	23
4.2	Early Warning Setup.....	23
4.3	Dual-Lane Setup	23
4.4	Split-B Audio Setup	23
4.5	Auto-Hands-Free Setup.....	23
5.	SYSTEM FUNCTIONAL CHECK.....	24
5.1	Noise Reduction Adjustment	24
5.2	VAA (Voice Activated Attenuation) Adjustment	25
6.	WIRELESS IQ OPERATION	26
6.1	Changing Languages.....	26
6.2	Obtaining COMMUNICATOR® Status.....	26
6.3	Single-Lane Operation (one base station for one speaker post in one lane)	27
6.4	Dual-Lane Operation (two base stations for two speaker posts in two lanes).....	28
6.5	Tandem Operation (two base stations for two speaker posts in one lane)	29
6.6	Internal Communication.....	30
6.7	Speed-Team Operation.....	31
6.8	Wired Backup System.....	31
6.9	Message Repeater Operation.....	31
6.9.1	Recording Messages	31
6.9.2	Message Repeater Switch Settings.....	32
7.	IN CASE OF PROBLEMS.....	33
8.	EQUIPMENT SPECIFICATIONS	38
9.	BLOCK DIAGRAM	39
10.	BASE INTERFACE DESCRIPTION	40
10.1	Audio Circuit Board.....	40
10.2	Transceiver Circuit Board	41
10.3	Switcher Circuit Board.....	42
10.4	Vehicle Detector Circuit Board (Optional)	42
11.	WIRING DIAGRAMS.....	43

Figures and Diagrams

Figure 1.	Wireless IQ standard equipment	1
Figure 2.	Base station with front door open.....	2
Figure 3.	Communicator controls	4
Figure 4.	Correct wearing of the headset.....	4
Figure 5.	Registration buttons and indicators	6
Figure 6.	Belt-pac battery-release latch	7
Figure 7.	Headset battery-release latch.....	7
Figure 8.	Batteries in charger	8
Figure 9.	Battery charger AC adapter connection	9
Figure 10.	230VAC adapter wiring for battery charger.....	10
Figure 11.	Typical drive-thru store layout	13
Figure 12.	Typical tandem and dual drive-thru layouts.....	14
Figure 13.	Open base station showing four screw holes.....	15
Figure 14.	Remote antenna mounting on wall bracket	16
Figure 15.	Microphone	18
Figure 16.	Microphone unit and foam inserts shown in typical speaker post installation	18
Figure 17.	Open the low-profile speaker	19
Figure 18.	Mark speaker post or menu board through wire hole in rear panel of SP2500LP speaker assembly	19
Figure 19.	Screw the self-tapping screws through holes in rear panel of SP2500LP speaker box	19
Figure 20.	SP2500LP cable connections	19
Figure 21.	Installing the SP2000A	20
Figure 22.	SP2000A cable connection	20
Figure 23.	External message repeater connections	22
Figure 24.	Typical tandem drive-thru layout	29
Figure 25.	S2 switch on Switcher Board	31
Figure 26.	Base Station internal controls and indicators	35
Figure 27.	Base station jumper settings	36
Figure 28.	Base station DIP switch functions	37
Figure 29.	Typical Wireless IQ Base Station block diagram.....	39

Wiring Diagrams43

Figure 30.	Full-Duplex Wireless IQ with VDB but no Switcher Board.....	44
Figure 31.	Full-Duplex Wireless IQ with VDB, Switcher Board, DM1 or DM3 Microphone and IC300.....	45
Figure 32.	Full-Duplex Wireless IQ with VDB, Switcher Board and DM1 or DM3 Microphone.....	46
Figure 33.	Half-Duplex Wireless IQ with VDB but no Switcher Board	47
Figure 34.	Half-Duplex Wireless IQ with VDB and Switcher Board	48
Figure 35.	Dual-Lane Wireless IQ Primary to Secondary Base Station Connections	49
Figure 36.	Tandem Wireless IQ Primary to Secondary Base Station Connections	50

Illustrations in this publication are approximate representations of the actual equipment, and may not be exactly as the equipment appears.

HM Electronics, Inc. is not responsible for equipment malfunctions due to erroneous translation of its installation and/or operating publications from their original English versions.

FCC NOTICE

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by HM Electronics, Inc. could void the users authority to operate this equipment.

The antenna(s) used for the base transmitter must be installed to provide a separation distance of at least 7.87 inches (20 cm) from all persons, and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device has been designed to operate with the antennas or antenna kits listed below, and having a maximum gain of 2dBi. Antennas/Kits not included in this list or having a gain greater than 2dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

- 1. Antenna: NEARSON, S181TR-2450R, 2dBi*
 - 2. Antenna Kit: HME, EC20 (P/N G28493-1), 0dBi*
-

Industry Canada (IC)

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement. Information can be obtained at http://www.hc-sc.gc.ca/ewh-sem/pubs/radiation/radio_guide-lignes_direct-eng.php

“Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.”



Hereby, HM Electronics, Inc. declares that the Wireless IQ System is in compliance with the essential requirements and other relevant provisions of R&TTE Directive 1999/5/EC.

IMPORTANT!

Waste Electrical and Electronic Equipment (WEEE)

The European Union (EU) WEEE Directive (2002/96/EC) places an obligation on producers (manufacturers, distributors and/or retailers) to take-back electronic products at the end of their useful life. The WEEE Directive covers most HME products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

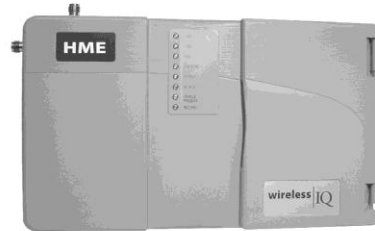
The symbol shown below is on the product or on its packaging which indicates that this product was put on the market after August 13, 2005 and must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of WEEE. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local authority, your household waste disposal service or the seller from whom you purchased the product.



1. EQUIPMENT DESCRIPTION

The Wireless IQ is an audio system primarily for use at quick-service restaurants. The equipment shown below is standard with each Wireless IQ system. Optional equipment can be ordered from your local dealer.

As you unpack the Wireless IQ, check the packing list for each item to verify receipt of all equipment and quantities listed.



Wireless 6000A Base Station



Base Station Antennas



Remote Antenna Cable



Odyssey IQ



COM6000BP

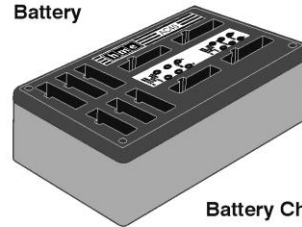
COMMUNICATOR®

OPTIONAL EQUIPMENT

Equipment	Model Number
Belt-Pac Communicator	COM6000BP
Odyssey IQ Headset Communicator	HS6000
Wireless Headset (listen only)	HS6000L
Battery for Communicator	BAT41
Headset	HS12
Headset Earmuff	No model number
Headset Interface	HSI6000
Ceiling Speaker	MM100
Ultrasonic Vehicle Detector	DU3
Vehicle Detector Board	VDB102
Vehicle Detector Loop (underground)	VDL100
Message Repeater	MR300
Low-Profile Speaker	SP2500LP
Microphone	DM3
Mode Switch (dual lane)	MS10
Switcher Circuit Board	No model number
Antenna Coverage Extension Kit	EC10
Remote Antenna Kit (with 6 ft / 1.83 meter cable)	ANT20-6
Remote Antenna Kit (with 30 ft / 9.14 meter cable)	ANT20-30
Remote Record Switch	No model number
Remote Speed Team Switch	SW2



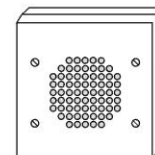
Battery



Battery Charger



Microphone



Speaker

Figure 1. Wireless IQ standard equipment

1.1 Wireless IQ Base Station

The base station is the electronic heart of the Wireless IQ. It contains the circuitry through which all functions of the drive-thru audio system are channeled.

External base station features are shown in Figure 2, and described on page 3. Internal controls and indicators are shown in Figure 26 on page 35.

1.1.1 External Features

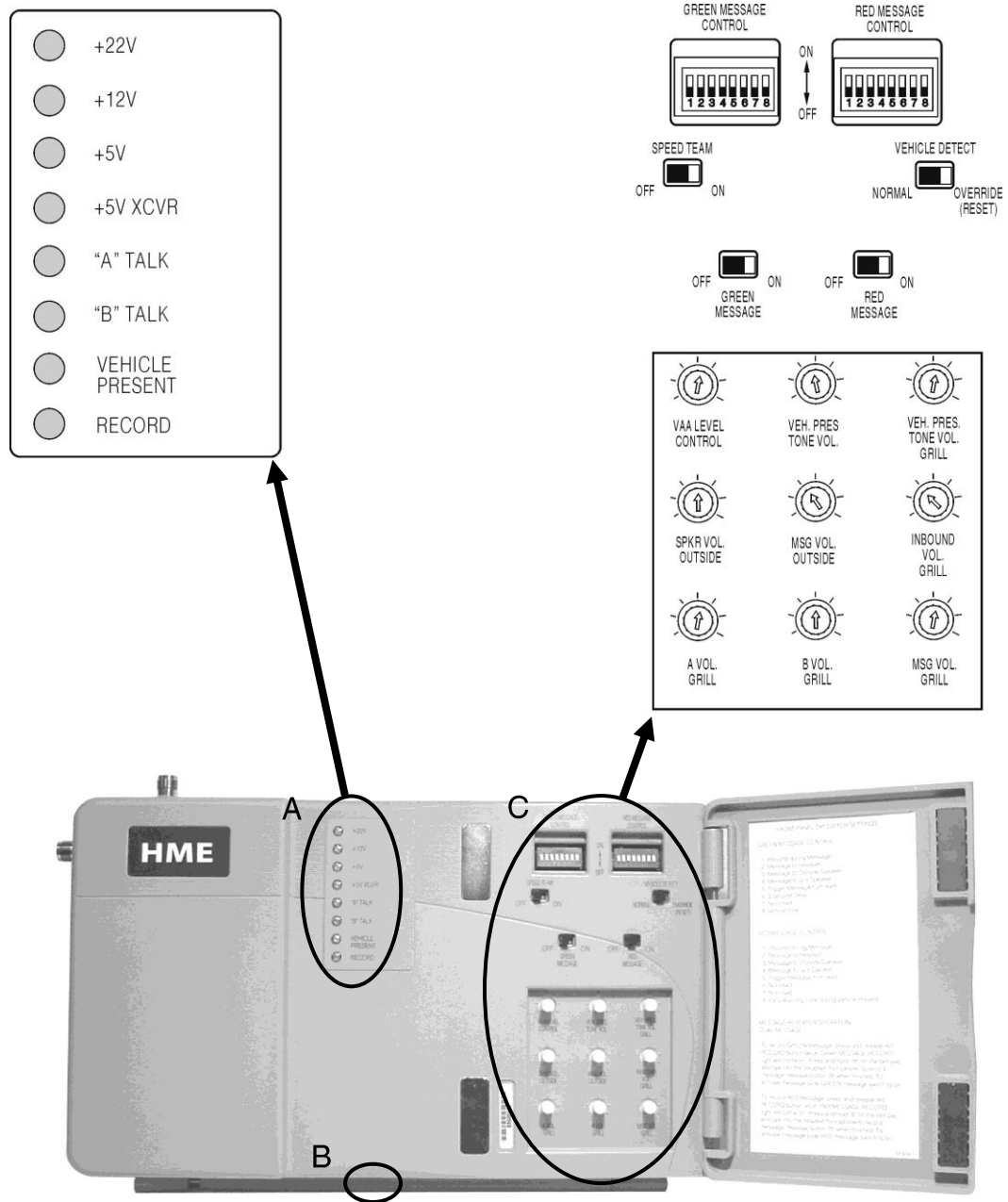


Figure 2. Base station with front door open

Front – (See A on Figure 2.)

- The top four **power supply lights** are on when the base station has AC power.
- **“A” TALK light** is on during channel-A transmission.
- **“B” TALK light** is on during channel-B transmission.
- **VEHICLE PRESENT light** is on when a vehicle is present in the drive-thru lane or when the system is in vehicle-detect override.
- **RECORD light** is ON RED when the base station is ready to record a red message for the message repeater, and BLINKING RED while a red message is being recorded. It is ON GREEN when the base station is ready to record a green message for the message repeater, and BLINKING GREEN while a green message is being recorded.

Bottom – (See B on Figure 2.)

- **PUSH FOR RECORD MODE button** must be pushed IN AND RELEASED ONCE to prepare the base station to record a red message for the message repeater, or pushed IN AND RELEASED TWICE to record a green message.

Behind Front Door – (See C on Figure 2.)

- **GREEN MESSAGE CONTROL and RED MESSAGE CONTROL switches** must be in the ON position to use the message repeater, OFF when the message repeater is not being used. Instructions are given inside the front door.
- **SPEED TEAM switch** must be in the ON position for speed-team operation, OFF for normal drive-thru operation.
- **VEHICLE DETECTOR switch** must be in the OVERRIDE position to disable the vehicle detector. To reset the vehicle detector, switch to OVERRIDE for 5 seconds, then switch back to NORMAL for normal vehicle detection. If the switch is left in the OVERRIDE position, the outside microphone will remain on.
- **DIP switches** at the top are used to control messages going to the outside speaker, grill speaker or COMMUNICATOR®s. DIP switch settings are shown inside the front door.
- **Nine level controls** are used to set the following levels:
 - VAA LEVEL CONTROL** adjusts the volume level at which one’s own voice is heard in the headset while speaking into the microphone. Turn clockwise to lower the voice level in the headset earpiece. Turn counterclockwise to raise the voice level.
 - VEH. PRES TONE VOL.** adjusts the vehicle-present tone volume in the headset.
 - VEH. PRES. TONE VOL. GRILL** adjusts the volume of the vehicle present tone played through the grill speaker.
 - SPKR VOL. OUTSIDE** adjusts the outside speaker volume.
 - MSG VOL. OUTSIDE** adjusts the volume of the outgoing message-repeater message to the customer at the speaker post or menu board.
 - INBOUND VOL GRILL** adjusts the volume of the inbound audio from the outside microphone played through the grill speaker.
 - A VOL. GRILL** adjusts the volume of channel A communication, from Communicator operators, played through the grill speaker.
 - B VOL. GRILL** adjusts the volume of channel B communication, from Communicator operators, played through the grill speaker.
 - MSG VOL. GRILL** adjusts the volume of the recorded message played through the grill speaker.

1.2 COMMUNICATOR[®]s

IMPORTANT! Before doing anything else, set up the battery charger and charge the Communicator batteries according to the instructions in section 2.2 on pages 9 and 10.

1.2.1 Features and Controls

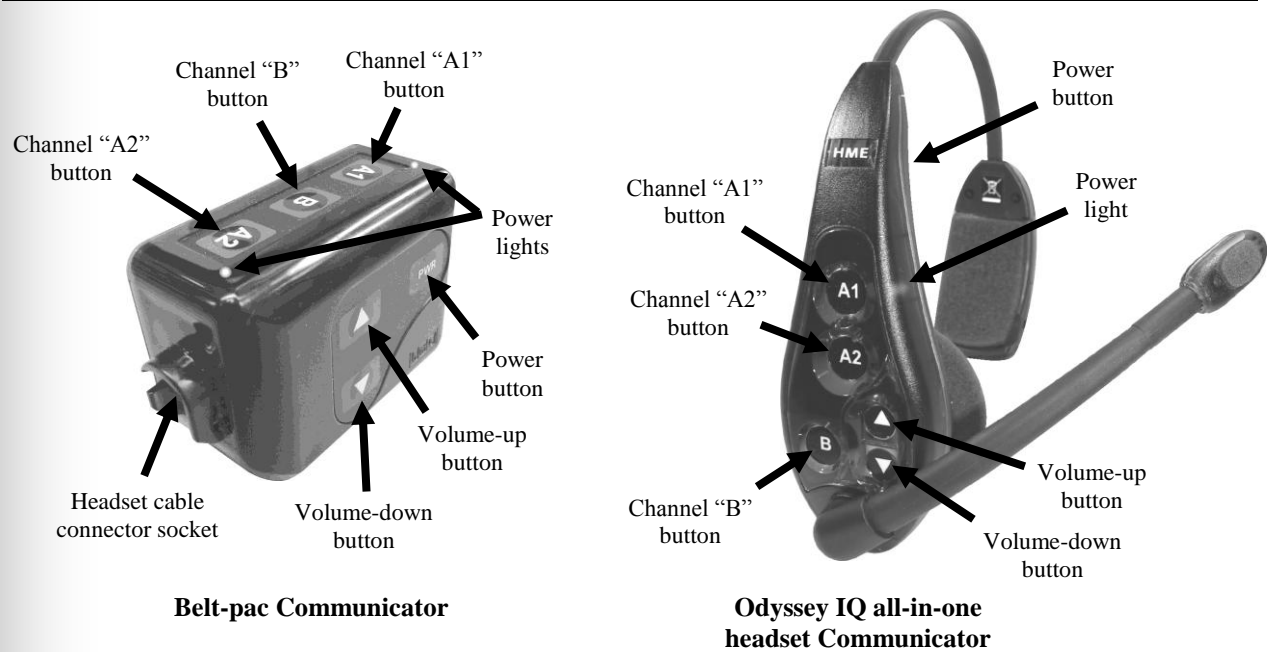


Figure 3. Communicator controls

1.2.2 How to Wear the COMMUNICATOR[®]

- Wear the headset with the microphone on your right or left side next to your mouth.
- Adjust the headband and microphone boom as needed.
- If you are using a belt-pac with headset, clip the belt-pac to your belt or waistband on either your right or left side. Clip the clothing clips on the headset cable to the back of your shirt and collar.
- If you are using an Odyssey IQ headset, put the headset on your head with the headset band behind your neck.

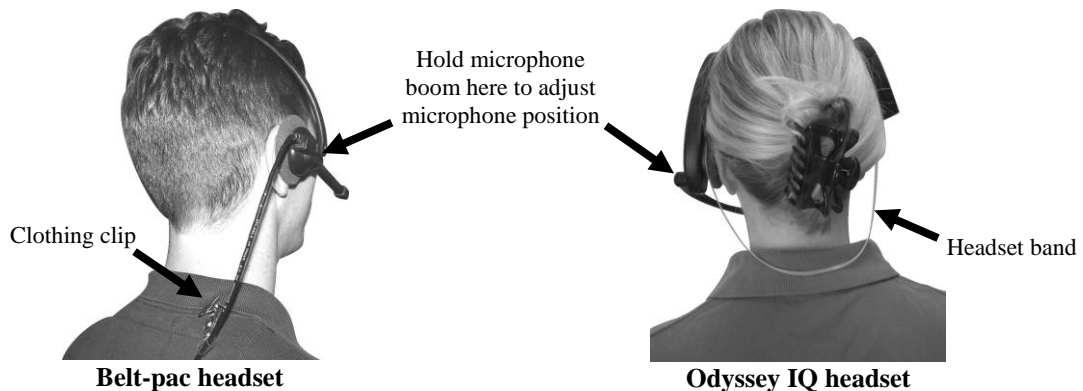


Figure 4. Correct wearing of the headset

1.2.3 How to Use the COMMUNICATOR® Controls

The Communicator control buttons have a snap action. They will activate when pressed firmly. Use your fingertips, not your fingernails, to press the buttons. Refer to Figure 3 on page 4.

