# INMOTION Controls, Inc.

## Industrial Radio Remote Control

# INMOTION Series 410
# User's Manual

## Safety/Reliability/User-Friendly

**August, 2015**

# CONTENTS

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: NCT059L40 IC: 2802A-059L40**

**CE 0678**

# 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 410 Series Radio Control System is 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 joystick, 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/interfacing, 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 stringently 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 Operating Series 410, please press EMO (Emergency Off) mushroom and turn the keyswitch to the "Off" position and shut off 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 410 Transmitter is durable and weather-resistant, but care should be taken not to subject it to severe impact or pressure.

- Series 410 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 410 system before daily operation.

- Press EMO mushroom 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 procedure below:

1. Press EMO button and stop operation.
2. Switch the rotary key to “OFF” position and remove it from transmitter unit.
3. Switch off crane main power.
4. Contact an authorized distributor for further assistance.

# POWER-ON OPERATIONS

Power-on means that the Main-Relay on the receiver will switch on as soon as the transmitter sends a signal and then the receiver will be on standby for continuous control.
There are 2 options for “Power-On Mode”:

A. Any pushbutton Power-On Mode
1. Rotate “EMO” mushroom clockwise 45º and pull out.
2. Turn security key clockwise to “ON” position.
3. Press any pushbutton on the transmitter. This will turn on the power as well as execute the function of pushbutton.

B. “Start” pushbutton Power-On Mode
1. Rotate “EMS” mushroom clockwise 45º and pull out.
2. Turn security key clockwise to “ON” position.
3. Press “Start” pushbutton on the transmitter to turn on power.

# SPECIFICATION

## General Specification

ID Code…….. 4.1 Billon
Channel Space…… 25 KHz
Hamming Distance……. > 4
Structure……. Enhanced Glass-Fiber
Operating Environment…….. -22°F ~ +167°F
Operating Distance……. Up to 300 Feet

## Transmitter

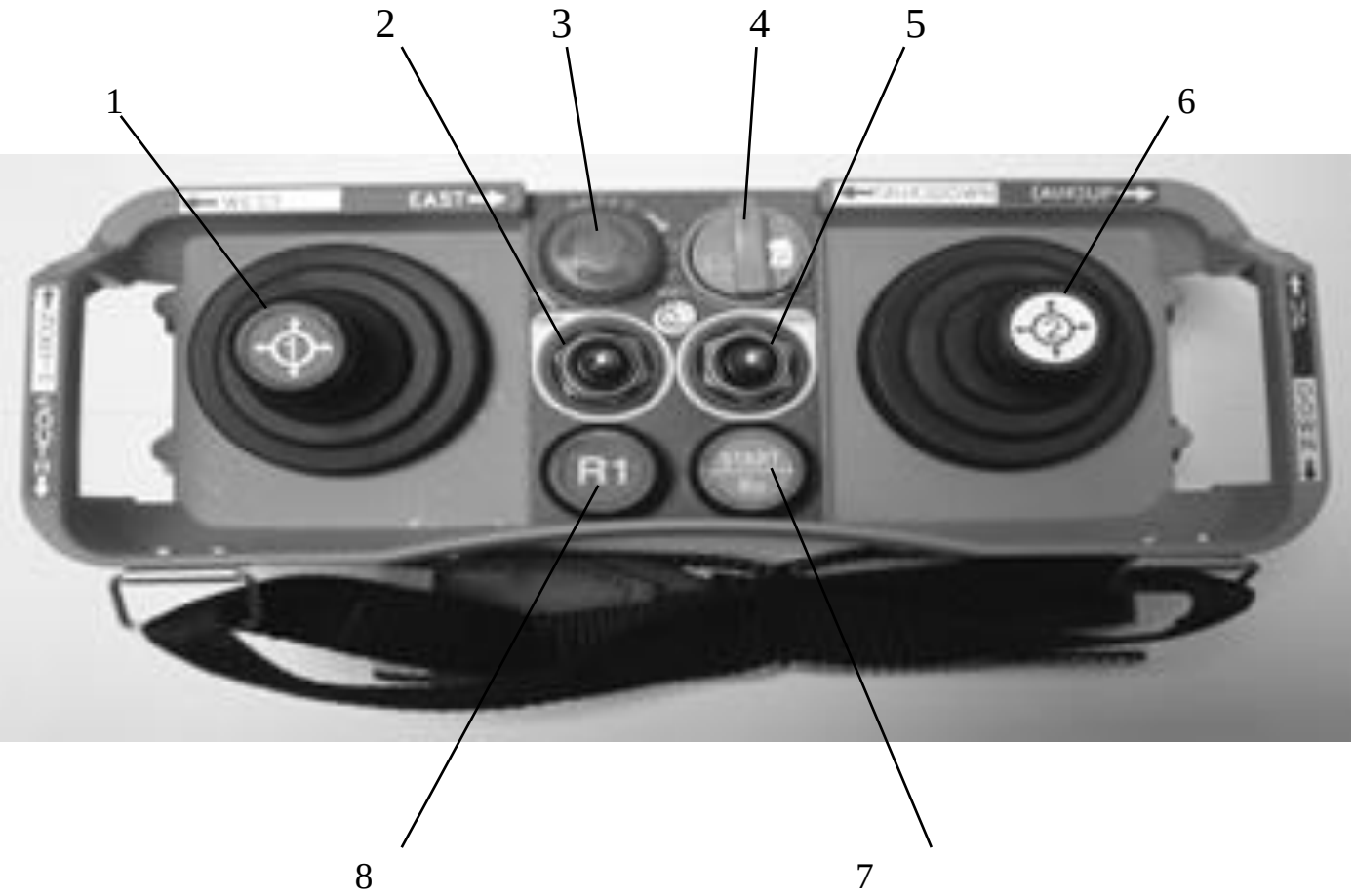
Power……. (4) AA Alkaline Batteries
Emission Power……. <10mW
Dimensions…… 9.125” x 3.74” x 4.33”
Weight…… 2 lbs. (w/ Batteries)

