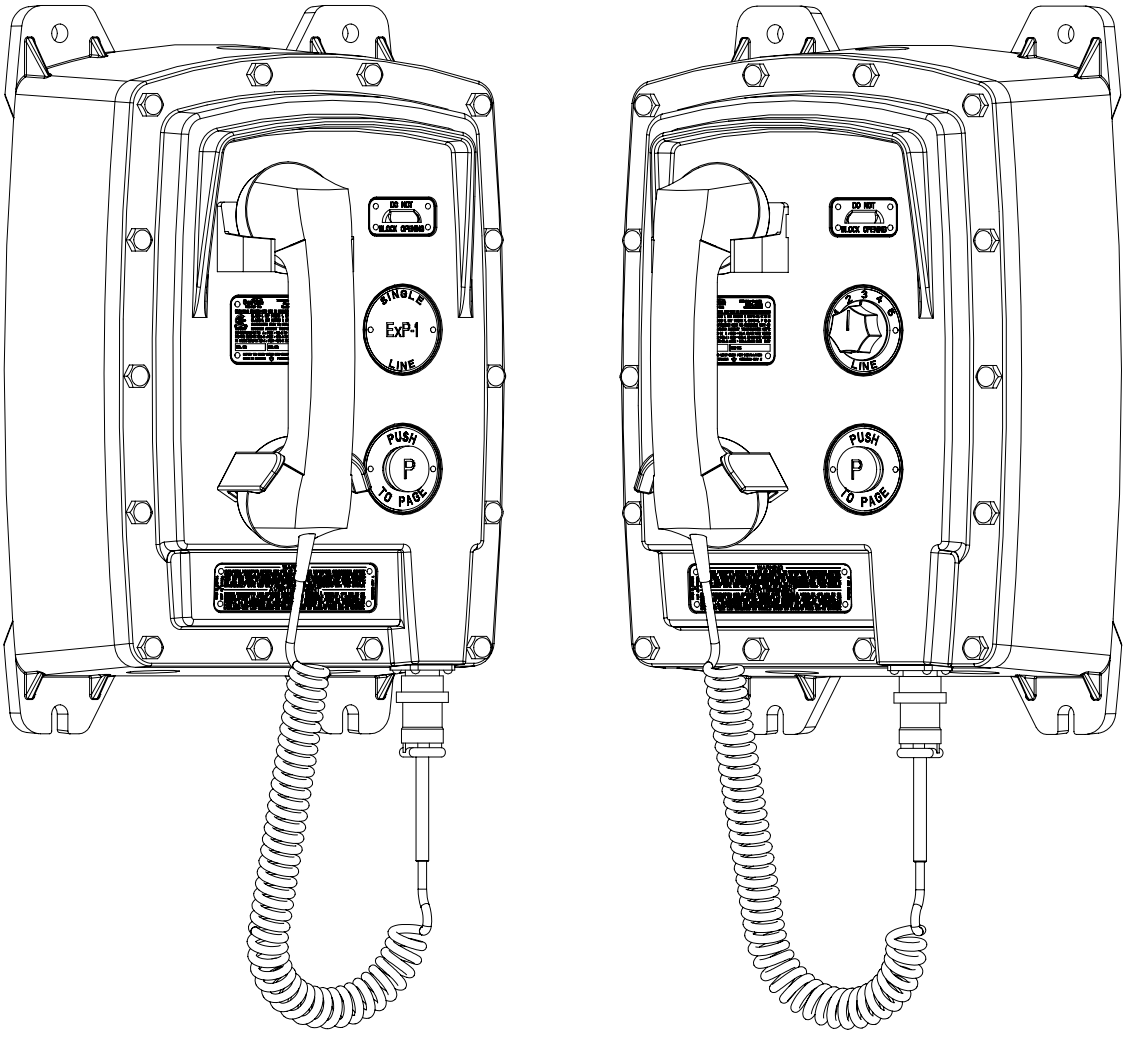
Guardian Telecom Inc.

Industrial Communications Worldwide

Page/Talk Explosion Proof Wall Stations

Models ExP-1 and ExP-5

Installation & Operation



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Package Contents

One (1) ExP-1 or ExP-5 Page/Talk Wall Station
Twelve (12) Faceplate Bolts
Two (2) Tubes of Lubricant
One (1) Installation & Operation Manual

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Overview

ExP-1/-5 Explosion Proof Page/Talk Wall Stations

Guardian's Page/Talk Systems provide reliable and easy to use paging and communication within industrial environments such as plants, mills and factories. Individuals can be paged from any station and two or more persons can communicate on any available Talk line.

The Models ExP-1 (Single-line) and ExP-5 (Multi-line) stations described in this manual are designed for use in Class I & II, Division 1 hazardous locations. Each ExP-1/-5 Wall Station provides up to twelve watts of paging power for an external loudspeaker. A push button switch on the faceplate puts the station into paging mode.

