



INMOTION Controls, Inc.

**INSTALLATION & OPERATION
MANUAL**

INMOTION Controls Series 310

March, 2006

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 310 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, unavoidable natural essential, 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, the power to Receiver, and remove Transmitter key.
- 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.
- The manufacturer may introduce new functions to the equipment as necessary; therefore, the descriptions may change.
- The patent and related documents for this equipment belong to INMOTION Controls, Inc. and are not allowed to be used by others without written permission.

- Series 310 is manufactured with many patents developed and owned by INMOTION Controls and its related enterprises.

PRECAUTIONS

- After Operating Series 310, please press EMS mushroom to shut off main power in the Crane & Receiver and remove Transmitter key.
- Stop operating when slow-response occurs due to insufficient Transmitter power, beyond the remote control range, or sever 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 310 Transmitter is durable and weather-resistant, but care should be taken not to subject it to severe impact or pressure.
- Series 310 is suitable for use in diverse industrial environments, and adequate operating and maintenance will extend system's life.
- Check EMS mushroom and the other security functions of Series 310 system before daily operation.
- Press EMS 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 steps below and ask the distributor for service immediately.

- Press EMS mushroom
- Turn the security key to the "OFF" position
- Remove the batteries and key
- Shut off the main power of the Crane and discontinue the operation
- Contact the distributor to find out possible causes

Standard Accessories

A standard and full set of Series 310 consists of:

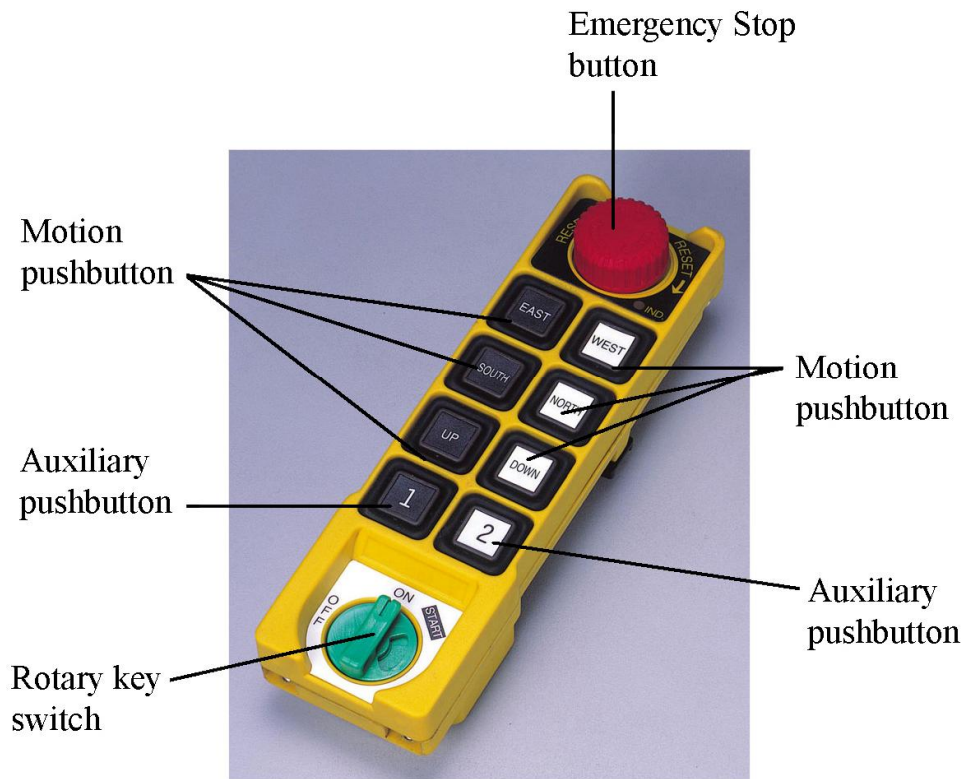
(1) Transmitter, 2 units

(2) Receiver, 1 unit

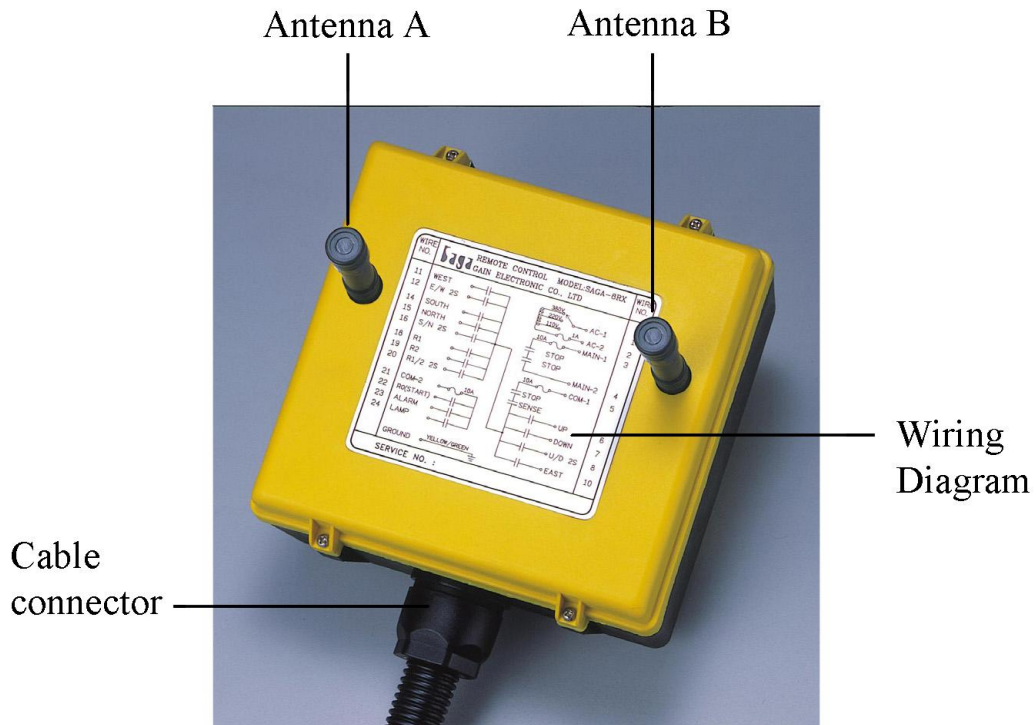


Operation

TRANSMITTER CONFIGURATION



RECEIVER CONFIGURATION



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 “+” and “-“ directions are correct.
 - Attach Transmitter battery door with screws.
 - Insert security key in the “OFF” position.
 - Turn the keyswitch clockwise to the “ON” position, then continue to turn it to the “START” position to power-on.
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 EMS mushroom
 - (2) Turn rotary key switch counter-clockwise to the “OFF” position
 - (3) Remove key and keep it in a safe place
 - (4) Switch main power off to the equipment (Crane)
 - (5) 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 with new batteries when battery power is low.

! DO NOT USE RECHARGEABLE BATTERIES !

Receiver Voltage Selection

There are two types of power voltages (DC and AC) available for the Series 310.

1) DC Type:

Input Voltage: 12~24 VDC

Relay Contact: 10A-36 VDC

2) AC Type:

Three different AC transformers: 48/110/220V, 48/220/380V, 110/220/380V.

Please disconnect the Receiver's power, select the proper voltage, and plug in the connector.

SWITCH THE PLUG TO CHOOSE VOLTAGE

Note: Standard Systems are 48/110/220 VAC. If any others are required, please specify when ordering.

ID-Code Remote Setting

ID-Code remote setting allows the user to pair the new Transmitter or Receiver if one of them is damaged. Using ID-Code remote setting will make both the Transmitter and Receiver have the same ID-Code.

1) Please make sure of the following conditions before ID-Code remote setting:

- Both Transmitter and Receiver are of the SAME model and frequency.
- Place the Transmitter as close as possible to the Receiver to avoid interference.
- Turn off the Receiver power more than 10 seconds and turn it on again.

2) ID-Code remote setting Instructions:

- Press and hold the Transmitter EMS button.
- Press UP pushbutton and hold it.
- Press DOWN pushbutton 4 times and release “EMS & UP” pushbuttons when the red light on the Transmitter is flashing.
- Start the system as usual.

! ATTENTION !