## Receiver

Power…….. 24/48/110/220VAC (±20%)
Dimensions……. 9.96” x 10.51” x 5.91”
Weight……. 8.63 lbs.

# Transmitter Overview

## Inmotion Series 410 Transmitter Overview




1- Joystick #1

2- Select Switch #1

3- Emergency Off

4- Rotary Key

5- Select Switch #2

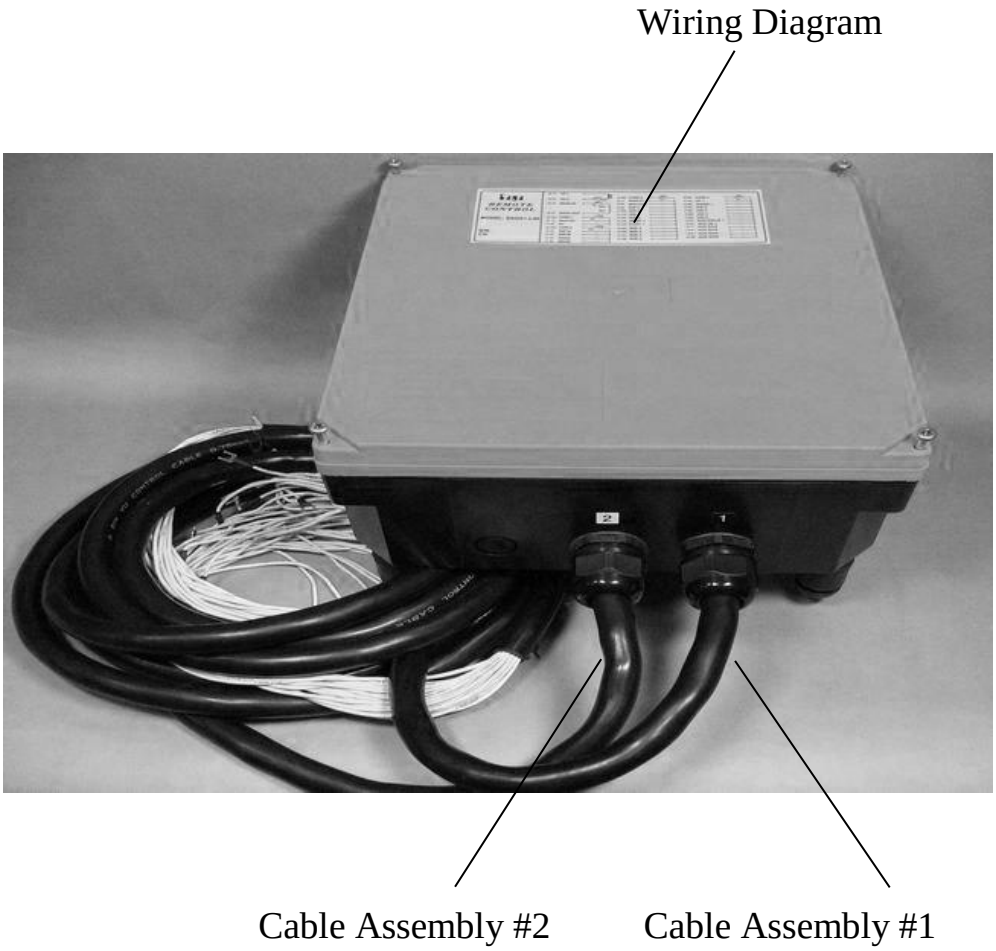
6- Joystick #2

7- Start Pushbutton

8- Pushbutton R1

# Receiver Overview

## Inmotion Series 410 Receiver Overview



# GENERAL OPERATION

## Getting Started

1. Install 2 new AA-size batteries in the battery holder (make sure batteries are correctly installed according to “Positive” & “Negative”) and then insert into the battery chamber.
2. Insert rotary key into transmitter unit and switch to “ON” position.
3. Press START button to power on the system.
   **Note: LED indicator will flash red if this procedure is not followed.**
4. Operate the desired function by pressing the appropriate pushbutton.

Follow the procedure below when finished with operation.

1. Press EMO button.
2. Switch the key to the “OFF” position.
3. Remove the key and keep in a safe place.
4. Remove batteries if not to be used for a long period of time.