In order to avoid acoustical feedback from a loudspeaker receiving a signal from the station, a jumper on the circuit board provides for the speaker to be muted when the Page button on the faceplate is pressed. Group muting is also available for the same purpose, this feature mutes adjoining speakers when the page button on any station in the group is pressed.

Guardian's Page/Talk stations and related equipment are compatible with systems provided by most other manufacturers.

Features

Enclosure and Faceplate

- copper free cast aluminum - powder coated

Ambient Noise Monitor

- monitors the ambient noise and adjusts speaker volume accordingly

Connectors

- removable screw and plug Combicon connectors allow for ease of installation, simply screw wires into plug and reinsert plug into PCB socket

Page Switch

- page switch on faceplate of enclosure

Handset

- noise canceling microphone
- electronic hook switch provides durability

Headset

- optional plug in headset

Controls

- speaker volume
- ambient noise level
- microphone gain
- receiver volume
- side tone adjustment

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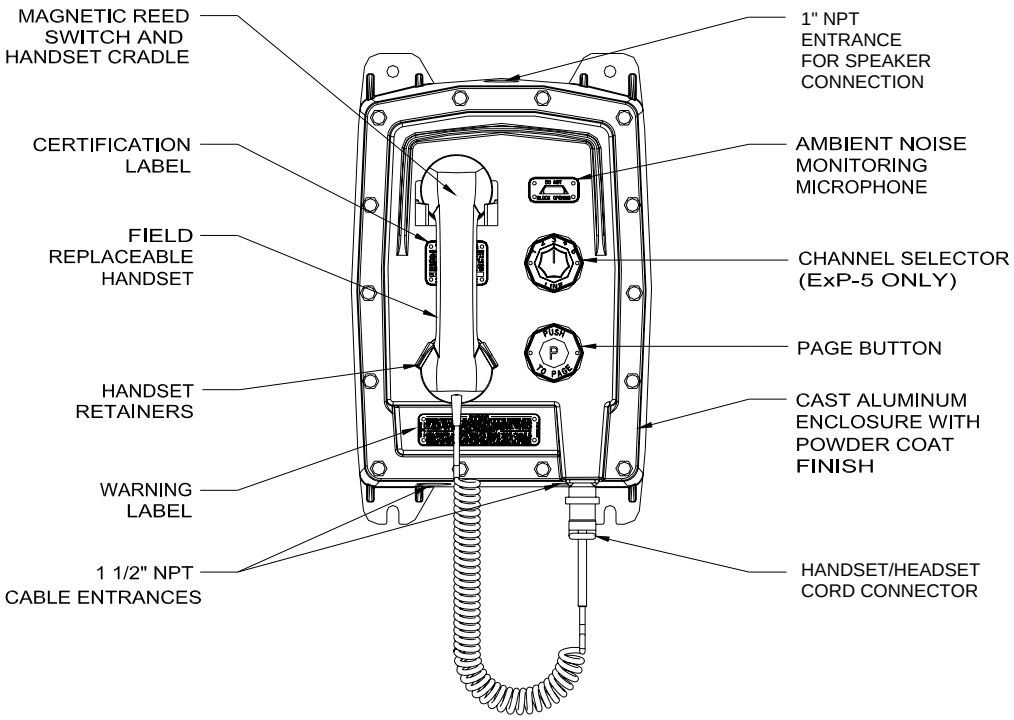

