

REMOTE CONTROL SYSTEMS OPERATION MANUAL

200 Series



400 Series



500 Series



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1.0 WARRANTY

Every product is thoroughly inspected and tested before it is shipped from the factory. If any problem develops within one year, return the product prepaid to the factory. If an inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the product will be returned with the shipping prepaid.

Excluded Items

This warranty does not cover:

- Deterioration caused by normal wear, abuse, chemical or abrasive actions, improper maintenance or excessive heat.
- Problems resulting from repairs, modifications, or alterations made by people other than factory or ACI representatives.
- If the product has been abused or damaged due to an accident.
- If repair parts or accessories other than ACI equipment are used on the product; they are warranted only to the extent that they are warranted by the manufacturer of said parts or accessories.

Remarks

EXCEPT AS STATED HERE, ACI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES FOR A PARTICULAR PURPOSE.



Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

To avoid injury:

DO NOT alter or modify equipment.

DO NOT use equipment to lift, support or otherwise transport people.





DO NOT suspend unattended loads over people.

2.0 SAFETY PRECAUTIONS

2.1 Safety Alert Symbols

Throughout this manual are steps and procedures that can prevent hazardous situations, the following symbols are used to identify the degree or level of hazard seriousness.

DANGER, WARNING AND CAUTION NOTICE

Symbol	Description
	Danger Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury and property damage.
	Warning Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury and property damage.
	Caution Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.
	Notice Notifies people of installation, operation or maintenance information which is important but not directly hazard related.



Failure to read and comply with any of the limitations noted in this manual can result in serious bodily injury or death, and/or property damage.

2.2 Operating Precautions

2.2.1 Attention

1. Due to the complex nature of equipment, it is necessary to read the entire manual before installation.
2. Never allow any unauthorized personnel to dismantle equipment as this may cause equipment damage.
3. The equipment has been stringently tested for quality assurance before delivery from factory. However, it must not be used in extremely dangerous situations or where damage may result.
4. After operation, switch off crane main power as well as receiver unit and remove rotary key from transmitter unit.
5. Keep the transmitter in a safe place when not in use to avoid any unintentional operation.
6. The crane should be equipped with a main power relay, limit switch, and other safety devices required.
7. Do not use this device during an electrical storm or where there are conditions of high electrical interference.
8. Always check transmitter batteries and receiver input power condition before operation.
9. The installation and maintenance service is allowed only when the crane and receiver power are off to avoid electrical shock.
10. The contents of the manual may be amended by the manufacturer without notice.
11. The specification and function is subject to change without notice by manufacturer.

2.2.2 Precautions (500 Series)

1. Press EMS button and switch off main power of crane and receiver after operation. Then, remove transmitter rotary key and keep in a safe place.
2. The following may cause receiver response delay and you should stop operation immediately when these situations occur.
 - a. Beyond operating range.
 - b. During severe radio interference.
3. Remove transmitter batteries when not in use for a long period of time.
4. To extend product life, please follow the standard operating procedure and maintain system regularly.

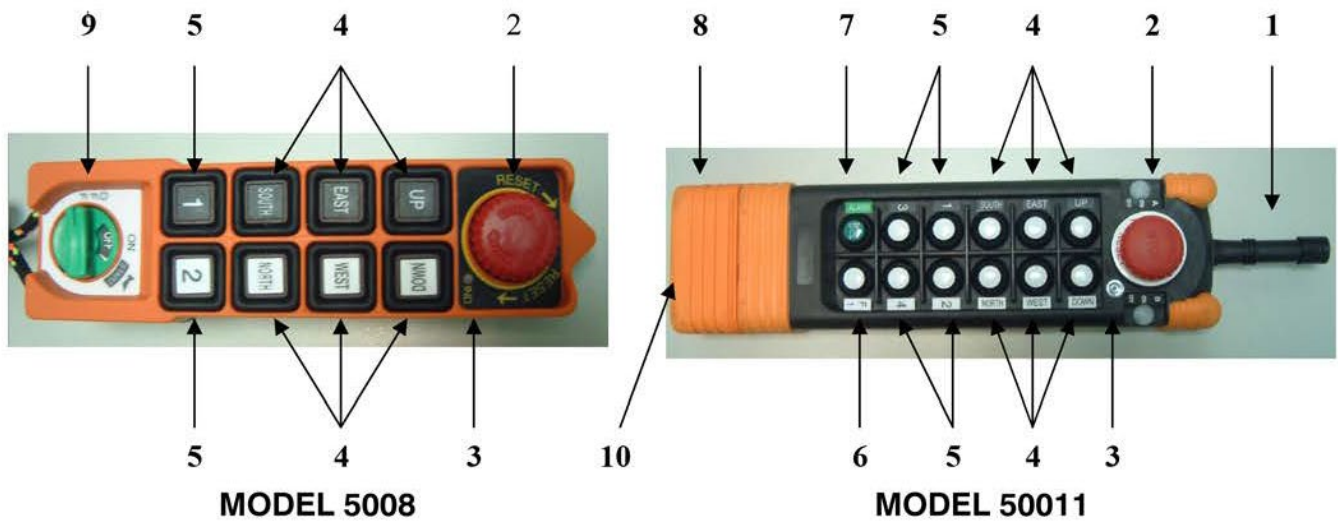
2.2.3 Emergency Procedures (500 Series)

In case of emergency, please follow the procedure below:

5. Press EMS button and stop operation.
6. Switch rotary key to "OFF" position and remove it from transmitter unit.
7. Switch off crane main power.
8. Contact the authorized distributor for further assistance.

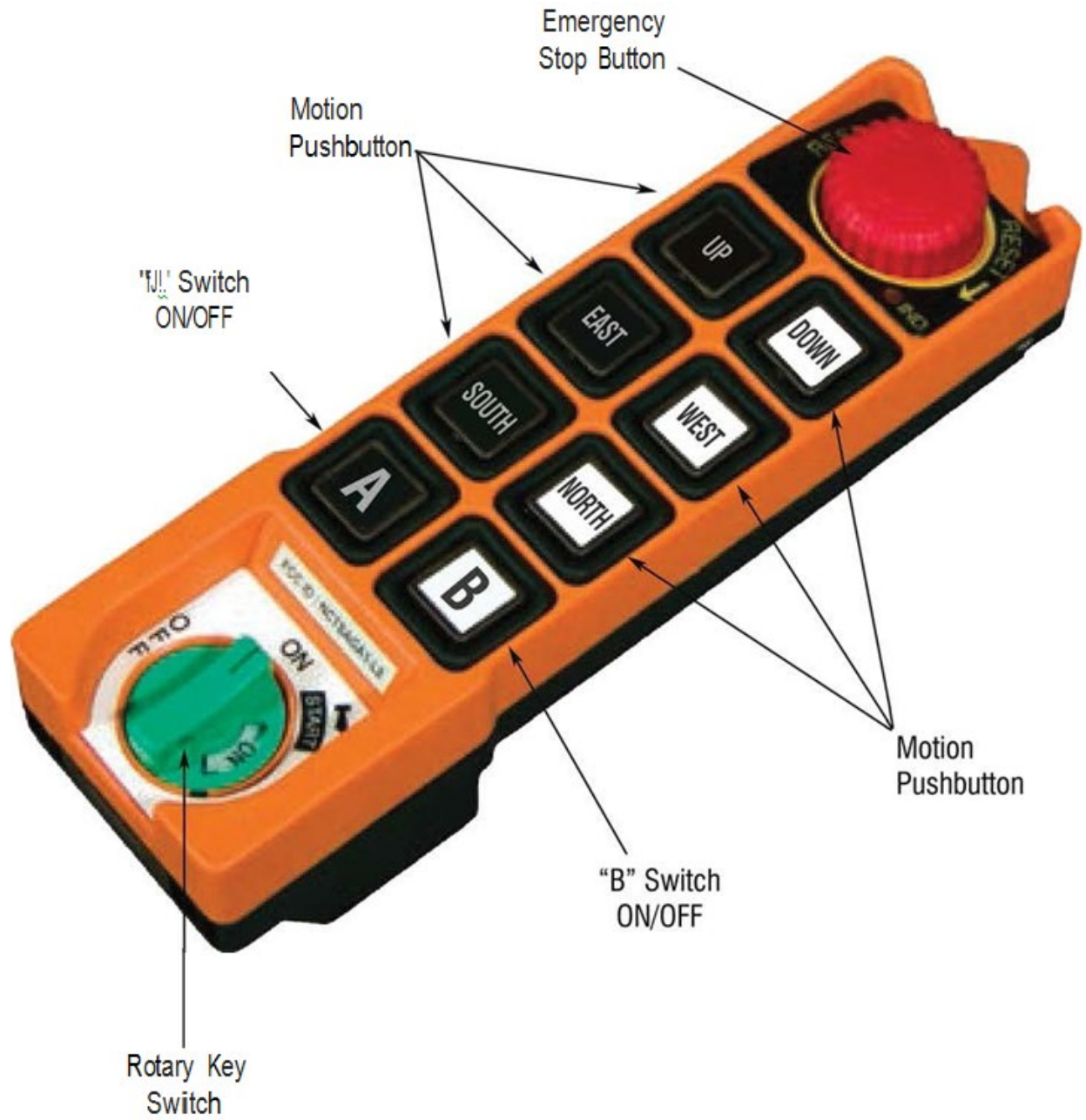
3.0 GENERAL OPERATION (500 SERIES)