# TRANSMITTER LED INDICATOR

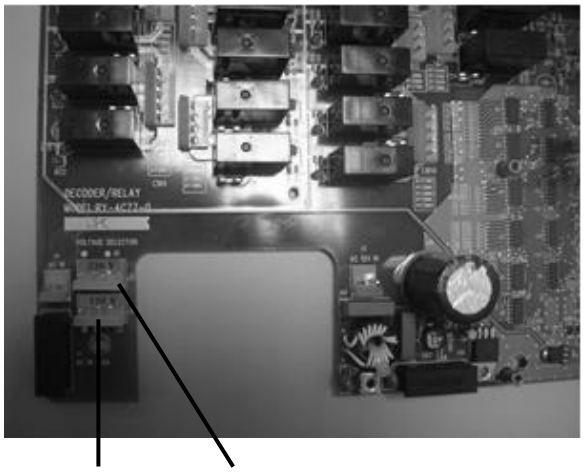
| | |
|---|---|
| Green (Full Power) | Operate as usual. |
| Yellow (Mid Power) | Unload the article as soon as possible and stop operation until old batteries are replaced with fresh batteries. |
| Red (Low Power) | An EMO signal will be sent to the receiver automatically to turn off receiver. To avoid interruption during operation, check battery power frequently. |

# RECEIVER VOLTAGE SELECTION

There are two types of power voltages (DC and AC) available for the Series 410:

**(1) DC Type:**
Input Voltage : 12~24 VDC
Relay Contact: 10A-36VDC

**(2) AC Type:**
Three different AC transformers:
48/110/220V, 48/220/380V, 110/220/380V.
Please disconnect the RX's power, select the proper voltage and plug in the connector.



**Switch the plug to choose voltage**

## TRANSMITTER 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.

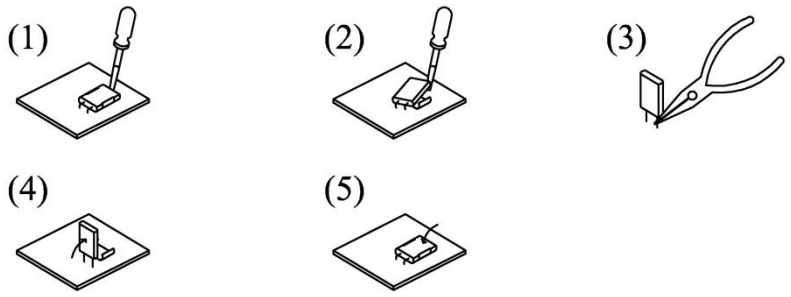
**Do not use rechargeable batteries.**

# CHANGING THE FREQUENCY

It is easy to change the frequency of the Series 410 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.