Figure 1 - ExP-1/-5 Features

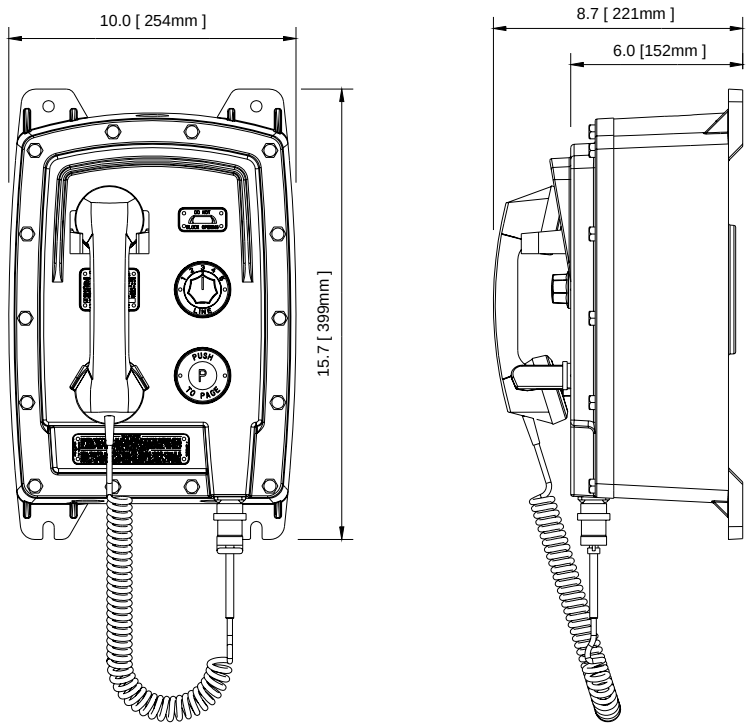

Figure 2 - ExP-1/-5 Dimensions

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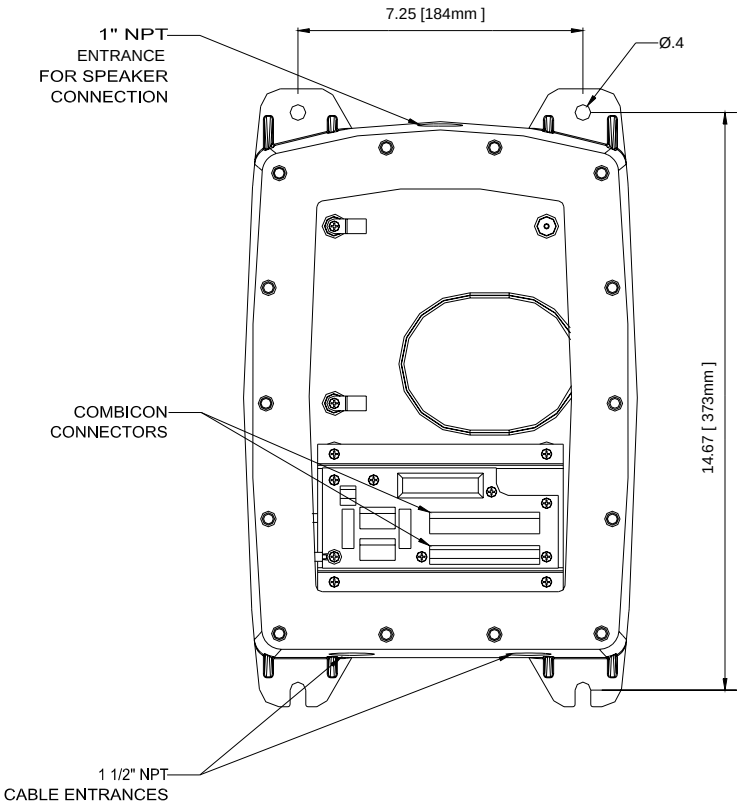

Figure 3 - Mounting

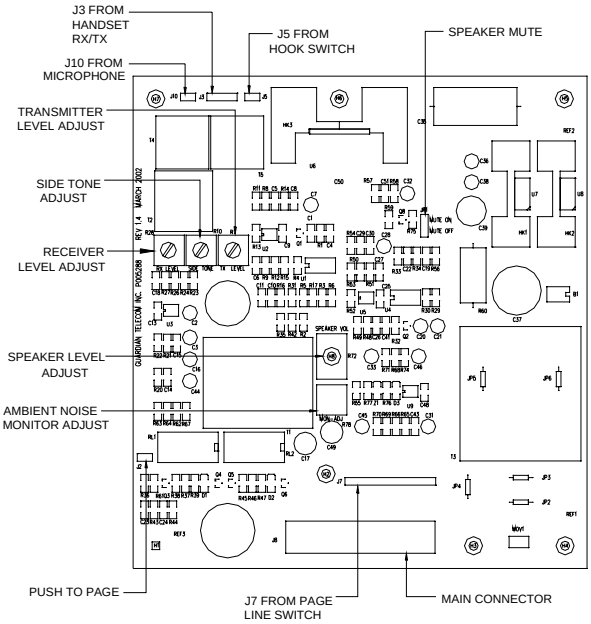

Figure 4 - Circuit Board Layout

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Installing the ExP-1/-5

Caution: Installation or electrical wiring in a hazardous location could result in serious injury to personnel or damage to property.

WARNING - high voltages are present in this equipment when it is connected to the power source.

- **Ensure that the location is non-hazardous before proceeding with any installation or electrical wiring.**
- Ensure that the station is set up for the correct voltage.
- Follow all appropriate electrical codes and use only approved electrical fittings for the installation.
- Choose a wall location that is free of obstructions and permits space for conduit or wire.

Tip: *check the identification label on the faceplate.*

See:*Figure 2 - ExP-1/-5 Dimensions*

- Ensure mounting can support 30 lbs./14 kg and any additional load.
- Use the template provided to locate and drill holes for mounting screws.
- Remove the bolts on the faceplate and remove the faceplate.
- Secure the unit to the wall.
- Ensure that none of the electrical connection circuits are live.
- Bring cable(s) into the enclosure through the conduit entrance(s) and attach individual wires to the Combicon connector(s). Attach the wires from the first or only cable to the bottom connector. Make Talk channel connections to terminals 1A and 1B for the single line ExP-1. Plug any unused cable entrances.

Note: *Be careful when removing the faceplate. The circuit board is on the faceplate.*

See: *Figure 4 - and Figure 5 - Electrical Connections*

- If the station is part of a Group Muting series connect the wires assigned to this function to either the Mute or Park terminal on the connector.

