

# MS2000X

## User Information



The MS2000X is an Emergency Signaling Monitoring System for Grace's worker safety products including SuperCELL®, LTX200, and TPASS®, WorkForce® and others. The MS2000X has several enhanced features including a simple interface to existing security and alarm systems. The MX2000X contains an optional audible horn and strobe light, activated upon receiving emergency alarm signals from Grace worker-safety devices.

The MS2000X must be mounted in an area where there is a clear, unobstructed path to the environment where the SuperCELL® (man-down alarm) or Transmitting TPASS® (man-down-alarm) may be used. A typical location for the MS2000X would be near an unobstructed office window or mounted just outside an office.

**The MS2000X should also be located as far away as possible from other radio equipment antennas to minimize any interference.** This includes cell phone boosters, wifi, and other 2-way radio equipment antennas. It is also recommended to keep the MS2000X a minimum of six inches away from metal surfaces.

A System Check of the MS2000X can be done by viewing the Receive LED located on the bottom surface of the MS2000X. When a SuperCELL® or TPASS® is turned On, Off, or by activating the Alarm, the radio signal will cause the Red Receive LED to flash several times - indicating signals are successfully being received by the MS2000X.

Once the MS2000X has been prepared for AC power, the unit may be plugged in. AC power connector is a screw less Terminal rated for solid or

stranded wire from 14-22AWG. Wire should be stripped at a 1/2". Wires should be inserted by using a small screwdriver to depress the lever and then inserting the wire.

When the unit is plugged in to AC Power, the Red/Green AC Power Indicator glows (or flashes) Green - indicating the system has AC Power and is ready for operation. With loss of power, the Red/Green AC Power Indicator glows (or flashes) Red - indicating the optional Backup-Battery System has been automatically activated, keeping the MS2000X ON and ready for operation.

### POWER INDICATOR LED

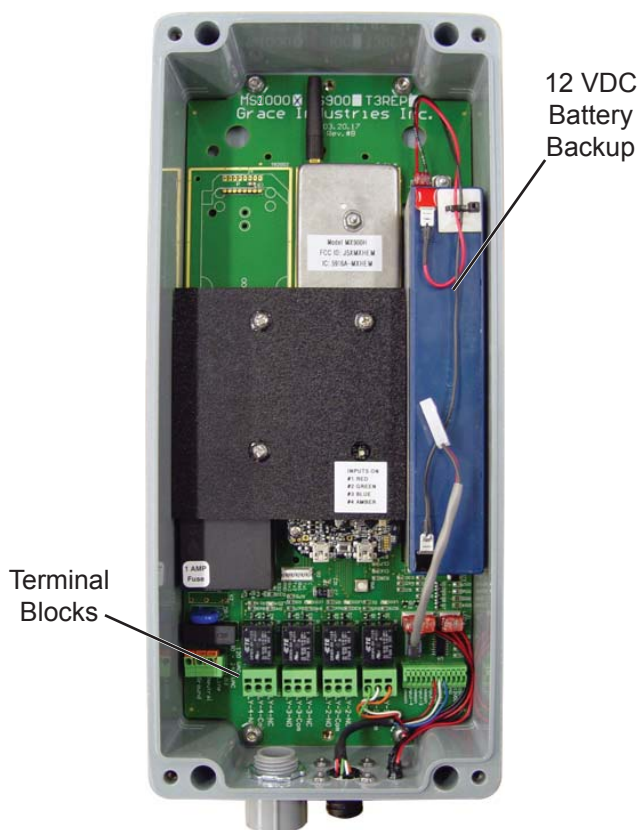
- **Green Steady Glow:** AC Power and battery is fully charged.
- **Optional Battery -B** (see options list, pg. 5)
  - **Red/Green Alternate Flashing:** Battery fault detected - open or shorted battery.
  - **Red Steady Glow:** Running on battery backup
  - **Red Flashing:** Running on Low Battery.

