

Remote Alarm Monitoring System Operation and Service Manual

RA1 and RA4



Document History

Revision	Date	CO	Supersession	Revision Description
A	27 DEC 2005	3391	n/a	Initial release.
B	08 NOV 2007	4324	n/a	◆ Added WEEE symbol to the product specification label and to the manual. ◆ Added power supply outlet adapters.
C	04 MAR 2010	5475	n/a	◆ Changed chamber and product specification label style. ◆ Added ISO certification statement. ◆ Deleted references to Entela.
D	20 FEB 2013	8268	n/a	◆ Added caution label regarding alarm contacts. ◆ Updated UL standards compliance label. ◆ Changed manual format for improved readability and ease of locating information within manual.
E	18 MAR 2020	15399	E supersedes D	◆ Reformatted document for consistency with other Helmer manuals. ◆ Updated compliance information.

* Date submitted for Change Order review. Actual release date may vary.

Document Updates

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This manual is intended as a guide to provide the operator with necessary instructions on the proper use and maintenance of certain Helmer Scientific products.

Any failure to follow the instructions as described could result in impaired product function, injury to the operator or others, or void applicable product warranties. Helmer Scientific accepts no responsibility for liability resulting from improper use or maintenance of its products.

The component images appearing in this guide are provided for illustrative purposes only, and may vary slightly from the actual software screens and/or product components.

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1 About this Manual

1.1 Intended Audience

This manual is intended for use by end users of the remote alarm and authorized service technicians.

1.2 Model References

Generic references are used throughout this manual to group models that contain similar features. For example, "RA models" refers to all models of that configuration (RA1, RA4). This manual covers all remote alarms, which may be identified singly, by their size, or by their model designation (RA).

1.3 Intended Use

Helmer remote alarm monitoring systems are intended for the monitoring of alarm systems of refrigerators, freezers, and other medical and scientific products.

1.4 Safety Symbols and Precautions

Symbols and precautions found in this document

The following symbols are used in this manual to emphasize certain details for the user:



Task Indicates procedures which need to be followed.



Note Provides useful information regarding a procedure or operating technique when using Helmer Scientific products.

NOTICE Advises the user against initiating an action or creating a situation which could result in damage to equipment; personal injury is unlikely.

Symbols found on the units

The following symbols may be found on the agitator or agitator packaging:



Caution: Risk of damage to equipment or danger to operator

1.5 Avoiding Injury

Review safety instructions before installing, using, or maintaining the equipment.

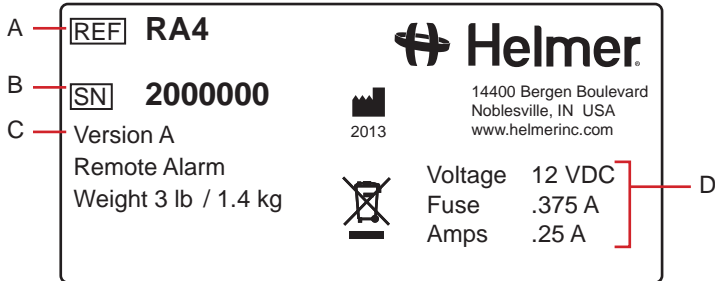
- ◆ Avoid removing electrical service panels and access panels unless so instructed.
- ◆ Use manufacturer supplied power cords only.
- ◆ **REQUIRED:** Decontaminate parts prior to sending for service or repair. Contact Helmer or your distributor for decontamination instructions and a Return Authorization Number.

1.6 Product Labels

Note

Service information varies depending on the model.

This information appears on the product specification label, located on the bottom of the monitoring system. The model also appears on a label located inside the remote alarm monitoring system.



Sample Product Specification label (located on the back).

Label	Description	Label	Description
A	Model (REF)	C	Version
B	Serial number (SN)	D	Power requirements

2 Setup and Installation

Notes

- Allow the remote alarm monitoring system to come to room temperature before switching power on.
- During initial startup, the high temperature alarm may sound while monitored equipment reaches operating temperature.

2.1 Location Requirements

- ◆ Stable, flat horizontal surface (desk-mounted) or vertical surface (wall-mounted)
- ◆ Has a grounded outlet meeting national and local electrical requirements
- ◆ Meets the limits specified for ambient temperature and relative humidity

2.2 Wall Placement

Install Wall Anchors:

1. Use a pencil to mark the wall with the locations for the anchors. The holes are 4-1/8" (105 mm) apart.
2. Install the self-drilling anchors at the marked locations.
3. Using a #2 Phillips screwdriver, install the screws into the anchors, leaving a 1/8" (3 mm) gap between the screw head and the anchor.
4. Place the monitoring system on the wall so the screw heads protrude into the lower part of the mounting holes.
5. Slide the monitoring system down until the top of the mounting holes rest on the screws.