See: *Group Muting*

- Set the speaker mute jumper on the circuit board to the desired position.
- Plug the connector(s) into the receptacle(s) on the interface board.
- Ensure all connections are secure.
- Apply a bead of lubricant to the machined surface of the housing.
- Replace the faceplate ensuring that the connector is properly seated.
- Torque faceplate bolts to 13.5 ft. lbs. (18 Newton-Meters).
- Apply power to the system.

Tip: *The lubricant acts as a seal to prevent water and dust from entering the enclosure.*

- Wait at least 20 seconds then check the speaker volume by making a paging call. If alteration to the speaker volume is necessary, remove the faceplate and adjust the speaker level potentiometer on the circuit board – clockwise rotation increases the volume.

Note: *Adjust speaker volume while ambient noise at the station is at a minimum.*

- Test the installation by making a call as described in the operating section.

See: *Figure 6 - Wiring*

Accessing the Interior of the ExP-1/-5

Follow these instructions when necessary to access the interior of the ExP-1/-5 for adjustments or repairs.

- **Declassify the hazardous area or remove power before proceeding.**
- Remove the faceplate cover bolts.
- Lift off the faceplate cover.

See: *Figure 1 - ExP-1/-5 Features*

- Perform the necessary adjustments or repairs.

Note: *Be careful when removing the faceplate. The circuit board is on the faceplate.*

- Replace the faceplate and bolts ensuring that the connector is properly seated. Torque faceplate bolts to 13.5 ft. lbs. (18 Newton-Meters).
- Apply power to the wall station and test by making a call.

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Assignment	*Designation*	*Description*	*Jacket Color*	*Stripe Color*	*Wire Gauge*
System Power	J4A/J5A J4A/J5A J4A/J5A	HOT COM GND	Black White Green		14 AWG 14 AWG 14 AWG
Ambient Noise Microphone	J6A J6A	MIC + MIC -	n/a n/a	n/a n/a	n/a n/a
Speaker	J7A J7A	SPK + SPK -	n/a n/a	n/a n/a	n/a n/a
Page Line	J2A/J3A J2A/J3A	PA Page Line PB "	Blue Red	Red Blue	18 AWG "
Channel	J2A/J3A J2A/J3A	1A Channel 1 1B "	Red L. Brown	 Red	18 AWG "
	J2A/J3A J2A/J3A	2A Channel 2 2B "	Violet L. Brown	 Violet	18 AWG "
	J2A/J3A J2A/J3A	3A Channel 3 3B "	Blue L. Brown	 Blue	18 AWG "
	J2A/J3A J2A/J3A	4A Channel 4 4B "	Brown L. Brown	 Brown	18 AWG "
	J2A/J3A J2A/J3A	5A Channel 5 5B "	Yellow L. Brown	 Yellow	18 AWG "
Group Muting of Loudspeakers	J2A/J3A J2A/J3A	Mute Park	Orange		18 AWG
Spare Conductor (Special Order)	n/a	Extra	Red		12 AWG

Note:
Channels 2 to 5 connections remain empty for ExP-1 hookup.

If this station is in a Group Muting series, but is not to be muted when paging calls are made from other stations in the group, connect the wires assigned to this function to the Park terminals.