### TRANSMIT / RECEIVE LED

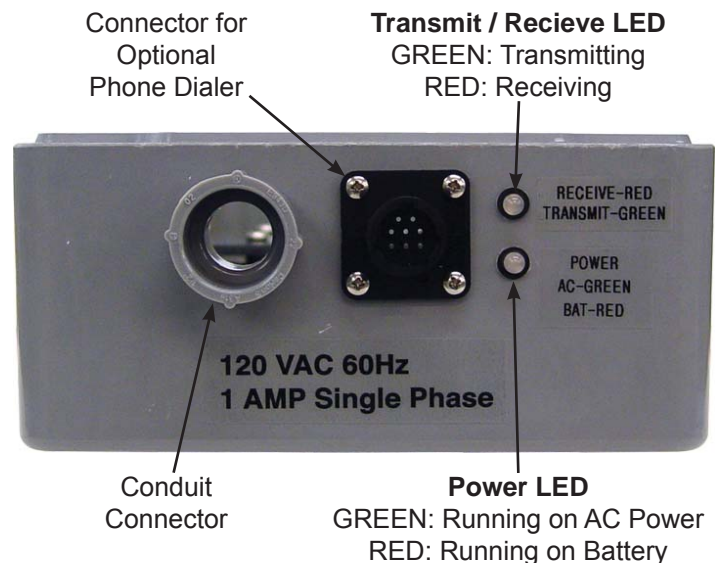
- **Green Flashing:** when MS2000X is transmitting a triggered message, Reset Acknowledgment, or repeating a signal.
- **Red Flashing:** when MS2000X is receiving a triggered message, Reset Acknowledgment, or repeating a signal.

### IMPORTANT:

**Always test MS2000X and man-down alarms in area of planned use prior to implementation.**



Inside View of MS2000X



# Terminal Block Labeling and Configuration

## A. Inputs and Power:

- 1- 15VDC – In
- 2- +12VDC – Out
- 3- GND
- 4- GND
- 5- INPUT#1
- 6- Input Common
- 7- INPUT#2
- 8- Input Common
- 9- INPUT#3
- 10- Input Common
- 11- INPUT#4
- 12- Input Common

### MS2000X Factory Default Input Setting

Input #	Trigger	Repeat Time
1	Transmit Alarm	6 Seconds
2	Transmit Global Evac	6 Seconds
3	Transmit Canned Message (Message#) **	1 Hour
4	Transmit Free Form Message ("Input#4-MS2000") **	1 Hour
Loss of AC	Transmit Free Form Message ("AC LOSS-MS2000") **	1 Hour
Low Battery	Transmit Free Form Message ("Low Bat-MS2000") **	1 Hour

## B. Power Terminals:

- Line
- Neutral
- GND

## C. Relay Terminals:

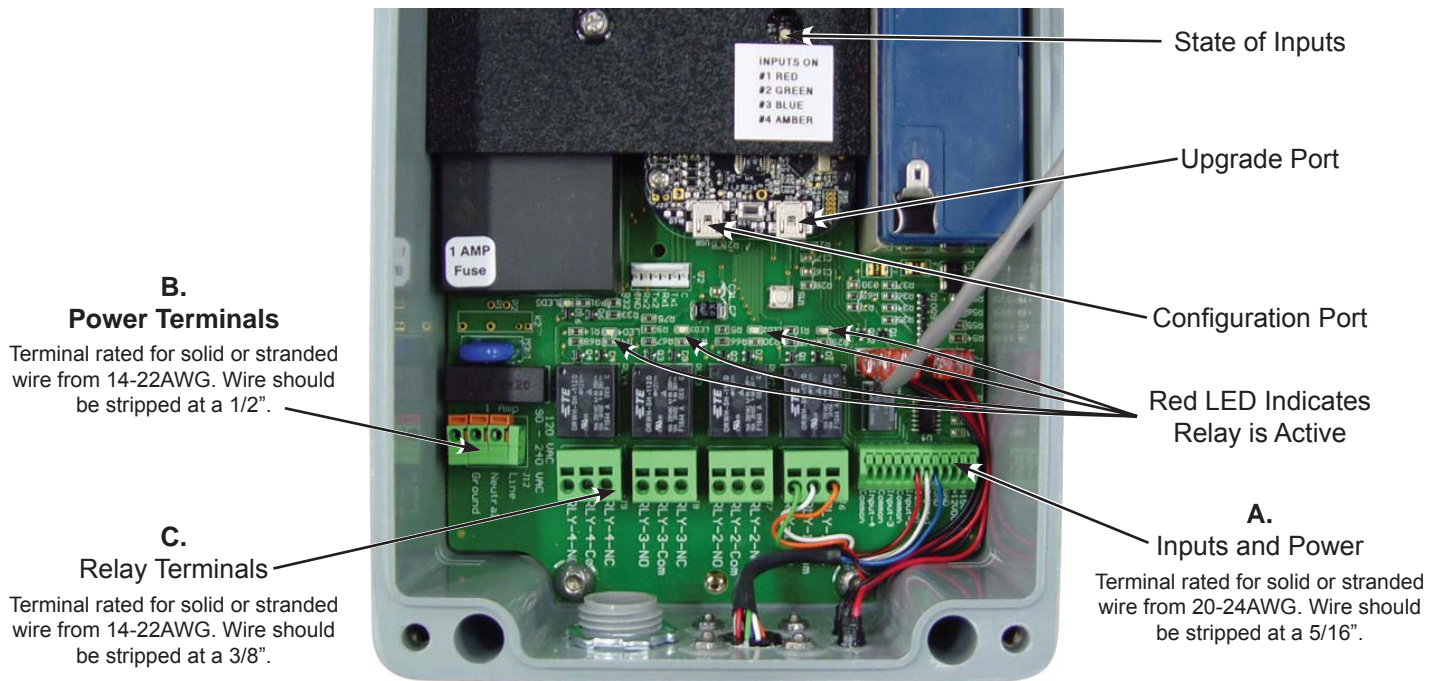
- (4 Sets; Numbered 1 - 4)
- Normally Open
- Common
- Normally Closed