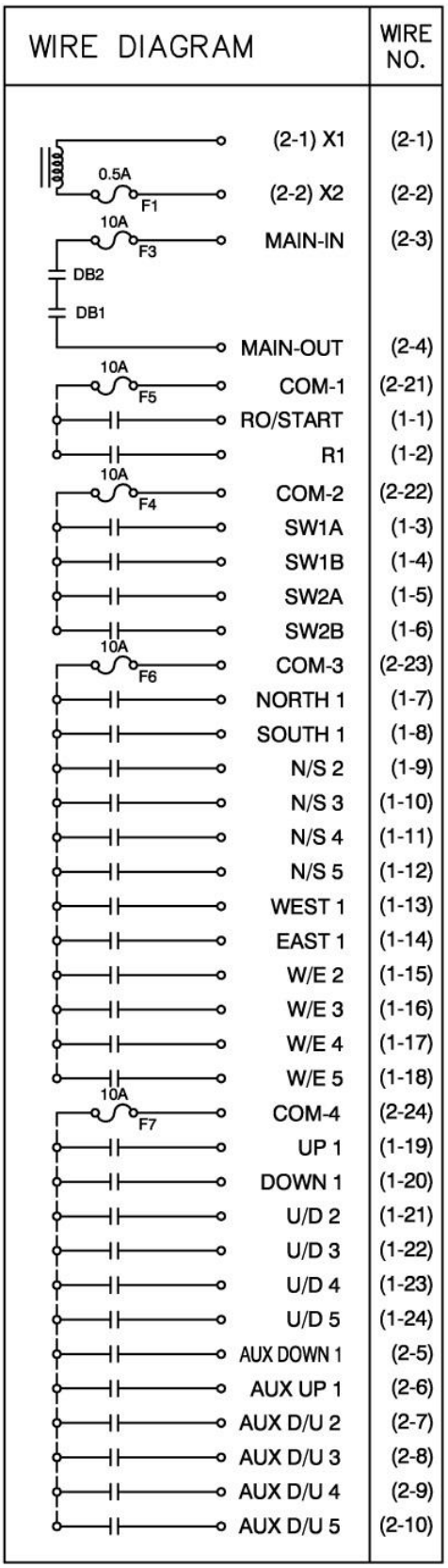

**ATTENTION:**
**The Transmitter frequency will be different from the Receiver frequency. For example, the transmitter crystals are labeled T01 thru T40 and receiver crystals are labeled R01 thru R40.**

## FREQUENCY CHART

| Ch | Freq. MHz | Ch | Freq. MHz | Ch | Freq. MHz | Ch | Freq. MHz |
|---|---|---|---|---|---|---|---|
| 1 | 310.0325 | 11 | 312.7075 | 21 | 315.3825 | 31 | 318.0575 |
| 2 | 310.3000 | 12 | 312.9750 | 22 | 315.6500 | 32 | 318.3250 |
| 3 | 310.5675 | 13 | 313.2425 | 23 | 315.9175 | 33 | 318.5925 |
| 4 | 310.8350 | 14 | 313.5100 | 24 | 316.1850 | 34 | 318.8600 |
| 5 | 311.1025 | 15 | 313.7775 | 25 | 316.4525 | 35 | 319.1275 |
| 6 | 311.3700 | 16 | 314.0450 | 26 | 316.7200 | 36 | 319.3950 |
| 7 | 311.6375 | 17 | 314.3125 | 27 | 316.9875 | 37 | 319.6625 |
| 8 | 311.9050 | 18 | 314.5800 | 28 | 317.2550 | 38 | 319.9300 |
| 9 | 312.1725 | 19 | 314.8475 | 29 | 317.5225 | 39 | 320.1975 |
| 10 | 312.4400 | 20 | 315.1150 | 30 | 317.7900 | 40 | 320.4650 |

# Installation Notes

# Receiver Wiring Diagram



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


# Try Our Neoprene Rubber Boots