3.1 Transmitter Configuration

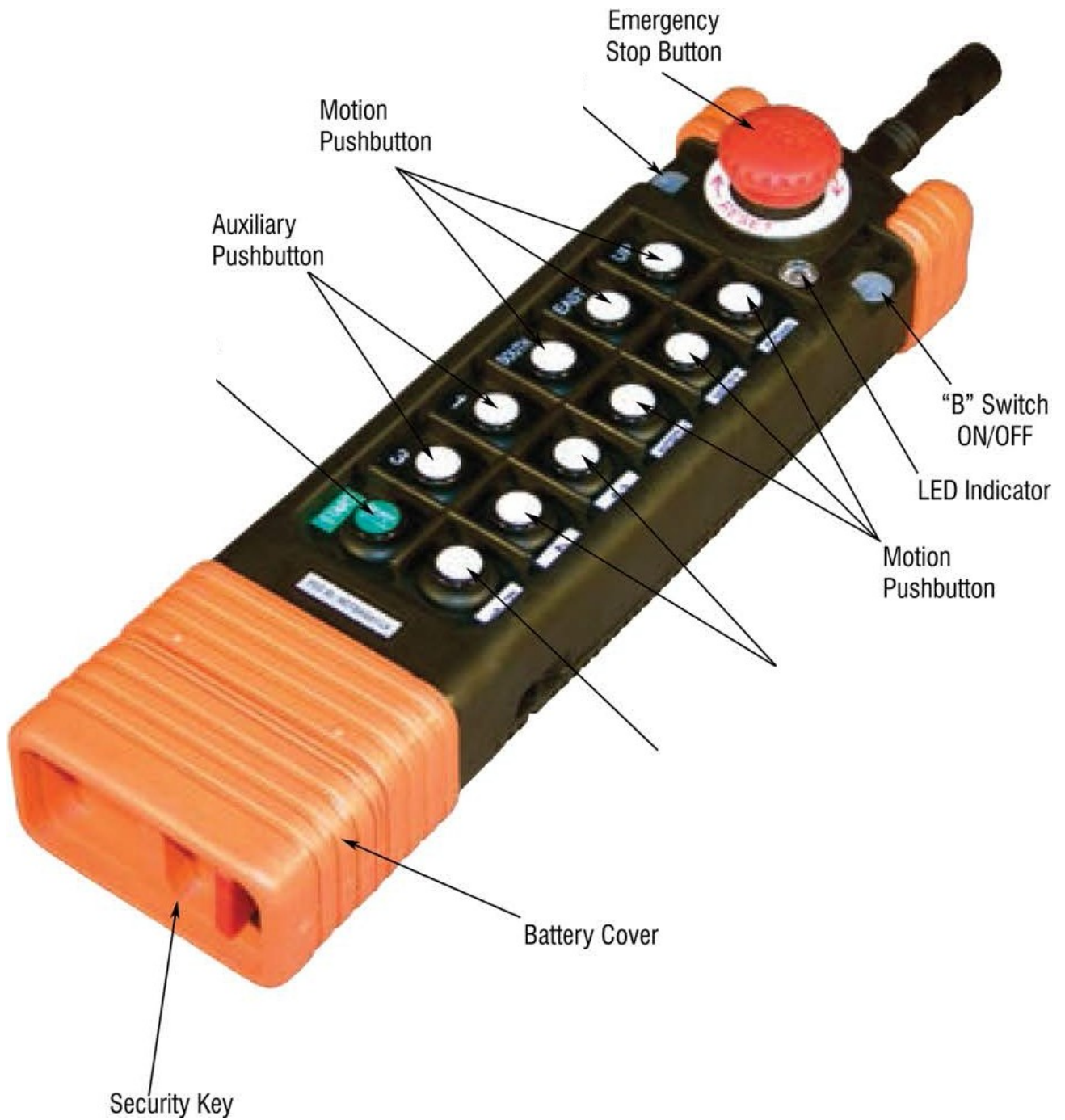


1. Antenna
2. Emergency Stop
3. LED indicator
4. Motor Pushbutton
5. Auxiliary Pushbutton R1-R4
6. F1 Pushbutton
7. Start Pushbutton
8. Battery Cover
9. Rotary Key Switch
10. Security Key

3.1.1 Model 5008AB



3.1.2 Model 50011AB



3.2 General Operation

1. Install two (2) new AA-size alkaline batteries in the battery box of MODEL 50011, then insert into battery case of transmitter; or battery chamber of 5008, and screw in transmitter's bottom cover. Make sure the "+" and "-" directions are correct.
2. Insert security key in the "OFF" position.
3. Turn on the power according to the "Power-On Modes". **Note:** LED indicator will flash red if proper procedures are not followed.
4. Operate transmitter by pressing each pushbutton.
5. After operation, perform the following procedures in sequence:
 - (1) Press EMS mushroom,
 - (2) Rotate security key or rotary key switch counterclockwise to the "OFF" position,
 - (3) remove key and keep it in a safe place, (4) remove batteries if not to be used for a long period of time.

3.3 Special Functions Operation

3.3.1 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":

1. Any Pushbutton Power-On Mode
 - a. Rotate "EMS" mushroom clockwise 45° and pull out.
 - b. Turn security key clockwise to "ON" position for 50011; Rotary key switch clockwise to "ON" for 5008.
 - c. Press any pushbutton on the transmitter. This will turn on the power as well as execute the function of pushbutton.
2. "START" Pushbutton Power-On Mode
 - a. Rotate "EMS" mushroom clockwise 45° and pull out.
 - b. Turn security key clockwise to "ON" position for 50011; Rotary key switch clockwise to "ON" for 5008.
 - c. Press "START" pushbutton on the transmitter to turn on power for 50011; Continue to turn rotary key switch to "START" position to turn on power for 5008 (the rotary key switch will return to "ON" position automatically after being released).

3.3.2 Acceleration Operation

1. For 50011: The "START" pushbutton is acceleration pushbutton.
2. For 5008: The "START" key is the acceleration key.
3. When a motion is in the second speed, quick touch of acceleration pushbutton will accelerate the speed. Repeated touch of acceleration pushbutton will increase the speed. **Note:** When accelerating, the motion pushbutton must be depressed and held in the second speed. If motion pushbutton is released, there will be no acceleration and speed will return to zero.

3.3.3 Inching Operation

1. "Start" pushbutton is set for "inching" function.
2. Press and hold inching pushbutton.
3. Press any motion pushbutton to perform the inching motion. **Note:** The other pushbutton of transmitter must be released before pressing the inching pushbutton.

4.0 FUNCTION SETTINGS (DEFINED BY CUSTOMER)

4.1 Pushbutton Function Setting:

UP/DOWN, NORTH/SOUTH, EAST/WEST,R1/R2, R3/R4 Pushbutton Function Setting

Item	Title	Content	Description
1	Button Function	<ol style="list-style-type: none"> 1. Normal/Normal 2. Toggle/Toggle 3. No/Off 4. Normal/Toggle 5. Dual Motor(1)/Dual Motor(1) 6. Dual Motor(2)/Dual Motor(2) 7. 3 Speed Accel. / 3 Speed Accel. 8. Digital Accel. / Digital Accel. 9. Normal/Dual Motor(1) 10. Normal/Dual Motor(2) 11. Toggle/Dual Motor(1) 12. Toggle/Dual Motor(2) 13. Toggle/3 Speed Accel. 14. Synthesis/Synthesis <p>NOTE: 500 Series Model 5008 Up/Down Pushbuttons are for full functions, the rest are for Normal, <u>Toggle</u>, On, Off only.</p>	<p>Normal: The relative relay is "ON" when the Pushbutton is pressed and held. The relative relay is "OFF" when the Pushbutton is released.</p> <p>Toggle: Press the Pushbutton and release once for "ON", re-press and release for "OFF"</p> <p>ON & OFF: Two relative Pushbuttons are set to respectively control the same relay. If a Push-button set as "ON" is pressed and released, the relay remains conductive. At this time, the other Pushbutton can't change the situation of this relay except the Pushbutton set as "OFF".</p> <p>Dual Motor(1): When Pushbutton is released from 2nd speed and back to 1st, the 1st speed relay is activated again til the Pushbutton is totally released.</p> <p>Dual Motor(2): When Pushbutton is released from 2nd speed and back to 1st, the 1st speed relay is not activated but bypassed.</p> <p>3 Speed Accel.: Use "START" to accelerate to 3 Speed</p> <p>Digital Accel.: Use "START" to accelerate to 4 Speed</p> <p>Synthesis: Three relays used for two dual-speed motions, the fourth relay works as independent "TOGGLE" ON and OFF function when two Pushbuttons pressed simultaneously and again.</p>
2	Acceleration Delay	0-4.0 seconds	This function is used to set the time interval between acceleration relays (i.e. conduction delayed time of acceleration delay. It is suitable for accelerative operation to prevent the crane from running at a higher speed to damage the motor.
3	EMS Control	<ol style="list-style-type: none"> 1. Control by EMS 2. Bypass EMS 	Control by EMS means the corresponding relay of function Pushbutton is controlled by EMS mushroom or emergency stop signal. Bypass EMS means the corresponding relay of function Pushbutton will not be controlled by EMS mushroom or emergency stop signal.
4	Interlock Function	<ol style="list-style-type: none"> 1. Interlock Delay 0-2 seconds 2. Non-Interlocked 	<p>Interlock: If it is dangerous or improper to operation two motions at the same time, select "INTERLOCK". Delay time means the time interval before next motion is valid.</p> <p>Non-Interlocked: If two motions are safe or irrelevant to operate at the same time, select "NON-INTERLOCKED".</p>