### MS2000X Factory Default Relay Setting

Relay #	Trigger	Hold/Activation Time*
1	User Alarm or Input #1 Active (Transmit Alarm)	20 Seconds
2	Global Evac or Input #2 Active (Transmit Global Evac)	20 Seconds
3	Input #3 Active (Transmit Canned Message) **	3 Seconds
4	Loss of AC Detected	3 Seconds

\* **Hold/Activation Time: How long relay contact will be maintained after last trigger message is received.**

\*\* **Canned and Free Form Messages will only be displayed on SC500 Product Line**

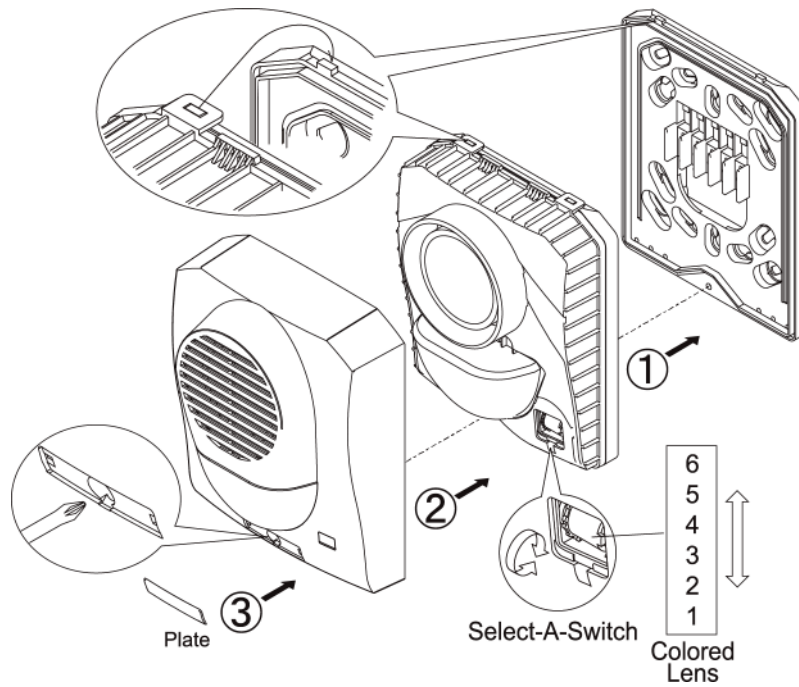


Inside View of MS2000X with -AC, -B, -LS, and -D Options Installed

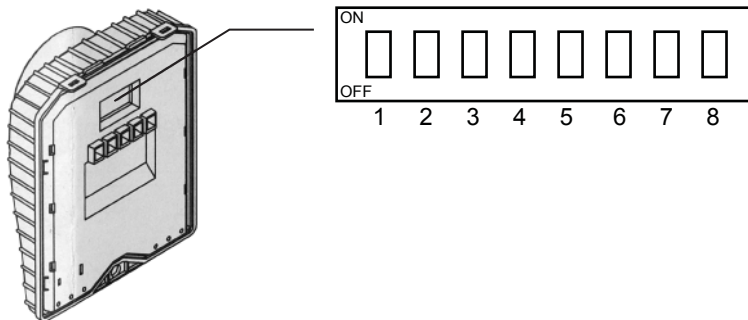
## Additional Notes:

- Except for the battery, all parts of the MS2000X are attached to the PCB.
- Connect the AC Power cable to the Line, Neutral, and Ground positions.
- When setting case lid in place, make sure the light siren cable is NOT pinched. To seal from intrusion of contaminants, secure the case lid by tightening all four (4) lid bolts until snug.
- Once Installation and Field Testing is complete, the MS2000X is ready for use.