2.3 Connect Power Supply

The power supply and several adapters are provided for use with a variety of power outlets. The North American adapter is installed at the factory. The power supply and adapters are included with the remote alarm monitoring system.



Monitoring system with power supply and adapters (RA1 model shown with North American adapter installed).

Change the Power Supply Adapter:

1. On the power supply, slide the adapter away from the cord to remove it.
2. Slide the new adapter into place.

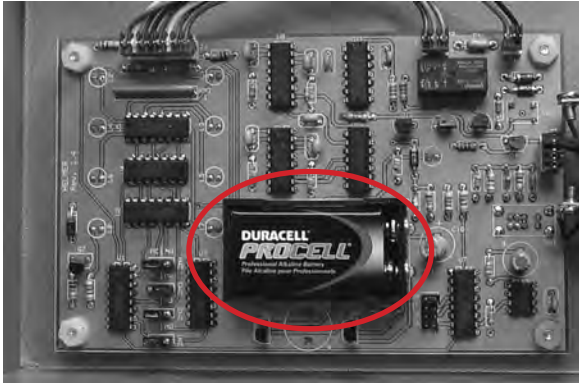
2.4 Connect Backup Battery

A backup battery provides power to the remote alarm monitoring system if AC power fails. The remote alarm monitoring system is shipped from the factory with the backup battery.

- ◆ The monitoring system has visual and audible alarms to notify when the remaining charge on the installed battery is low.
- ◆ The low-charge alarms remain active until the battery is removed.
- ◆ If AC power fails, and alarms are not active at the time of failure, the monitoring system can continue to operate on battery power for a maximum of two hours.

Note

The visual and audible alarms do not indicate whether a battery is installed. The alarms only indicate the battery charge is low.



Battery holder with battery installed (circled).

Note

Use only 9V non-rechargeable alkaline (or equivalent) battery.

Install Backup Battery

1. Disconnect the power to the remote alarm monitoring system.
2. Remove the cover from the base of the remote alarm monitoring system.
3. Install the battery in the battery holder on the circuit board.
4. Replace the cover.
5. Reconnect the power to the remote alarm monitoring system.

Remove Backup Battery:

1. Disconnect the power to the monitoring system.
2. Remove the cover from the base of the remote alarm monitoring system.
3. Remove the battery from the battery holder on the circuit board.
4. Replace the cover.
5. Reconnect the power to the remote alarm monitoring system.

3 Configuration

Each zone on the remote alarm monitoring system is designed to connect to and monitor one device. Each zone will support one device.

- ◆ RA1: One zone (one monitored device)
- ◆ RA4: Four zones (four monitored devices)

i Notes

- Multiple devices to a single zone if all devices are identically configured (all normally-open or normally-closed).
- An active zone alarm indicates that at least one device connected to the zone has an active alarm but does not identify which device(s) in the zone has triggered the alarm.

3.1 Zone Configuration

Each zone can be independently configured as either a normally-open (NO) or normally-closed (NC) circuit to accommodate the capability of the device being monitored. At the factory, all zones on the monitoring system are configured as normally-closed circuits.

Normally-Closed Configuration

- ◆ Normal state is a closed circuit between the input and output connectors for the zone.
- ◆ Connecting a device extends the circuit to include that device.
- ◆ When a connected device opens the circuit, an alarm is activated on the remote alarm monitoring system for the corresponding zone.
- ◆ When the device returns the circuit to the closed state, the alarm is cleared.

Normally-Open Configuration

- ◆ Normal state is an open circuit between the input and output connectors for the zone.
- ◆ Connecting a device extends the circuit to include that device.
- ◆ When a connected device closes the circuit, an alarm is activated on the remote alarm monitoring system for the corresponding zone.
- ◆ When the device returns the circuit to the open state, the alarm is cleared.

i Note

A normally-open configuration allows for immediate detection if a zone connection is loose or a wire is damaged. These conditions open the circuit which generates an alarm on the remote alarm monitoring system, even if monitored devices are not in an active alarm state.

3.2 Zone Labels

On the front of the remote alarm monitoring system, each zone has an area to place a label that identifies the monitored device. Blank labels are provided with the remote alarm monitoring system.



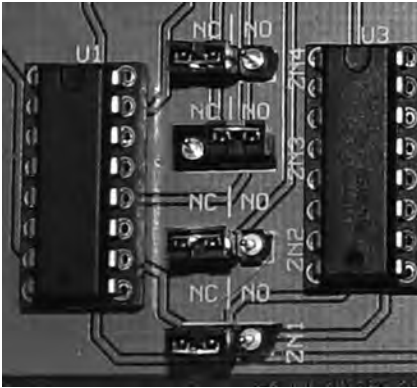
Label area for zone (circled).

