



**INMOTION Controls Inc.**

**Industrial Radio Remote Control**

**INMOTION Series 220**

**INMOTION Series 260**

**User's Manual**

**Safety/Reliability/User-Friendly**

**April, 2014**

This device complies with part 15 of 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.

**FCC ID: SAGA1-L8TX      IC: 2802A-SAGAL8  
CE0470**

## **WARRANTY**

INMOTION Controls, Inc. guarantees that this product meets its published specification at the time of shipment from the factory. Under proper installation, it should work as expected. However, INMOTION Controls, Inc. does NOT guarantee that operation of the 220-260 Series Radio Control System will be error-free or without interruption.

This equipment is warranted against defects in materials and workmanship for a period of one year from the date of shipment. During the warranty period, INMOTION Controls, Inc. is responsible for necessary repairs, as long as the product can be proved to be defective.

For warranty service or repair, this product must be returned to our factory. Customer is responsible for shipping charges to INMOTION Controls, Inc., while INMOTION Controls, Inc. will pay return shipping charges.

This warranty does NOT include consumable parts, such as batteries, fuses, buttons, and relays or damage from normal wear and tear. Furthermore, this warranty does NOT cover defects caused by misuse, neglect, accident, failure to follow instructions, improper installation, improper or insufficient maintenance, unauthorized modification, unsuitable operating environment, improper operation, ignorance of environmental specifications, improper software/interfaces, fire, or acts of God.

- No other warranty is expressed or implied, except for the above mentioned
- The remedies provided herein are the buyers' sole and exclusive remedies.
- INMOTION Controls, Inc. shall not be liable for any direct/indirect, special, incidental or consequential damages.

# **OPERATING PRECAUTIONS**

## **ATTENTION**

- Due to the complex nature of the equipment, it is necessary to read the entire manual before installation.
- Never dismantle equipment by any unauthorized personnel, or equipment may be damaged.
- This Manual is for reference only; please call your distributor if further assistance is required.
- This equipment has been strictly tested for quality before delivery from our factory. However, it must not be used in extremely dangerous situations, or where damage may result.
- After operating, please shut off main power in Crane and the power to Receiver.
- Transmitter should be placed safely when not in use to avoid accidental pressing of buttons.
- The Crane should be equipped with main power Relay, Limit Switch and other required safety devices.
- The GND (ground) of Receiver must be connected with metal part of Crane, or electrical shock will occur.
- Do not use this device during electrical storm, or high electrical interference conditions.
- Ensure Transmitter batteries are in good condition and power for Receiver is normal.
- Installation and maintenance should be done only while the Crane's main power and Receiver's power are OFF, to prevent electrical shock.
- Contents of the Manual may be amended by the manufacturer without notice.

## **PRECAUTIONS**

- After use of Series 220-260, please press red Emergency Off (EMO) mushroom button to shut off the main power in the Crane & Receiver.
- Stop operating when slow-response occurs due to insufficient Transmitter power, beyond the remote control range, or severe interference.
- Remove the batteries when the equipment won't be used for a long period.
- Operators must be in good health and have good judgment in regards to safety.
- Remote Control operator must have adequate training and related license to avoid danger.
- Series 220-260 Transmitter is durable and weather-resistant, but care should be taken not to subject it to severe impact or pressure.
- Series 220-260 is suitable for use in diverse industrial environments, and adequate operating and maintenance will extend system's life.
- Check EMO mushroom and the other security functions of Series 220-260 system before daily operation.
- Press Stop pushbutton when malfunctions or abnormal conditions occur.
- Operator must be familiar with the following Emergency Procedures before operating.

# **EMERGENCY PROCEDURES**

In case of emergency, please follow the steps below and ask the distributor for service immediately.

- Press the EMO mushroom.
- Remove the batteries.
- Shut off the main power of the Crane and discontinue the operation.