Start/F1 Pushbutton Function Setting

Item	Title	Content		Description
1	Button Function	START	F1	<p>Inching: "Inching" means that once the Pushbutton is pressed, relative relay will be activated within a certain period of time to operate a short but precise movement. Press and hold inching Pushbutton and then press motion Pushbutton to perform the inching motion.</p> <p>Acceleration: When the motion is at the 2nd speed, quick pushing on acceleration Pushbutton will accumulate one speed each time and the relative relay will turn on accordingly. When accelerating, the motion Pushbutton must be pressed and held in the 2nd speed. If motion Pushbutton is released, there will be no acceleration and the speed will return to zero.</p>
		1. Normal 2. Toggle 3. Inching/ Accel.	1. Normal 2. Toggle 3. Dual Motor(1) 4. Dual Motor(2)	
2	EMS Control	1. Control by EMS 2. Bypass EMS		<p>Control by EMS means the corresponding relay of function Pushbutton is controlled by EMS mushroom or emergency stop signal.</p> <p>Bypass EMS means the corresponding relay of function Pushbutton will not be controlled by EMS mushroom or emergency stop signal.</p>
3	Inching	0.1-4.0 seconds		Select the time interval of each inching motion.
4	Acceleration Delay	0-4.0 seconds		Select the time interval for each acceleration.

Transmitter Function Setting

Item	Title	Content	Description
1	POWER-ON Mode	<ol style="list-style-type: none"> Any Pushbutton START Pushbutton 	<p>Any Pushbutton: When mushroom is released and security or rotary key is at "ON" position, the receiver will be "POWER-ON" by pressing any Pushbutton on transmitter.</p> <p>START Pushbutton: When mushroom is released and security or rotary key is at "ON" position, the receiver will be "POWER-ON" only by pressing "START" Pushbutton on transmitter.</p>
2	Transmit Mode	<ol style="list-style-type: none"> Non-Continuous Continuous 15 seconds-30 seconds OFF Continuous Never OFF 	<p>Non-Continuous: Once the receiver is "POWER-ON", the transmitter will transmit signal only when Pushbutton is pressed. This mode can save the power of transmitter.</p> <p>Continuous Due Time OFF: Transmitter will transmit signal continuously during "POWER-ON" and stop sending signal if no Pushbutton is pressed within selected timeframe.</p> <p>Continuous Never OFF: Transmitter will keep sending signal unless turned off manually.</p>
3	Auto Off	<ol style="list-style-type: none"> Enable Disable 	<p>Enable: When Transmit Mode is set for continuous, it will send an EMS signal to "POWER-OFF" the receiver if it is set to auto off in a certain timeframe.</p> <p>Disable: Disable the function to send EMS signal to receiver before the transmitter is off.</p>
4	Normal OP LED	<ol style="list-style-type: none"> ON ON Every 1-4 seconds OFF 	<p>ON: LED indicator will glow with green color when transmitter is transmitting. It still works for warning and fault indication with first priority.</p> <p>ON Every 1-4 seconds: LED indicator is flashing with green color every 1-4 seconds.</p> <p>OFF: LED indicator will not work during normal operation in order to save power. But, it is still available for warning and fault indication.</p>
5	Powersaving	<ol style="list-style-type: none"> Enable Disable 	<p>Enable: By using firmware to control frequency transmission cycle period, thus to reduce power consumption of transmitter. Simultaneously, the operating distance will be decreased when the "POWERSAVING" mode is enabled.</p> <p>Disable: Disable this function.</p>
6	Remote Setting	<ol style="list-style-type: none"> Enable Disable 	<p>Enable: Allow the transmitter to do ID-Code remote setting.</p> <p>Disable: Not allow ID-Code remote setting on transmitter.</p>

Receiver Function Setting

Item	Title	Content	Description
1	Passive Act	1. Relay OFF 2. POWER OFF	<p>Passive Act: The function of this item is used to set the reaction of receiver when no command signal is received from transmitter in certain time (the default time is 0.5 seconds).</p> <p>Relay OFF means the Main Relay is still "ON" but the other relays with the "NORMAL:" function are all de-energized. It is not necessary to re-commence the procedure of "POWER-ON" again to continue operating.</p> <p>POWER OFF means the Main Relay and all of the other relays with the "NORMAL:" and "Control by EMS" functions are going to de-energize and it is essential to re-commence the procedures of "POWER ON" again to continue operation.</p>
2	Passive Act Timing	0.1 -4 seconds	The duration working time of receiver between passive act is activated and the power or relay is really OFF.
3	Auto-OFF (RX)	1. None-Execute 2. 10 minutes~4 hours POWER OFF	<p>Enable: When Transmit Mode is set for continuous, it will send an EMS signal to "POWER-OFF" the receiver if it is set to auto off in a certain time-frame.</p> <p>Disable: Disable the function to send EMS signal to receiver before the transmitter is off.</p>
4	Remote Setting	1. Enable 2. Disable	<p>Enable:Allow the receiver to do ID-Code remote setting.</p> <p>Disable: Not allow ID-Code remote setting on receiver.</p>

5.0 CORRESPONDENCE BETWEEN PUSHBUTTON AND RELAY OUTPUT (500 SERIES)

 Means relay is on
  Means relay is off

UP

Down

1. Normal/Normal

1st Step

2nd Step

1st Step

2nd Step



2. Toggle/Toggle

1st Step

1st Step



3. On/Off

1st Step

1st Step



4. Normal/Toggle

1st Step

2nd Step

1st Step



5. Dual Motor(1)/Dual Motor(1)

1st Step

2nd Step

1st Step

2nd Step



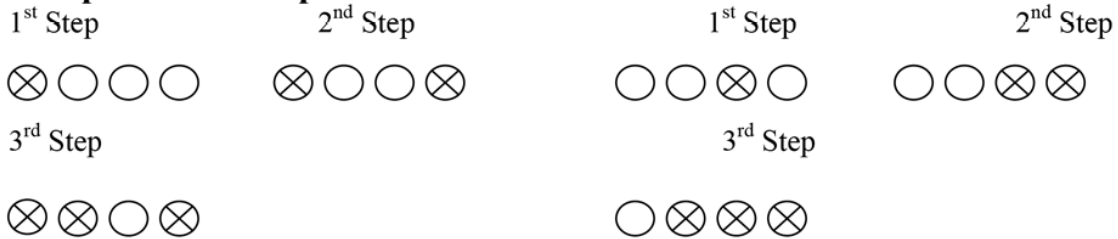
Note: When pushbutton is released from 2nd speed and back to 1st one, the 1st speed relay is activated again until the pushbutton is completely released.

6. Dual Motor(2)/Dual Motor(2)



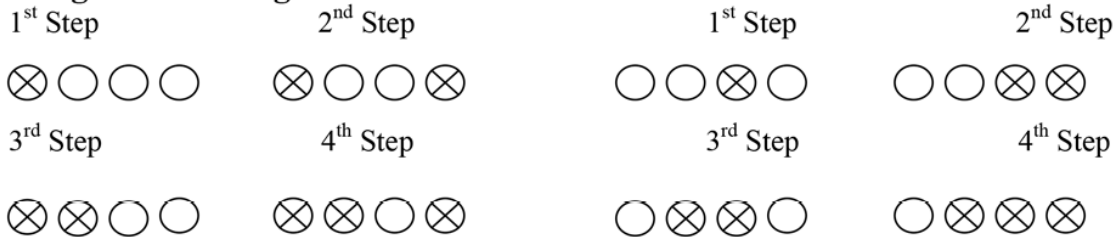
Note: When pushbutton is released from 2nd speed and back to 1st one, the 1st speed relay is not activated but bypassed to nothing.

7.3 Speed Acce./3 Speed Acce.



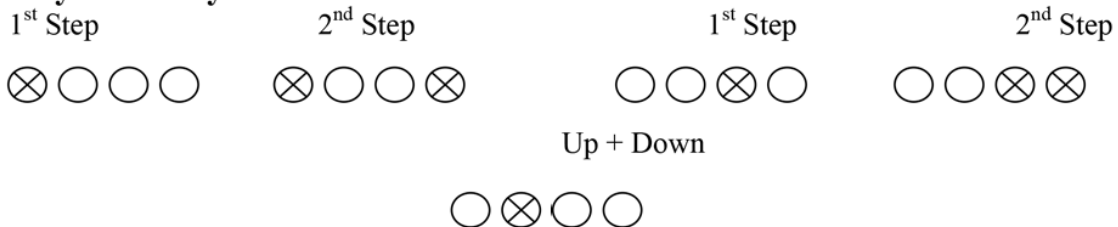
Note: The second step pushbutton must be pressed and held when pushing or turning “Start” pushbutton or key to reach third speed.