3.3 Set Internal Jumpers for Zones

Each zone has a corresponding internal jumper that is used to configure it as a normally-open or normally-closed circuit. The internal jumpers are located on the circuit board inside the monitoring system.

Note

Default factory setting is normally-closed.



Internal jumpers. Zones are labeled ZN and the positions for each zone are labeled NC and NO. RA4 model shown with zone 3 jumper in the NO position and the remaining zone jumpers in the NC position.

Set a Zone Jumper:

NOTICE

Before removing the cover, disconnect the power to the monitoring system to eliminate the potential of electric shock.

1. Disconnect the power to the remote alarm monitoring system.
2. Remove the cover from the base of the monitoring system. For instructions, see Section 3.5, "Removing and installing the cover."
3. Inside the monitoring system, on the circuit board, locate the jumper for the zone configuration to be changed.
4. Move the jumper to the appropriate position. For a normally-closed configuration, move the jumper to connect the pins that are labeled NC. For a normally-open configuration, move the jumper to connect the pins that are labeled NO.
5. Replace the cover.
6. Connect the power to the remote alarm monitoring system.

3.4 Connect Monitored Devices

Note

Each zone on the monitoring system is designed to monitor one device.

Multiple Devices Connected to a Single Zone

- ◆ Multiple devices may be connected to a single zone, provided all devices are identically configured (all normally-open or normally-closed).
- ◆ With multiple devices connected to a single zone, alarm information received by the remote alarm monitoring system would be limited.
- ◆ An active alarm indicated that at least one device connected to the zone has an active alarm.
- ◆ There is no way to identify which device(s) has the active alarm.

Maximum Distance for Monitored Devices

- ◆ Monitored devices can be a maximum of 3000' (915 m) away from the remote alarm monitoring system when connected with 22-gauge wire.
- ◆ When multiple devices are connected to a single zone, the maximum distance refers to the length of wire needed to reach the device farthest from the remote alarm monitoring system.

Default Connection Settings

- ◆ The default factory settings for the RA1 zone and RA4 zones is normally-closed.
- ◆ An external jumper connects the two terminals for each zone.
- ◆ The connections depend on whether the zone will be normally-open or normally-closed, and whether one or more devices is connected to the zone.



Zone connections for a normally-closed configuration. Left: One device. Right: Multiple devices.

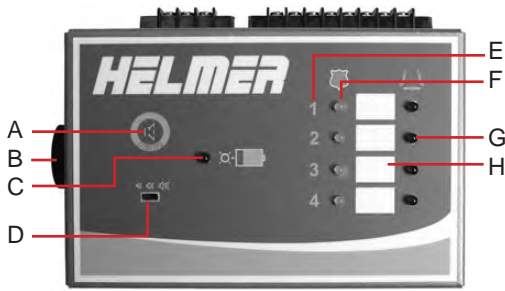


Zone connections for a normally-open configuration. Left: One device. Right: Multiple devices.

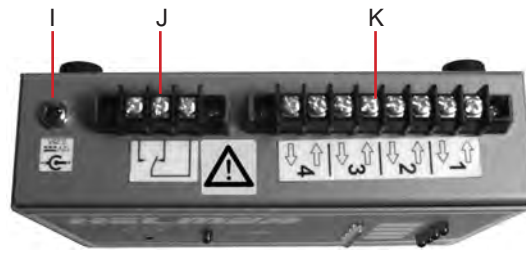
☑ Connect Devices to a Zone

1. Confirm the internal jumper for the zone is set appropriately.
2. On the top panel of the remote alarm monitoring system, using a #2 Phillips screwdriver to loosen the screw terminals remove the external jumper that connects the terminals (if installed) .
3. Connect the zone to the device(s) according to the illustrations above using two-conductor, 22 gauge wire.

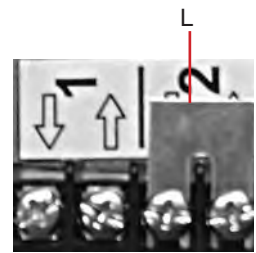
4 Operation



Front features (RA4 model shown).



Top features (RA4 model shown).