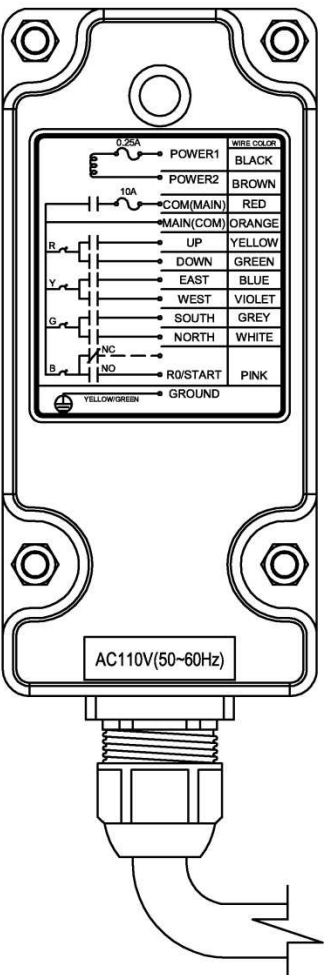
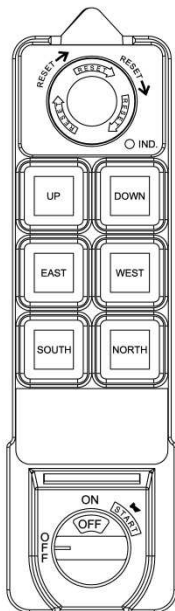
Contact the distributor to find out possible causes.

# STANDARD ACCESSORIES

A standard INMOTION Series 220-260 System consists of:

(1) Transmitter, 2 units

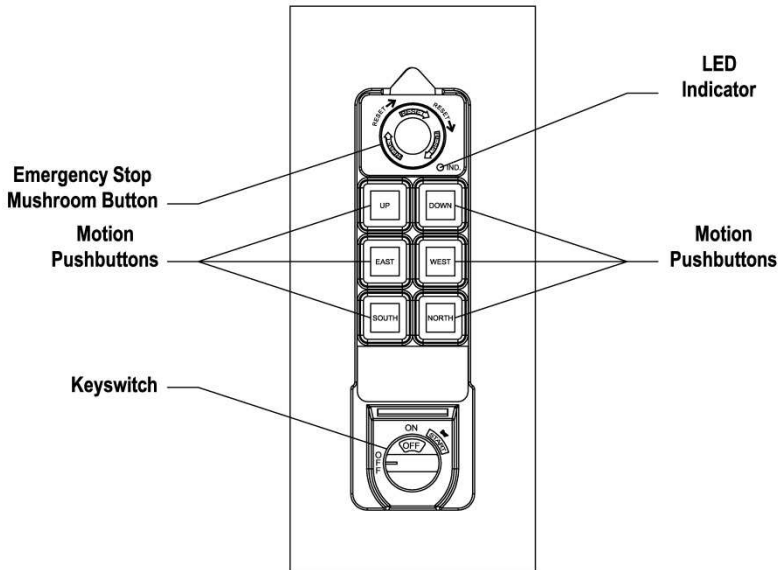
(2) Receiver, 1 unit



Note:  
INMOTION Series 260 shown.