- **In case ID-Code remote setting fails, repeat the instructions above within 4 minutes.**
- **ID-Code remote setting is available for ID Code only. It will not change function settings.**
- **Within the operating distance, all same model systems on the same frequency will be paired with the Transmitter’s ID Code.**
- **A jumper added inside the receiver is necessary to enable ID-Code remote setting function.**

Changing the Frequency

It is easy to change the frequency of the Series 310 simply by replacing corresponding frequency crystals in both the Transmitter and the Receiver.

- **Note: To replace a new crystal, please note that there are two kinds of frequencies (VHF and UHF) available. The indication of VHF or UHF is shown on the PC board with a check mark "V". Please make sure not to replace a VHF crystal unit into a UHF PC board, or vice versa.**

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 crystal are labeled T01 thru T40 and receiver crystals are labeled R01 thru R40.

Batteries

Two AA size alkaline batteries are required for the Transmitter.

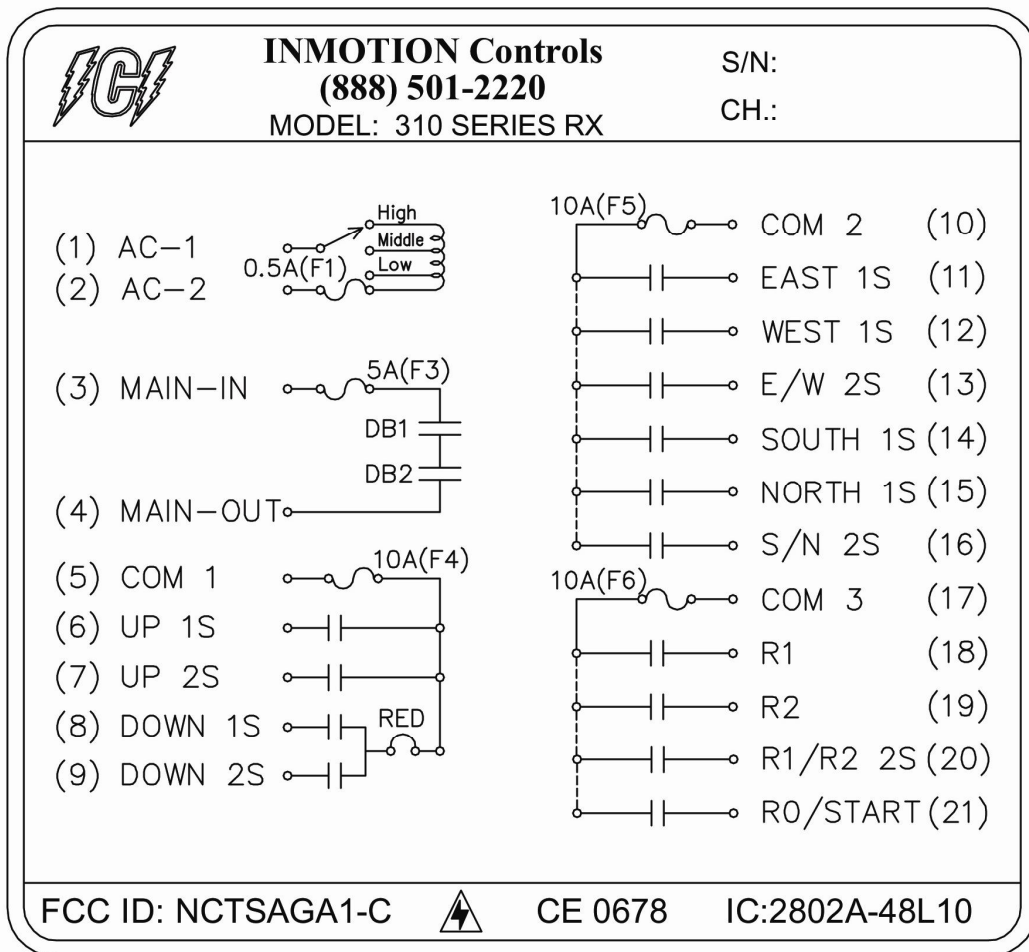
The LED will flash green when the battery power is sufficient.

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.

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Wiring Diagram



INMOTION-310