Figure 5 - Electrical Connections

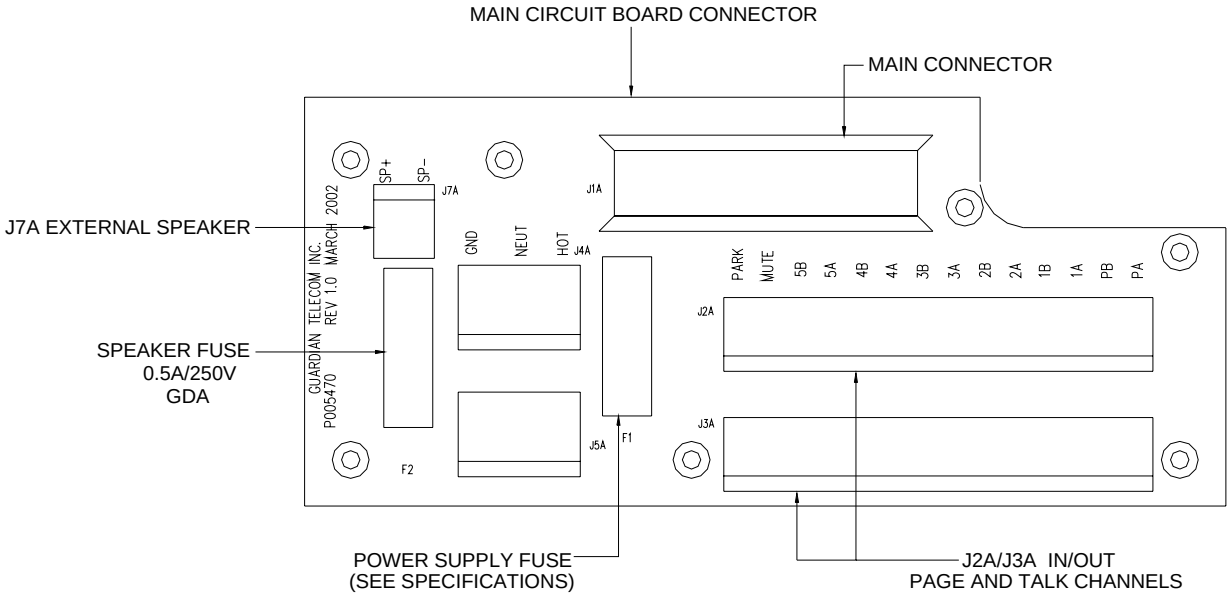

Figure 6 - Wiring

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Group Muting

In order to avoid acoustical feedback it may be desirable in certain circumstances to mute speakers associated with adjoining stations when making a paging call. This can be accomplished by interconnecting the "Group Mute" terminals of each station in the group, and setting the speaker mute jumpers on the circuit boards to the appropriate position.

See: Figure 5 - Electrical Connections

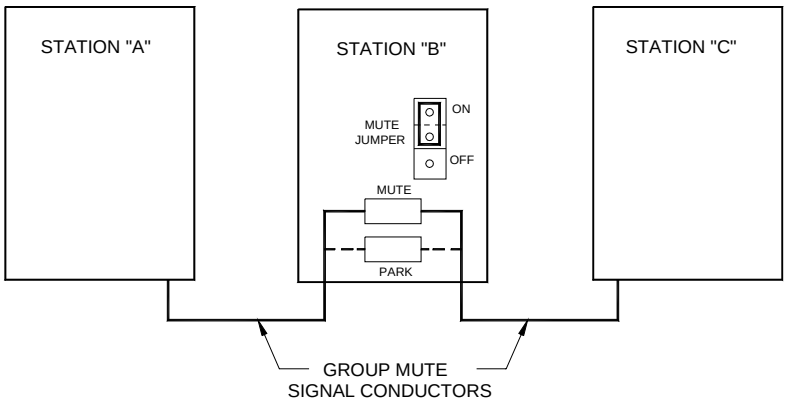
Note: Putting the mute jumper of a station in the on position will mute the associated speaker when the page button is pressed. If the jumper is in the off position the speaker will not be muted when the page button is pressed.

If group muting is used the associated speaker of any station in the group with its mute jumper in the on position will be muted when a paging call is made from any station in the group, including the associated station. Any speaker associated with a station with its mute jumper in the off position will not be muted when a paging call is made from any station in the group, including the associated station.

Note: Paging calls originating from stations outside the group will be heard regardless of the position of the Mute jumper.

If it is desired to bypass a station in a group, connect the group paging wires to the PARK terminals of that station.

EXAMPLE OF GROUP MUTING



If the Group Mute Signal Conductors of station "B" are attached to the Park terminals, that station will be bypassed and paging from stations "A" or "C" or any other station in the system will always be heard over the loudspeaker associated with Station "B", regardless of the position of the Mute jumper.

If the Group Mute Signal Conductors of station "B" are attached to the Mute terminals the condition of the loudspeaker associated with that station will depend on the setting of the Mute On/Off jumper. If the jumper is in the ON position the loudspeaker will be muted if a paging call is made from any of the three stations. If the jumper is in the OFF position the paging call will not be muted if a paging call is made from any of the three stations.

Paging calls from outside the Group will always be heard, regardless of the position of the mute jumper.

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Ambient Noise Level Adjustment

The Ambient Noise Sensor on Guardian's Page/Talk stations automatically adjusts the volume of the associated loudspeaker up to 10dB, so that pages can be heard over the background noise.

There are two controls on the circuit board to adjust the Ambient Noise Sensor mechanism. The Paging Speaker Volume Control – which is accessible from the back of the module – sets the volume of the speaker to a comfortable level when the ambient noise is at a minimum. The Ambient Noise Monitor Adjustment Control determines how the speaker volume tracks the ambient noise. That is if the speaker is not loud enough with a high ambient noise the control can be adjusted to increase the volume. Alternatively if the speaker is too loud with a high ambient noise the control can be adjusted to decrease the volume. It is usually not necessary to change the setting of the Ambient Noise Monitor Adjustment Control since it is set at the factory for average conditions. Adjustment could be necessary if for some reason the Ambient Noise Sensor Microphone is shielded from the source of ambient noise or some similar situation exists.

See: *Figure 4 - Circuit Board Layout*

Operating the ExP-1 Single Line Station

Initiating a Call

- Remove the handset.
- Ensure that the line is free.

Broadcasting a Page

- Press and hold the **Page** button on the handset.
- Broadcast the page. (e.g. "Joe, I need to talk to you, pick up a handset.")

Connecting with a Second Party

- When the second party picks up their handset, both parties are connected and can carry on a conversation.