8. Digital Acce./Digital Acce.



Note: The second step pushbutton must be pressed and held when pushing or turning “Start” pushbutton or key to reach the third and fourth speed.

9. Synthesis/Synthesis



Note: When Up and Down pushbuttons are pressed at the same time, the second relay works as “Toggle”, released when they are pressed simultaneously again.

6.0 ID-CODE REMOTE SETTING (500 SERIES)

The use of Copier (500 Series)

1. Insert the six (6) pins of the female plug into the male socket inside the TX or RX of the 500 Series.
2. To copy and save the data from TX or RX, put the magnetic key onto the receptor to connect. To transfer the saved data from the copier to TX or RX, release the magnetic key from the receptor.
3. Press and release the "1" pushbutton (or 2 or 3) to copy and save the data (when the magnetic key is on) from TX or RX, after the green indicator light has flashed, the transfer is finished, disconnect the plug. Complete the same procedure to transfer the data from copier to TX or RX (when magnetic key is off). Note:
 - (1) Make sure the power of TX or RX is off when copying.
 - (2) The copier can copy both function settings and ID-Code, but to pair the crystal is still essential to match both TX and RX for communicating with each other.

ID-Code Remote Setting (500 Series)

ID-Code remote setting allows you to pair the new TX or RX if one of them is damaged. Using ID-Code remote setting will allow both the TX and RX to have the same ID-Code.

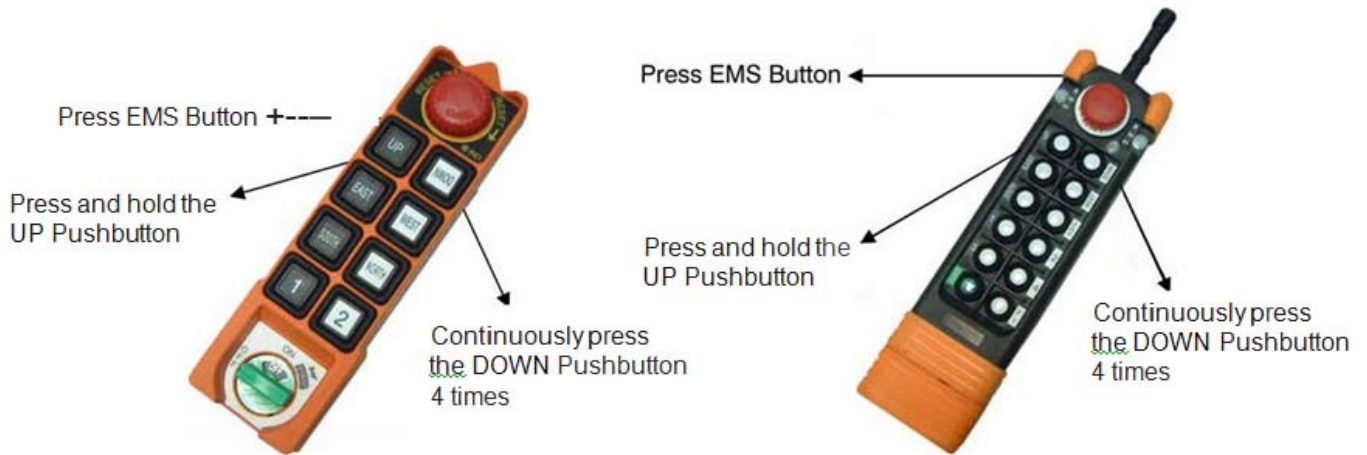
Please make sure the following conditions are met before ID-Code remote setting:

1. Both TX and RX are of the SAME model and frequency.
2. Place the transmitter as close as possible to the receiver to avoid interference.
3. Turn off the RX power for at least 10 seconds and turn it on again.

ID-Code Remote Setting Instructions

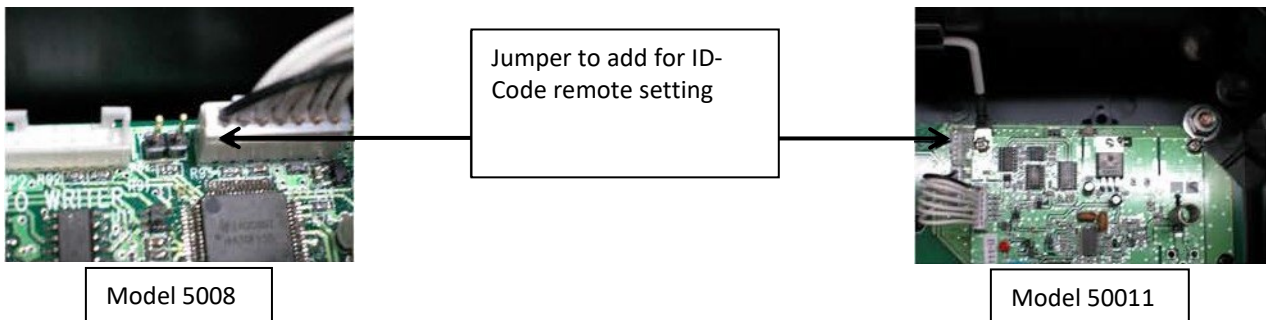
1. Press and hold the transmitter EMS button and "UP" pushbutton.
2. Press "DOWN" pushbutton four (4) times and then release "EMS & UP" push buttons when the red light on the transmitter is flashing.
3. Start the system as you usually would.

ID-Code Remote Setting (continued)



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 the ID-Code remote setting function.

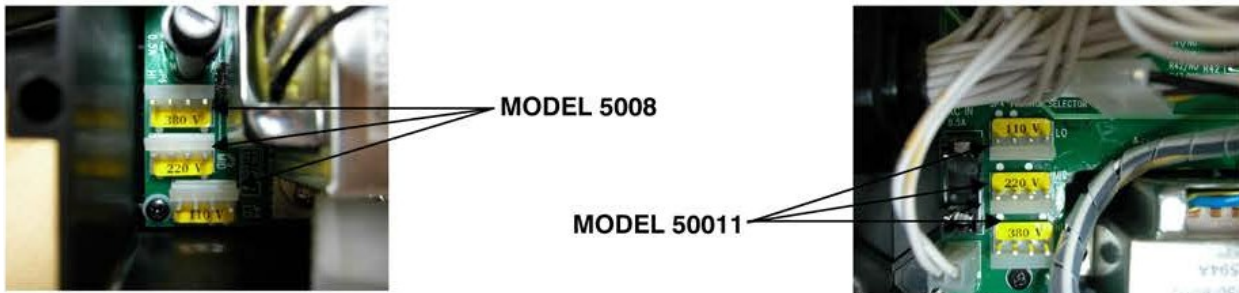


7.0 RECEIVER VOLTAGE SELECTION (500 SERIES)

Receiver Voltage Selection

There are two (2) types of power voltages (DC & AC) available for the 500 Series:

1. **DC Type:** Input Voltage: 12 ~ 24 VDC Relay Contact: 10A-36 VDC
2. **AC Type:** Three (3) different AC transformers: 48/110/220V, 48/220/380V,
3. 110/220/380V. Disconnect the AX's power, select the proper voltage and plug in the connector.



