Page/Talk Hazardous Area Wall Stations
Models MLW100 and MLW150
Installation & Operation
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Package Contents

One (1) MLW100 or MLW150 Page/Talk Wall Station
One (1) Installation & Operation Manual
Overview

MLW100/150 Hazardous Area 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 line.

The Models MLW100 (Single-line) and MLW150 (Multi-line) stations described in this manual are designed for use in Class I, Division 2 hazardous locations. Each MLW100/150 Wall Station provides up to ten watts of paging power for an external loudspeaker. A press bar on the handset enables one-hand paging operation.

In order to avoid acoustical feedback from speakers associated with adjoining stations group muting is available. This feature mutes selected speakers when the page button on any station in the group is pressed.

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

Features

Enclosure and Faceplate
- 16 gauge steel, zinc dichromate plated and powder coated

Ambient Noise Monitor
- monitors the ambient noise and adjusts speaker volume accordingly
- initial level adjustment on faceplate

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

Handset
- page switch on handset
- noise reducing microphone
- electronic hook switch provides durability

Headset
- optional plug in headset

Controls
- speaker volume - externally accessible
- ambient noise level
- microphone gain
- receiver volume
- side tone adjustment
Figure 1 - MLW100/150 Features

Figure 2 - MLW100/150 Dimensions

Explosion hazard - do not disconnect equipment wiring unless area is known to be non-hazardous.

Substitution of components may impair suitability for Division 2 / Zone 2.

Do not replace fuses when unit is energized.

See instruction manual for proper operation and installation.
Figure 3 - Mounting

Figure 4 - Wiring
Installing the MLW100/150

- 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.
- Ensure mounting can support 11 lbs./5 kg.
- Ensure that none of the electrical connection circuits are live.
- Use the template provided to locate and drill holes for mounting screws.
- Remove the screws on the faceplate and remove the faceplate.
- Secure the unit to the wall.
- Bring cable(s) into the enclosure through the conduit entrance(s) and attach individual wires to the Combicon connector(s). Attach the first or only cable to the bottom connector. Make Talk channel connections to terminals 1A and 1B for the single line MLW100. Plug any unused cable entrances.
- Plug the connectors into the receptacles on the interface PCB.
- Ensure all connections are secure.
- Replace the faceplate ensuring that the connector is properly seated.
- Apply power to the system.
- Wait at least 60 seconds then adjust speaker volume to the desired level using the potentiometer accessible through the screw hole in the faceplate. Use the tamperproof screwdriver bit provided to remove the screw and a small flat tip screwdriver to make the adjustment.
- Test the installation by making a call as described in the operating section.

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

Tip: check the label on the main circuit board cover.

See: Figure 2 - MLW100/150 Dimensions

See: Insert - Template

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

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

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

Accessing the Interior of the MLW100/150

Follow these instructions should it be necessary to access the interior of the MLW100/150 for adjustments or repairs.

- **Declassify the hazardous area before proceeding.**

- Remove power from the wall station.
- Remove faceplate cover screws.
- Lift off the faceplate cover.
- Perform the necessary adjustments or repairs.
- Replace the faceplate ensuring that the connector is properly seated.
- Apply power to the wall station.
## Electrical Connection Details

<table>
<thead>
<tr>
<th>Source</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>120/240VAC</td>
<td>J4A/J5A</td>
<td>HOT</td>
</tr>
<tr>
<td></td>
<td>J4A/J5A</td>
<td>COM</td>
</tr>
<tr>
<td></td>
<td>J4A/J5A</td>
<td>GND</td>
</tr>
<tr>
<td>Ambient Noise</td>
<td>J6A</td>
<td>MIC +</td>
</tr>
<tr>
<td>Microphone</td>
<td>J6A</td>
<td>MIC -</td>
</tr>
<tr>
<td>Speaker</td>
<td>J7A</td>
<td>SPK +</td>
</tr>
<tr>
<td></td>
<td>J7A</td>
<td>SPK -</td>
</tr>
<tr>
<td>Page Line</td>
<td>J2A/J3A</td>
<td>PA</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>PB</td>
</tr>
<tr>
<td>Channel</td>
<td>J2A/J3A</td>
<td>1A Channel 1</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>1B          &quot;</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>2A Channel 2</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>2B          &quot;</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>3A Channel 3</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>3B          &quot;</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>4A Channel 4</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>4B          &quot;</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>5A Channel 5</td>
</tr>
<tr>
<td></td>
<td>J2A/J3A</td>
<td>5B          &quot;</td>
</tr>
<tr>
<td>Group Mute</td>
<td>J2A/J3A</td>
<td>Mute</td>
</tr>
<tr>
<td>Park</td>
<td>J2A/J3A</td>
<td>Park</td>
</tr>
</tbody>
</table>

**Note:** Channels 2 to 5 connections remain empty for MLW100 hookup.

*Figure 5 - Electrical Connections*
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.