Label	Description	Function
A	Mute button	Mutes audible alarms for 30 minutes
B	Alarm buzzer	Audibly indicates an active alarm
C	Low battery indicator	Indicates low battery charge
D	Volume control	Controls the volume for audible alarms
E	Zone number	Identifies the zone used to monitor a device
F	Zone Secure lamp	Indicates when a zone is secure (no active alarms)
G	Zone Alarm lamp	Indicates when a zone is in an active alarm state
H	Zone identification label area	Description of the device being monitored
I	Power connector	Interface for the power cord
J	Remote alarm interface	Provides a dry contact connection to external central alarm systems
K	Zone input and output terminals	Connects to the remote alarm interface on devices
L	External jumper	Completes a normally-closed circuit

4.1 Initial Power Up



The interface on the remote alarm monitoring system is intended for connection to the end user's central alarm system(s) that uses normally-open or normally-closed dry contacts.

NOTICE

If an external power supply exceeding 33 V r.m.s. or 70 V (DC) is connected to the remote alarm monitoring system's circuit, the remote alarm will not function properly; may be damaged; or may result in injury to the user.

Connect Remote Alarm Monitoring System

1. Connect the power cord to the connector located on the top panel of the remote alarm.
2. Plug the power cord into a grounded outlet meeting electrical requirements stated on the product specification label. The Zone Secure lamps illuminate.

5 Alarms

The remote alarm monitoring system provides both visual and audible indicators to signify an alarm state.

5.1 Visual Alarm Indicators

Description	Function
Low battery indicator	Battery charge is low. Replace the battery.
Zone Secure lamp	Lamp ON (flashing) indicates one of the following: <ul style="list-style-type: none"> ◆ No active alarm(s) for the connected device(s). ◆ No devices are connected to the zone.
	Lamp OFF indicates one of the following: <ul style="list-style-type: none"> ◆ Active alarm(s) for the connected device(s). ◆ Power is disconnected from the remote alarm monitoring system.
Zone Alarm lamp	Lamp ON (flashing) when the zone is in an alarm state, indicating one of the following: <ul style="list-style-type: none"> ◆ Active alarm(s) for the connected device(s). ◆ Device(s) is connected incorrectly. ◆ Problem with the circuit (normally-closed configuration only).
	Lamp OFF indicates one of the following: <ul style="list-style-type: none"> ◆ No active alarm(s) for the connected device(s). ◆ Power is disconnected from the remote alarm monitoring system.

5.2 Audible Alarms

A three-position volume switch adjusts the alarm volume. Pressing the Mute button mutes an audible alarm.

Tone	Indication
Constant	Zone alarm is active (if the alarm has not been muted).
Intermittent	Battery charge is low.

Zone Alarms

- ◆ Volume may be adjusted or muted.
- ◆ Changing volume or muting alarm applies to audible alarms on the remote alarm monitoring system.
- ◆ Volume or mute for the monitored device is controlled through the device itself.
- ◆ Muting an alarm silences the alarm for approximately 30 minutes.
- ◆ If another alarm is activated from a monitored device while an alarm on the remote alarm monitoring system is muted, the mute timer is reset and the alarm sounds.

Low Battery Alarm

- ◆ Volume can not be adjusted or muted.

6 Maintenance

Maintenance tasks should be completed according to the following schedule.

Note

These are minimum requirements. Regulations for your organization or physical conditions at your organization may require maintenance items to be performed more frequently. Follow the guidelines for your organization.

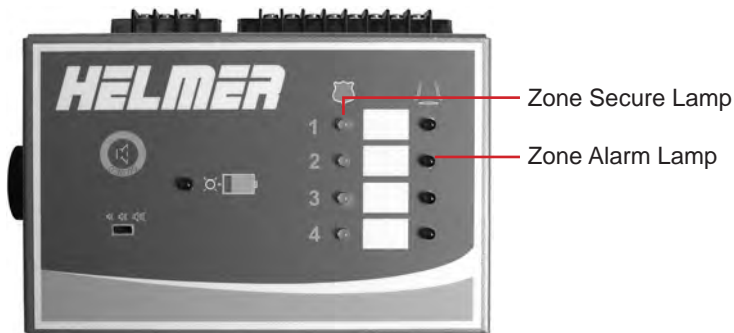
Task	Frequency		
	Quarterly	Annually	As Needed
Test the alarms.	✓		
Check the backup battery. Replace the battery if it has been in service for 1 year.		✓	
Clean the exterior of the remote alarm monitoring system.			✓
Clean the interior of the remote alarm monitoring system.		✓	

Notes

- During a power failure, the backup battery provides power to the remote alarm monitoring system.
- If the backup battery does not provide power to the remote alarm monitoring system during a power failure or battery test, replace the battery.

6.1 Test Alarms

Test alarms to ensure they are working correctly. The remote alarm monitoring system provides real-time monitoring of alarm status for all connected devices.



Front features (RA4 model shown).

Note

Refer to the device's service manual for information on which device alarms are transmitted through the respective device's remote alarm interface.