Freeing the Line

- Place the handset back on the cradle.

Note: *There is one talk line on the ExP-1.*

Note: *Continue holding down the Page button while broadcasting the page.*

Note: *The second party can be located at any other station.*

Operating the ExP-5 Multi Line Station

Initiating a Call

- Remove the handset.
- Select a free line using the **Line** selector.

Broadcasting a Page

- Press and hold the **Page** button on the handset.
- Broadcast the page that includes the number of the line you are using. (e.g. "Joe, talk to me on line one.")

Connecting with a Second Party

- When the second party selects the appropriate channel and picks up their handset, both parties are connected and can carry on a conversation.

Freeing the Line

- Place the handset back on the cradle.

Note: *There are five talk lines on the ExP-5.*

Note: *Continue holding down the Page button while broadcasting the page.*

Note: *The second party can be located at any other station.*

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Troubleshooting

Note: *If access to the interior of the ExP-1/-5 is required refer to the appropriate section.*

See: *Accessing the Interior of the ExP-1/-5*

Station Is Dead But Associated Speaker Is Working

- No repair possible, return station for repair.

See: *Warranty and Product Return*

Station Is Dead And Associated Speaker Is Not Working

- Ensure power is being supplied to the station.
- Check the fuse located on the connector board and replace if necessary. Correct the problem that caused the fuse to fail.

See: *Engineering Specifications for correct fuse rating*

Handset Microphone Volume Too Low

- Adjust TX level control on circuit board.

Handset Receiver Volume Too Low

- Adjust RX level control on circuit board.

Feedback Or Distortion

- Adjust sidetone level control on circuit board.
- Inspect the line and connections for shorts and grounds.

Sidetone

- Adjust sidetone level control on circuit board.

Station Stays On or Off Hook

1. Ensure power is being supplied to the station.
2. Test the proximity switch in the handset receiver cradle by moving a small, permanent magnet over the area while listening on the handset for the line to open and close.
3. If the movement of the magnet switches the on/off hook condition, the magnet in the receiver cartridge of the handset may be weak – try another handset. It is not necessary to wire in the new handset to perform this test – if the new handset switches the on/off hook condition, replace the existing handset with the new unit.
4. If the movement of the magnet does not appear to switch the on/off hook condition the handset itself may be defective – try another handset.
5. If these remedies do not correct the problem return the station for repair.

See: *Warranty and Product Return*

Excessive Noise on Line

- Verify no other station's handset is off the hook.

Crosstalk

- Inspect wire terminations for crossed wire pairs.

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Engineering Specifications	
ELECTRICAL REQUIREMENTS	
INPUT VOLTAGE	20 - 26 / 90-140 / 200-260 VAC, 24 - 30VDC
INPUT FREQUENCY	50/60HZ
INPUT VOLTAGE/CURRENT/FUSE	120VAC/0.1AMP/0.5A 20MM CERAMIC FAST BLOW 240VAC/0.05AMP/0.25A 20MM CERAMIC FAST BLOW 24VAC/0.5AMP/0.75A 20MM CERAMIC FAST BLOW 24VDC/0.5AMP/0.75A 20MM CERAMIC FAST BLOW
HANDSET AMPLIFIER	
OUTPUT LEVEL	1.5VRMS NOMINAL INTO 33 OHM LOAD
OUTPUT LIMITER	1.5VRMS NOMINAL
TRANSMIT GAIN	50dB
FREQUENCY RESPONSE	250 – 4000HZ
DISTORTION	1.0% MAXIMUM THD @ 1000HZ
SPEAKER AMPLIFIER	
OUTPUT VOLTAGE/CURRENT/FUSE	24VRMS/0.5AMP/0.5A 20MM CERAMIC FAST BLOW
OUTPUT LEVEL	12 WATTS MAXIMUM WITH NOMINAL VOLTAGE
AMPLIFIER GAIN	1.5VRMS AT RATED OUTPUT
FREQUENCY RESPONSE	250 – 4000HZ
DISTORTION	1% MAXIMUM THD @ 1000HZ 10WATTS
INPUT IMPEDANCE	200K OHMS, NOMINAL
ENVIRONMENTAL	
WEATHER TIGHT	TYPE 4X (CSA)
MECHANICAL	
BODY CONSTRUCTION	COPPER FREE CAST ALUMINUM - POWDER COATED
COLOR	STANDARD BLUE, OTHER COLORS OPTIONAL
DIMENSIONS	10.0 X 15.7 X 8.7 INCHES (254 X 399 X 221MM)
NET WEIGHT	30 LBS/14 KG
STANDARD MOUNTING	VERTICAL WALL
WIRING ACCESS	LOWER 2 X 1 1/2" NPT – UPPER 1 X 1" NPT
COMPLIANCE	
CANADIAN STANDARDS ASSOCIATION	CLASS I DIVISION 1/ZONE 1 GROUPS B, C, D CLASS II DIVISION 1/ZONE 21 GROUPS E, F, G EX d IIB+H_2 T5

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Warranty

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

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

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

Disclaimer

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

Warning

High voltages may be present in this product. Ensure that power is removed before installing, performing maintenance or making repairs.