Power On/Off:

- **Power On** — Press and release the PWR (power) button. A voice message in the earpiece will say “belt-pac #, battery full/half/low” and the red power lights next to the A1 and A2 buttons on the belt-pac will go on. After a short time, one light will go off and the other will change to green. A voice message will then say “Lane 1 (or 2) ready.” The green light indicates the Communicator is ready to use. In dual-lane operations, a green light next to A1 indicates ready on Lane 1 and a green light next to A2 indicates ready on Lane 2.
- **Power Off** — Press and hold the PWR button for about two seconds. A voice message in the earpiece will say “belt-pac off,” and the power lights will go off.

Volume Up/Down:

- **Volume Up Adjustment** — Press and release the volume-up ▲ button. Each time you press the button you will hear a higher pitch beep in the earpiece as the volume increases. When you reach maximum volume, you will hear a high-pitched double beep. If you press and hold the volume-up ▲ button, you will hear repeating beeps, increasing in pitch until the volume reaches maximum. Then you will hear high-pitched double beeps repeating until you release the volume-up ▲ button.
- **Volume Down Adjustment** — Press and release the volume-down ▼ button. Each time you press the button you will hear a lower pitch beep in the earpiece as the volume decreases. When you reach minimum volume, you will hear a low-pitched double beep. If you press and hold the volume-down ▼ button, you will hear repeating beeps, decreasing in pitch until the volume reaches minimum. Then you will hear low-pitched double beeps repeating until you release the volume-down ▼ button.

1.2.4 COMMUNICATOR® Registration

Before you operate the Wireless IQ system, you must register each Communicator for use with the base station. The base station will then recognize all Communicators registered to it when their power is on, and will be able to tell the difference between them and other electronic equipment operating on similar frequencies.

Note: In tandem or dual-lane systems there are two base stations, a primary and a secondary. Communicators must be registered to the primary base station.

A maximum of 15 Communicators can be registered. If a Communicator is replaced, you must register the new one before you use it. When a Communicator is replaced, the old one remains in memory. If the maximum number of 15 (in memory) is exceeded, the Communicator ID display in the base station will show “F” for full. See Figure 5. If this happens, you must clear all current registrations and re-register all active Communicators. To clear all current registrations, press the “CLEAR ALL REGISTRATION” button and the “RESET” button at the same time. Refer to Figure 5 on page 6. Continue holding the “CLEAR ALL REGISTRATION” button after releasing the “RESET” button, until the clear code “c” (lower case) appears on the Communicator ID display. Register all active Communicators the same way, one at a time.

Register each COMMUNICATOR® as follows:

Note: Communicators must be within 6 feet (1.83 meters) of the base station while being registered.

- Be certain all Communicators to be registered are turned off and the base station is plugged in and its power is on. Other Communicators can be on or off. See Figure 30 for base station power adapter/supply connections to the J29 connector.
- Open the base station and locate the items shown in Figure 5.
 - If no Communicators are on, the status light will begin blinking red. If any Communicators are on, the status light will be on steady green.
 - Press and release the START REGISTRATION button.
 - The Communicator ID display will show a small “o” for open, and the status light will blink green.
- Press and hold the B button on the Communicator while pressing and releasing its PWR (power) button to turn the Communicator on, and release the B button. This will cause the Communicator to enter the registration mode.
 - The status light in the base station will be blinking green and the Communicator ID display will continue to show a small “o” for open.
 - The power lights next to the A1 and A2 buttons on the Communicator will be blinking red then will change to green.

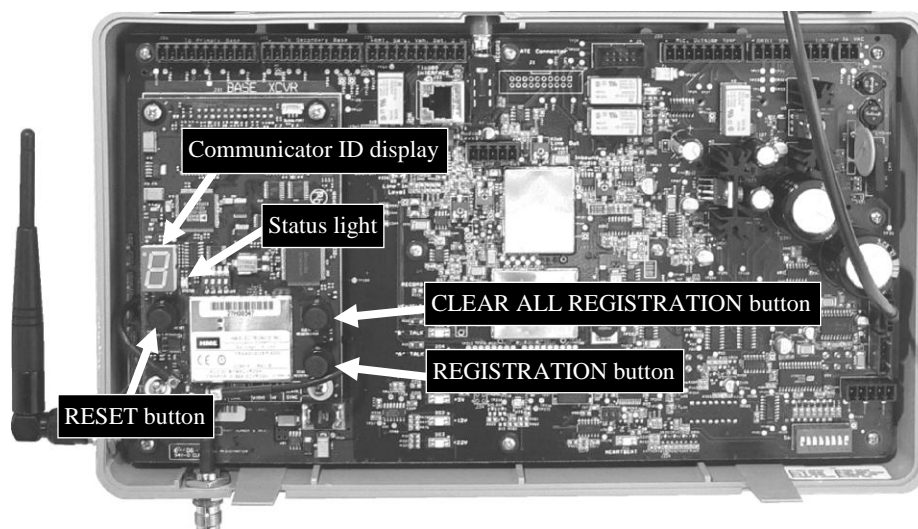


Figure 5. Registration buttons and indicators

When the registration is successfully completed:

- The green status light in the base station will be on steady and the Communicator ID display will show the ID number assigned to this Communicator. ID numbers are assigned sequentially as 0 thru 9, A, b, C, d and E.
- One of the power lights on the Communicator will remain on steady green.

If the registration failed:

- A message in the headset will say “Beltpac/Headset #, Battery Low/Half/Full, Registration ...” The Communicator power light/s will blink red and after a delay of up to 1.5 minutes you will hear “Registration failed.”
- Note the condition of the STATUS light in the base station. Press the RESET button. The STATUS light may blink and change colors. When the STATUS light returns to its previous condition, press the START REGISTRATION button and repeat the registration procedure.

If the registration fails again:

In the USA, call HME Customer Support at 1-800-848-4468.

Outside the USA, call your local HME representative for assistance.

1.2.5 Battery Removal and Replacement

COM6000BP Belt-pac Batteries —

To change batteries:

If a battery is weak when the COMMUNICATOR® power is turned on, a voice in the earpiece will say “Battery low.” If a battery becomes weak during operation, a voice in the earpiece will say “Change battery.” When this happens, take the Communicator out of its pouch and slide the battery-release latch in the direction of the arrow. Pull up on the end of the battery near the latch and lift it out of the Communicator, or turn the Communicator over and catch the battery in your hand.



Figure 6.
Belt-pac battery-release latch

To replace batteries:

Place the end of the battery with the metal contacts into the Communicator, in the same position as the battery you removed. Press the top of the battery carefully down into the Communicator until it snaps in place.

Odyssey IQ Headset Batteries —

To change batteries:

When a battery becomes weak, a voice in the Headset will say “Change battery.” When this happens, remove the battery from the Headset by carefully sliding the battery-release latch and lifting the battery out.

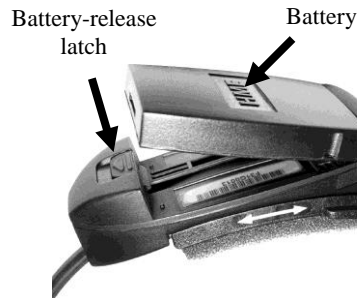


Figure 7. Headset battery-release latch

To replace batteries:

When replacing a battery in the Headset, place the end of the battery with the metal contacts into the battery holder on the Headset, in the same position as the battery you removed. Press the top of the battery carefully into the battery holder until it snaps in place under the battery-release latch.

Recharge batteries according to the instructions on pages 9 and 10.

1.3 Battery Charger

The battery charger has charging ports to charge up to four batteries at the same time. Charging time is about 2.5 hours. Six battery storage ports are provided to store up to six fully charged batteries.

Battery Status Lights:

- A yellow light stays on steady next to each charging port while the port is empty.
- Insert a battery in one of the four charging ports until it clicks in place.
- If a yellow light is on steady next to a battery in a charging port, it means CHARGE FAILED. Follow the diagnostic instructions on the side of the battery charger.
- If a yellow light is flashing next to a battery in a charging port, it indicates CHARGE PENDING, which means the battery is too hot. Lower the room temperature or move the charger to a cooler area.
- A red CHARGING light will stay on next to a battery in a charging port while the battery is charging.
- A green READY light will go on next to a battery in a charging port when the battery is fully charged.
- Store fully charged batteries in the storage ports.

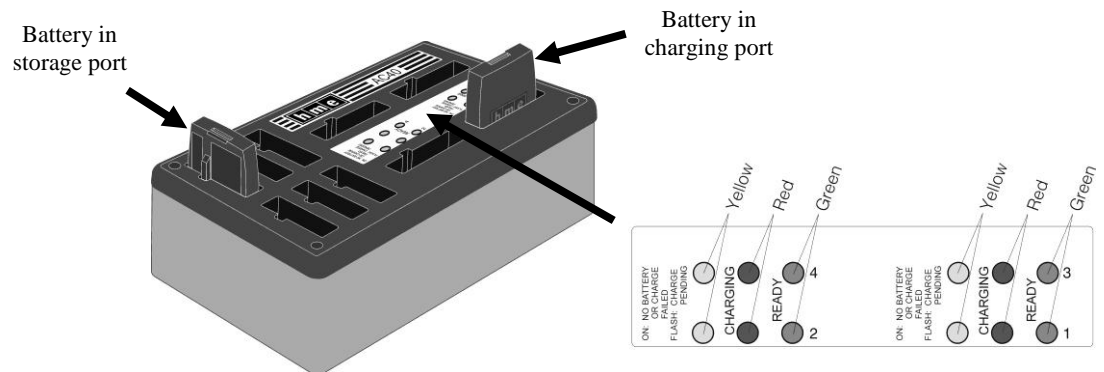


Figure 8. Batteries in charger

2. PREPARATION FOR INSTALLATION

- About 3 hours are required for Wireless IQ installation.
- Before you begin, coordinate the time of installation with the store owner/manager to minimize disruption of business.
- Be certain electrical power is available.
- Be certain some type of compatible vehicle detector loop or other vehicle detector system has already been installed in the drive-thru lane(s).

2.1 Tools Required

- Phillips (cross-point) screwdriver, size #2
- standard (slotted) screwdriver, 1/8 inch (3.2 mm)
- power drill and drill-bit set
- fish tape, 100 feet (30 meters)
- wire cutter/stripper
- soldering iron
- rosin-core solder
- electrical tape

2.2 Battery Charger Setup and Battery Charging

Set up the battery charger and charge the COMMUNICATOR® batteries as follows.

2.2.1 Battery Charger Setup for Use In the United States

- Connect the battery charger cable to the 16.5VAC power adapter or 24VDC power supply as shown in Figure 9.
- Plug the adapter into an AC electrical outlet. The red lights on the charger will come on and go off, then the yellow lights will come on and stay on.

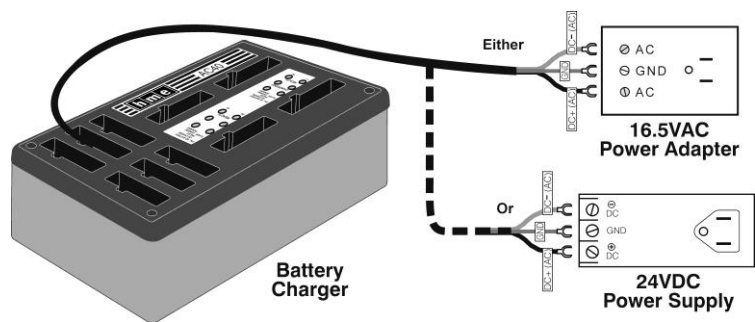


Figure 9. Battery charger power connection

2.2.2 Battery Charger Setup for Use Outside the United States

To use the battery charger outside the United States, in countries requiring a 230 Volt AC adapter, modify the 230VAC adapter as follows. The 24VDC power supply will work with an input AC voltage of 100-240VAC.

- Connect an electrical plug to the wires on the power cable according to color codes (**Brown** = live, **Blue** = neutral, **Green with yellow stripes** = ground).
- Plug the other end of the power cable into the AC adapter.
- Cut the connector off the AC adapter cable. Cut the spade lugs off the brown and blue wires of the battery charger cable and cut the green/yellow ground wire as short as possible. No ground wire will be used. Strip enough of the insulation from the wires of both cables so they can be spliced. Splice the AC adapter cable wires to the brown and blue “AC” wires of the battery charger cable. Cover the splice with electrical tape or shrink tubing.
- Plug the electrical plug into an AC electrical outlet. The red lights will come on and go off, then the yellow lights will come on and stay on.

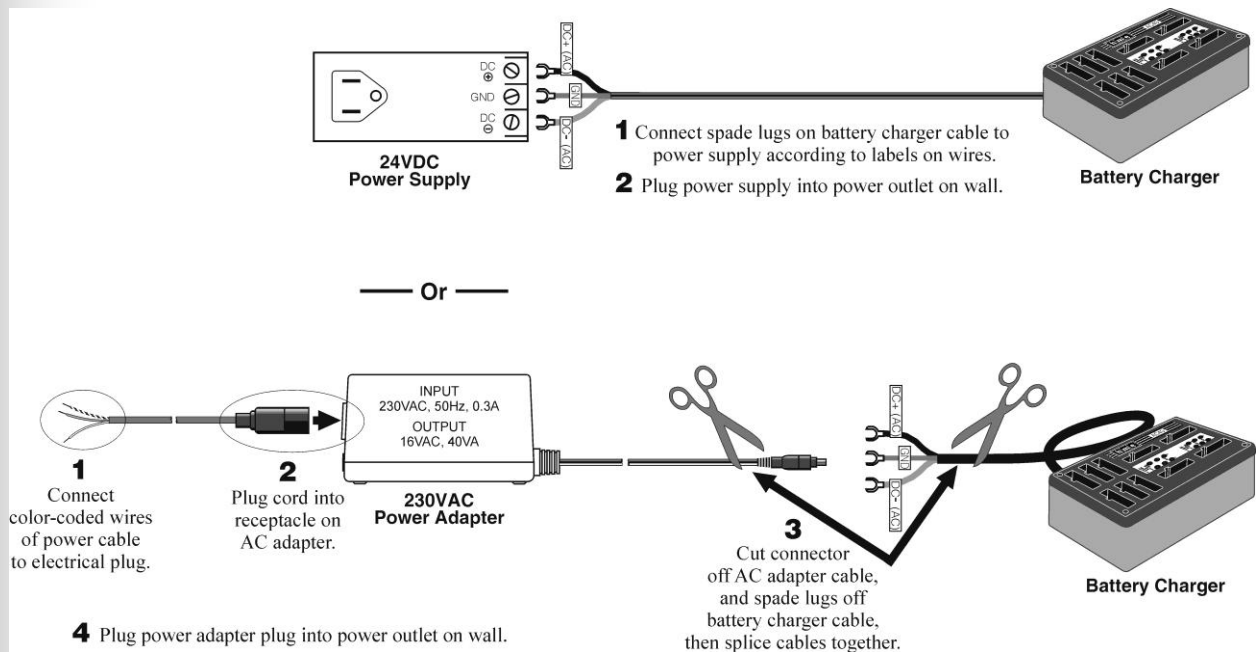


Figure 10. 230VAC adapter wiring for battery charger

2.2.3 Battery Charging

Insert up to four COMMUNICATOR® batteries into the charging ports to be charged while you are installing the other equipment. When they are fully charged, install them in the Communicators. Battery charging time is about 2 hours.

CAUTION: Do not remove batteries from the charger until the green **READY** light is lit, or the charger will reset and the charge cycle will begin again.

2.3 Interference Prevention

CAUTION: *Interference may occur if the audio system is not properly installed.*

The following types of interference could occur if precautions are not taken during installation. Read this section carefully before proceeding.

2.3.1 Radio Frequency (RF) Interference

Finding the cause of RF interference is difficult and time-consuming. The following precautions will help you avoid the most common RF interference problems.

- Find the best base station and antenna locations before mounting them.
- Solder all joints (including crimp joints) at the speaker location. This is very important in damp climates
- Be certain all connections are tight.
- Avoid leaving unshielded wire anywhere in the audio system.
- Ground the shield of the outgoing speaker cable. In severe cases of interference, grounding the shield at the speaker may help.

AM and FM interference may cause similar problems but require different corrective action. AM interference may increase or decrease at certain times of day, since AM transmitter power must be reduced in some areas between 5 and 7 PM.

Note the following symptoms carefully to determine the possible cause of interference. Call HME at 1-800-848-4468 if you need help.

AM Interference:

Static or hum may be heard in the headset when the system is active. The AM interference can enter the system through the cables connecting the outside speaker/microphone to the base station. To block the AM signal, first find out if there is an AM station in the area, and find out its operating frequency and transmitter output power. You can then modify the equipment with a network of inductors and capacitors that will trap the AM signal where it enters the system.

Static, hum and/or voice may be heard in the headset when the system is active or when transmitting in either channel A or B. The interference can enter the system at three different locations: the outside speaker cables, the COMMUNICATOR® receiver and the base station transmitter. The AM station frequency may completely suppress or overpower the audio system's transmitter signal, depending on the operating frequency, transmitter tower location and output power of the AM radio station. You may need to move the base station.

FM Interference:

FM interference may cause cracks, pops and other noises to be heard in the headset when the Communicator is transmitting on either channel A or B, or when the system is active.

2.3.2 Electrical Interference

Electrical faults in appliances and other electrical equipment can cause interference such as static, hum, crackling, buzzing and zip sounds in the headset when the system is active. Interference caused by electrical faults in lighting systems might not be noticed immediately, since most lighting systems are controlled by a timer or light-sensing device.

Faulty Wiring or Components:

Faulty components or electrical wiring in menu boards or speaker posts can cause symptoms identical to those caused by AM interference. Remove power to the menu board or speaker post at the circuit breaker until the electrical system can be repaired.

Improper Earth Grounds:

Improper earth grounds in the building can cause random buzzing and zip sounds in the headset when operating in either channel A or B. Placing a surge protector between the base station AC adapter and the electrical outlet can eliminate the problem.

In the event of an electrical power outage —

such as from a lightning storm or power generator failure, if you experience problems with your HME equipment after the electricity comes on again, unplug the equipment and wait 15 seconds, then plug it back in.

3. EQUIPMENT INSTALLATION

These instructions are for installation of standard Wireless IQ equipment and most commonly used optional equipment. Specific instructions may also be enclosed with optional equipment.

IMPORTANT! If you haven't already done so, before proceeding with the installation, plug the battery charger into an AC electrical outlet and place all COMMUNICATOR® batteries into it for charging while the other equipment is being installed.