## Strobe / Siren Settings ( -LS Option )



### Horn Dipswitch



### Pattern

- 1 ON and 2 OFF = Non Temporal
- 1 OFF and 2 OFF = Temporal
- 1 ON and 2 ON = March Time

### Tone

- 3 ON and 4 ON = 2400 Hz
- 3 ON and 4 OFF = Electromechanical
- 3 OFF and 4 OFF = Chime
- 3 OFF and 4 ON = Broadband

### Volume

- 5 ON and 6 ON = High
- 5 ON and 6 OFF = Mid
- 5 OFF and 6 OFF = Low
- 7 ON and 8 ON = Horn ON
- 7 OFF and 8 OFF = Horn OFF



**MS2000X**  
**AC Powered Micro Receiver System Specifications**  
**(With Battery Backup)**

**Case:** Rugged fiberglass

**Dimensions:** 6-1/2" wide by 15" high by 6-1/2" deep

**Weight:** 10 lb. (with battery backup and light-siren)

**Power Input Requirement:**

**AC Models:** 110/220 VAC, 60 Hz Single Phase 1Amp

**DC Models:** 12-15 VDC ONLY, 0.5 Amp

**Battery (Option):** 12 VDC, 2.9 Amp. Hr. (provides emergency, backup power for up to 24 hours)

**Frequency Range:** 902-928 MHz (frequency hopping spread spectrum)

**FCC ID:** J5MXHEM -- Meets FCC Part 15

**IC:** 5916A-MXHEM -- Complies with Canadian ICES-003

**For Use With:** Grace Telemetry Systems using the RadioH platform (SuperCELL®, LTX200, TPASS®, WorkForce®, and Micro Repeater).

**Relay Closure:** 4 form-c contact ratings 6A @ 28VDC, 6A @ 125VAC.

**MS2000X BASE PACKAGE:**

**MS2000-H-X:**

- 2-Way Micro-Transceiver System, two way signaling
- Indoor coverage of 200k Sq. Feet and 1 mile outdoor clear line of site. Indoor performance is subject to effects of building construction and RF noise.
- 4 Opto-Isolated 12VDC inputs (See Page 3 for default configuration)
- 4 Form C Relays (See Page 3 for default configuration)

**OPTION LIST:**

**-CA**

- AC powered models shipping to Canada require Canadian Electrical Inspection.

**-DC**

- 12-15VDC model (0.5 Amps).

**-AC**

- 110/220VAC 60Hz (1 Amps).

**-B (Not Available on -DC models unless supplying +15VDC).**

- Includes 12VDC, 2.9AH battery backup (Up to 24 hours).

**-LS**

- Include Case mounted Adjustable Strobe with Light Siren (See Page 4 for LS setting).

**-D (Required for ADT Telephone Dialer or MS-CA-10 Cable Assembly).**

- Dialer/quick connection port (See Page 7 for -D Pin Out).
- Includes Input #1 & 2 as well as contacts for Form C Relay#1.