Declassify the area or remove all current carrying connections in a safe area before opening the enclosure.

Service Telephone Number

1-800-363-8010

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

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Feedback

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

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Guardian Product Return
Guardian products have been quality tested and are in full working order when shipped from the factory, given the rugged nature of these products shipping is not expected to damage a unit. In the unlikely event of a malfunction, Guardian follows the three step procedure below.
Step I - On-Site Correction
• The most common source of difficulties with a new product is improper installation in one of two ways: incorrect wiring connections or connection to an incorrect power source.
• Product wiring needs to be properly connected to the on-site wiring. Correct wiring instructions are shown in the user manual included with the product.
Step II - Return Materials Authorization (RMA)
• When a product has been installed following user manual instructions, and the unit fails to operate, the user must contact Guardian Telecom to obtain authorization to return the product. This can be done by completing a RMA form online at www.guardiantelecom.com, or by calling the service telephone number given in this manual.
• After providing information on the product, the owner and the nature of the problem, Guardian will issue a RMA number, to be shown on documentation returned with the product.
• In addition to the RMA number, shipping documents should include name, address and telephone number of the owner along with contact information for the person responsible for the repair and/or the user who identified the malfunction.
• (Where a product is being returned for repair from outside of Canada, customs documentation must show the product's serial number, date of export [date of purchase], and a notation that the equipment is: "Canadian goods returning.")
Step III - Factory Authorized Service
• Once received, each product is carefully inspected and tested. If the product is under warranty, repairs are completed and the product returned to the owner, generally within five working days of receipt by the factory.
• A product that has been subjected to misuse, neglect or accident or is beyond the warranty period will be evaluated. The service department will provide the owner's representative with a repair cost estimate. Once approved, repairs are completed and the product returned, generally within five working days.

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Page/Talk System Models and Options

Indoor Handset Stations PTI-1 & PTI-5

P5550	Ambient noise sensor, single line
P5551	Ambient noise sensor, five line
P5552	Ambient noise sensor, headset connector, single line
P5553	Ambient noise sensor, headset connector, five line
P5554	Single line
P5555	Five line
P5556	Headset connector, single line
P5557	Headset connector, five line

Outdoor Handset Stations PTO-1 & PTO-5

P5560	Ambient noise sensor, single line
P5561	Ambient noise sensor, five line
P5562	Ambient noise sensor, headset connector single line
P5563	Ambient noise sensor, headset connector five line
P5564	Single line
P5565	Five line
P5566	Headset connector, single line
P5567	Headset connector, five line

Handset Explosion Proof Stations EXP-1 & EXP-5

P5930	Ambient noise sensor, single line
P5935	Ambient noise sensor, five line

Indoor Speaker Amplifier Stations PSA-I

P5570	Ambient noise sensor
P5571	Speaker amplifier

Outdoor Speaker Amplifier Stations PSA-O

P5572	Ambient noise sensor
P5573	Speaker amplifier

Desk Set Amplifiers PDA

P5580	Ambient noise sensor
P5581	Speaker amplifier

Desk Set Stations (Complete) PTD & PDA

P5590	Ambient noise sensor, amplifier and single line desk set
P5591	Ambient noise sensor, amplifier and five line desk set
P5592	Amplifier and single line desk set
P5593	Amplifier and five line desk set

P5940 Telephone Interface PTI

P5980 Line Balance Assembly LBU

Alarm Tone Generator AG-17

P5960	With Relay
P5970	Without Relay

Acoustic Booths

P9010	AB100 Aluminum or Steel full size
P9035	AB1000 Glass Reinforced Plastic hood
P9029	AB2000 Glass Reinforced Plastic full size

Cable

	2 Conductor 18AWG Industrial Armored Speaker Cable
	2 Conductor 18AWG Industrial Standard Speaker Cable
P006217	4 Conductor 18AWG Industrial Armored Speaker Cable
P006216	4 Conductor 18AWG Industrial Standard Speaker Cable
P005863	Heavy Duty 8 Conductor Armored Cable (Single Line Page/Talk)
P005916	Standard Duty 8 Conductor Cable (Single Line Page/Talk)
P005366	Heavy Duty 16 Conductor Armored Cable (Multi Line Page/Talk)
P005219	Standard Duty 16 Conductor Cable (Multi Line Page/Talk)
P006218	Heavy Duty 17 Conductor Armored Cable (Multi Line Page/Talk)