Test the Alarms

1. On a device monitored by the remote alarm monitoring system, manually trigger an alarm that is transmitted through the remote alarm interface.
2. On the remote alarm monitoring system, verify the zone corresponding to the device with the alarm is in an alarm state. The red Zone Alarm lamp should be flashing.
3. On the monitored device, clear all active alarms.
4. On the remote alarm monitoring system, verify the tested zone is in a secure state. The green Zone Secure lamp should be illuminated.

6.2 Check the Remote Alarm Monitoring System Battery

The monitoring system does not indicate the charge level of the battery. Regularly test the battery. Replace battery if the test fails or if the battery has been in use for one year.

Test the battery

1. Disconnect the power to the remote alarm monitoring system. The Zone Secure lamp should remain illuminated. If the Zone Secure lamp is not illuminated, replace battery.
2. Connect the power to the remote alarm monitoring system.

Note

Use only 9V non-rechargeable alkaline (or equivalent) battery.

6.3 Clean the Remote Alarm Monitoring System

NOTICE

Disconnect remote alarm monitoring system from AC power when cleaning.

In environments where remote alarm monitoring system is exposed to excessive lint or dust, cleaning may be required more frequently than stated in preventive maintenance schedule.

Clean Exterior

Clean exterior surfaces with soft cotton cloth and non-abrasive liquid cleaner. Clean alarm terminals with a soft brush and a vacuum cleaner.

Clean Interior

Clean the interior using a soft brush and a vacuum cleaner.

7 Service

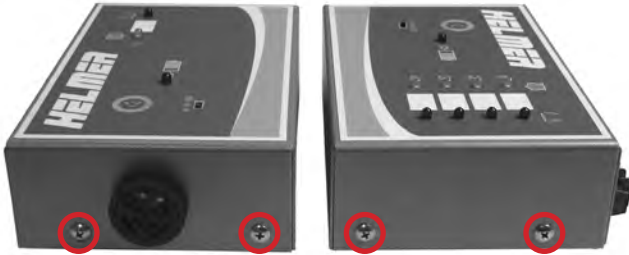
7.1 Remove and Install the Cover

NOTICE

Before removing the cover, disconnect the power to the remote alarm monitoring system to eliminate the potential of electric shock.

Note

After removing the cover, internal wiring will connect the cover to the base.



Screws securing the cover to the base (circled).

Remove the Cover:

1. Disconnect the power to the remote alarm monitoring system.
2. Using a screwdriver, loosen and remove the screws that secure the cover to the base.

Install the Cover:

1. Place the cover over the base, aligning the screw holes.
2. Using a screwdriver, install the screws to secure the cover to the base.
3. Connect the power to the remote alarm monitoring system.

7.2 Circuit Board Replacement

NOTICE

Before removing the cover, disconnect the power to the remote alarm monitoring system to eliminate the potential of electric shock.

Replace Circuit Board

1. Disconnect the power to the remote alarm monitoring system.
2. Using a screwdriver, loosen and remove the screws that secure the cover to the base.
3. Disconnect the wires from the circuit board.
4. Remove the four nuts that secure the board. Lift the board out of the base.
5. Install the new board and four nuts to secure the board.
6. Connect connect the wires to the circuit board.
7. Place the cover over the base, aligning the screw holes.
8. Using a screwdriver, install the screws to secure the cover to the base.
9. Connect the power to the remote alarm monitoring system.

8 Troubleshooting

NOTICE

Review all safety instructions prior to troubleshooting.

Problem	Possible Cause	Action
No Zone Secure or Zone Alarm lamps are illuminated.	No power (AC or battery backup) to the remote alarm monitoring system.	Verify the power cord is connected. Secure the connections if necessary.
		Verify the fuse has not blown. Replace the fuse if necessary.
		Verify the outlet is operational.
		Verify the backup battery is installed and is not depleted. Install or replace the battery if necessary.
	Power supply is faulty.	Replace the power supply.
A Zone Alarm lamp is illuminated but there are no active alarms on any device connected to the zone.	Lamps are faulty.	Replace the circuit board.
	Circuit board is faulty.	Replace the circuit board.
	A connection is loose between the monitoring system and the device.	Check the connections on the device and the monitoring system.
A Zone Alarm lamp is illuminated but there is no audible alarm.	Wrong terminals are connected.	Check that connections are correct for the configuration (NO or NC).
	Internal jumper for the zone is set incorrectly.	Check that internal jumper settings are correct for the configuration (NO or NC).
	Circuit board is faulty.	Replace the circuit board.
The Low Battery lamp is illuminated but there is no audible alarm.	Audible alarm is muted.	Activate an alarm on a connected device. Verify the alarm sounds on the remote alarm monitoring system.
	Buzzer for the zone alarms is faulty.	Replace the alarm buzzer.
	Circuit board is faulty.	Replace the circuit board.
The audible alarm sounds, but no Zone Alarm lamps are illuminated.	Buzzer for the low battery alarm is faulty.	Replace the circuit board.
	Circuit board is faulty.	Replace the circuit board.
The audible alarm sounds, but no Zone Alarm lamps are illuminated.	Battery charge is low.	Check that the Low Battery lamp is illuminated. Replace the battery if necessary.
	Zone alarm lamps are faulty.	Replace the circuit board.
	Buzzer for the zone alarms is faulty.	Replace the alarm buzzer.
	Buzzer for the low battery alarm is faulty.	Replace the circuit board.
	Circuit board is faulty.	Replace the circuit board.