**-HT (Not Available on DC models)**

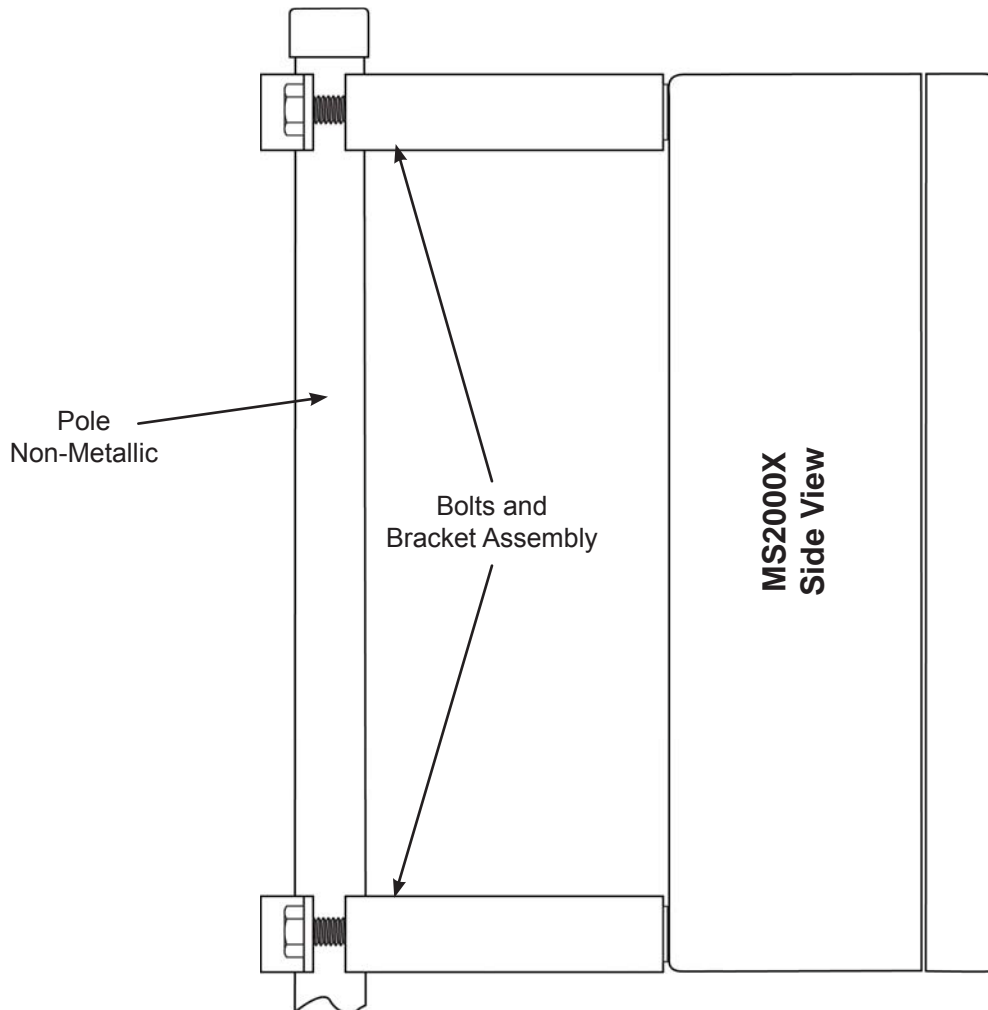
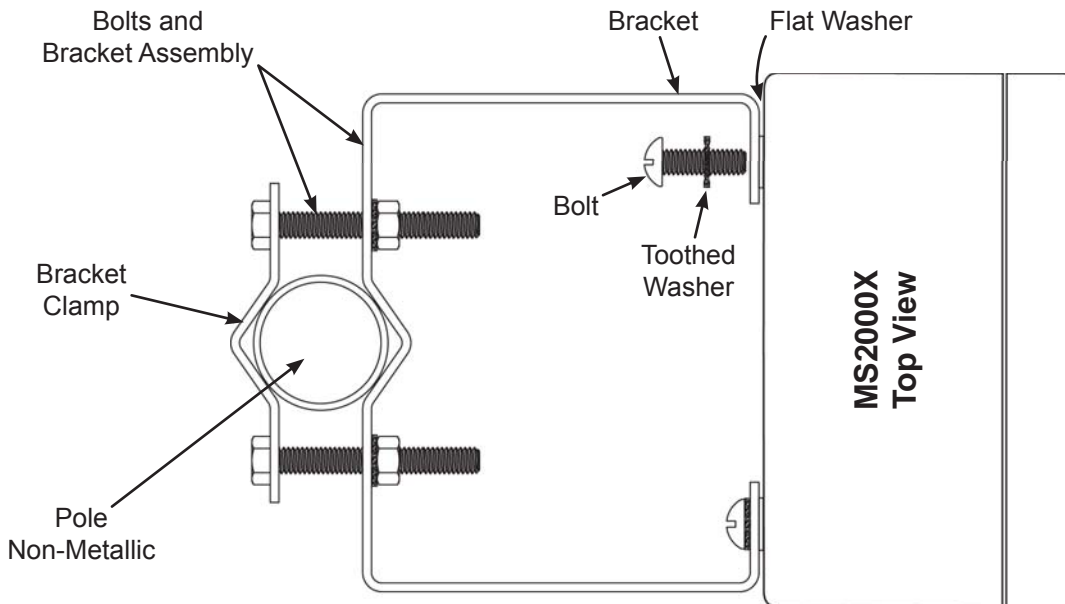
- Heated system for use in environments below 32°F / 0°C.