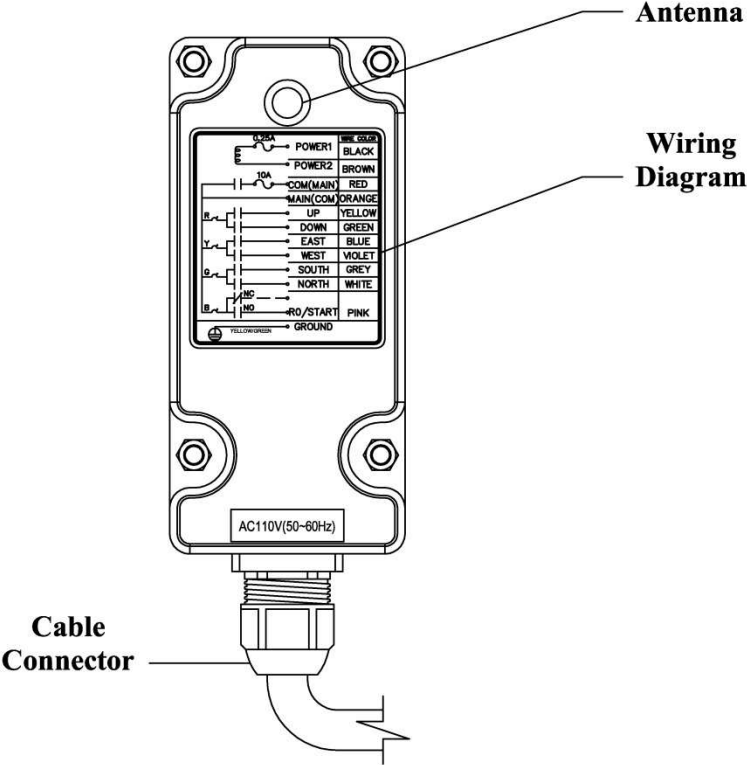
# OPERATION

## TRANSMITTER CONFIGURATION



Note:  
Inmotion Series 260 Shown.

**RECEIVER CONFIGURATION**



Note:  
INMOTION Series 260 Shown. Models vary depending on options.



## **GENERAL OPERATION**

- Turn on the main power switch of the equipment (Crane).
  - Install 2 AA batteries in the battery box in the Transmitter. Make sure the polarity is correct.
  - Attach Transmitter battery door with screws.
  - Press the “R0/Start” Button.  
**Note:** LED indicator will flash with red color if proper procedures are not followed.
  - Operate Transmitter by pressing each pushbutton.
  - After operation, perform the following procedures in sequence:
    - (1) Press the EMO mushroom
    - (2) Keep the transmitter in a safe place
    - (3) Switch main power off to the equipment (Crane)
    - (4) Remove batteries if not used for a long period of time**Note:** Transmitter has power indicating functions with LED display.
- ← “Green Color” – The LED will flash green when battery power is sufficient.
- “Red Color” – The LED will flash red when the power is low.
- The operating distance will become shorter and intermittent when the batteries are low.
  - Replace batteries with new batteries when battery power is low.

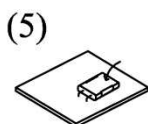
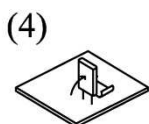
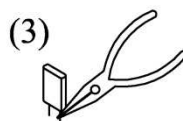
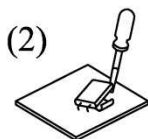
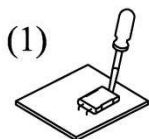
**! DO NOT USE RECHARGEABLE BATTERIES !**

# **CHANGING THE FREQUENCY**

It is easy to change the frequency of the Series 220-260 simply by replacing corresponding frequency crystals in both the Transmitter and the Receiver.

## **Instructions:**

1. Pry up the crystal with a flathead screwdriver.
2. Remove the crystal from the system.
3. Use needle nose pliers to straighten both pins of the new crystal.
4. Insert the new crystal vertically into the PC board.
5. Press the new crystal down into the socket.



## **ATTENTION :**

**The Transmitter frequency will be different from the Receiver frequency. For example, the transmitter crystals are labeled T01 thru T40 and receiver crystals are labeled R01 thru R40.**