Loudspeakers

P7247	SR40 Explosion Proof (Class I, Div. 1) Metal Horn Speaker
GB406	8 Watt Indoor Plastic Wall Speaker
GCW4T	8 Watt Indoor Cabinet Speaker
GBL650	15 Watt Indoor Plastic Ceiling Speaker
GB640	20 Watt Indoor Metal Ceiling Speaker
GCAR6	10 Watt Metal Surface Mount Speaker
GHP15	15 Watt Outdoor Plastic Horn Speaker
GHS15	15 Watt Outdoor Metal Horn Speaker
GHS15IIN	15 Watt Hazardous Area (Zone 2) Metal Horn Speaker
GHP20S	20 Watt Hazardous Area (Zone 2) Plastic Horn Speaker
GBA56EExeN	6 Watt Hazardous Area (Zone 1) Indoor Metal Ceiling Speaker
GCAPEEX6	6 Watt Hazardous Area (Zone 1) Metal Surface Mount Speaker
GHS15EExmN	15 Watt Hazardous Area (Zone 1) Metal Horn Speaker
GHS15ExdFM	15 Watt Hazardous Area (Class I, Div. 1) Metal Horn Speaker
AM15XD2	15 Watt Hazardous Area Speaker (Class I, Div. 2) Metal Horn Speaker

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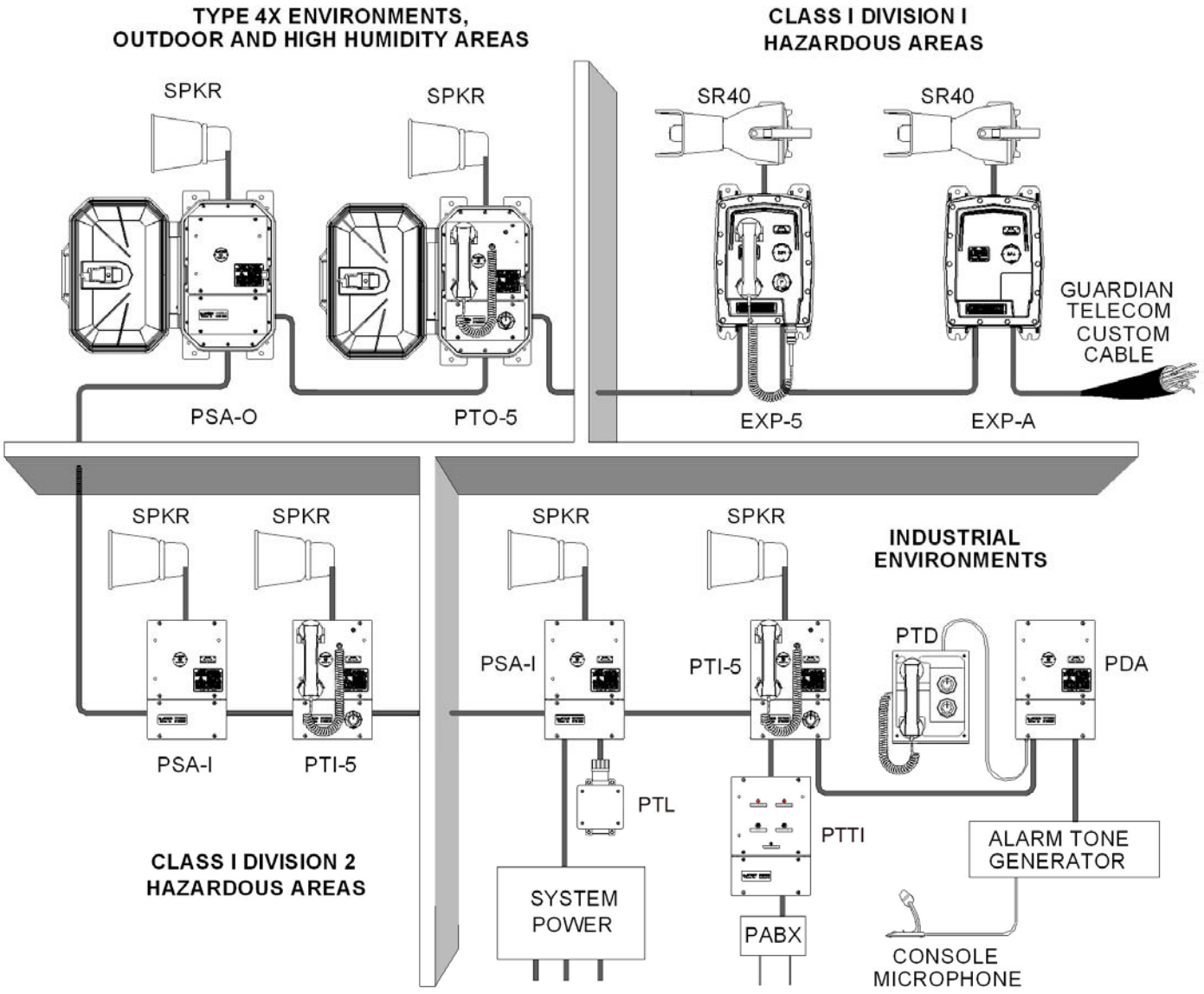
Typical Installation



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