**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.

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

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**Figure 6 - Circuit Board Layout**

- **Speaker Mute**
- **Speaker Level Adjust**
- **J7 From Page Line Switch**
- **Ambient Noise Monitor Adjust**
- **Fuse 120 VAC 0.5 AMP (2 AG Fast Blow)**
- **Ground Post**
- **Receiver Level Adjust**
- **Transmitter Level Adjust**
- **Side Tone Adjust**
- **J5 From Hook Switch**
- **J4 From Handset Page Switch**
- **J3 From Handset RX/TX**
- **J10 From Microphone**
Operating the MLW100 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.

---

Operating the MLW150 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.
Guardian Telecom Inc.

Installation and Operation
Models MLW100 and MLW150

Troubleshooting

**Note:** If access to the interior of the MLW100/150 is required refer to the appropriate section.

**Station Is Dead But Associated Speaker Is Working**
- No repair possible, return station for repair.

**Station Is Dead And Associated Speaker Is Not Working**
- Ensure power is being supplied to the station.
- Check the fuse located on the circuit board and replace if necessary. Correct the problem that caused the fuse to fail.

**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.

**Excessive Noise on Line**
- Verify no other station's handset is off the hook.

**Crosstalk**
- Inspect wire terminations for crossed wire pairs.

See: Accessing the Interior of the MLW100/150

See: Warranty and Product Return

See: Engineering Specifications for correct fuse rating

See: Warranty and Product Return
### Engineering Specifications

<table>
<thead>
<tr>
<th><strong>Electrical Requirements</strong></th>
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<tr>
<td>INPUT VOLTAGE</td>
<td>120/240VAC</td>
</tr>
<tr>
<td>INPUT FREQUENCY</td>
<td>50/60Hz</td>
</tr>
<tr>
<td>INPUT CURRENT</td>
<td>120VAC 0.1Amp, 240VAC 0.05Amp</td>
</tr>
<tr>
<td>FUSE</td>
<td>120VAC 0.5Amp, 240VAC 0.25Amp - 2AG Fast Blow</td>
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<table>
<thead>
<tr>
<th><strong>Handset Amplifier</strong></th>
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<tbody>
<tr>
<td>OUTPUT LEVEL</td>
<td>1.5VRMS nominal into 33 Ohm load</td>
</tr>
<tr>
<td>OUTPUT LIMITER</td>
<td>1.5VRMS nominal</td>
</tr>
<tr>
<td>TRANSMIT GAIN</td>
<td>50dB</td>
</tr>
<tr>
<td>FREQUENCY RESPONSE</td>
<td>250 – 4000Hz</td>
</tr>
<tr>
<td>DISTORTION</td>
<td>1.0% maximum THD @ 1000Hz</td>
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<table>
<thead>
<tr>
<th><strong>Speaker Amplifier</strong></th>
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<td>OUTPUT LEVEL</td>
<td>10 Watts with nominal voltage</td>
</tr>
<tr>
<td>AMPLIFIER GAIN</td>
<td>0.5VRMS at rated output</td>
</tr>
<tr>
<td>FREQUENCY RESPONSE</td>
<td>250 – 4000Hz</td>
</tr>
<tr>
<td>DISTORTION</td>
<td>1% maximum THD @ 1000Hz 10Watts</td>
</tr>
<tr>
<td>INPUT IMPEDANCE</td>
<td>200K Ohms, nominal</td>
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<table>
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<th><strong>Environmental</strong></th>
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<tbody>
<tr>
<td>WEATHER TIGHT</td>
<td>ENCLOSURE GASKET</td>
</tr>
<tr>
<td>DUST TIGHT</td>
<td>ENCLOSURE GASKET</td>
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<tr>
<th><strong>Mechanical</strong></th>
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<tr>
<td>BODY CONSTRUCTION</td>
<td>16 gauge steel, zinc dichromate plated and powder coated</td>
</tr>
<tr>
<td>COLOR</td>
<td>STANDARD YELLOW, other colors optional</td>
</tr>
<tr>
<td>DIMENSIONS</td>
<td>12.3 x 8.0 x 5.7 INCHES (313 x 203 x 145MM)</td>
</tr>
<tr>
<td>NET WEIGHT</td>
<td>11 LBS/5 Kg</td>
</tr>
<tr>
<td>STANDARD MOUNTING</td>
<td>VERTICAL WALL</td>
</tr>
<tr>
<td>WIRING ACCESS</td>
<td>1 3/8” opennings for owner supplied fittings</td>
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<tr>
<th><strong>Compliance</strong></th>
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<tr>
<td>CANADIAN STANDARDS ASSOCIATION (by Entela)</td>
<td>CSA C22.2 No. 213 CLASS I, DIVISION 2 GROUPS A,B,C &amp; D HAZARDOUS LOCATION</td>
</tr>
<tr>
<td>CSA (CANADA AND USA) [PENDING]</td>
<td>CLASS I, DIVISION 2, GROUPS A, B, C &amp; D CLASS II, DIVISION 2, GROUPS E, F &amp; G</td>
</tr>
</tbody>
</table>
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 repairs.