7.1 Switch the plug to choose voltage

Transmitter Battery Information

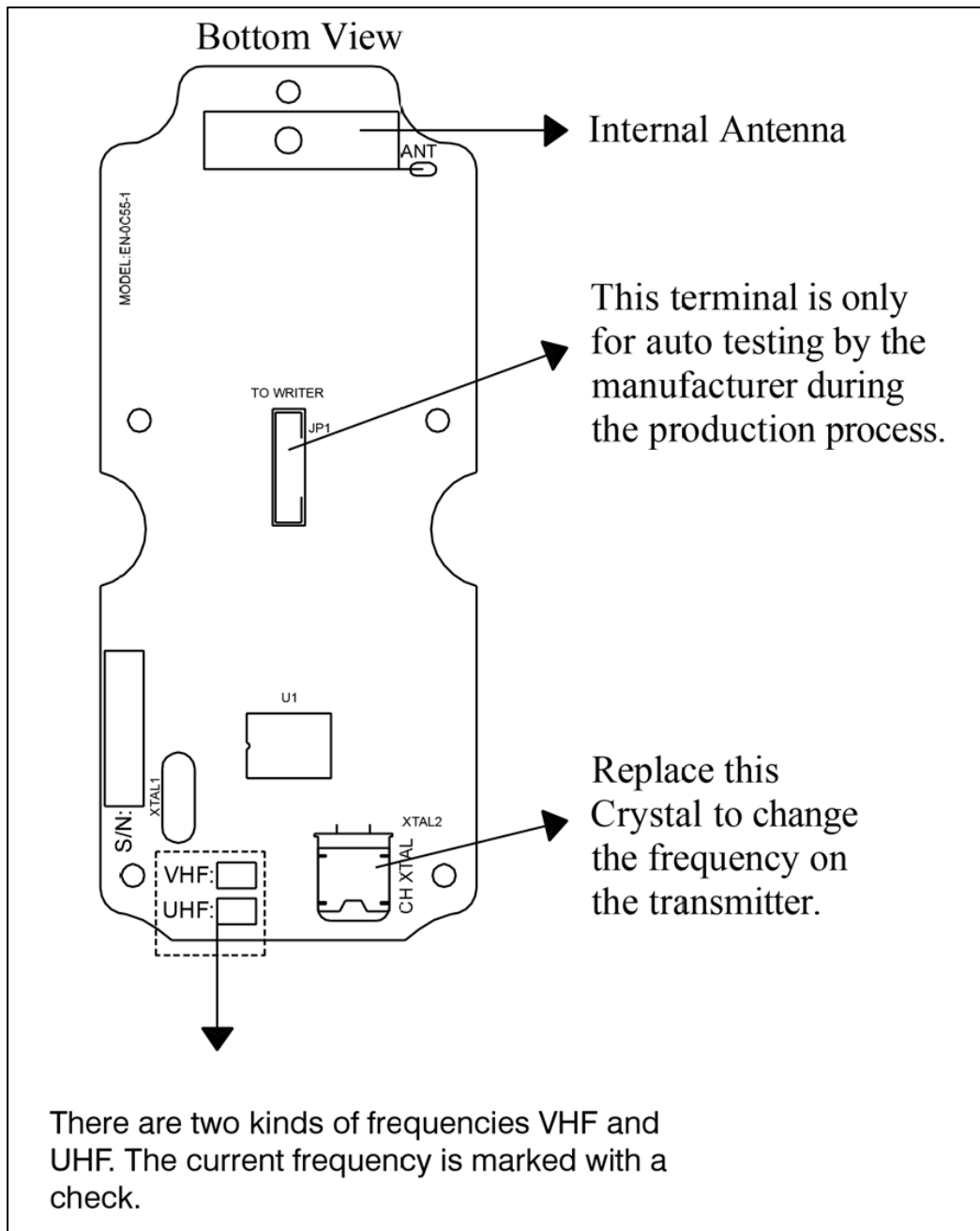
Two (2) AA size alkaline batteries are required for the transmitter. The LED will flash green when the battery power is sufficient. The LED will flash red when the battery power is low.

Note: The operating distance will become shorter and intermittent when the battery is low (replace with new batteries when battery power is low).

DO NOT USE RECHARGABLE BATTERIES.

8.0 BOARD LAYOUTS

8.1 Transmitter PC Board Layout (200 & 400 Series)

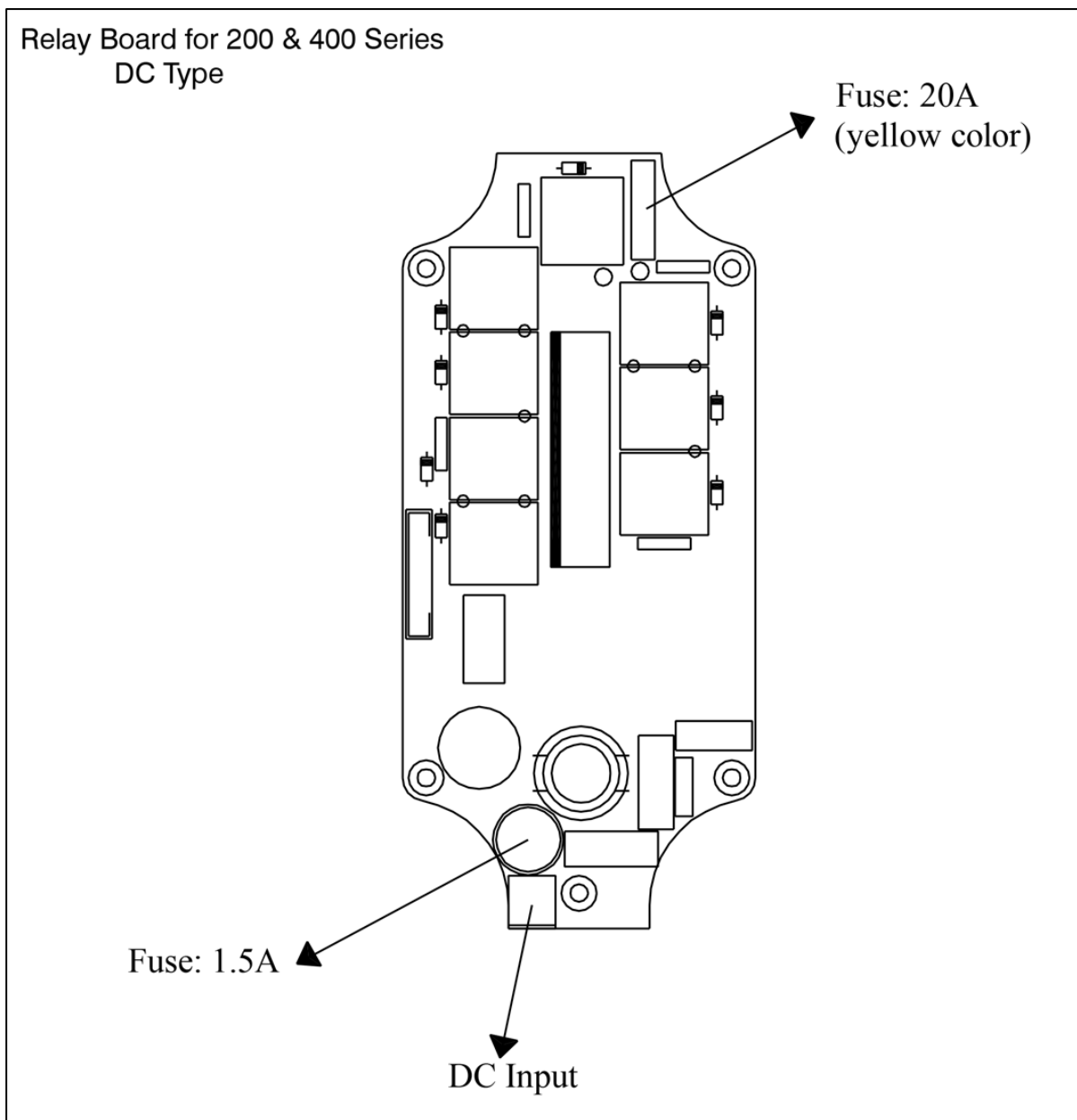


* Please do not install a VHF crystal into a UHF PC board or vice versa.