3.1 Base Station Installation

Things to consider before and during base station installation

- The base station should be located where, if you stand with your back to the wall, you can see most of the work area where the Communicators will be used.
- The number of walls between the base station and where the Communicators will be used should be minimized.
- Sheets of stainless steel on the walls may shield or reflect radio signals.
- Outside coverage may be needed for Speed Team operation.
- Large windows will allow the signal to pass through and can improve outside coverage.
- The antenna coverage area can be extended with the Remote Antenna Kit.
- If a system is being replaced, it may not be desirable to use the same mounting location for the base station as used before, but it may be required in some cases.

A typical drive thru QSR building is set up as shown in Figure 11. The numbers in Figure 11 refer to the location numbers in the following instructions. This drawing is similar to most store layouts. The base station is typically mounted at location #1. This is also where old equipment is usually found. The order taker is usually at location #2 in a high volume store. The order taker Communicator signal from location #2 must penetrate two walls to reach the base at location #1. Communicator signals from the kitchen must only penetrate one wall to reach the base at location #1. If there are large pieces of equipment in the kitchen or speed team operation is needed outside at location #6, location #1 may be a poor choice for mounting the base. For speed team operations, the signal would have to penetrate three walls and get by the kitchen equipment to reach the base at location #1. Coverage in the store around location #7 and outside at location #6 may be poor. Don't forget to check for a basement. Communicator signals from basements may not reach the base at location #1.

If outside coverage is not needed, mounting the base at locations #3, #4 or #5 is best. Communicator signals from most work areas would thereby require no wall penetration. Other work and seating areas may require signals to penetrate one wall. In this case, the remote antenna kit can be used. The antenna may not need to be mounted very far from the base station unless a large piece of equipment causes a dead spot.

The Wireless IQ base uses two antennas to avoid multi-path dropouts. Both antennas transmit and receive signals. The antenna coverage area can be improved by mounting one antenna away from the base. The base will select the antenna that gives the best signal to a particular COMMUNICATOR® location.

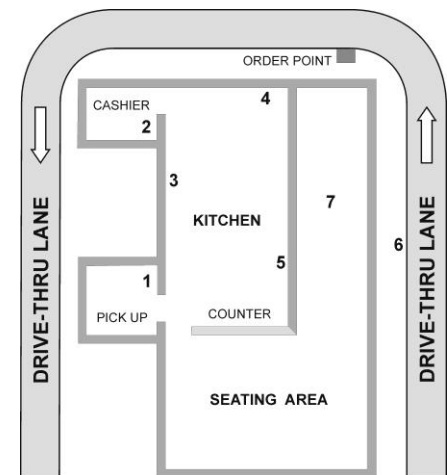


Figure 11. Typical drive-thru store layout

If outside coverage is required for speed team coverage, mount the base as close as possible to the wall that faces the desired coverage area. In this case, mounting the base at location #5 to cover location #6 will minimize wall penetrations. Stores with a large window near the base will have better outside coverage if the base is facing the windows. If there are large windows along the wall next to location #6 outside coverage will be enhanced. Also consider in-store coverage. If the base is located in the best location for inside and outside coverage, but the coverage outside is still spotty then the antenna extension cable needs to be run outside the store. In this case, hanging the antenna under an eave next to the desired area will cover that side of the store very well. Another approach is to go up through the roof and have the antenna overlook the desired side area. This approach overcomes obstacles, like walls, that may shadow the signal when the antenna is at a lower height.

Discuss the location of the base station with the store owner or manager. It should be mounted less than 10 feet (3 meters) from an available electrical outlet, and away from grease and large metal objects. Also, the base transmitter antenna(s) must be installed where they will be at least 7.87 inches (20 cm) from all persons, and will not be near any other antenna or transmitter. The remote antenna kit should be used to extend the coverage area if needed. See section 3.1.3.

Tandem or Dual Drive-Thru Base Stations

For tandem or dual drive-thrus, two base stations (primary and secondary) will be installed. They **must not** be more than 20 feet (6 meters) apart. Cables must be pulled and routed to connect the primary base station to the secondary base station as shown in the wiring diagrams on pages 43 – 50. A vehicle detector and an outside speaker and microphone will be installed for each order point, and cables pulled as described in sections 3.2 and 3.3.

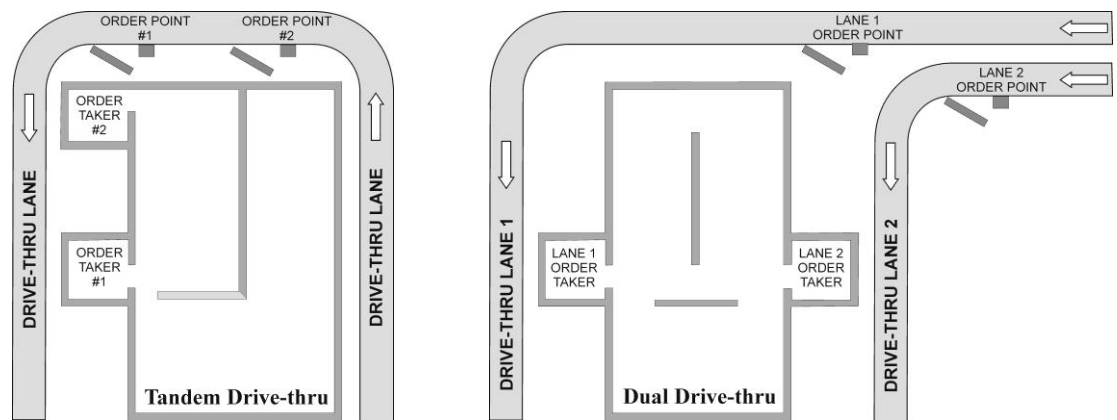


Figure 12. Typical tandem and dual drive-thru layouts

3.1.1 Walk Test for Best Transmission/Reception

You must do a walk test **before permanently mounting the base station**, with the base station at various locations until the best possible transmission/reception is found. Check transmission and reception around the area where the COMMUNICATOR®s will be used, with two people using Communicators (with fully charged batteries) pressing button B to communicate with each other. Also, walk past the menu board to test reception when using speed-team operation.

If you need to extend the antenna coverage area, remove power from the base station and install the Remote Antenna Kit as described in section 3.1.3, but do not permanently mount the antenna. Return power to the base station and place the antenna in the area where improved performance is needed. Repeat the walk test as described above, moving the antenna around the area while communicating to determine where the antenna improves transmission and reception most.

3.1.2 Mount Base Station on Wall

When you have found the best location for transmission and reception, unplug the AC power and mount the base station and antenna as follows.

- Hold the base station against the wall at the desired mounting location, with its door open, and mark the wall through the four screw holes on the back of the cabinet, shown in Figure 13.
- Set the base station down and drill four $\frac{3}{16}$ inch (4.76mm) holes in the wall at the marked spots.
- Insert the enclosed #6 screw anchors into the holes.
- Screw the four enclosed screws into the anchors, leaving the screw heads $\frac{1}{8}$ inch (3.2 mm) away from the wall.
- Mount the base station on the wall by placing the four screw holes in the back of the base station over the four screws, and sliding the base station downward.
- Connect the base station power adapter cable to the adapter as you did for the battery charger, as shown in Figure 9, page 9. For use outside the United States, see 230VAC adapter connections shown in Figure 10, page 10.
- Connect the two wires at the other end of the cable to J16 on the top-left of the audio circuit board in the base station.
- Plug the adapter into the electrical outlet nearest the base station.

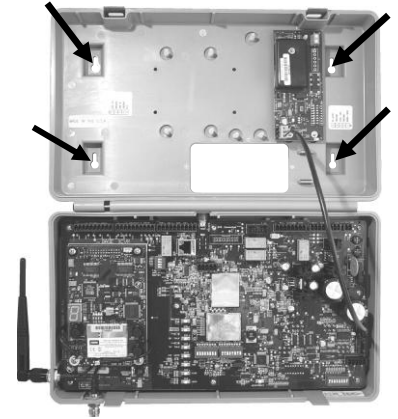


Figure 13. Open base station showing four screw holes

3.1.3 Install Remote Antenna Kit (if needed)

The remote antenna kit allows one of the antennas to be mounted up to 30 feet (9.14 meters) from the base station for improved coverage. With the extension cable and mounting bracket, an antenna can be mounted inside a window or outside to extend coverage for speed team operation. Install the remote antenna kit as follows.

- Lay out the enclosed 30 foot (9.14 meter) antenna cable, with its female connector near the base station and its male connector at the proposed area where the antenna will be mounted. Bend and align the cable to the desired position.
- Remove electrical power from the base station.
- Remove (unscrew) the antenna from the top of the base station.
- Screw the female antenna cable connector onto the base station antenna connector where the antenna was removed.

Note: To minimize stress on the connector, bend the cable as required to line it up with the base station antenna connector before connecting it.

- Screw the antenna onto the male connector at the other end of the antenna cable.
- Hold the enclosed antenna mounting bracket against the wall at the desired mounting location and mark the wall through the two screw holes in the bracket. It may be necessary to mount the antenna high enough to avoid a safety hazard or possible damage to the antenna.
- Remove the bracket from the wall and drill two $\frac{3}{16}$ inch (4.76mm) holes in the wall at the marked spots.
- Insert the enclosed screw anchors into the holes.
- Place the enclosed screws through the holes in the bracket and screw them into the two screw anchors to secure the bracket to the wall.

- Remove the antenna from the antenna cable. DO NOT remove the antenna cable from the base station.
- Unscrew the hexagonal nut from the antenna cable connector.
- Insert the antenna cable connector through the hole in the mounting bracket as shown in Figure 14, and screw the hexagonal nut onto the connector to secure it in place on the bracket.

Note: To minimize stress on the bracket, bend the cable to line it up with the bracket before connecting it.

- Replace the antenna on the cable connector mounted on the wall.

Note: The best transmission and reception may be achieved with the antenna perpendicular to the wall. However, if it is a safety hazard or is likely to be bumped and damaged in that position, it may be necessary for the antenna to be parallel to the wall.

- Return electrical power to the base station and resume normal operation.

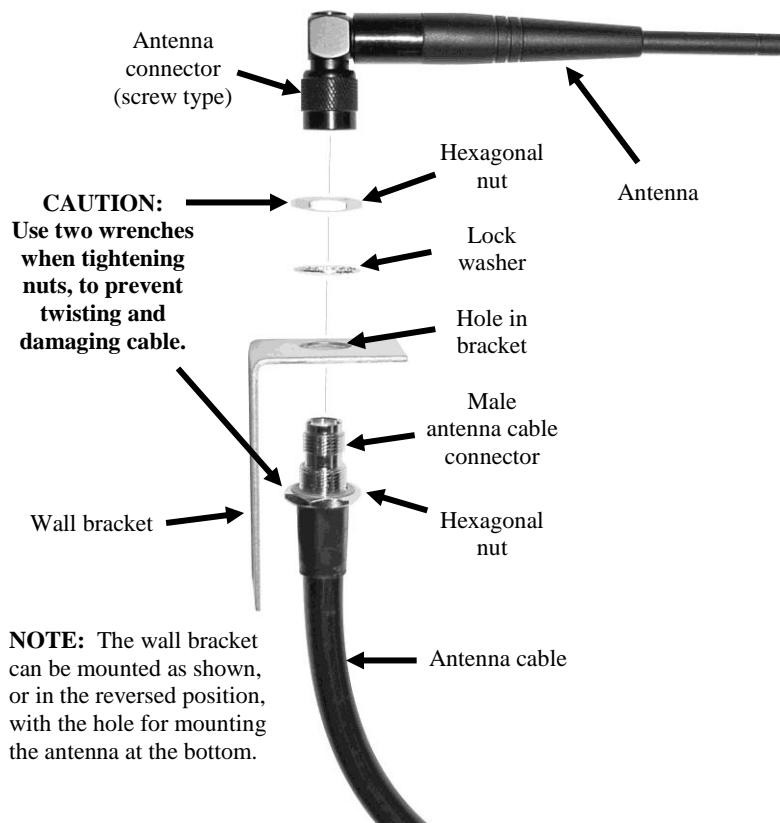


Figure 14. Remote antenna mounting on wall bracket

3.2 Cable Pulling

CAUTION: *If you do not use the HME audio cable, be sure the speaker/microphone wires you use are a twisted pair. For full-duplex installations, the speakers and microphones must use separate cables or audio feedback will occur. Never run high-voltage cables in the same conduit with audio or loop cables.*

The recommended HME audio cable has four color-coded, insulated wires and a bare shield (drain) wire. It can be used to connect any component to the base station. Pull the cables (two for full-duplex, one for half-duplex) through the conduit from the speaker post or menu board into the building as follows.

For dual drive-thru installations, repeat the following steps to route **shielded** cable from inside the building to the speaker post or menu board in each lane.

For tandem drive-thru installations, repeat the following steps to route **shielded** cable from inside the building to the speaker post or menu board at each order point.

- Run fish tape from inside the building, through the conduit to the speaker post or menu board.
- Go outside. If you are pulling more than one cable, **mark the cables and spools for identification**. Fasten each cable to the fish tape where it comes out of the conduit, and go back inside the building.
- Pull the fish tape and cable through the conduit into the building. Disconnect the cable from the fish tape and pull enough of it in to reach the base station.
- Go outside again and route the cable from the outside conduit to the speaker and microphone units in the speaker post or menu board.
- Cut the cable, leaving about 3 feet (915 mm) of slack. If more than one cable have been pulled, **mark the ends of the cables again for identification**.
- Remove about 2 inches (50 mm) of the outer insulation from the end of each cable. Strip about ½ inch (12 mm) of insulation from each of the four wires in the cable.
- Route all the cables together to the base station, through walls and over ceiling panels if possible. Cut off any slack cable so no coils of excess cable are left in the ceiling or elsewhere.

3.3 Outside Speaker and Microphone Installation and Cable Connections

This section describes standard, full-duplex installations, using a DM3 microphone and SP2500LP Low-Profile Speaker. Installation requirements may vary. In dual-lane or tandem systems, speakers and microphones must be installed for each lane or order point. Refer to the wiring diagrams on pages 43 – 50.

Note: For half-duplex installations, the SP2000A Speaker/Microphone Unit is used. See Section 3.4, page 20 for installation of the SP2000A.

In full-duplex systems the standard microphone and speaker provide the best performance. However, in some cases the DM1 Microphone may be used. For DM1 installation, refer to the instructions enclosed with the unit. For either the DM1 or DM3, refer to the appropriate wiring diagram on pages 43 – 50.

Mount the microphone first, against the speaker grill in the speaker post or menu board. Position it where the customer will speak directly into it. The speaker can then be installed anywhere around the microphone, as long as they are at least 2 feet (610 mm) apart, center-to-center, to avoid audio feedback.

Note: Try the system with the speaker at various locations around the microphone before permanently mounting it. If feedback occurs, move around until the feedback disappears. If possible, park a vehicle in front of the outside microphone to simulate echo conditions that may also cause feedback.

3.3.1 Microphone Installation

Typical microphone installation involves mounting the unit with the enclosed foam pieces, inside the upper compartment of the speaker post. The foam will fit many types of speaker posts and menu boards. If the microphone must be mounted in a small area, compress the foam when installing it and closing the speaker post or menu board. In larger areas, additional foam (not supplied) must be added. To install the microphone in a typical speaker post, follow the instructions below and refer to Figure 16. Installation in a menu board will be similar, within the menu-board speaker compartment.



Figure 15. Microphone

- Open the speaker post and remove any existing equipment, foam or debris. If there is an existing microphone, remove it and disconnect the microphone cable from it.
- Splice the wires of the audio cable (new or existing) to the wires of the cable extending from the microphone unit, according to the audio system wiring diagram.
- Place the enclosed foam windscreen against the inside of the metal speaker grill.
- Place the front of the microphone unit flush against the foam windscreen, centered on the speaker grill.
- **For the best performance, mount the microphone flush and tight against the foam windscreen, behind the speaker grill.** Pack the remaining pieces of foam around the top, bottom and back of the microphone unit, so it will be held in place against the speaker grill when the compartment is closed. If required, add extra foam (not supplied) on the sides of the microphone to fill the enclosure.

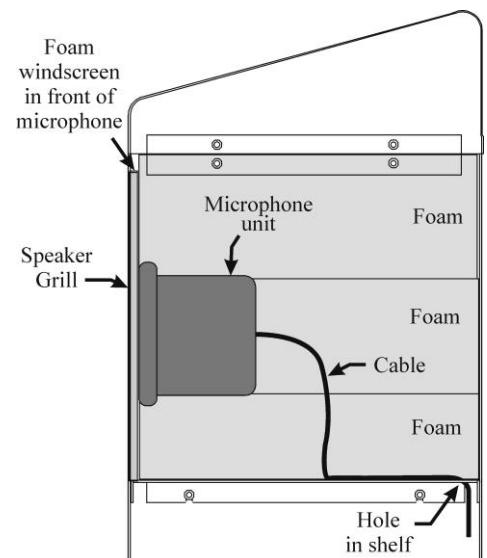


Figure 16. Microphone unit and foam inserts shown in typical speaker post installation

IMPORTANT! In the speaker post or menu board, fill all the holes and openings in the panel that separates the speaker and microphone, with insulating foam sealant (“Great Stuff” expanding polyurethane foam or equivalent, available at home improvement stores).

CAUTION: Do not use the foam sealant in a wet area, or allow it to come in contact with water. See can for precautions and safety information.

- Close the speaker post.

3.3.2 SP2500LP Low-Profile Speaker Installation

Use a flat-blade screwdriver, or similar tool, to open the SP2500LP speaker box by prying the rear panel off the box at the four points shown in Figure 17, and remove it.

Note: Mount the speaker inside the speaker post or menu board if possible. It must be mounted at least 2 feet (610 mm) from the microphone, center-to-center.

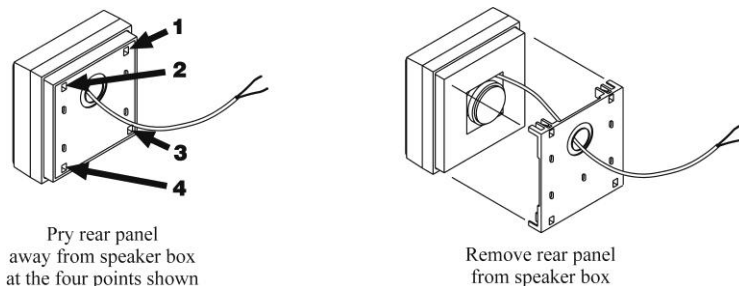


Figure 17. Open the low-profile speaker

- Hold the rear panel of the SP2500LP flat against the surface of the speaker post or menu board, at the desired mounting location, as shown in Figure 18. Use a pencil to mark the speaker post through the wire hole in the panel. Remove the panel and set it aside. Drill a ¼ inch (6 mm) wire hole at the marked location.
- Hold the rear panel against the surface, in the same position as before, and screw the four enclosed self-tapping screws through the screw holes on the panel into the speaker post or menu board as shown in Figure 19.
- Route the cable from the back of the speaker through the wire hole in the rear panel of the speaker box, into the speaker post. Close the box by pressing it against the rear panel.