**-SP**

- Custom I/O programming as requested at time of order.
- One or more of the Inputs or Outputs will be set other than at Factory Default values found on Page #3.

# OPTIONAL EQUIPMENT

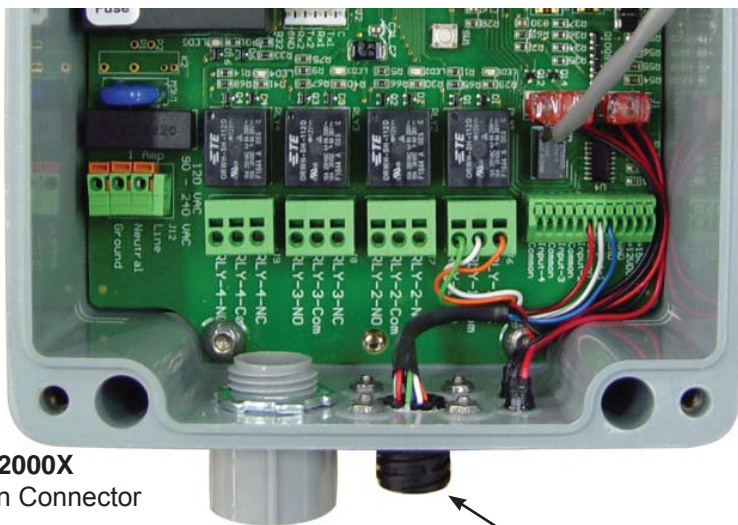
## - PM2040 Mounting Assembly - Pole Mounted with 'C' Brackets -



***Improper Installation May Degrade Performance***

# OPTIONAL EQUIPMENT

**CAUTION:** To avoid damaging mating pins, carefully match up connector keyways when attaching phone dialer connector.



Inside View of MS2000X  
Shown with optional 8-Pin Connector

OPTIONAL 8-Pin Connector  
p/n: MS-D

OPTIONAL 10 Foot Cable with Connector  
p/n: MS-CA-10



### Wiring

Pin 1	GREEN	Normally Open
Pin 2	WHITE	Contact Com.
Pin 3	RED	+12VDC
Pin 4	Blue	Input #1
Pin 5	ORANGE	Normally Closed
Pin 6	White/Black	Input Common
Pin 7	BLACK	GND
Pin 8	Red/Black	Input #2

OPTIONAL PHONE DIALER  
p/n: ATD

MS2000X with phone dialer has 8 pin connector to supply relay contact trigger and power to the external phone dialer.



## General Warranty Information

Grace Industries, Inc. warrants Grace Products to be free from defects in workmanship and materials for a period of one year from the date of purchase. This warranty is valid only when the returned products are accompanied by a sales slip or other proof of purchase that states the date and location of purchase. Grace Industries, Inc. will not repair or replace any merchandise under warranty which has been damaged because of accident, misuse or abuse of the products while in possession or control of the consumer. This warranty is void if any attempt to repair or replace parts was made or attempted by other than qualified Grace Industry's Inc. personnel. This warranty is void if any of the sealed compartments are opened or tampered with. Before sending product to Grace for repair, call for Return Authorization or RA #. Please reference RA# in shipping documents for tracking purposes. Send all repair products, prepaid and accompanied by proof of purchase to: Grace Industries, Inc., Repair Division, 305 Bend Hill Road, Fredonia, PA 16124. Grace Industries, Inc. shall not be liable for any direct, incidental or other consequential loss or damage arising out of the failure of the device to operate. End-user or customer is responsible for return shipping/freight charges.

The sole and exclusive remedy under all guarantees or warranties, expressed or implied, is strictly limited to repair or replacement as herein provided. All implied warranties, including but not limited to, warranties of fitness and merchantability, are hereby limited in duration to a period ending one (1) year from the date of purchase. The warranty and liability set forth in the prior paragraphs are in lieu of all other warranties, expressed or implied, in law or in fact, including implied warranties of merchantability and fitness for a particular purpose. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Technical assistance is available by contacting Grace Industries, Inc. at 724-962-9231. Product issues may be reported at any time to Grace Industries, Inc. at 724-962-9231.

## FCC Statements

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

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 communications. 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.

## Industry Canada Statements

This Class A digital apparatus complies with Canadian ICES-003.

This device complies with Industry Canada licence-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, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.(select the class for your device)

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.



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