VHF: 310.0325 ~ 331.1650 MHz

UHF: 425.5925 ~ 446.7250 MHz

8.2 Receiver PC Board Layouts (200 & 400 Series)

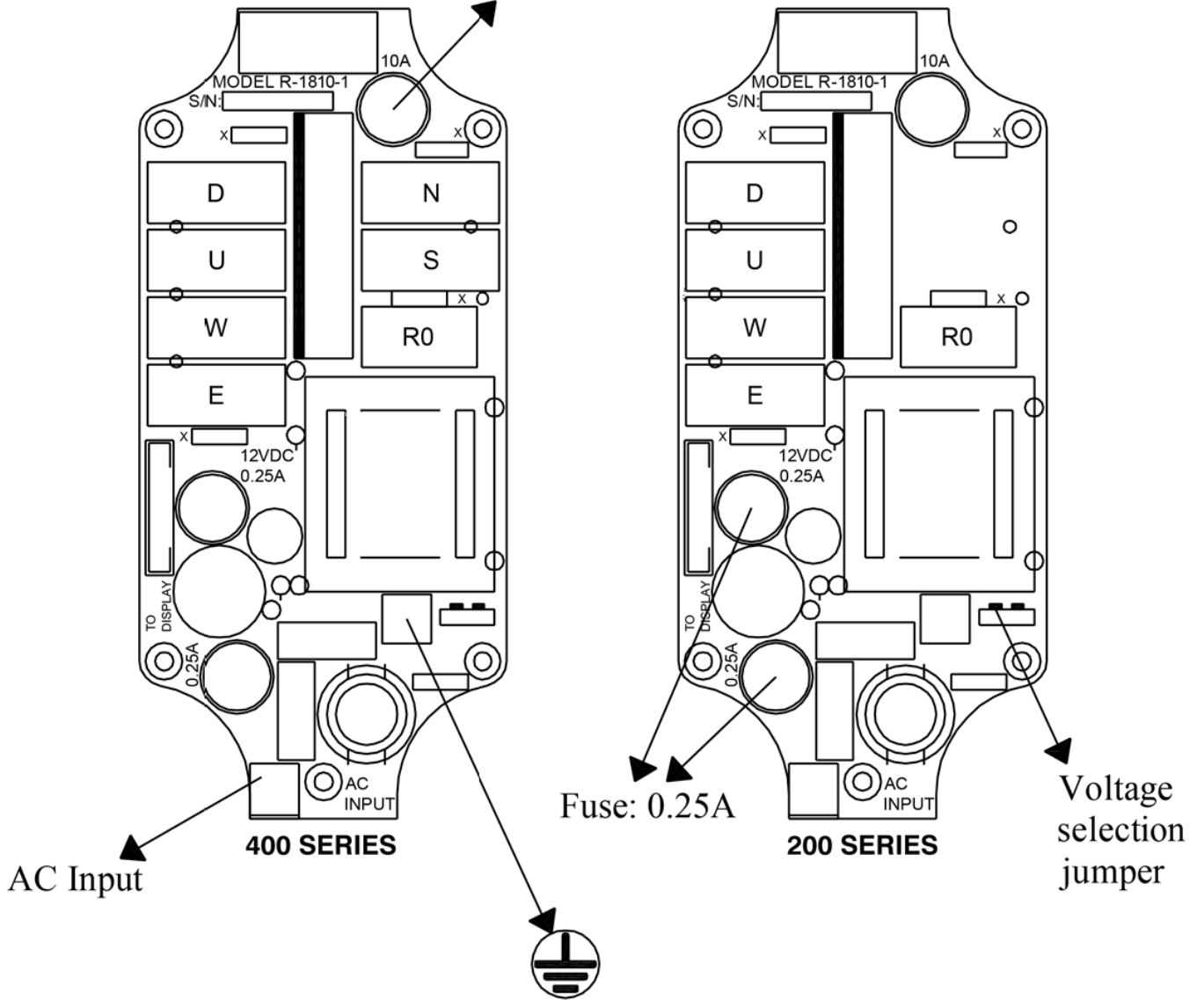


Remark: The Polarity direction of DC Input is not required when plugging in the power line connector.

Relay Board for 200 & 400 Series (con't)

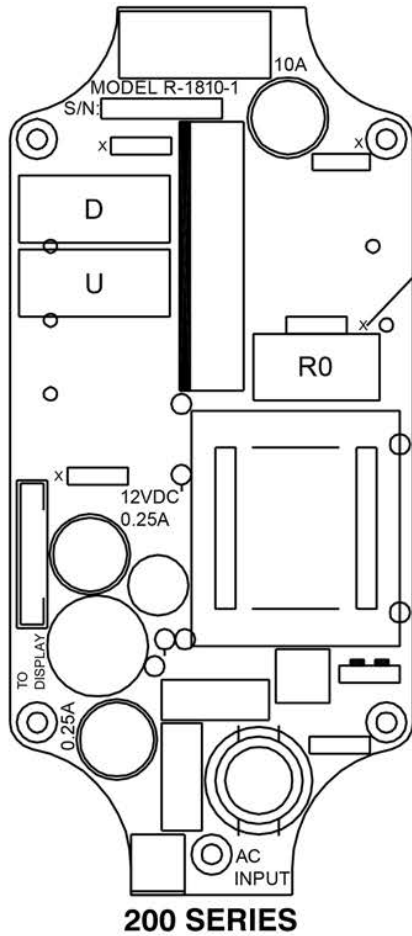
AC Type

Fuse: 10A

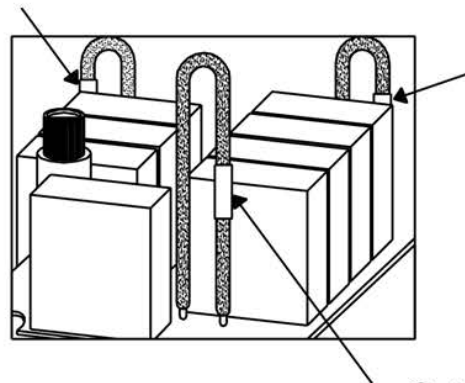


The GND (ground) of the receiver must be connected with metal part of the equipment or electrical shock may occur.

Relay Board for 200 & 400 Series (con't)



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



Cut the wire here.

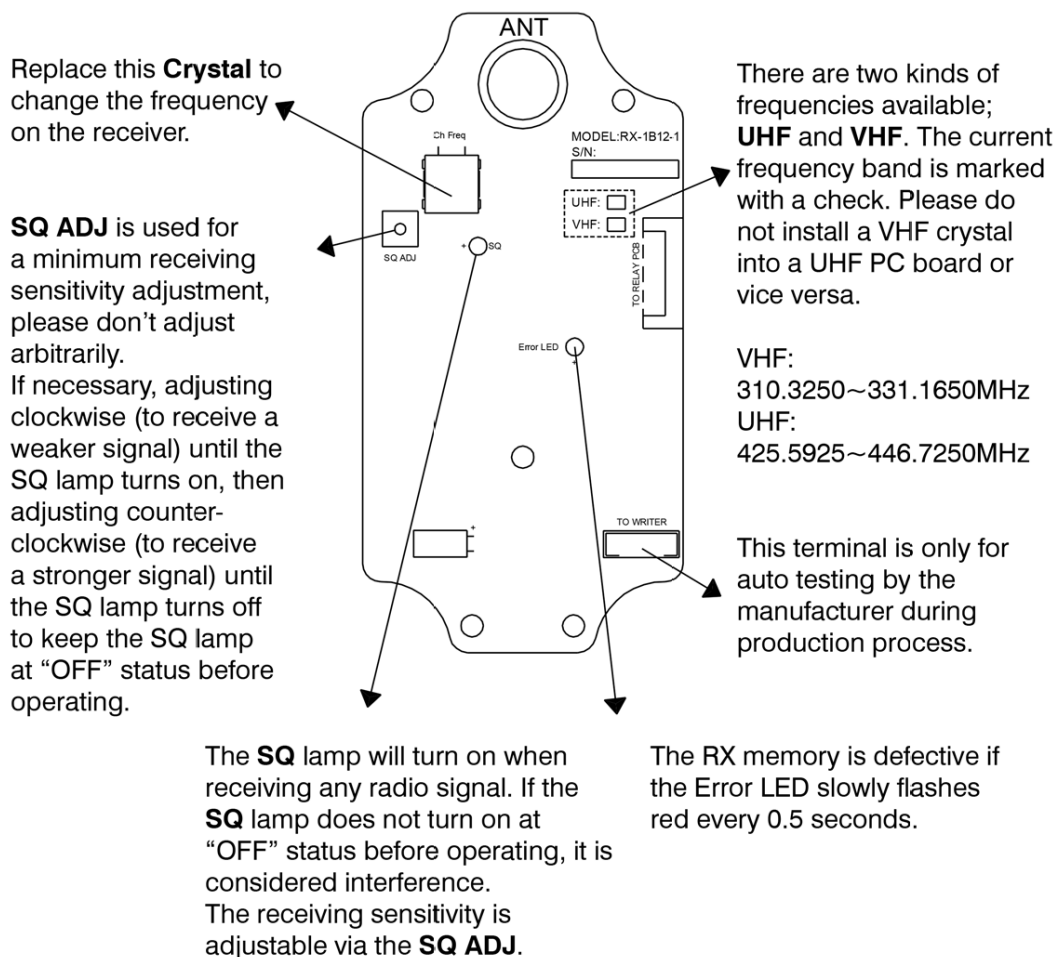
8.3 Independent COM Line

The 200 & 400 Series offer independent COM lines as:

200 Series	2 independent COM lines	Up/Down, R0
400 Series	3 independent COM lines	Up/Down, East/West, R0
400 Series	4 independent COM lines	Up/Down, East/West, North/South, R0

CAUTION

Please refer to the above figures of receiver relay boards and if an 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 line with an existing spare output wire. If no spares are available, the customer must supply the extra wire.



9.0 FREQUENCY CHANGE (200, 400, & 500 SERIES)

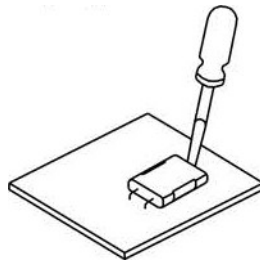
The frequency of the 200, 400 & 500 Series can be changed by replacing the corresponding crystal in both the Transmitter and Receiver. Please refer to the procedure below in regard to replacing the crystal.

CAUTION

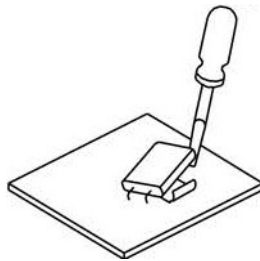
Note: To replace a new crystal, please note there are two kinds of frequencies available; **UHF** and **VHF**. The current frequency band is marked on the PC board with a checkmark. Please **DO NOT** install a **VHF** crystal into a **UHF** PC board or vice versa.

9.1 Procedures

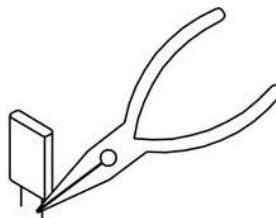
1. Pry up the crystal with a flat screwdriver.



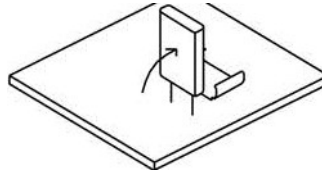
2. Remove the crystal from the system.