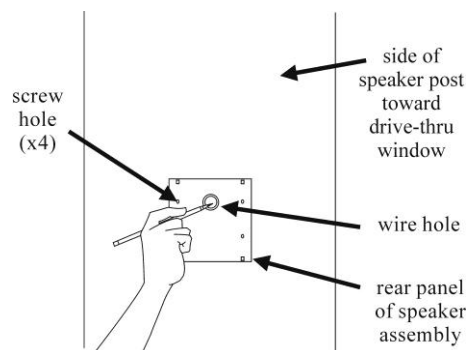


Figure 18. Mark speaker post or menu board through wire hole in rear panel of SP2500LP speaker assembly

SP2500LP Cable Connections:

- Inside the speaker post or menu board, connect the green and white wires of the appropriate cable to the wires coming from the speaker as shown in Figure 20. Do not connect the drain wire. Solder the connection and cover it with a crimp cap insulator.

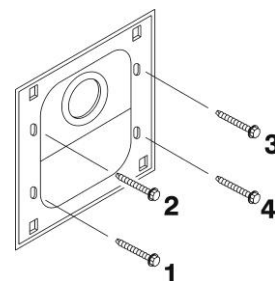


Figure 19. Screw the self-tapping screws through holes in rear panel of SP2500LP speaker box

IMPORTANT! For full-duplex systems, use separate cables for speaker and microphone, or feedback may occur.

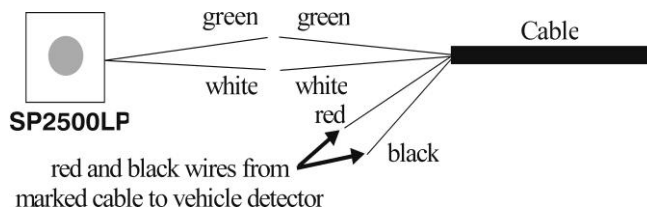


Figure 20. SP2500LP cable connections

Optional SP2000A Speaker/Microphone Installation

Note: The installation described below is for typical mounting of the SP2000A directly against the inside of the speaker grill. If it needs to be mounted at an angle, or at a distance from the speaker grill, its base can be bolted to a horizontal surface.

Installation

- Drill four 1/8 inch (3.2 mm) pilot holes at the spots shown on Figure 21 A, in the flange of the SP2000A.
- Find the enclosed SP2000A mounting template. Hold the template centered against the outside of the speaker grill on the speaker post or menu board. With a pencil or other sharp object, mark the speaker grill through the four drill-hole targets on the template. Drill a 3/16 inch (4.8 mm) hole at each of the marked spots.
- Hold the SP2000A flush against the inside of the speaker grill, with the four pilot holes on its flange directly over the four holes drilled through the grill speaker. From the outside of the speaker grill, drill the four enclosed self-tapping screws through the drilled holes in the speaker grill and through the SP2000A flange at each pilot hole, as shown in Figure 21 B.

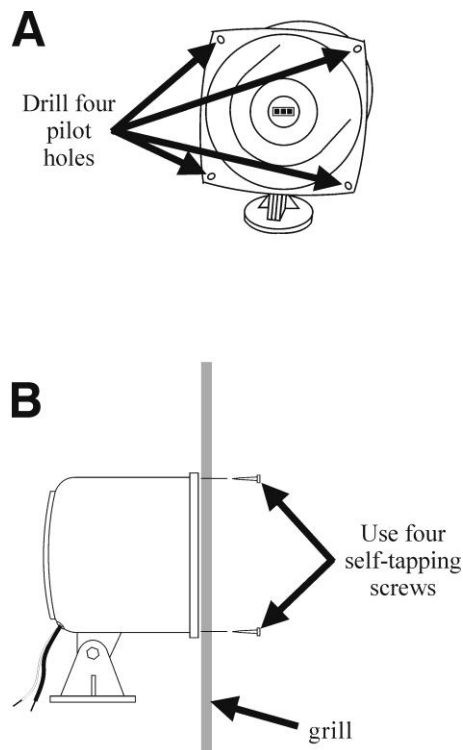


Figure 21. Installing the SP2000A

Cable Connections

CAUTION: *Never run high-voltage cables in the same conduit with audio or loop cables.*

- Connect the red wire from the appropriate cable to the white SP2000A wire, and the black cable wire to the black SP2000A wire as shown in Figure 22. Do not connect the drain wire.
- Solder the connection and cover it with electrical tape. Solder all splices.

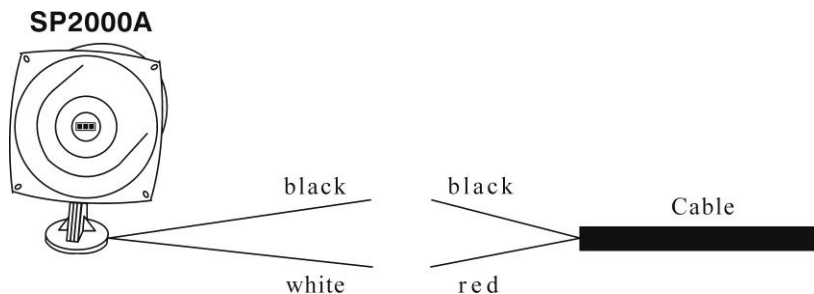


Figure 22. SP2000A cable connection

3.5 **Optional External Vehicle Detector Installation**

- If an external type vehicle detector will be used, install it according to its own installation instructions. Connect it to the base station according to the appropriate wiring diagram on pages 43 – 50. Note that the connections are different for internal and external vehicle detectors.
- Route a cable from the external vehicle detector output to the J30 connector on the audio board in the Wireless IQ base station.
- Remove 4 inches (100 mm) of outer insulation from the end of the cable at the base station, and strip about ¼ inch (6 mm) of insulation from each of the color coded wires coming from the cables.
- Connect the color-coded wires to connector J30, pins 3 and 5 for negative vehicle detection according to the wiring diagrams on pages 43 – 50. Be certain the wires are fully inserted into each connector plug to prevent shorting the wires.

3.6 **Optional HME Vehicle Detector Board (VDB) Installation**

To install an HME VDB in the base station, follow the instructions below.

Note: In tandem systems, there will be a VDB in the primary base station for Order Point #1, and a VDB in the secondary base station for Order Point #2.

- Open the base station by pushing the latches on the front cover and VERY CAREFULLY guiding the cover downward.
- Carefully position the three holes in the VDB over the three plastic standoffs at the upper right side, inside the base station, in the position shown on the respective wiring diagram on pages 43 – 50. Press on the VDB until the tips of the three standoffs snap through the holes in the board.

Connect the cable assembly enclosed with the VDB to the P1 connector on the vehicle detector board, and the other end to the J6 connector near the upper, right corner of the switcher board. If there is no switcher board, connect the cable assembly to the P1 connector on the vehicle detector board, and the other end to the J10 connector at the right end of the audio circuit board as shown on pages 43 – 50.

- Route a cable from the underground loop to the TB1 terminal block on the Vehicle Detector Board.
- Close the cover on the base station, and lock it by pushing until it latches.

3.7 External Message Repeater Installation

If an external message repeater is used, it must be wired in series with the outside speaker. It also requires a vehicle-present signal. Connect the message repeater vehicle-present input to the isolated vehicle detector output on the Audio Circuit Board.

Note: No output detect will be generated if the base station power is removed.

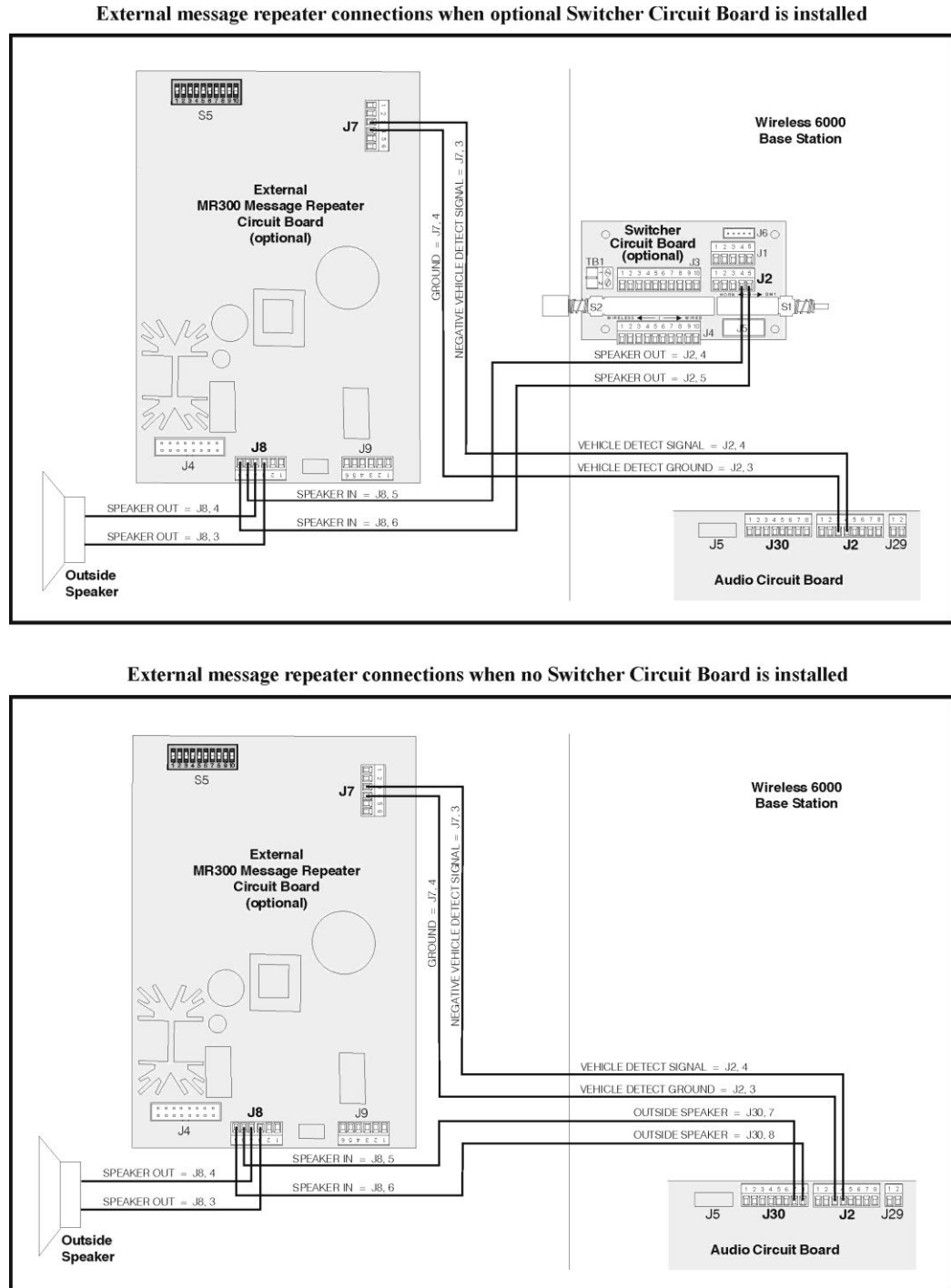


Figure 23. External message repeater connections

4. EQUIPMENT SETUP

4.1 Internal Message Repeater Setup

Locate and set the “Red Message” and “Green Message” slide switches and the “Red Message Control” and “Green Message Control” DIP switches on the front panel of the base station. Refer to section 6.9 for “Red Message Control” and “Green Message Control” switch functions and message recording instructions.

If a System 30 Timer is installed with the Wireless IQ, the timer alert output can be used to trigger tones in the headset or a message to be played by the message repeater. Set “Red Message Control” and/or “Green Message Control” #5 switch to ON for an alert message, which will be heard through outside speakers and/or headsets selected with the #2, 3 and 4 switches only in headsets, or OFF for an alert tone to be heard only in headsets.

If Wireless IQ message repeater will not be triggered by an alert signal, set both “Red Message Control” and “Green Message Control” #5 switches to OFF so the message repeater input will be triggered only by vehicle detector signals.

4.2 Early Warning Setup

An extra vehicle detector can be used with the Wireless IQ to give a pre-warning signal when a vehicle enters the drive-thru area. To set up a pre-warning signal, first install the extra vehicle detector at the desired detection point then connect its cable.

If an external vehicle detector is used, connect its cable to connector J9, positions 1 and 2 on the base station audio circuit board.

If an internal Vehicle Detector Board is used, connect P1 on the VDB to J15 on the Audio Circuit Board. Also on the Audio Circuit Board, wire the J25 connector, positions 8 and 9 to the J9 connector, positions 1 and 2 respectively.

4.3 Dual-Lane Setup

To set up the Wireless IQ system for dual-lane operation, place K1 DIP switch #1 on the base station transceiver board in the ON position, then press the “Reset” button. Refer to Figure 26 on page 35 and Figure 28 on page 37.

Set the “Green Message Control” DIP switch #8 to the ON position in the Secondary Base only. The Primary Base must be wired to Lane 1, the Secondary Base to Lane 2.

4.4 Split-B Audio Setup

Split-B audio is used in dual-lane operations to limit audio transmission from Lane 1 COMMUNICATOR®s to be heard only by other Lane 1 Communicator operators, and transmission from Lane 2 Communicators to be heard only by other Lane 2 Communicator operators. When the Split-B audio feature is not used, B audio transmission from either lane is heard by all Communicator operators in both lanes.

To set up the Wireless IQ system for split-B audio operation, on the base station transceiver board, place the K1 DIP switch #2 in the ON position, then press the “Reset” button. Refer to Figure 26 on page 35 and Figure 28 on page 37.

4.5 Auto-Hands-Free Setup

Auto-Hands-Free operation is explained on pages 27 – 30. To set up the Wireless IQ system for auto-hands-free operation, on the base station transceiver board, place the K1 DIP switch #3 in the ON position, then press the “Reset” button. Refer to Figure 26 on page 35 and Figure 28 on page 37.

5. SYSTEM FUNCTIONAL CHECK

ACTION	RESULT
Plug base station AC adapter into electrical outlet.	System power is on. Base station POWER lights are on. System is silent.
Go outside (or have someone else go outside) and follow the steps below.	
Push COMMUNICATOR® button A and speak into headset microphone.	Audio should be heard at outside speaker.
Release button A. Place vehicle detector reset switch in OVERRIDE position. Tap on outside microphone.	Vehicle present tone should be heard in headset earpiece, followed by inbound audio. If this does not happen, there is a wiring problem.

5.1 Noise Reduction Adjustment

When the ClearSound feature is turned on, it provides four levels of noise reduction. It can be adjusted for the best balance of noise reduction and voice quality, considering the store's environment.

- Locate the S13 switch near the center of the base station audio circuit board. Refer to Figure 28 on page 37.
- To turn the ClearSound noise reduction feature on, place the S13 switch position 2 ON.

ClearSound Noise Reduction Adjustments				
	18 dB reduction (maximum)	13 dB reduction	9 dB reduction	6 dB reduction (minimum)
S13 – 3	OFF	OFF	ON	ON
S13 – 4	OFF	ON	OFF	ON

S13 – 1 = VAA ON/OFF

S13 – 2 = ClearSound ON/OFF

Note: Factory default settings for S13-3 and S13-4 are shown in **bold**.

5.2 VAA (Voice Activated Attenuation) Adjustment

The VAA circuit reduces the level of the order taker's outbound audio that is picked up by the outside microphone and sent back to be heard in the order taker's headset. This is sometimes referred to as "external loop around" or "echo."

Note: Misalignment of the VAA circuit can result in complaints of echo, feedback or fluctuating inbound audio levels.

To activate the circuit, S13 switch #1 (See Figure 28, page 37) must be ON. The factory default setting is ON.

VAA Threshold Level:

This is the volume level of the order taker's voice required to activate the VAA circuit. During normal operation, the inbound audio level should be reduced when the order taker speaks to the customer, and should recover when the order taker stops speaking. If speaking to the customer does not reduce the inbound level, turn the VAA Level control on the front panel (See Figure 2, page 2) clockwise until the inbound audio is reduced while speaking to the customer. If the inbound is reduced anytime the outbound channel is open, regardless if the order taker is speaking or not, turn the VAA Level control counterclockwise, so the inbound is reduced only when the order taker is speaking.

VAA Attenuation Level:

This is the amount the inbound volume level is reduced when the order taker speaks to the customer. The attenuation level is factory set at 15dB, and should not require adjustment. If the order taker cannot hear the inbound audio at all while speaking, the attenuation level may be adjusted. To increase the inbound level while the order taker is speaking, turn R348 (See Figure 26, page 35) counterclockwise. To reduce the inbound level while the order taker is speaking, turn R348 clockwise. For assistance, call HME at 1-800-848-4468.

6. WIRELESS IQ OPERATION

The COM6000BP can be operated in Hands-Free (HF), Auto-Hands-Free (AHF) or Push-To-Talk (PTT) modes. If your store does not have HF capability, the Wireless IQ should be operated in the PTT mode, according to the instructions on the following pages for single-lane or dual-lane stores.

A full-duplex system supports HF, AHF and PTT operation. Communication can be transmitted and received at the same time, as in a normal telephone conversation. In the AHF mode, transmission and reception are activated automatically when a customer drives into the drive-thru lane. In the HF mode, transmission and reception are activated by touching and releasing one of the A buttons on the Communicator. In the PTT mode, one of the A buttons on the Communicator must be held while the operator is talking to the customer. A half-duplex system only supports the PTT mode. One of the A buttons on the Communicator must be held while the operator speaks to the customer. The customer's voice will not be heard while the operator is transmitting.

In single lane operations, when a customer arrives in the drive-thru lane, you will hear a single beep in the headset.

In dual-lane operations, when a customer arrives in the drive-thru lane you are connected to you will hear a single beep in the headset; when a customer arrives in the other lane, you will hear a double beep.

In dual-lane operation, if you are communicating with a customer in one lane when another customer arrives in the other lane, you will hear a higher pitch double beep in your headset. When the customer leaves the speaker post in the lane you are connected to, the same high pitch double beep will repeat in your headset every four seconds until you touch the A1 or A2 button to communicate with the customer in the other lane.

Note: In dual-lane operations, if you have a Mode Switch and it is in the "DEDICATED" position, you will only hear single beeps in your headset when customers arrive in the lane you are operating.

6.1 Changing Languages

To change the language of the cues heard in the Communicator from English to Spanish/French and back to English, with the Communicator power off, press and hold the volume-down ▼ button and the A1 button while you press the power PWR button. The language of the cues heard in the headset earpiece will change when the power goes on.

6.2 Obtaining COMMUNICATOR® Status

To obtain Communicator status, with the Communicator power off, press and hold the volume-down ▼ button and the A2 button while you press the power PWR button. You will hear the status message in the headset earpiece when the power goes on.