9 Parts

9.1 External Parts

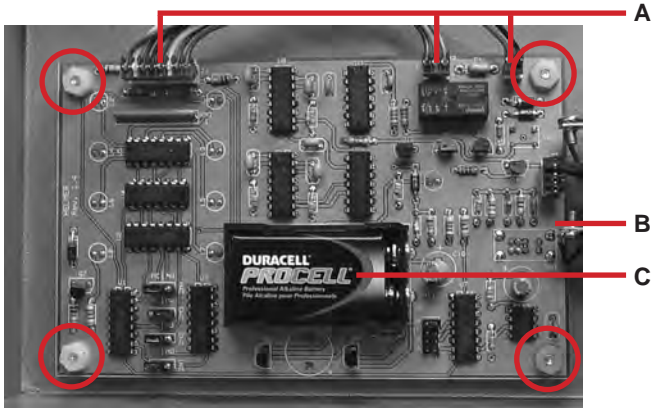


Label	Description	Part Number
A	Zone input and output terminal strip	120506
B	Remote alarm interface terminal strip	120404
C	Zone identification label	715111 (sheet of 36)
D	Power supply	120508
E	Adapters for power supply	120517
Not Shown	Foot	220441
Not Shown	Mounting kit	230350
Not Shown	External jumper	230351

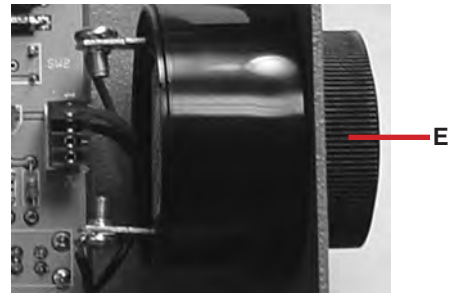
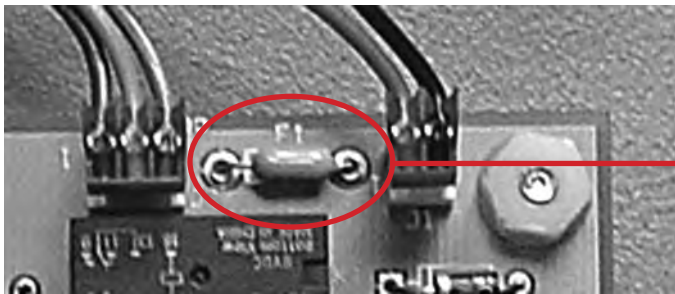
9.2 Internal Parts

NOTICE

Before removing the cover, disconnect the power to the remote alarm monitoring system to eliminate the potential of electric shock.



Circuit board and nuts (circled).