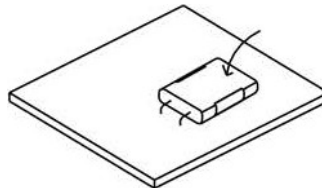
3. Use needle nose pliers to straighten both pins of the new crystal.



4. Insert the new crystal vertically into the PC board.

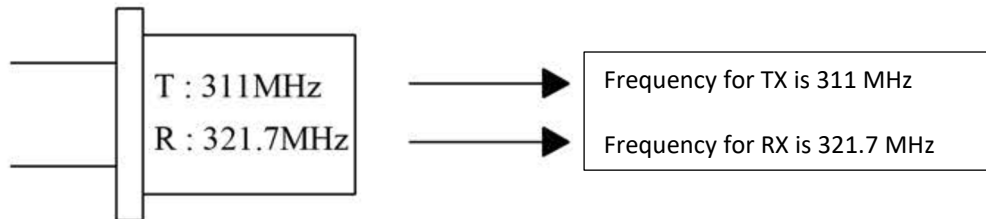


5. Press the new crystal down into the socket.



! CAUTION

Attention: The Transmitter frequency will be different from the Receiver frequency. For example:



9.2 VHF Band Conversion Table

Ch No.	Freq (MHz)	Ch No.	Freq (MHz)	Ch No.	Freq (MHz)
1	310.0325	29	317.5225	57	325.0125
2	310.3000	30	317.7900	58	325.2800
3	310.5675	31	318.0575	59	325.5475
4	310.8350	32	318.3250	60	325.8150
5	311.1025	33	318.5925	61	326.0825
6	311.3700	34	318.8600	62	326.3500
7	311.6375	35	319.1275	63	326.6175
8	311.9050	36	319.3950	64	326.8850
9	312.1725	37	319.6625	65	327.1525
10	312.4400	38	319.9300	66	327.4200
11	312.7075	39	320.1975	67	327.6875
12	312.9750	40	320.4650	68	327.9550
13	313.2425	41	320.7325	69	328.2225
14	313.5100	42	321.0000	70	328.4900
15	313.7775	43	321.2675	71	328.7575
16	314.0450	44	321.5350	72	329.0250
17	314.3125	45	321.8025	73	329.2925
18	314.5800	46	322.0700	74	329.5600
19	314.8475	47	322.3375	75	329.8275
20	315.1150	48	322.6050	76	330.0950
21	315.3825	49	322.8725	77	330.3625
22	315.6500	50	323.1400	78	330.6300
23	315.9175	51	323.4075	79	330.8975
24	316.1850	52	323.6750	80	331.1650
25	316.4525	53	323.9425		
26	316.7200	54	324.2100		
27	316.9875	55	324.4775		
28	317.2550	56	324.7450		

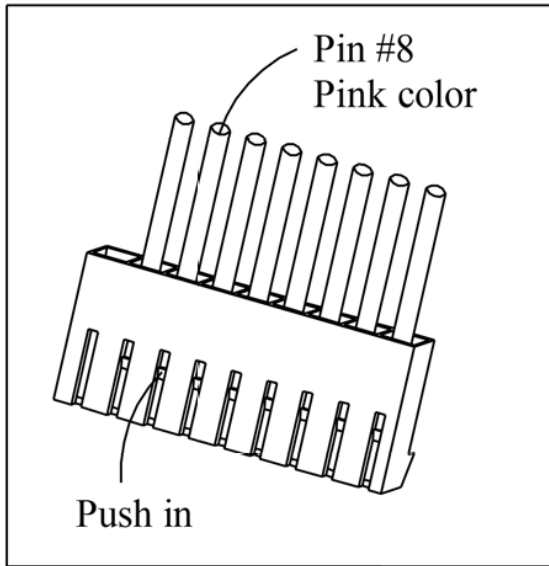
9.3 UHF Band Conversion Table

Ch No.	Freq (MHz)	Ch No.	Freq (MHz)	Ch No.	Freq (MHz)
101	425.5925	129	433.0825	157	440.5725
102	425.8600	130	433.3500	158	440.8400
103	426.1275	131	433.6175	159	441.1075
104	426.3950	132	433.8850	160	441.3750
105	426.6625	133	434.1525	161	441.6425
106	426.9300	134	434.4200	162	441.9100
107	427.1975	135	434.6875	163	442.1775
108	427.4650	136	434.9550	164	442.4450
109	427.7325	137	435.2250	165	442.7125
110	428.0000	138	435.4900	166	442.9800
111	428.2675	139	435.7575	167	443.2475
112	428.5350	140	436.0250	168	443.5150
113	428.8025	141	436.2925	169	443.7825
114	429.0700	142	436.5600	170	444.0500
115	429.3375	143	436.8275	171	444.3175
116	429.6050	144	437.0950	172	444.5850
117	429.8725	145	437.3625	173	444.8525
118	430.1400	146	437.6300	174	445.1200
119	430.4075	147	437.8975	175	445.3875
120	430.6750	148	438.1650	176	445.6550
121	430.9425	149	438.4325	177	445.9225
122	431.2100	150	438.7000	178	446.1900
123	431.4775	151	438.9675	179	446.4575
124	431.7450	152	439.2350	180	446.7250
125	432.0125	153	439.5025		
126	432.2800	154	439.7700		
127	432.5475	155	440.0375		
128	432.8150	156	440.3050		

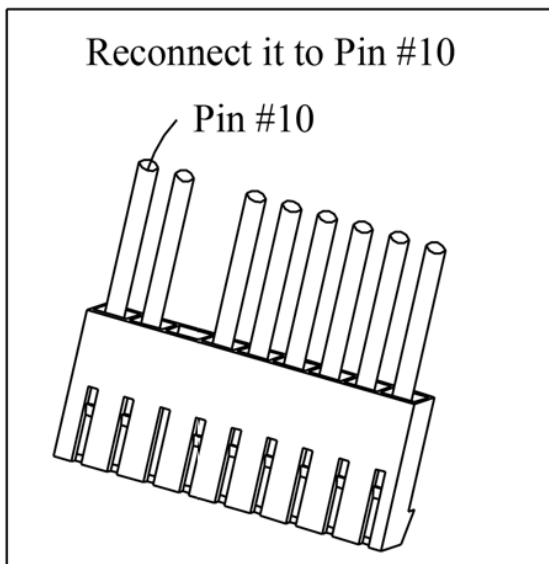
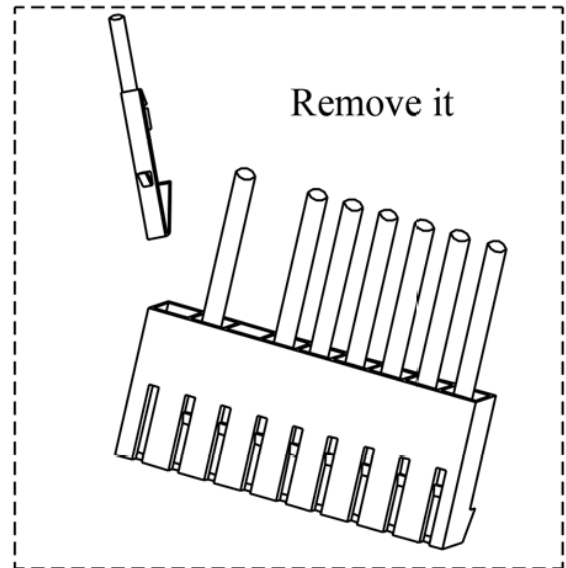
9.4 Changing RO/START N.O. (normally open) INTO N.C. (normally closed)

The Ro/START key of the new 200 & 400 series provides **NO** and **NC** contact. The **NO** is the default setting. If a **NC** output is necessary, please remove the #8 wire (**RO/Start, color pink**) from the connector and insert it into #10 Pin.

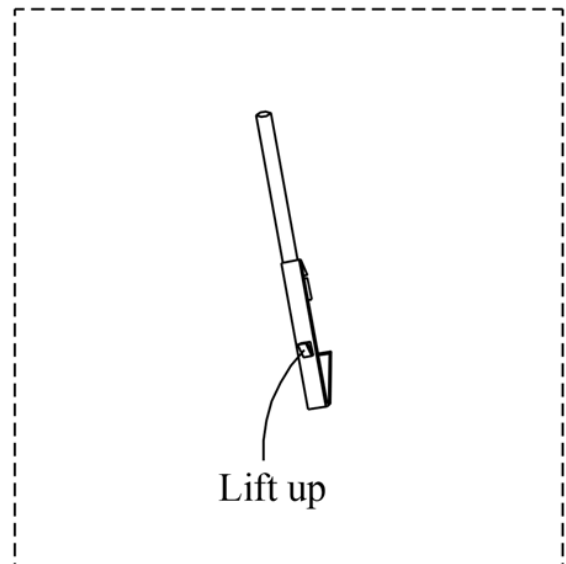
Procedures:



The R0/START is N.O.



The R0/START is N.C.