## **FREQUENCY CHART**

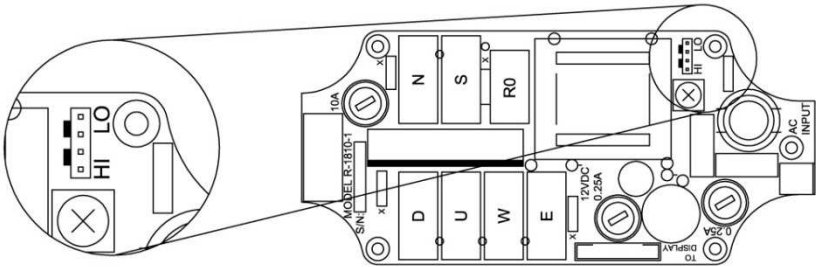
Channel No.	Frequency MHz	Channel No.	Frequency MHz
1	310.0325	21	315.3825
2	310.3000	22	315.6500
3	310.5675	23	315.9175
4	310.8350	24	316.1850
5	311.1025	25	316.4525
6	311.3700	26	316.7200
7	311.6375	27	316.9875
8	311.9050	28	317.2550
9	312.1725	29	317.5225
10	312.4400	30	317.7900
11	312.7075	31	318.0575
12	312.9750	32	318.3250
13	313.2425	33	318.5925
14	313.5100	34	318.8600
15	313.7775	35	319.1275
16	314.0450	36	319.3950
17	314.3125	37	319.6625
18	314.5800	38	319.9300
19	314.8475	39	320.1975
20	315.1150	40	320.4650

# RECEIVER VOLTAGE OPTIONS

There are two types of power voltages (DC and AC) available for the 220-260 Series.

- 1) DC Type:  
Input Voltage: 12~24 VDC  
Relay Contact: 10A-36 VDC
  
- 2) AC Type:  
Three different AC transformers: 24/48V, 48/110V, 110/220V.  
Set the jumper to either Hi or Lo depending on which voltage is required. See the chart and diagram below.

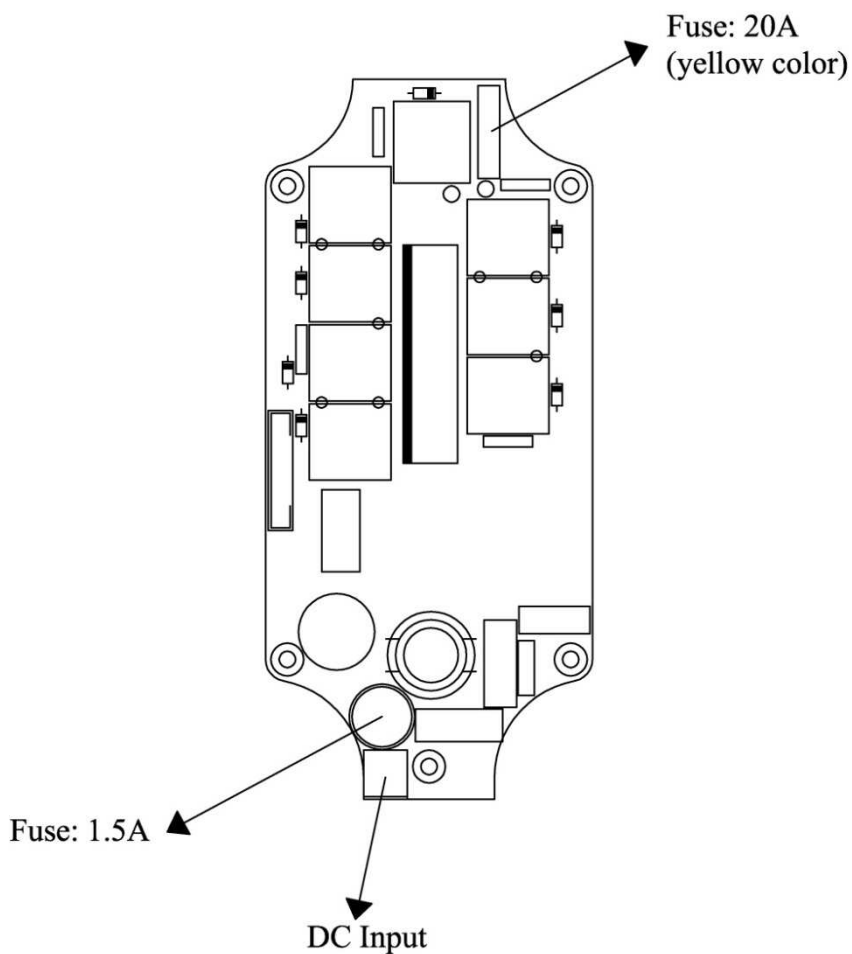
	LO	HI
<b>AC24/48 Transformer</b>	<b>24</b>	<b>48</b>
<b>AC48/110 Transformer</b>	<b>48</b>	<b>110</b>
<b>AC110/220 Transformer</b>	<b>110</b>	<b>220</b>