6.3 Single-Lane Operation (one base station for one speaker post in one lane)

Hands-Free (HF) Mode:

- With the power off, press and hold the volume-up ▲ and B buttons while you press and release the PWR button to turn the power on in the HF mode. The COMMUNICATOR® will remember this setting.
- As a customer enters the drive-thru lane, you will hear an alert tone (single beep) in your headset, and you will be able to hear the customer at the speaker post or menu board.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Touch and release the A1 or A2 button to speak and listen to the customer.
- Touch and release the A1, A2 or B button to end communication with the customer.
- Touch and release the A1 or A2 button if you want to speak to the customer again.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

Auto Hands-Free (AHF) Mode:

Note: Only one Communicator operator at a time can use the auto hands-free feature. If a Communicator is turned off while in the AHF mode, it will automatically be reset to its previous operating mode.

- With the power off, press and hold the volume-up ▲ and A1 buttons while you press and release the PWR button to turn the power on in the AHF mode.
- As a customer enters the drive-thru lane, you will hear an alert tone (single beep) in your headset, and you will be able to hear the customer at the speaker post or menu board.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Speak and listen to the customer without pressing any buttons.
- Touch and release the A1, A2 or B button to end communication with the customer.
- Touch and release the A1 or A2 button if you want to speak to the customer again.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

Push-To-Talk (PTT) Mode:

- With the power off, press and hold the volume-down ▼ and B buttons while you press and release the PWR button to turn the power on in the PTT mode. The Communicator will remember this setting.
- As a customer enters the drive-thru lane, you will hear an alert tone (single beep) in your headset, and you will be able to hear the customer at the speaker post or menu board.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Touch and hold the A1 or A2 button to speak to the customer. Release when finished.

6.4 Dual-Lane Operation (two base stations for two speaker posts in two lanes)

Hands-Free (HF) Mode:

- With the COMMUNICATOR® power off, press and hold the volume-up ▲ and B buttons while you press and release the PWR button to turn the power on in the HF mode. The Communicator will remember this setting.
- As a customer enters a drive-thru lane, you will hear an alert tone in your headset (single beep for Lane 1, double beep for Lane 2), and you will be able to hear the customer at the speaker post or menu board if that lane is selected.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Touch and release the A1 button for Lane 1 or A2 for Lane 2, to speak and listen to the customer.
- Touch and release the A1, A2 (depending on lane) or B button to end communication with the customer.
- Touch and release the A1 button for Lane 1 or A2 for Lane 2, to speak to the customer again.
- To change lanes, touch and release the opposite A button.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

Auto Hands-Free (AHF) Mode:

Note: Only one Communicator operator at a time, in each lane, can use the AHF feature. If an operator attempts to configure another Communicator, "System busy" will be heard in his headset. Changing lanes is not possible in the AHF mode. If you turn a Communicator off in the AHF mode, it will reset to its previous operating mode.

- For Lane 1 operation, with the power off, press and hold the volume-up ▲ and A1 buttons while you press and release the PWR button to turn the power on in the AHF mode.
- For Lane 2 operation, with the power off, press and hold the volume-up ▲ and A2 buttons while you press and release the PWR button to turn the power on in the AHF mode.
- As a customer enters a drive-thru lane, you will hear an alert tone in your headset (single beep for Lane 1, double beep for Lane 2), and you will be able to hear the customer at the speaker post or menu board if that lane is selected.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Speak and listen to the customer without pressing any buttons.
- Touch and release the A1, A2 (depending on lane) or B button to end communication with the customer.
- Touch and release the A1 button for Lane 1 or A2 for Lane 2, to speak to the customer again.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

Push-To-Talk (PTT) Mode:

- With the Communicator power off, press and hold the volume-down ▼ and B buttons while you press and release the PWR button to turn the power on in the PTT mode. The Communicator will remember this setting.
- As a customer enters a drive-thru lane, you will hear an alert tone in your headset (single beep for Lane 1, double beep for Lane 2), and you will be able to hear the customer at the speaker post or menu board if that lane is selected.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Touch and hold the A1 button to speak to a customer in Lane 1, or A2 to speak to a customer in Lane 2.

6.5 Tandem Operation (two base stations for two speaker posts in one lane)

In Tandem operation, customers at Order Point #1 are served by Order Taker #1, and customers at Order Point #2 are served by Order Taker #2. If a customer arrives at Order Point #2 when there is no customer at Order Point #1, a message will be played automatically from Speaker Post or Menu Board #2 saying “Please pull forward.” The message can be set to play one time or to repeat every 4 seconds until the customer pulls forward to Order Point #1 (See section 6.9.2, page 32, Red Message Control, Switch 6). When a customer arrives at Order Point #1, Order Taker #1 will be alerted. If a customer arrives at Order Point #2 when there is already a customer at Order Point #1, Order Taker #2 will be alerted.

Note: If you want to change the pre-recorded “Please pull forward” message, see section 6.9.1 on page 31.

CAUTION: *In tandem operation, if Order Taker #2’s Communicator is set in the Auto Hands-Free mode, the “Please pull forward” message will not be played at Order Point #2. If necessary, Order Taker #2 will have to ask the customer at Order Point #2 to pull forward.*

Hands-Free (HF) Mode (Either Order Taker)

- With the COMMUNICATOR® power off, press and hold the volume-up ▲ and B buttons while you press and release the PWR button to turn the power on in the HF mode. The Communicator will remember this setting.
- As a customer approaches Order Point #1, Order Taker #1 will hear an alert tone in the headset, and will be able to hear the customer at speaker post or menu board #1.
- If a customer approaches Order Point #2 when there is already another customer at Order Point #1, Order Taker #2 will hear an alert tone in the headset, and will be able to hear the customer at speaker post or menu board #2.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer’s voice level in your headset if necessary.
- Order Taker #1, touch and release the A1 button to speak and listen to the customer at Order Point #1.
- Order Taker #2, touch and release the A2 button to speak and listen to the customer at Order Point #2.
- Touch and release the A1/A2 (depending on which Order Taker) or B button to end communication with the customer.
- Touch and release the A1/A2 (depending on which Order Taker) to speak to the customer again.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

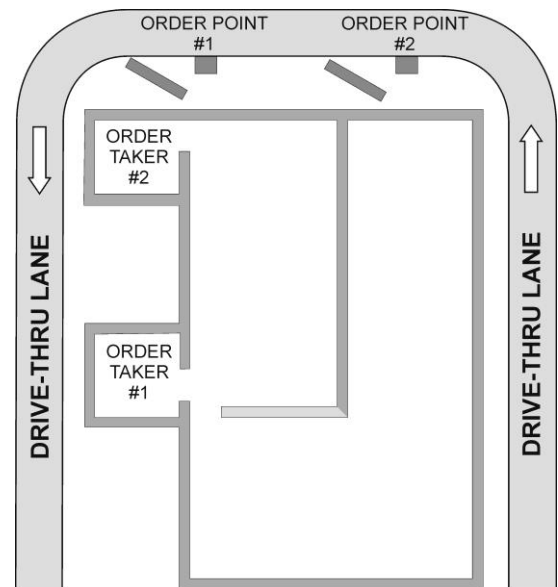


Figure 24. Typical Tandem drive-thru layout

Auto Hands-Free (AHF) Mode (Only Order Taker #1)

- Order Taker #1 only, with the power off, press and hold the volume-up ▲ and A1 button while you press and release the PWR button to turn the power on in the AHF mode.
- As a customer approaches Order Point #1, you will hear an alert tone in your headset, and you will be able to hear the customer at speaker post or menu board #1.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Speak and listen to the customer without pressing any buttons.
- Touch and release the A1 or B button to end communication with the customer.
- Touch and release the A1 button to speak to the customer again.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

Push-To-Talk (PTT) Mode (Either Order Taker)

Note: In Tandem operation, only Order Taker #1 can use the Auto Hands-Free Mode. If a Communicator is turned off while in the AHF mode, it will automatically be reset for its previous operating mode.

- With the Communicator power off, press and hold the volume-down ▼ and B buttons while you press and release the PWR button to turn the power on in the PTT mode. The Communicator will remember this setting.
- As a customer approaches Order Point #1, Order Taker #1 will hear an alert tone in the headset, and will be able to hear the customer at speaker post or menu board #1.
- If a customer approaches Order Point #2 when there is already another customer at Order Point #1, Order Taker #2 will hear an alert tone in the headset, and will be able to hear the customer at speaker post or menu board #2.
- Use the volume-up ▲ and down ▼ buttons to adjust the customer's voice level in your headset if necessary.
- Touch and hold the A1 button to speak to a customer at Order Point #1, or A2 to speak to a customer at Order Point #2.
- If a customer drives away from the speaker post or menu board, the Communicator will stop transmitting.

6.6 Internal Communication

To communicate internally with other COMMUNICATOR® operators, press and hold the B button while talking. Release when finished. In single-lane operations, up to four Communicator operators can have conference-call type communication by all pressing the B button. Everyone pressing the B button will hear each other without interference.

In dual-lane operation, if your system was set up for "Split-B," internal communication will be heard only by Communicator operators in your lane. If your system was not set up for Split-B operation, internal communication will be heard by all Communicator operators in both lanes. In dual-lane operation, up to three Communicator operators can have conference-call type communication by all pressing the B button. Everyone pressing the B button will hear each other without interference. If a car arrives in a lane while internal communication is taking place, priority will be given to the respective A channel for customer communication, which will reduce the number of internal communication channels available.

6.7 Speed-Team Operation

Speed team operation is used during high-volume times. An order taker wearing a Communicator relays orders from outside into the store, using button A1, A2 or B.

Note: Speed teams are not used in tandem drive-thrus.

6.8 Wired Backup System

In order to use a wired backup system, you must have a Switcher Board (optional) in your base station. Open the base station, and look for the board shown in Figure 25. If there is no Switcher Board, a wired backup system cannot be used. If there is a Switcher Board, place the S2 switch in the IN position to use the wired backup system. When using the Wireless IQ system, leave the S2 switch in the OUT position.

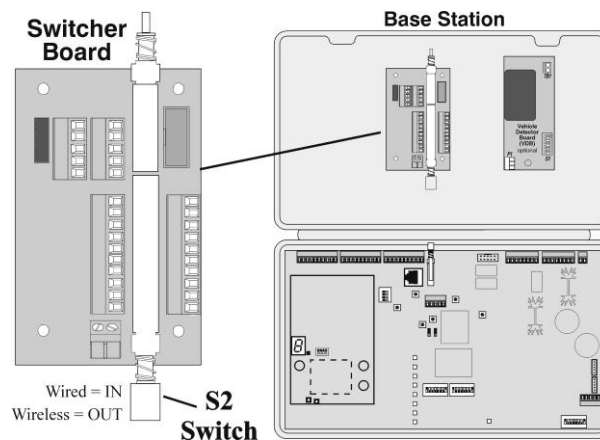


Figure 25. S2 switch on Switcher Board

6.9 Message Repeater Operation

6.9.1 Recording Messages (Refer to Figure 2 on page 2.)

To record RED MESSAGE: RED MESSAGE switch must be in ON position.

Note: In Tandem base stations, the red message “Please pull forward” is pre-recorded. Recording a new red message will replace the pre-recorded message.

- Press and release the RECORD MODE button on the base station **once**.
— The **red** MESSAGE RECORD light on the base station will come on.
- Press and hold button B on the COMMUNICATOR® and talk into the headset microphone to record a message (up to 15 seconds).
— The MESSAGE RECORD light on the base station will begin blinking.
- Release button B.
— The record function will stop and the MESSAGE RECORD light will go off.

To record GREEN MESSAGE: GREEN MESSAGE switch must be in ON position.

- Press and release the RECORD MODE button on the base station **twice**.
— The **green** MESSAGE RECORD light on the base station will come on.
- Press and hold button B on the Communicator and talk into the headset microphone to record a message (up to 15 seconds).
— The MESSAGE RECORD light on the base station will begin blinking.
- Release button B.
— The record function will stop and the MESSAGE RECORD light will go off.

6.9.2 Message Repeater Switch Settings

Locate the "RED MESSAGE" and "GREEN MESSAGE" switches, and the "RED MESSAGE CONTROL" and "GREEN MESSAGE CONTROL" DIP switches inside the front door of the base station for the following settings.

Note: If the RED MESSAGE and GREEN MESSAGE switches are both in the ON position, and are selected for the same output, Red and Green Messages will be played alternately. After a new message has been recorded or after the base station has lost and regained power, any message to the outside speaker will always be heard in the Communicator headset the first three times it plays, whether Switch 1 (DIP switch S13, 8) is in the ON or OFF position. See Figure 28, page 37.

Red Message Switch:

In the ON position, the RED MESSAGE switch enables the "Red Message" to be played. A playing message can be cancelled by pressing Communicator button A.

Note: The RED MESSAGE switch does not need to be in the ON position to enable the "Red Message" to be played when the Tandem switch is on.

Red Message Control:

Switch 1 enables inbound audio from speaker post to be heard while message is playing.

Switch 2 enables message to be played to all Communicators.

Switch 3 enables message to be played on the outside speaker.

Switch 4 enables message to be played on the ceiling speaker.

Switch 5 causes message to be triggered by an external alert signal.

Switch 6 (only used in tandem systems, on secondary base station)

in **OFF** position, "Please pull forward" message plays once.

in **ON** position, "Please pull forward" message repeats every 4 seconds.

Switches 7 and 8 not used.

Green Message Switch:

In the ON position, the GREEN MESSAGE switch enables the "Green Message" to be played. A playing message can be cancelled by pressing Communicator button A.

Green Message Control:

Switch 1 enables inbound audio from speaker post to be heard while message is playing.

Switch 2 enables message to be played to all Communicators.

Switch 3 enables message to be played on the outside speaker.

Switch 4 enables message to be played on the ceiling speaker.

Switch 5 causes message to be triggered by an external alert signal.

Switch 6 causes a 3 second delay before message is played.

Switch 7 not used

Switch 8 selects a "dual-beep" vehicle tone for the Lane 2 base station in a dual lane configuration.

7. IN CASE OF PROBLEMS

PROBLEM	PROBABLE CAUSE	SOLUTION
“Battery failed” is heard in headset when COMMUNICATOR® PWR button is pressed.	Battery may be defective.	Replace battery. Call HME.*
“Headset failed” is heard in headset when Communicator PWR button is pressed.	Headset may be defective.	Use another headset. Call HME.*
You hear your echo in headset earpiece when you speak into Communicator microphone.	Outside speaker and microphone may not be properly installed.	Be sure speaker and microphone are isolated from each other, and are tightly mounted with enough foam packed around each of them to absorb vibrations.
	Outbound and/or inbound audio level may be set too high.	Set outbound audio level just high enough to be heard by customers. Lower inbound audio to comfortable level.
	VAA controls may need to be adjusted. See section 5.2, page 25.	Adjust VAA Level control on the front panel of the base station clockwise to reduce inbound audio level when you are speaking into the headset microphone.
		Adjust VAA attenuation level, R348 on the base station circuit board (Figure 26 #13, page 35) clockwise to reduce inbound audio level when you are speaking into the headset microphone. NOTE: If the inbound level is too low, you will not hear the customer.
No sound is heard in Communicator headset when you press button A and speak into microphone.	Power may be off at base station.	Check circuit breaker for building.
	Power supply in base station may not be working.	Check power supply indicator lights on base station. If no light is lit, be certain AC power adapter is plugged into AC electrical outlet, and is connected to J29 on base station audio circuit board.
	Communicator power may not be on.	Press PWR button on Communicator. Be certain power light goes on and switches from red to green.
	Volume may not be set correctly.	Adjust volume with Volume-up and down buttons.
	Battery may be low or defective.	Check Communicator Power light. If not lit, replace battery.
	Headset may be defective.	Use another headset. Call HME.*
	Communicator may not be registered.	Register Communicator.
Channel A or B is not working.	Communicator power may not be on.	Press PWR button on Communicator. Be certain power light goes on and switches from red to green.
	Battery may be low or defective.	Check Power light. If not lit, replace battery.
	“A” Talk or “B” Talk light on base station does not light when button A or B on Communicator is pressed.	Use another Communicator. Call HME.*
	Communicator may not be registered.	Register Communicator.
Outbound sound is too low.	Outbound volume may be set too low for environment.	Turn outside speaker volume control, on front panel of base station, clockwise until volume is satisfactory.
No outbound sound; Customer cannot hear anything.	System may be set for speed-team operation.	Be certain SPEED TEAM button on base station is in OFF position.
	There may be loose wires on outside speaker or base station circuit board.	Check VEHICLE PRESENT light on base station. Check outside speaker wire connections in base station and at outside speaker.
	Defective speaker or base station.	Call HME.*

PROBLEM	PROBABLE CAUSE	SOLUTION
Customer cannot be heard in push-to-talk PTT) operation.	System may be set for speed-team operation.	Be certain SPEED TEAM button on base station is in OFF position.
	Base station may be set for wrong drive-thru mode (full or half-duplex).	Check S6 DIP switch #1 at bottom of base station audio circuit board. It should be ON for full-duplex, OFF for half-duplex operation.
Only intermittent voice can be heard in headsets.	Transmitter antenna connectors on base station transceiver circuit board may be loose or damaged.	Be certain antennas are screwed securely onto base station. Check transmitter antenna cable connection at ANT1 and ANT2 near lower-left corner of transceiver circuit board. Pull and remove each connector plug, and check to be certain pin inside it is not bent. If not, call HME.*
	Circuit board may be defective.	Call HME.*
	VAA level is too sensitive.	Reduce VAA level (See Figure 2, page 2) so inbound audio is reduced only when order taker speaks into microphone.
Personnel hear customers in ceiling speaker or headsets, but cannot hear each other.	Circuit board may be defective.	Check to see if status lights on base station are lit. Call HME.*
	Defective COMMUNICATOR®.	Use another Communicator. Call HME.*
No tone or sound is heard in ceiling speaker or headsets when vehicle enters drive-thru lane.	Power interruption may have caused vehicle detection circuit to be out of balance.	When no vehicle is in the drive-thru lane, move the vehicle detector override switch on the base station to the RESET position, then back to the NORMAL position.
	System may be set for speed-team operation.	Be certain SPEED TEAM switch on base station is in OFF position.
	Connector may be loose, or S6 DIP switch #8 is not set to ON.	Check all connectors in base station, and be certain S6 #8 is set to ON. Call HME.*
Personnel cannot hear customers in ceiling speaker or headsets.	There may be loose wires on base station circuit board.	Check all connections on base station circuit boards.
	System may be set for speed-team operation.	Be certain SPEED TEAM switch on base station is in OFF position.
	Outside speaker, audio circuit board or vehicle detector board failed.	Call HME.*
	VAA attenuation set too high	Reduce attenuation. (See Figure 26 #13, page 35)
Headset has intermittent sound.	Battery may be low.	Replace battery.
	Headset may be defective.	Use another headset. Call HME.*
There is still sound in headset after all customers have been served.	VEHICLE DETECT switch on base station may be in the OVERRIDE position.	Be certain switch is in the NORMAL position.
	Vehicle detector may be locked up.	Slide VEHICLE DETECT switch back and forth slowly twice.
Battery charger is not working.	Charger may not be plugged in.	Be certain charger is plugged in. If it still is not working, call HME.*
Red or Green message will not play.	Switch not on.	Be certain respective Red or Green message repeater switch on base station is in the ON position, and routing switches are set.
COMMUNICATOR® “Registration failed” message heard in headset. Lights stay red.	Base station power not on.	Check power supply indicator lights on base station. If no light is lit, be certain AC power adapter is plugged into AC electrical outlet, and is connected to J29 on base station audio circuit board.
	Registration button not pushed.	Repeat registration procedure, pages 5 and 6. Call HME.*

* For assistance, call HME at 1-800-848-4468, or Fax 858-552-0172.