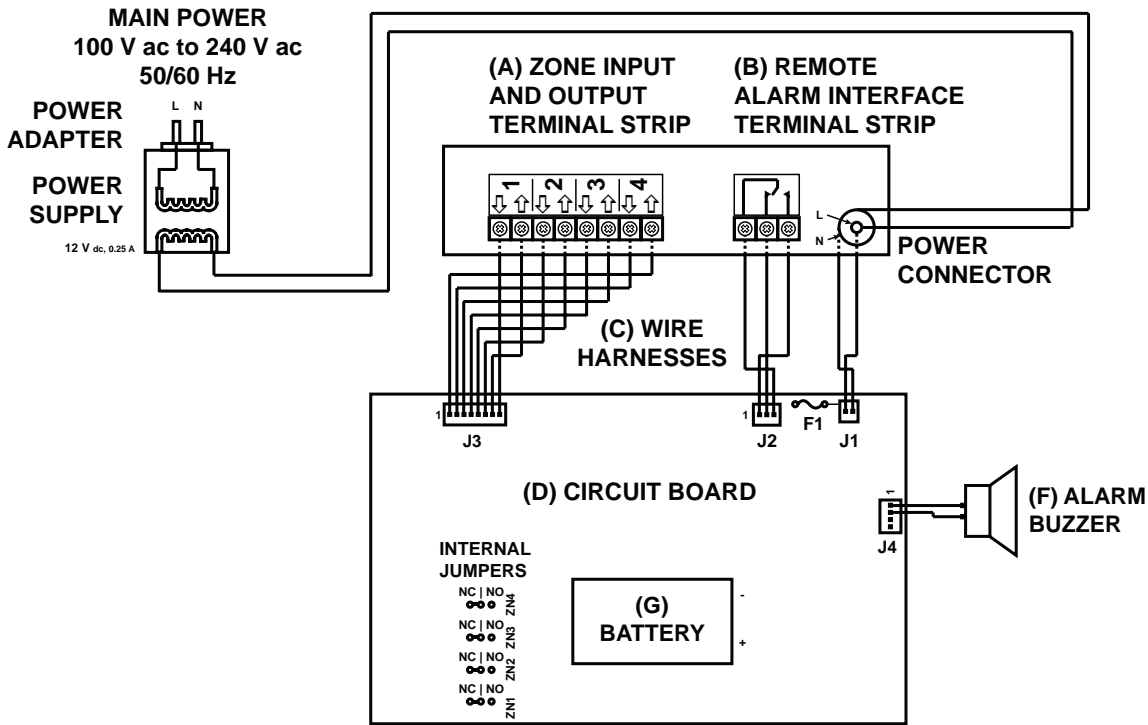


Left: Fuse (circled). Right: Alarm buzzer.

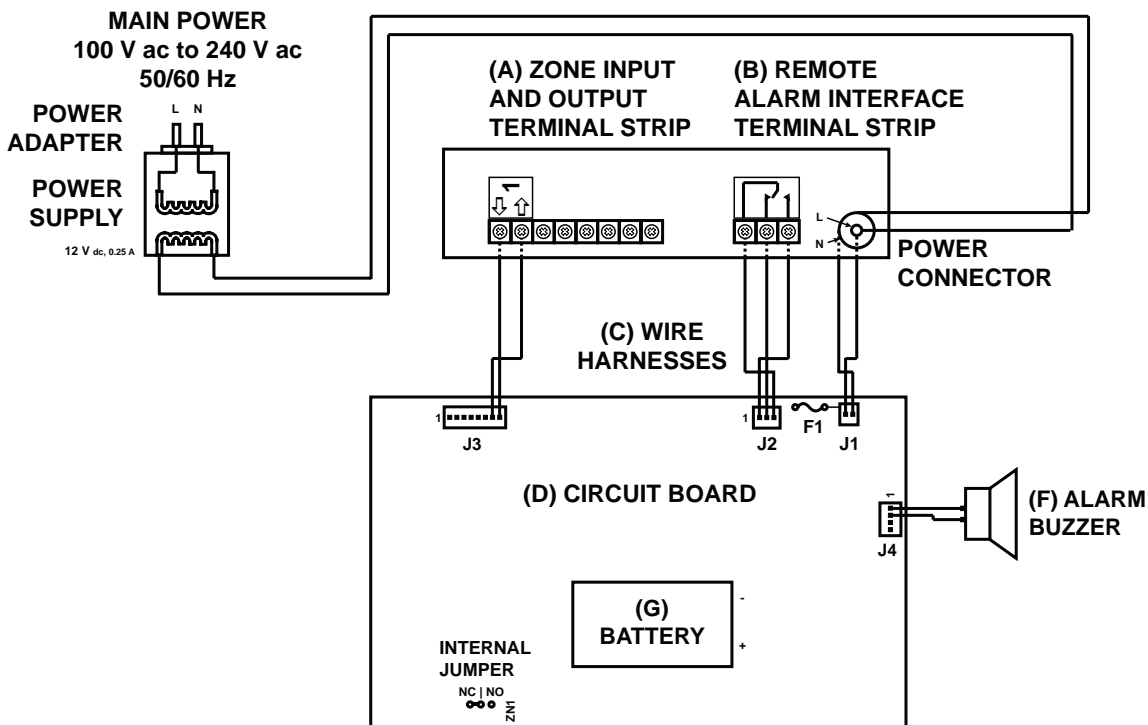
Label	Description	Model	Part Number
A	Wire harness kit	RA4	400664-2
		RA1	400664-1
B	Circuit board	RA4	400653-1
		RA1	400653-2
C	Backup battery (9 V alkaline, non-rechargeable)		120218
D	Fuse (0.375 A)		120501
E	Alarm buzzer		120160

10 Schematics

10.1 RA4



10.2 RA1



11 Specifications

11.1 Operating Standards

These units are designed to operate under the following conditions:

- ◆ Indoor use only
- ◆ Ambient temperature range: 5 °C to 40 °C (41 °F to 104 °F)
- ◆ Relative humidity (maximum for ambient temperature): 80%
- ◆ Remote alarm monitoring system can be mounted up to 3000' (915 m) from monitored device, when connected with 22-gauge wire
- ◆ Sound level is less than 70 dB(A).