**Note: Standard Systems are 48/110 VAC. If any others are required, please specify when ordering.**

# **DC TYPE RELAY P.C. BOARD LAYOUT**

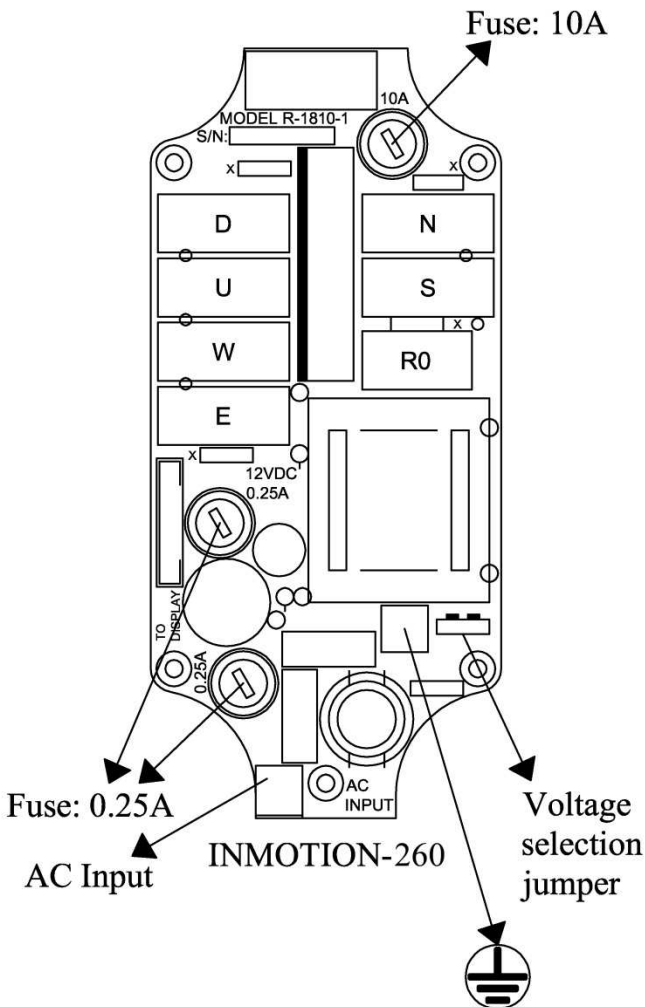
For INMOTION 220-260



**Note: The Polarity of DC Input is not required when plugging in the power.**

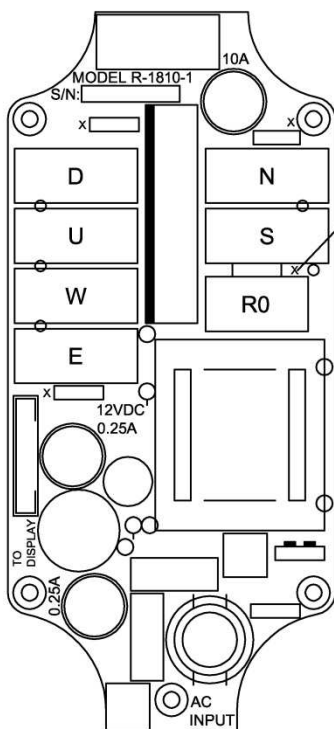
**AC TYPE RELAY P.C. BOARD LAYOUT**

INMOTION 260 Shown

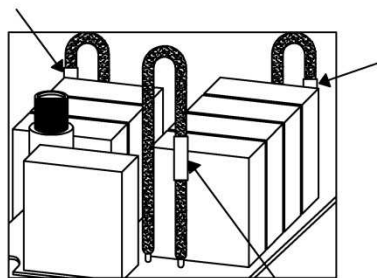


**Note: The Ground of the receiver must be connected with metal Part of equipment, or electrical shock may occur.**

# INDEPENDENT COMMONS



If an independent COM line is required then cut the wire labeled with a white "X" as shown below. The longer part of the wire will become the new COM Line.