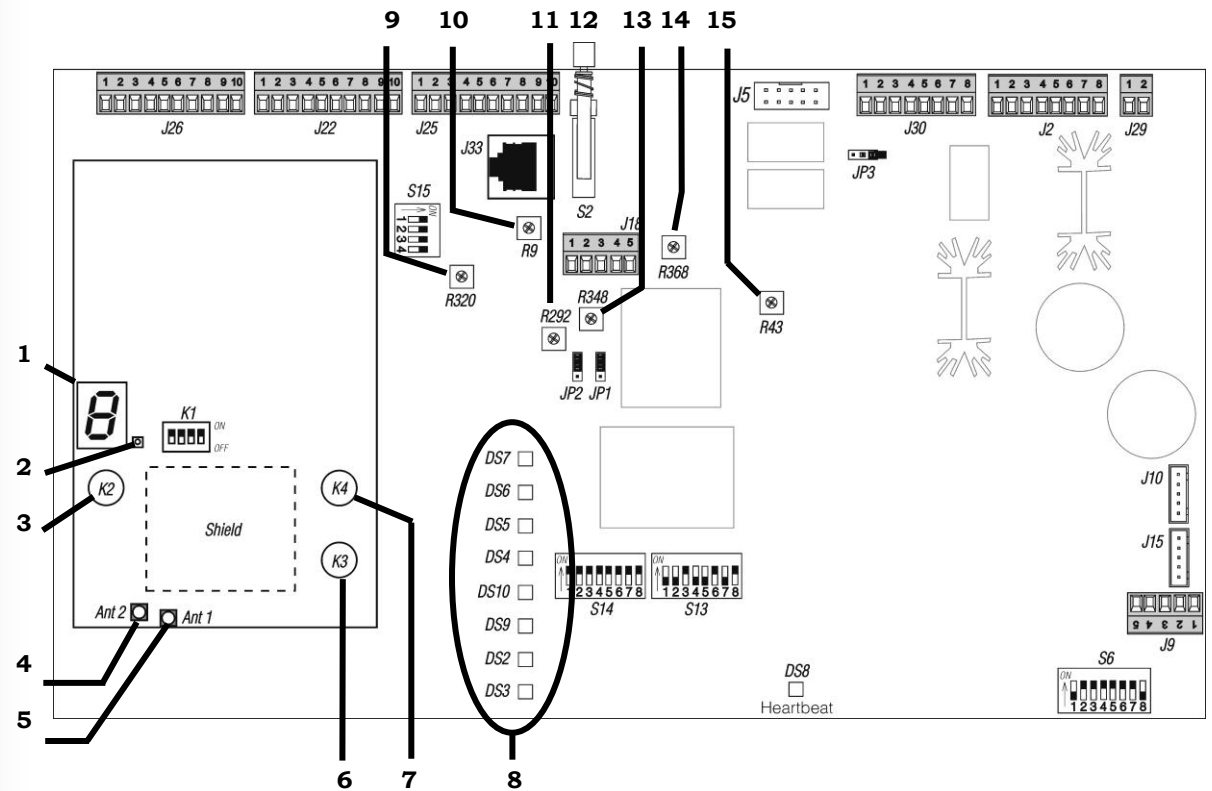


Figure 26. Base Station internal controls and indicators

1. COMMUNICATOR® ID display
2. Status light
3. Reset button
4. Ant2 antenna connector
5. Ant1 antenna connector
6. Start registration button
7. Clear all registration button
8. Indicator lights

DS7	Record
DS6	Vehicle Present
DS5	“B” Talk
DS4	“A” Talk
DS10	+5V Xcvr
DS9	+5V
DS2	+12V
DS3	+22V

 (See Figure 2)
9. Line-in level adjustment
10. Transmit audio level adjustment
11. Transmit message level adjustment
12. Record mode button
13. VAA attenuation level adjustment
14. Line-out level adjustment
15. Inbound audio level adjustment

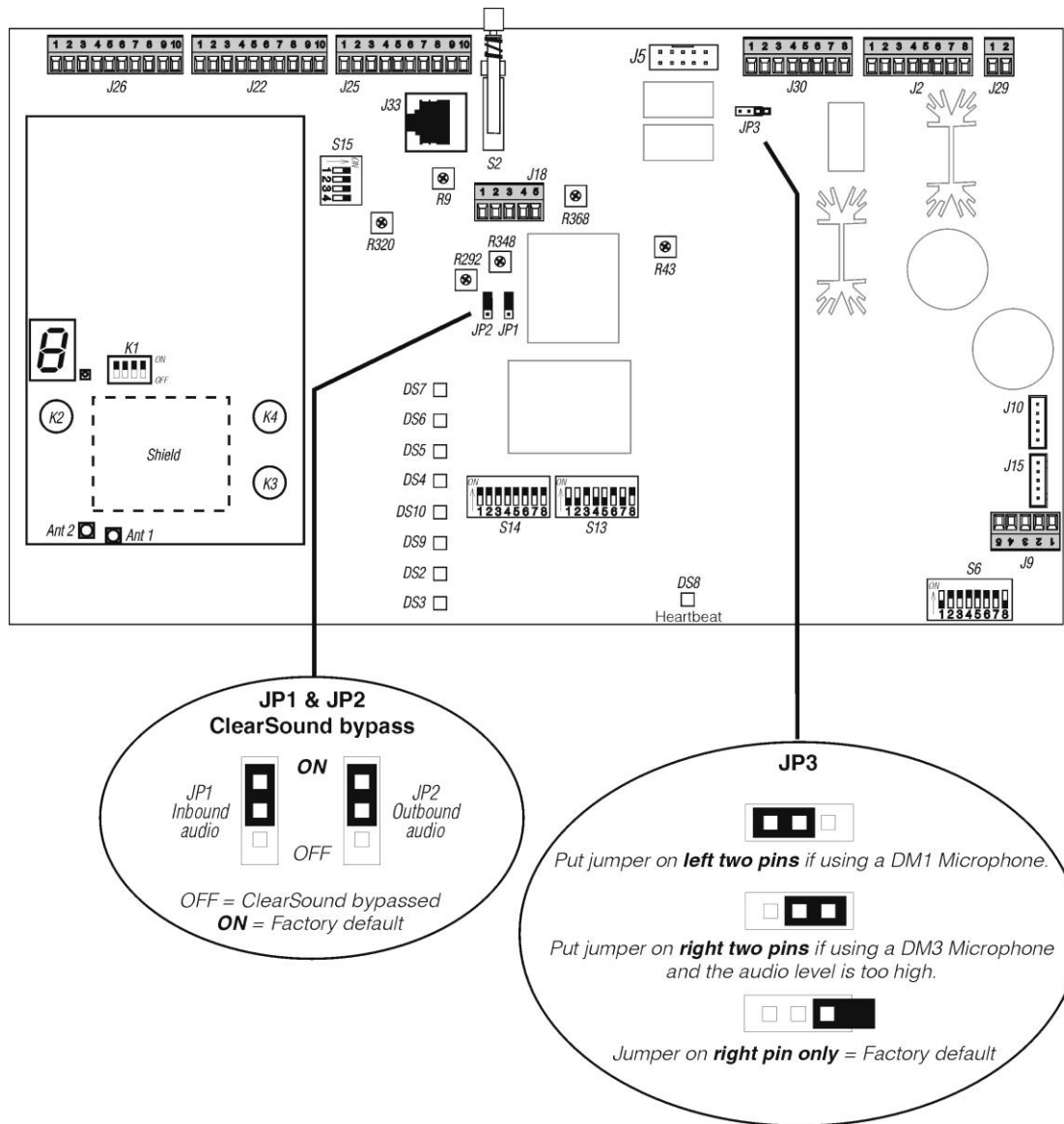
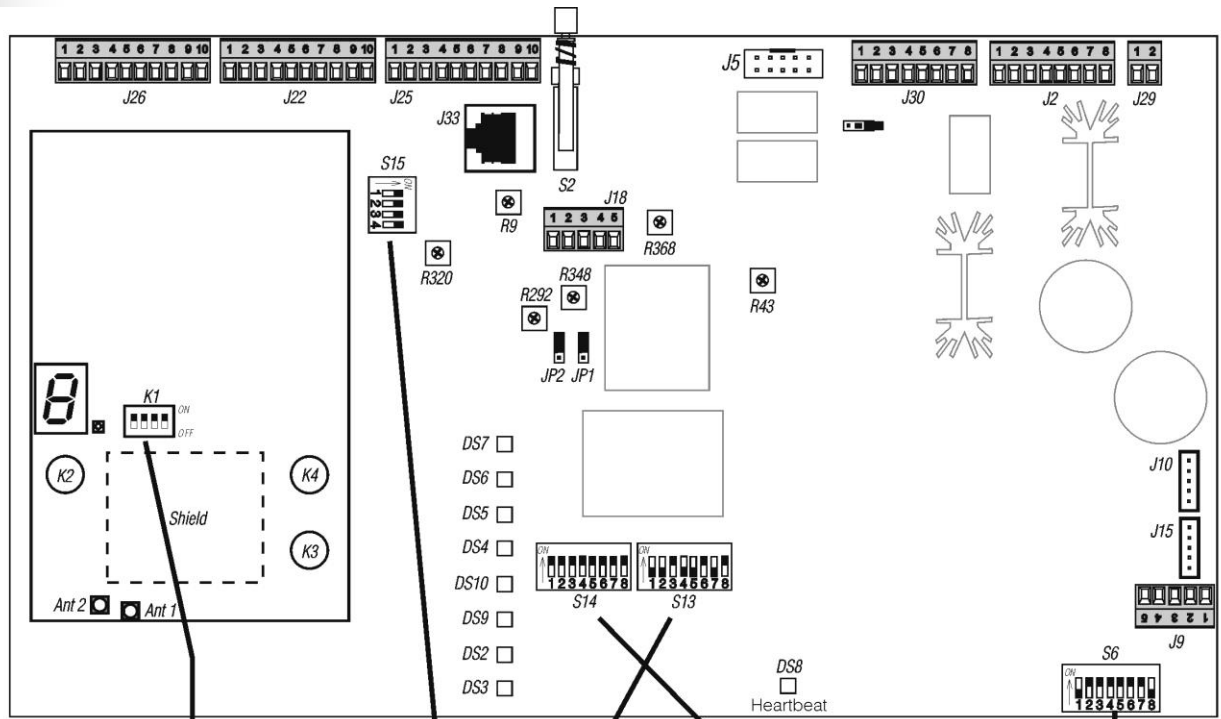


Figure 27. Base station jumper settings



K1 – Switch Functions

Switch	Function
1	ON – Dual lane operation ON OFF – Dual lane operation OFF
2	ON – Split-B audio ON OFF – Split-B audio OFF
3	ON – Auto Hands Free operation ON OFF – Auto Hands Free OFF
4	OFF – Do not change

S14 – Switch Functions

Switch	Function
1	ON – AVC active OFF – AVC inactive
2	ON – Grill speaker audio to line out OFF – Outbound audio to line out
3	ON – Line input to inbound audio OFF – Line input to outbound audio
4	ON – Grill speaker VAA enabled OFF – Grill speaker VAA disabled
5 - 8	OFF – Not used

S13 – VAA and ClearSound

Switch	Function
1	ON – VAA active OFF – VAA not active
2	ON – ClearSound active OFF – ClearSound not active
5	ON – Echo canceller enabled OFF – Echo canceller disabled
6	ON – Store echo canceller enabled OFF – Store echo canceller disabled
7	ON – Echo canceller limiter enabled OFF – Echo canceller limiter disabled
8	ON – Tandem ON OFF – Tandem OFF

When ClearSound is active, it provides four levels of noise reduction, which can be selected by placing switches 3 and 4 in the OFF/ON positions shown below. Level 1 provides maximum and Level 4 provides minimum noise reduction.

	Level 1 18dB	Level 2 13dB	Level 3 9dB	Level 4 6dB
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	ON

S15 –

Switch	Function
1 - 4	ON – OFF – Normal

S6 – Switch Functions

Switch	Function
1	ON – Full-Duplex operation OFF – Half-Duplex operation
2	ON – Headset "A" audio played over ceiling speaker OFF – Headset "A" audio NOT played over ceiling speaker
3	ON – Headset "B" audio played over ceiling speaker OFF – Headset "B" audio NOT played over ceiling speaker
4	ON – Inbound audio from drive-thru lane played over ceiling speaker OFF – Inbound audio from drive-thru lane NOT played over ceiling speaker
5	ON – Vehicle present tone played over ceiling speaker OFF – Vehicle present tone NOT played over ceiling speaker
6	ON – Vehicle early warning tone played over ceiling speaker OFF – Vehicle early warning tone NOT played over ceiling speaker
7	ON – Vehicle present tone repeats every 4 seconds until "A" button is pushed OFF – Vehicle present tone plays only once
8	ON – Vehicle present tone allowed to play when vehicle arrives OFF – Vehicle present tone NOT allowed to play when vehicle arrives

NOTE: Default ON/OFF positions are shown in **bold** letters.

Figure 28. Base station DIP switch functions

Figure 29. Base station DIP switch functions

8. EQUIPMENT SPECIFICATIONS

Base Station

Voltage input	16VAC \pm 2.5V
AC current input	2.5A maximum
Audio distortion	5% maximum level
Outside speaker output	3 watts RMS into 8 ohms
Ceiling speaker power	3 watts RMS into 8 ohms
TX/RX frequency	2400MHz – 2483.5MHz
Dimensions	7.75”H x 12.75”W x 3.8”D (197 mm x 323 mm x 97 mm)
Weight	4 lbs (1.81 kg) maximum

COM600BP Belt-Pac COMMUNICATOR®

Battery type	3.6V Lithium ion
Battery life	18 - 20 hours (typical)
RF frequency	2400MHz – 2483.5MHz
Weight	5.1 oz (.133 kg) with battery

Odyssey IQ Headset COMMUNICATOR®

Battery type	3.6V Lithium ion
Battery life	18 - 20 hours (typical)
RF frequency	2400MHz – 2483.5MHz
Weight	5.7 oz (.16 kg) with battery

AC40 Battery Charger

Voltage input	16.5VAC
Charging time	2 hrs maximum
Dimensions	7.6” x 4.6” x 2.6” (193mm x 117mm x 66mm)
Weight	1.5 lb (.68 kg)

9. BLOCK DIAGRAM

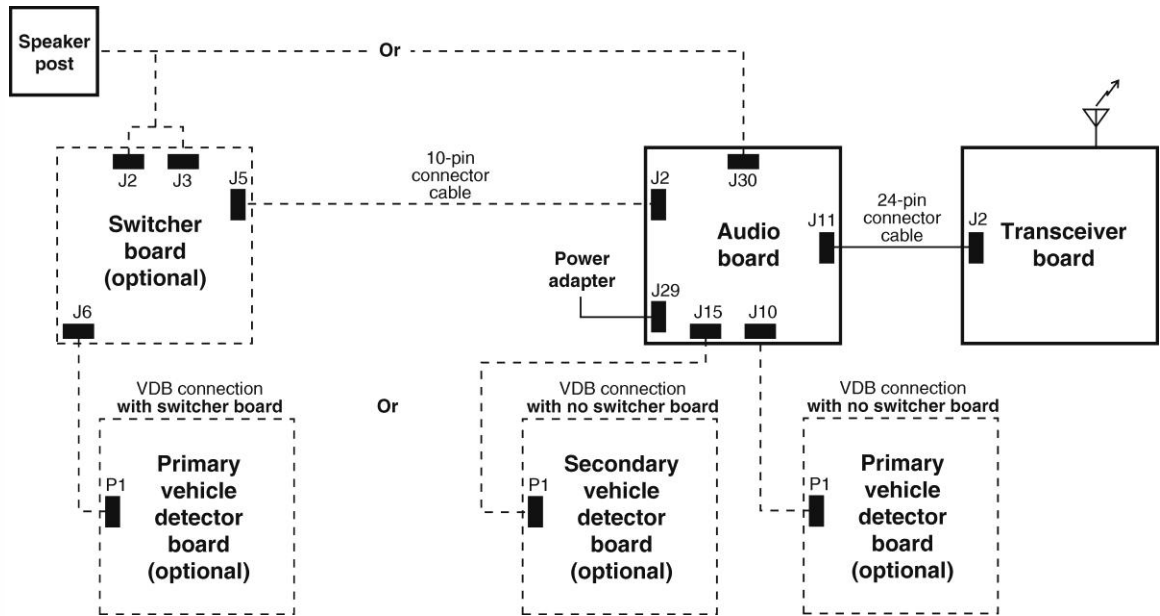


Figure 29. Typical Wireless IQ Base Station block diagram

10. BASE INTERFACE DESCRIPTION

10.1 Audio Circuit Board

J1 – ATE Connector (not installed)

J1,1	Microphone 1
J1,2	Microphone 2
J1,3	/Vehicle 2 tone force
J1,4	/Vehicle present
J1,5	Vehicle detector power
J1,6	/Vehicle 1 tone
J1,7	Receive Audio B1
J1,8	B Talk
J1,9	Power ground
J1,10	+5 VDC
J1,11	+5 Xcvr
J1,12	+12 VDC
J1,13	A Talk
J1,14	Not used
J1,15	+22 VDC
J1,16	Ceiling speaker output
J1,17	RX audio A1
J1,18	TX/RX audio ground
J1,19	TX audio 1
J1,20	Message audio

J2 – Speaker In/Out

J2,1	Ground
J2,2	/A Talk
J2,3	Relay 1 Common
J2,4	Relay 1 Normally Open
J2,5	Relay 1 Normally Closed
J2,6	Ceiling speaker +
J2,7	Ceiling speaker -
J2,8	Ground

J5 – Switcher Board Interface

J5,1	Microphone 1
J5,2	Microphone 2
J5,3	Ground
J5,4	+12VDC
J5,5	Not used
J5,6	Negative vehicle detect input
J5,7	Vehicle detector power
J5,8	Not used
J5,9	Outside speaker -
J5,10	Outside speaker +

J9 – Input/Output Connector

J9,1	Early warning
J9,2	Ground

J9,3	Service window
J9,4	Ground
J9,5	Alert input

J10 – Vehicle Detector Board Interface 1 (Primary)

J10,1	Negative vehicle detect signal
J10,2	Vehicle detector power
J10,3	Ground
J10,4	Not used
J10,5	Not used