11.2 Electrical Specifications

Refer to specification label for voltage and power consumption requirements. The remote alarm monitoring system is intended to be supplied by a LPS (limited power source) power unit, or one designated as "Class 2" and rated at 0.25 A, at 12 V (DC).

Fuse rating is 0.375 A.

11.3 Input Voltage and Frequency

- ◆ 100 V (AC) to 240 V (AC), 50 Hz to 60 Hz.
- ◆ Input power varies depending on the destination of the remote alarm.

11.4 Dimensions

All dimensions are for the overall exterior and include items that protrude from the main unit.

	Model	Wall-mounted	Desk-mounted
Width	RA1, RA4	8.25 in 210 mm	8.25 in 210 mm
Height		5.75 in 147 mm	2.75 in 70 mm
Depth		2.75 in 70 mm	5.75 in 147 mm
Weight		3 lbs 1.4 kg	

12 Regulatory Compliance

12.1 Safety Compliance



This device complies with the requirements of directive 2014/30/EU Electromagnetic Compatibility, and 2014/35/EU Low Voltage Directive.

12.2 Environmental Compliance



This device falls under the scope of Directive 2012/19/EU Waste Electrical and Electronic Equipment (WEEE) .

When disposing of this product in countries affected by this directive:

- ◆ Do not dispose of this product as unsorted municipal waste.
- ◆ Collect this product separately.
- ◆ Use the collection and return systems available locally.

For more information on the return, recovery, or recycling of this product, contact your local distributor.

Appendix A: Warranty

For technical service needs, please contact Helmer at 800-743-5637 or www.helmerinc.com. Have the model and serial number available when calling.

Rapid Resolution

When a warranty issue arises it is our desire to respond quickly and appropriately. The service department at Helmer is there for you. Helmer will oversee the handling of your warranty service from start to finish. Therefore, Helmer must give advance authorization for all service calls and/or parts needs relating to a warranty issue. Any repeat service calls must also be authorized as well. This allows for proper diagnosis and action. Helmer will not be responsible for charges incurred for service calls made by third parties prior to authorization from Helmer. Helmer retains the right to replace any product in lieu of servicing it in the field.

Parts

For a period of two (2) years, Helmer will supply at no charge, including freight, any part that fails due to defects in material or workmanship under normal use, with the exception of expendable items. Batteries are expendable items. Inspection of defective parts by Helmer will be final in determining warranty status. Warranty procedures must be followed in all events.

Labor

For a period of one (1) year, Helmer will cover repair labor costs, provided that the product is returned to Helmer for warranty service. Alternatively, your facility's staff may work with a Helmer technician to make repairs on site. Labor costs for repairs performed at a location other than Helmer, or for repairs made without the assistance of a Helmer technician, will be the responsibility of the end user.

Additional Warranty Information

The time periods set forth above begin two weeks after the original date of shipment from Helmer. Warranty procedures set forth above must be followed in all events.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.

THE LIABILITY, IF ANY, OF HELMER FOR DIRECT DAMAGES WHETHER ARISING FROM A BREACH OF ANY SALES AGREEMENT, BREACH OF WARRANTY, NEGLIGENCE, OR INDEMNITY, STRICT LIABILITY OR OTHER TORT, OR OTHERWISE WITH RESPECT TO THE GOODS OR ANY SERVICES IS LIMITED TO AN AMOUNT NOT TO EXCEED THE PRICE OF THE PARTICULAR GOODS OR SERVICES GIVING RISE TO THE LIABILITY. IN NO EVENT SHALL HELMER BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, INCLUDING WITHOUT LIMITATION DAMAGES RELATED TO LOST REVENUES OR PROFITS, OR LOSS OF PRODUCTS.

This warranty does not cover damages caused in transit, during installation by accident, misuse, fire, flood, or acts of God. Further, this warranty will not be valid if Helmer determines that the failure was caused by a lack of performing recommended equipment maintenance (per Helmer manual) or by using the product in a manner other than for its intended use. Installation and calibration are not covered under this warranty agreement.

Outside of USA and Canada

Consult your local distributor for warranty information.

END OF MANUAL

Helmer Scientific

14400 Bergen Boulevard, Noblesville, IN 46060 USA