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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Calgary, Alberta, Canada T2H 0W3
Toll-free 1-800-363-8010
Ph. (403) 258-3100
Fax. (403) 253-4967
www.guardiantelecom.com

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.
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.guardian telecom.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.
Page/Talk Product Series Description
Guardian's Page/Talk Systems provide reliable and easy to use paging and communication within industrial environments and hazardous locations, such as plants, mills and factories. Wall and desk stations are available in both single line and multi line models. Individuals can be paged from any station and two or more persons can communicate on any available line. With the addition of a Merge/Isolate Cabinet up to 12 zones are supported.

These systems provide quality paging and communication functions, and with the telephone interface unit, communication outside the system. Speaker amplifier units provide the capability of adding extra speakers without the need for a Page/Talk station. The alarm tone generator provides synthesized audio alarm signals for plant safety systems and can be programmed to activate strobe lights for additional warning in noisy environments.

Guardian's Stations and related equipment are compatible with systems provided by most other manufacturers.

Page/Talk System Models and Options

Standard Stations
P5901 MLW10 Single Line Wall Station
P5906 MLW15 Multi Line Wall Station
P5950 MLA13 Amplifier Unit
P5911 MLD20 Single Line Desk Set
P5916 MLD25 Multi Line Desk Set
P5921 MLW80 Single Line Weather Proof Wall Station, NEMA 4X
P5926 MLW85 Multi Line Weather Proof Wall Station, NEMA 4X
P5958 MLA83 Weather Proof Amplifier Unit, NEMA 4X

Hazardous Location and Explosion Proof Stations
P5900 MLW100 Single Line Wall Station, Class I, Div.2
P5905 MLW150 Multi Line Wall Station, Class I, Div.2
P5951 MLA130 Amplifier Unit, Class I, Div. 2
P5910 MLD200 Single Line Desk Set, Class I, Div.2
P5915 MLD250 Multi Line Desk Set , Class I, Div.2
P5920 MLW800 Single Line Weather Proof Wall Station, NEMA 4X, Class I, Div.2
P5925 MLW850 Multi Line Weather Proof Wall Station, NEMA 4X, Class I, Div.2
P5957 MLA830 Weather Proof Amplifier Unit, NEMA 4X, Class I, Div. 2
P5930 MLX300 Explosion Proof Single Line Wall Station, Class I, Div.1
P5935 MLX350 Explosion Proof Multi Line Wall Station, Class I, Div.1
P5956 MLA330 Explosion Proof Amplifier Unit, Class I, Div. 1

Options
P5940 MLI15 Telephone Interface Unit
P5970 AG17 Alarm Tone Generator
P5960 AG17 Alarm Tone Generator, (with optional relay board.)

Cable
P005219 Standard 16 Conductor
P005366 Heavy Duty 16 Conductor
Appendix - Typical Installation

Industrial Environment

Class I Div.2 Hazardous Area

CSA Type 4X

Class I Div.1 Hazardous Area

AG17 Alarm Tone Generator

Paging Amplifier MLA 13
MLW 10/15
Desk Power Supply MLD 20/25
MLW 100/150
MLW 80/85
MLX 300/350
120/240 VAC
Guardian's Custom Cable

Telephone Interface MLI15
Power Supply Max. 40VDC
120 / 240VAC

Switch P.A.B.X.

Logic Pair
Audio Pair
Alarm System
Fire & Gas

Alarm Activation
Manual Push Button

High Humidity Area

CSA Type 4X

MLW 80/85
Class I Div.2

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Industrial Communications Worldwide

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