J11 – Transceiver Interface

J11,1	XSCL
J11,2	XSDA
J11,3	+5V Xcvr
J11,4	Power Ground
J11,5	Reset
J11,6	Power Ground
J11,7	SCL
J11,8	/A1 Talk
J11,9	TX Audio 1
J11,10	/B1 Talk
J11,11	Ground
J11,12	Car 1
J11,13	RX Audio A1
J11,14	Ground
J11,15	Ground
J11,16	SDA
J11,17	RX Audio B1 or B1 + B2
J11,18	TX Audio 2
J11,19	/A2 Talk
J11,20	Ground
J11,21	/B2 Talk
J11,22	RX Audio A2
J11,23	Car 2
J11,24	Ground
J11,25	Ground
J11,26	Rx Audio B2 or B1 + B2

J15 – Vehicle Detector Board Interface 2 (Secondary)

J15,1	Negative vehicle detect signal
J15,2	Vehicle detector power
J15,3	Ground
J15,4	Not used
J15,5	Not used

J18 – Line In/Out

J18,1 Line out
 J18,2 Ground
 J18,3 Line in
 J18,4 Ground
 J18,5 Not used

J22 – Base Station Interface Connector in Primary Base Station

J22,1 Vehicle detect input
 J22,2 Vehicle detect output
 J22,3 /A2 Talk
 J22,4 /B2 Talk
 J22,5 Car 2
 J22,6 Ground
 J22,7 TX Audio 2
 J22,8 Ground
 J22,9 RX Audio A2
 J22,10 RX Audio B2 or B1 + B2

J25 – Remote Switch and Vehicle Detect 2 Interface

J25,1 Speed Team Remote Common
 J25,2 +5VDC
 J25,3 Ground
 J25,4 Not used
 J25,5 Record Remote
 J25,6 Ground
 J25,7 Not used
 J25,8 Relay 2 Normally open
 J25,9 Relay 2 Common
 J25,10 Relay 2 Normally Closed

J26 – Base Station Interface Connector in Secondary Base Station

J26,1 Vehicle detect output
 J26,2 Vehicle detect input
 J26,3 /A2 Talk
 J26,4 /B2 Talk
 J26,5 Car 2
 J26,6 Ground
 J26,7 TX Audio 2
 J26,8 Ground
 J26,9 RX Audio A2
 J26,10 RX Audio B2 or B1 + B2

J29 – AC Power

J29,1 16VAC power input
 J29,2 16VAC power input

J30 – Menu Board Interface (Without Switcher Board)

J30,1 Microphone 1
 J30,2 Microphone 2
 J30,3 Ground
 J30,4 +12VDC
 J30,5 Negative vehicle detect input
 J30,6 Aux Negative vehicle detect input
 J30,7 Outside speaker –
 J30,8 Outside speaker +

J33 –

J33,1 TX Audio 2
 J33,2 +12VDC
 J33,3 /A2 Talk
 J33,4 /B2 Talk
 J33,5 Alert
 J33,6 Aux Negative Detect
 J33,7 Ground
 J33,8 RX Audio B2

JP1 – ClearSound Bypass Jumper

JP1,1 Audio channel 1 input
 JP1,2 Inbound Audio
 JP1,3 Audio channel 1 output

JP2 – ClearSound Bypass Jumper

JP2,1 Audio channel 2 input
 JP2,2 Outbound Audio
 JP2,3 Audio channel 2 output

10.2 Transceiver Circuit Board

J2 –

J2,1 +5VDC
 J2,2 Ground
 J2,3 NC
 J2,4 Ground
 J2,5 NC
 J2,6 /A1 Talk
 J2,7 Tx audio 1
 J2,8 /B1 Talk
 J2,9 Ground
 J2,10 Car 1

J2,11 Rx audio A1
J2,12 Ground
J2,13 Ground
J2,14 NC
J2,15 Rx audio B1 or B1 + B2
J2,16 Tx audio 2
J2,17 /A2 Talk

J2,18 Ground
J2,19 /B2 Talk
J2,20 Rx audio A2
J2,21 Car 2
J2,22 Ground
J2,23 Ground
J2,24 Rx audio B2, or B1 + B2

10.3 Switcher Circuit Board

J1 – DM1 Interconnect

J1,1 Microphone in
J1,2 Microphone in
J1,3 Ground
J1,4 +12VDC
J1,5 Not used

J2 – Menu Board Interconnect

J2,1 Speaker/microphone in/out
J2,2 Speaker/microphone in/out
J2,3 Shield
J2,4 Speaker out
J2,5 Speaker out

J3 – Detector/Timer Interconnect

J3,1 Loop
J3,2 Loop
J3,3 Positive vehicle detection signal
J3,4 Ground
J3,5 Negative vehicle detection signal
J3,6 Greet
J3,7 Greet
J3,8 Negative vehicle detection signal
J3,9 Ground
J3,10 Positive vehicle detection signal

J4 – Backup System Interconnect

J4,1 Loop
J4,2 Loop

J4,3 Negative vehicle detection signal
J4,4 Ground
J4,5 Positive vehicle detection signal
J4,6 Not used
J4,7 Speaker/microphone in/out
J4,8 Speaker/microphone in/out
J4,9 +12V to +48V in
J4,10 +12V to +48V in

J5 – Audio Board Interconnect

J5,1 Microphone 1
J5,2 Microphone 2
J5,3 Ground
J5,4 +12VDC
J5,5 Positive vehicle detector input
J5,6 Negative vehicle detector input
J5,7 Vehicle detector power
J5,8 Not used
J5,9 Outside speaker –
J5,10 Outside speaker +

J6 – Vehicle Detector Board Interconnect

J6,1 Vehicle detector signal
J6,2 Vehicle detector signal
J6,3 Ground
J6,4 Not used
J6,5 Not used

10.4 Vehicle Detector Circuit Board (Optional)

P1 – Audio Board Interface Cable Connector

P1,1 Signal
P1,2 Power
P1,3 Ground

TB1 – Vehicle Detector Loop Connector

11. WIRING DIAGRAMS

- Page 44, Figure 30 — Full-Duplex Wireless IQ with VDB but no Switcher Board
- Page 45, Figure 31 — Full-Duplex Wireless IQ with VDB, Switcher Board, DM1 or DM3 Microphone and IC300
- Page 46, Figure 32 — Full-Duplex Wireless IQ with VDB, Switcher Board and DM1 or DM3 Microphone
- Page 47, Figure 33 — Half-Duplex Wireless IQ with VDB but no Switcher Board
- Page 48, Figure 34 — Half-Duplex Wireless IQ with VDB and Switcher Board
- Page 49, Figure 35 — Wireless IQ Dual-Lane, Primary to Secondary Base Station connections
- Page 50, Figure 36 — Wireless IQ Tandem, Primary to Secondary Base Station connections

IMPORTANT
Before completing this installation, be certain all DIP switches, jumpers and adjustments are set appropriately.

IMPORTANT
MICROPHONE AND SPEAKER
MUST USE SEPARATE CABLES

Outside Speaker
(SP2500LP or OTHER)
to J30, 3, 7 & 8 (3 = shield)

External Detector
to J30, 3 = Ground
to J30, 5 = Negative Vehicle Detect Signal
(When not using optional VDB)

Outside Microphone
(DM3 or other than DM1))
to J30, 1, 2 & 3 (3 = shield)

Underground Loop

- to J30, 3 Ground
- to J30, 5 Vehicle Detect Signal (Active Low) Input
- to J30, 7 Greet
- to J30, 8 Greet

If using internal message repeater, use Alternate Greet to Timer System.

Timer System Alternate Greet Wiring

If using an Internal Message Repeater, connect System 30 Timer ground to base audio J2, 1. Connect an unused timer Vehicle Detect input (1-6) to base audio J2, 2. Assign the timer Vehicle (1-6) as GREET and configure for negative detection.

External Message Repeater or Timer

- to J2, 1 "A" Decode (Active Low)
- to J2, 2 Isolated Vehicle Detect Ground
- to J2, 3 Isolated Vehicle Detect Signal (Active Low)

Grill Speaker (optional)

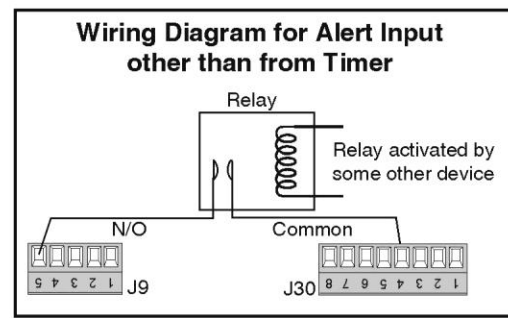
to J29, 1 & 2

16.5 VAC Power Adapter

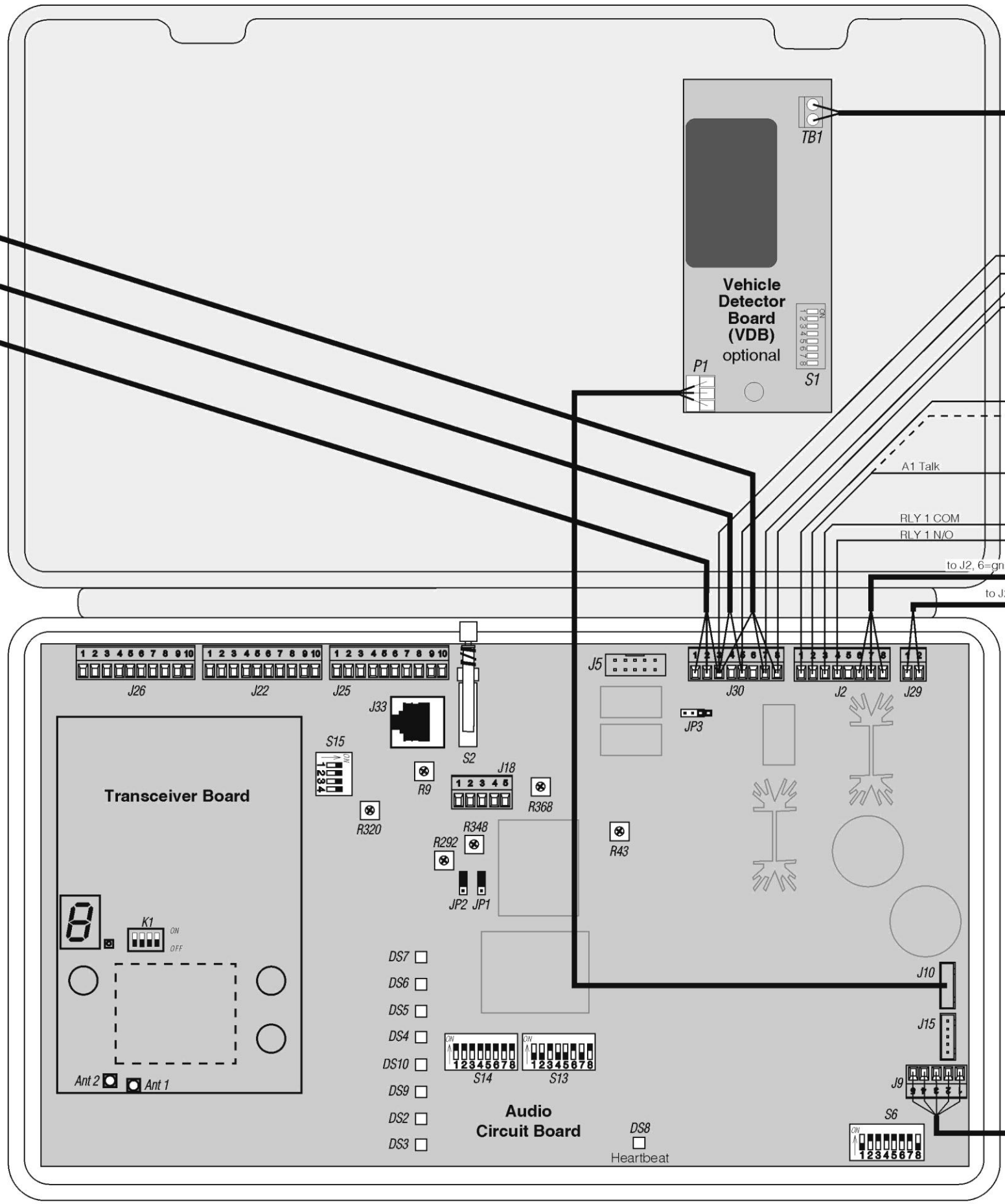
24 VDC Power Supply

J9 - Input/Output

- to J9, 1 Early Warning In (Active Low)
- to J9, 2 Ground
- to J9, 3 Service Window In (Active Low)
- to J9, 4 Alert In Ground
- to J9, 5 Alert In (+12V From System 30 Timer)



Wiring Diagram Full-Duplex Wireless IQ with VDB but no Switcher Board



For **dual-lane** primary to secondary base station connections, see Figure 35.

For **tandem** primary to secondary base station connections, see Figure 36.

Figure 30.

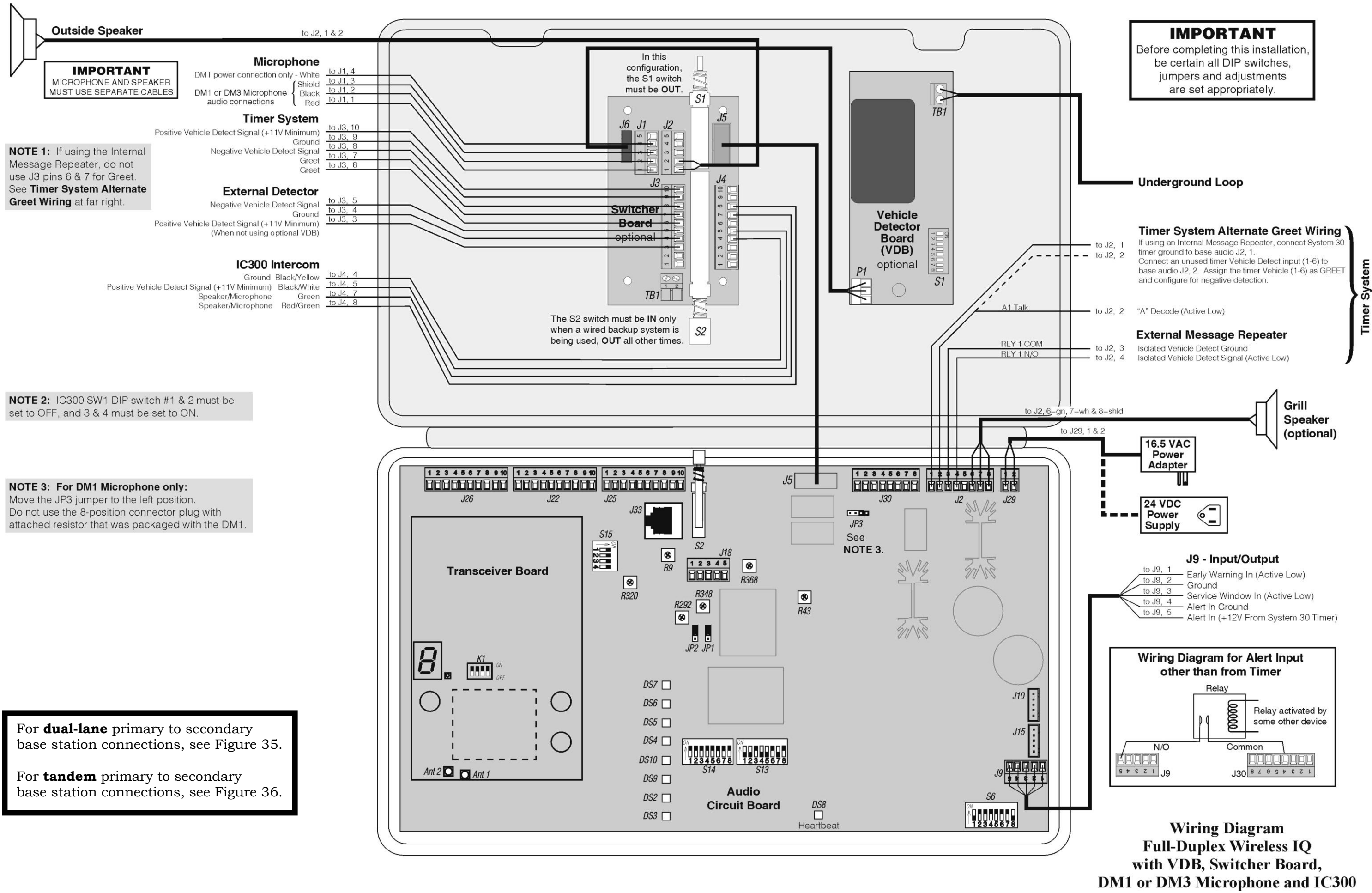


Figure 31.