Cut the wire here.

INMOTION-260

INMOTION Series 220-260 offer optional independent COM lines as:

INMOTION-260	4 Independent COM Lines	Up/Dn, E/W, S/N, R0
INMOTION-220	3 Independent COM Lines	Up/Down, E/W, R0

Please refer to the figure of the relay board above. If any independent COM line is required then cut the wire labeled with a white "X". The longer part of the wire will become the new COM line. Then you may connect this new COM wire with an existing spare output wire. If no spares are available the customer must supply extra wire.

## **BATTERIES**

Two AA size alkaline batteries are required for the Transmitter.

The LED will flash green when the battery power is sufficient.

The LED will flash red when the battery power is low.

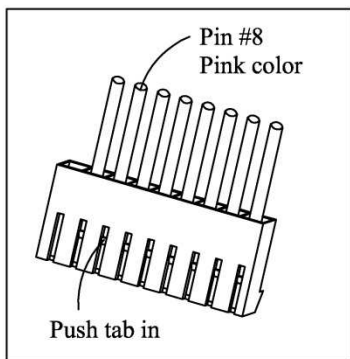
- The operating distance will become shorter and intermittent when the battery is low.
- Replace with new battery when battery power is low.

**! DO NOT USE RECHARGEABLE BATTERIES !**

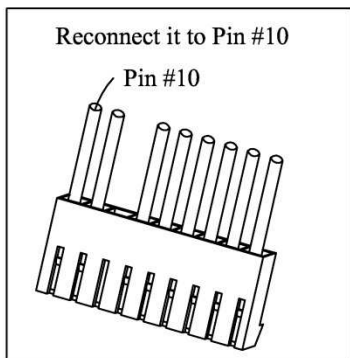
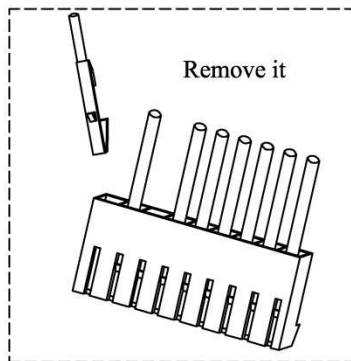


# **CHANGING R0/START N.O.** **(normally open) to N.C. (normally closed)**

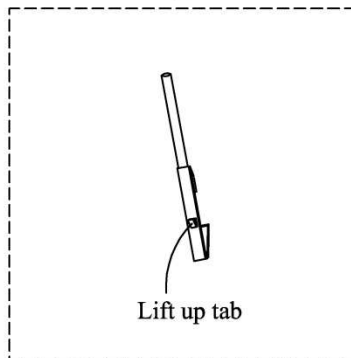
## **Instructions:**



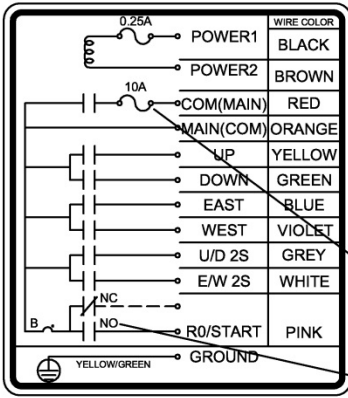
**The R0/START is N.O.**



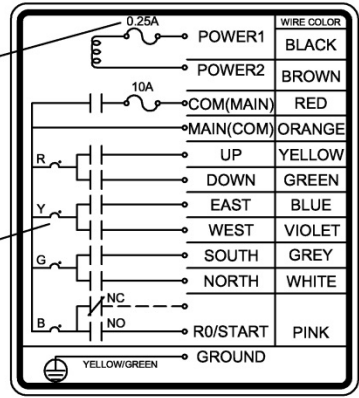
**The R0/START is N.C.**



# WIRING DIAGRAMS



**INMOTION-220**



**INMOTION-260**

*Note: Polarity for 12-24VDC systems is not required when wiring the power for the receiver.*