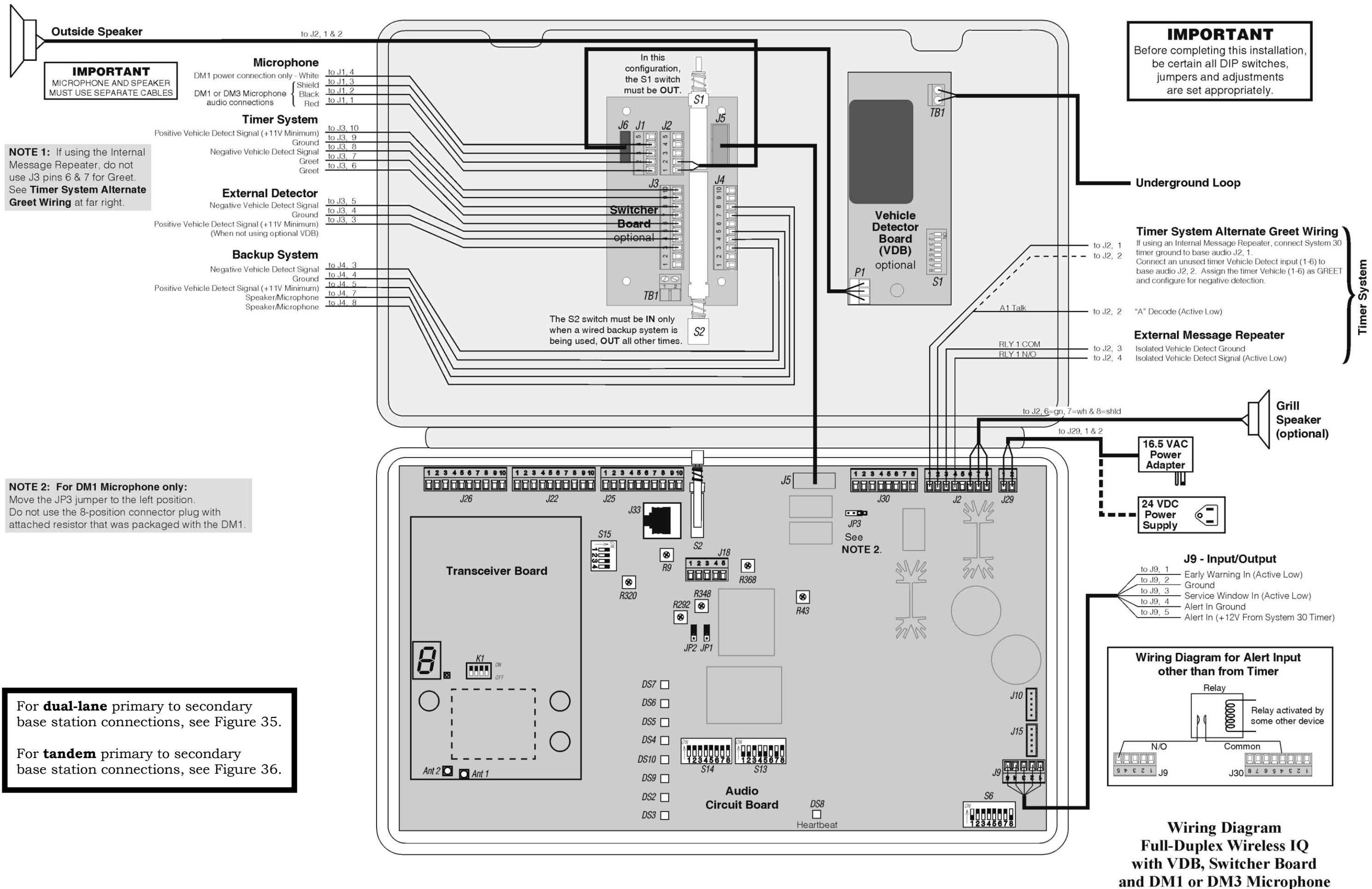
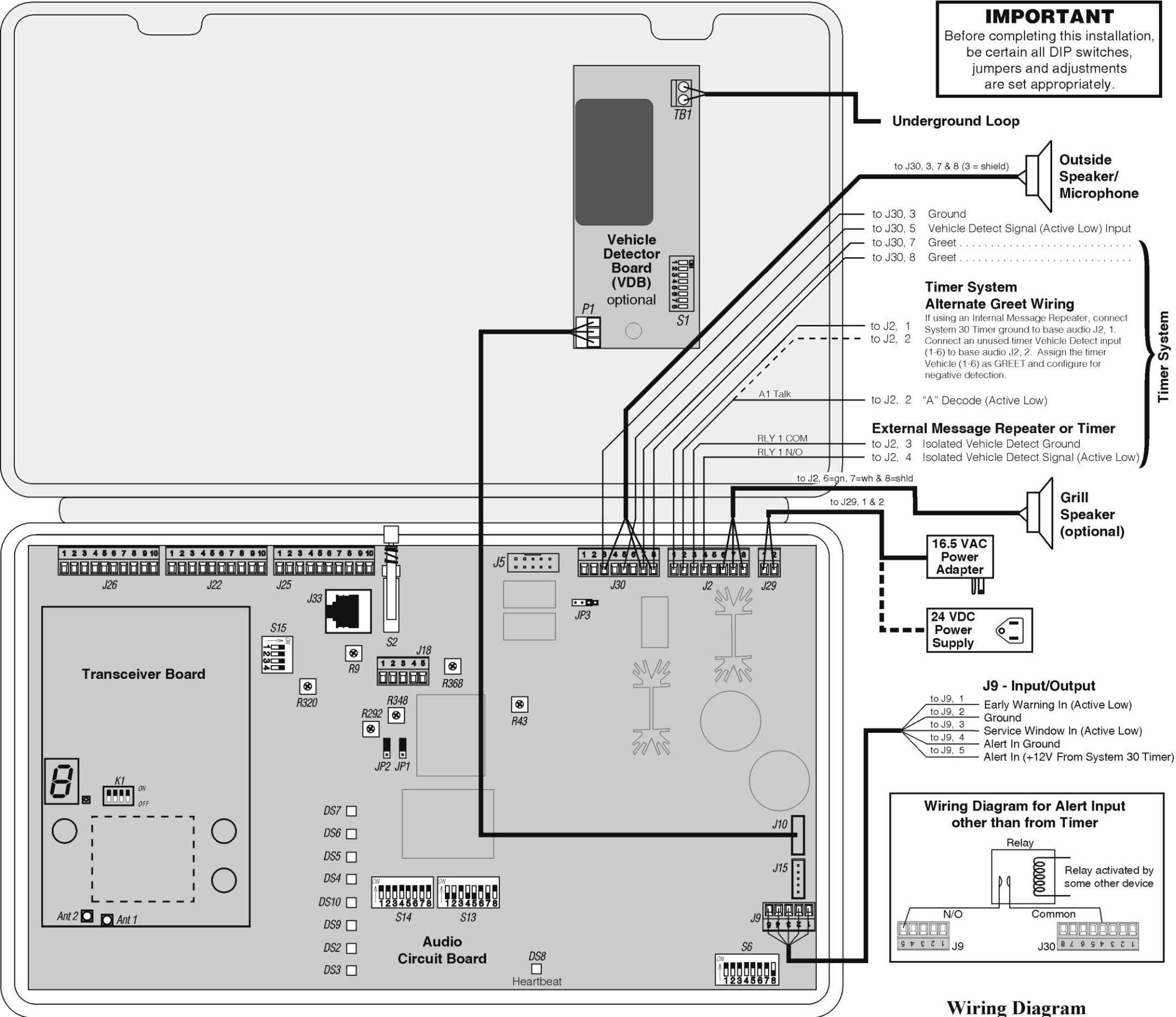


Figure 32.

IMPORTANT
Before completing this installation, be certain all DIP switches, jumpers and adjustments are set appropriately.

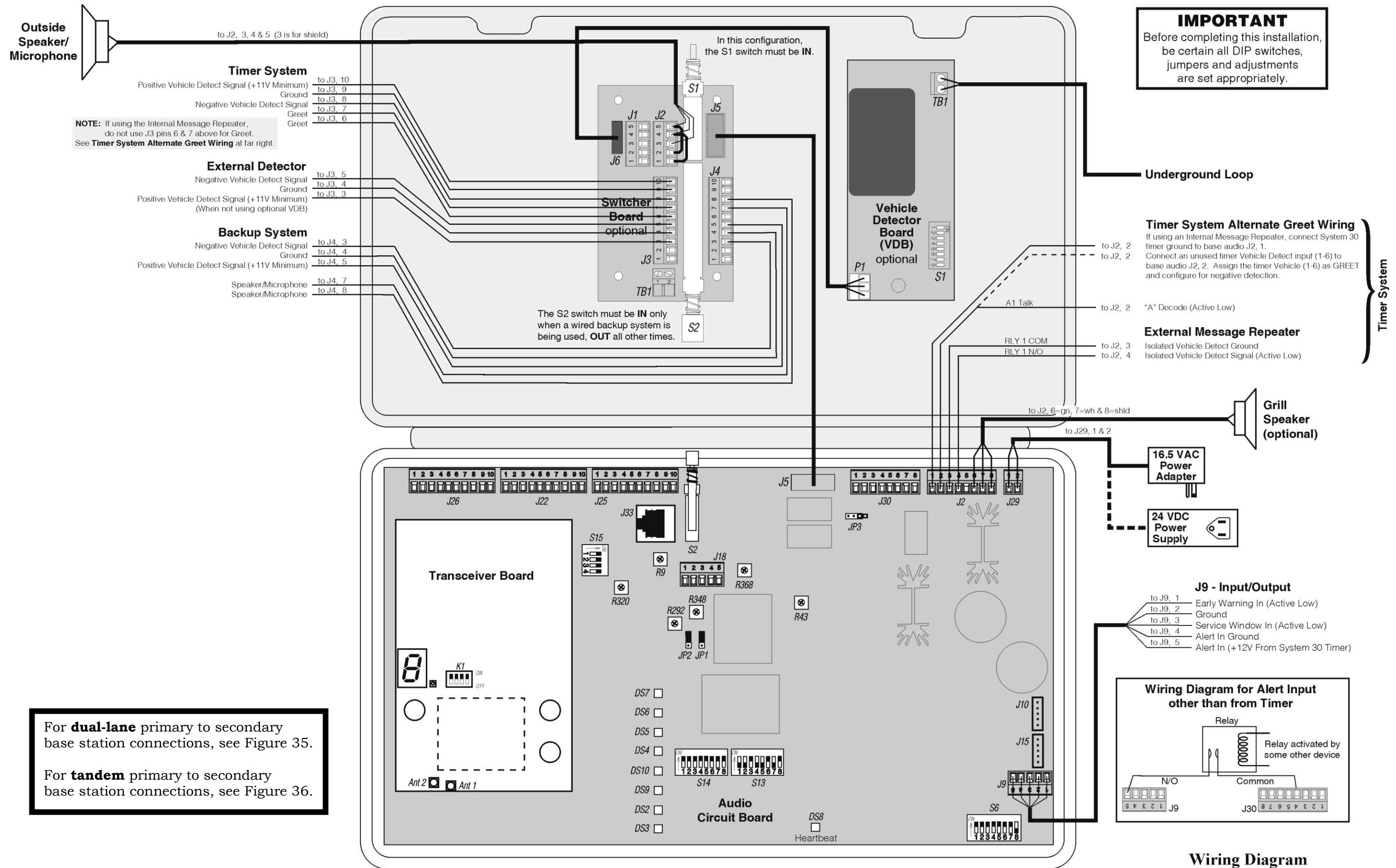


For **dual-lane** primary to secondary base station connections, see Figure 35.

For **tandem** primary to secondary base station connections, see Figure 36.

Wiring Diagram
Half-Duplex Wireless IQ
with VDB but no Switcher Board

Figure 33.



For **dual-lane** primary to secondary base station connections, see Figure 35.

For **tandem** primary to secondary base station connections, see Figure 36.

IMPORTANT
Before completing this installation, be certain all DIP switches, jumpers and adjustments are set appropriately.

Underground Loop

Timer System Alternate Greet Wiring

If using an Internal Message Repeater, connect System 30 timer ground to base audio J2, 1. Connect an unused timer Vehicle Detect input (1-6) to base audio J2, 2. Assign the timer Vehicle (1-6) as GREET and configure for negative detection.

External Message Repeater

Isolated Vehicle Detect Ground
Isolated Vehicle Detect Signal (Active Low)

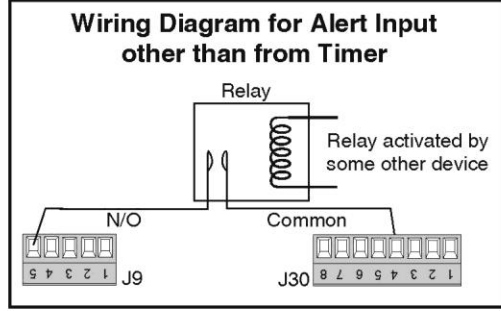
Grill Speaker (optional)

16.5 VAC Power Adapter

24 VDC Power Supply

J9 - Input/Output

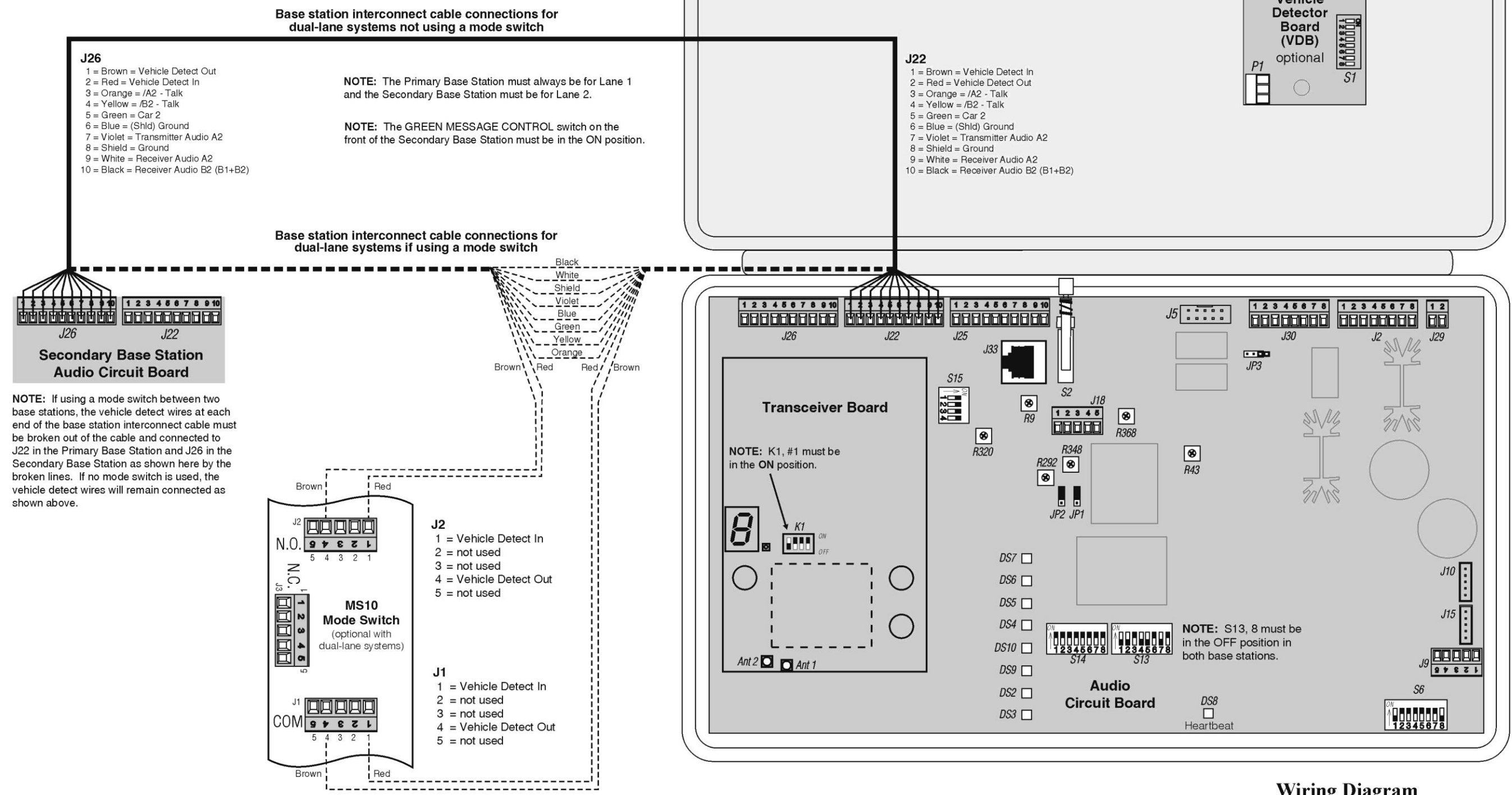
- to J9, 1 Early Warning In (Active Low)
- to J9, 2 Ground
- to J9, 3 Service Window In (Active Low)
- to J9, 4 Alert In Ground
- to J9, 5 Alert In (+12V From System 30 Timer)



Wiring Diagram Half-Duplex Wireless IQ with VDB and Switcher Board

Figure 34.

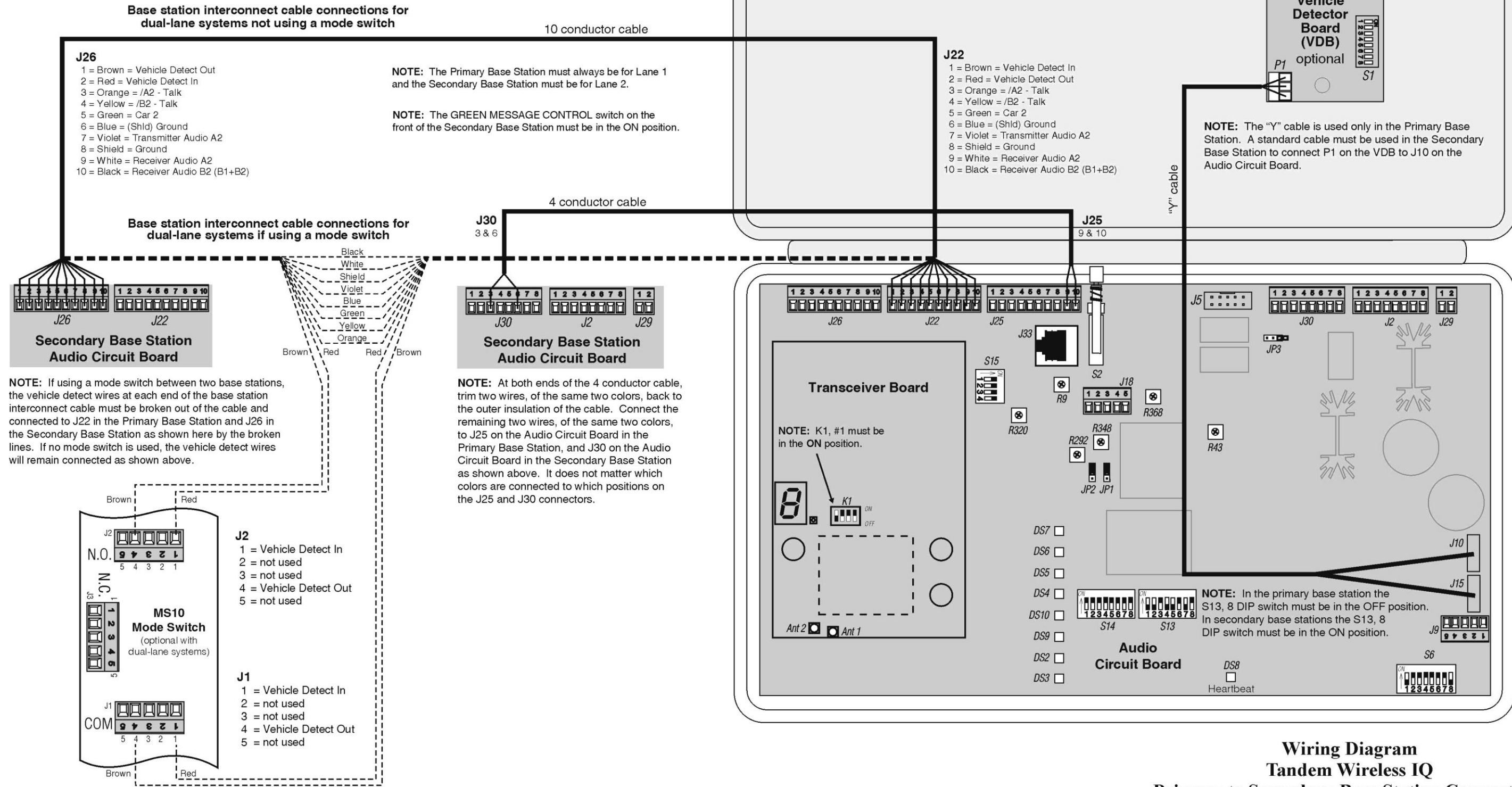
This diagram only shows how to interconnect the primary and secondary base stations in dual-lane configurations. For all other equipment connections, refer to Figures 30 – 34.



**Wiring Diagram
 Dual-Lane Wireless IQ
 Primary to Secondary Base Station Connections**

Figure 35.

This diagram only shows how to interconnect the primary and secondary base stations in tandem configurations. For all other equipment connections, refer to Figures 30 – 34.



**Wiring Diagram
 Tandem Wireless IQ
 Primary to Secondary Base Station Connections**

Figure 36.