## Notes:

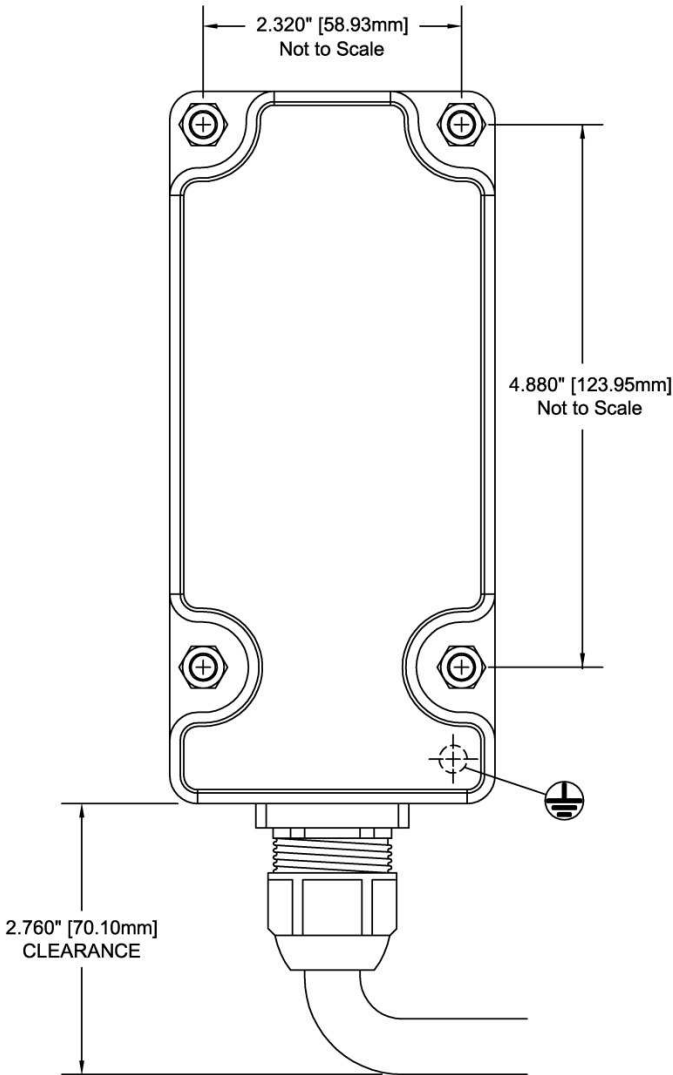
- (1) The R0/Start can be N.O. or N.C. See page 16.
- (2) The fuse for the power AC 48/110/220 is 0.25A.  
The fuse for the power DC 12/24V is 1.5A.
- (3) The fuse for the AC type at the COM(MAIN) is 10A.  
The fuse for the DC type at the COM(MAIN) is 20A.
- (4) The COM lines have been arranged prior to shipment,  
If an independent COM line is required, please refer to  
Page 14.

# **MOUNTING THE RECEIVER**

Please note that the drawing below is not to scale.

## INSTALLATION INSTRUCTIONS:

1. Attach this template in a proper location allowing 1.18" [29.97mm] clearance on all sides.
2. Drill the .256" [6.5mm] holes for 6mm vibration resistant screw bolts. Install and fix the receiver with 6mm screw nut (provided).



**Do You Have a  
Harsh Environment?  
Are Your Operators  
Tough on Transmitters?**



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