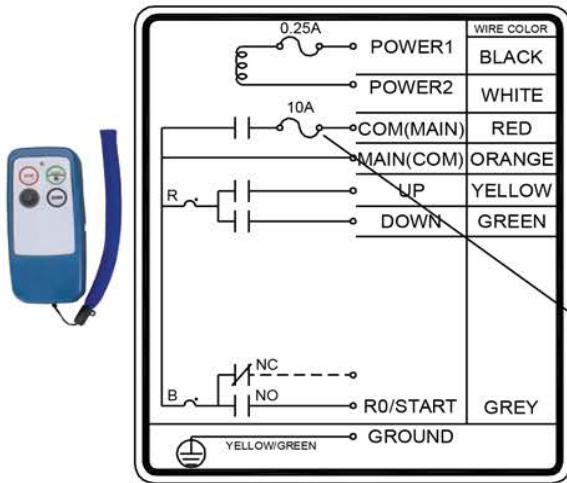
10.0 TROUBLESHOOTING

Item	Problem	Cause	Action Required
1	Red LED flashing quickly (every 0.2 sec.) when any motion pushbutton is pressed.	A) One of the push- buttons is jammed. B) The system is not properly powered according to the	A) Replace the pushbutton. B) Power on again according to the instructions.
2	TXLED flashes red and yellow reciprocally and slowly (every 0.5 sec).	The memory of the TX is defective.	Send back to the manufacturer.
3	TXLED flashes red every 2 seconds when any motion pushbutton is pressed.	The transmitter batteries are at low power.	Replace the 2 AA size Alkaline batteries at once.
4	RXError LED flashes red slowly (every 0.5 sec.).	The memory of the RX is defective.	Send back to the manufacturer.
5	The operating dis- tance is shorter or an intermittent operation is happening.	It was interferred by other Radio Remote Controller or unknown signal with the same frequency.	Replace the crystal of both TX and RX to change the frequency.

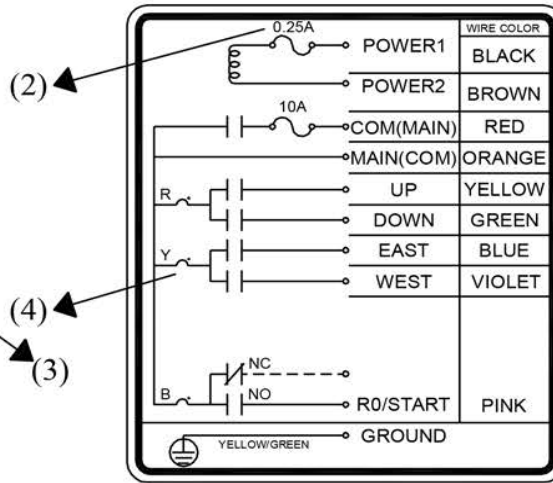
Remark: The memory of the TX and RX has anti-copy function design. Any improper decoding of the firmware of the memory will cause the problems as the above items 2 and 4.

If any problem cannot be solved or if you have any questions or suggestions, please call (866) 424-6478.

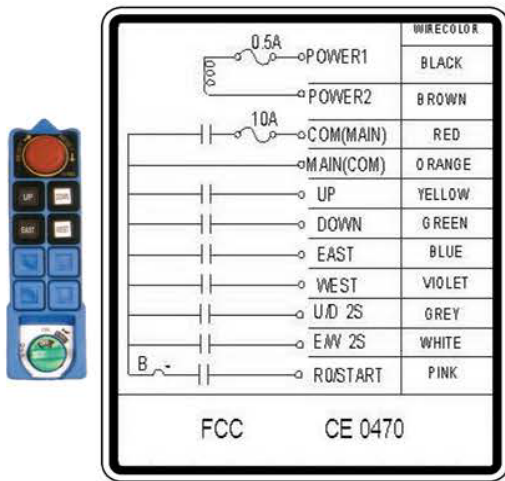
11.0 WIRING DIAGRAMS



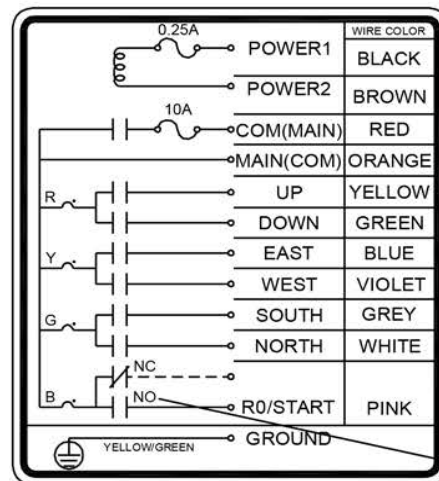
200 SERIES (2 BUTTON)



200 SERIES (4 BUTTON)



400 SERIES (4 BUTTON)



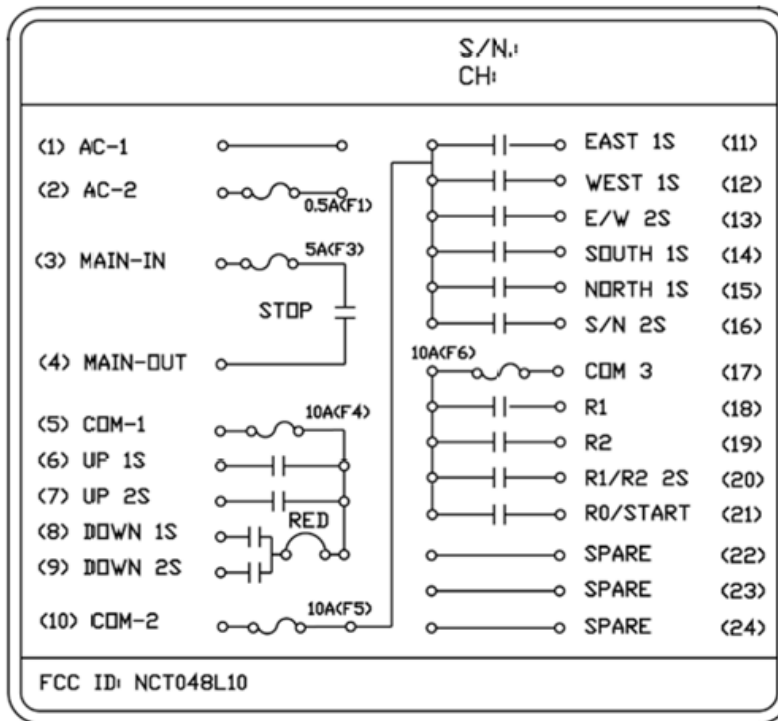
200 & 400 SERIES (6 BUTTON)

Remark:

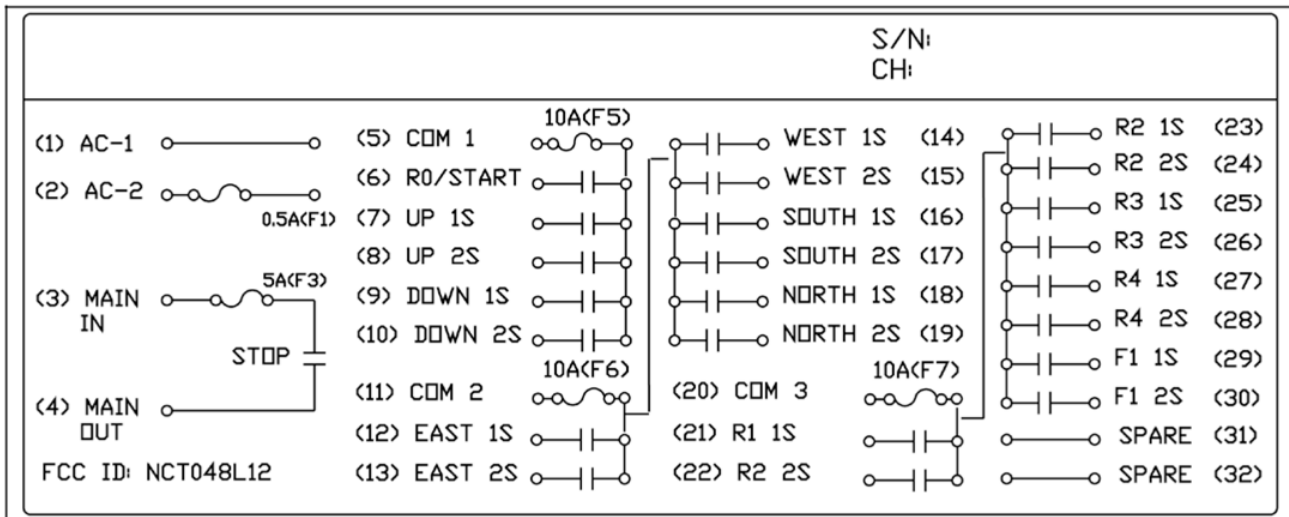
1. The RO/START can be N.C. or N.O.
2. The fuse for the power AC48/110/220/380V is 0.25A.
The fuse for the power DC 12/24V is 1.5A.
3. The fuse for the AC type at the COM (main) is 10A.
The fuse for the DC type at the COM (main) is 20A.
4. The com lines have been arranged prior to shipment, if an independent com line is required, please refer to section 8.3.

Note: The polarity direction for the power of DC12/24V is not required when plugging in the power line connector.

Wiring Diagram (500 Series: Model 5008) Default wiring diagram shown. Custom programming might alter relay outputs.



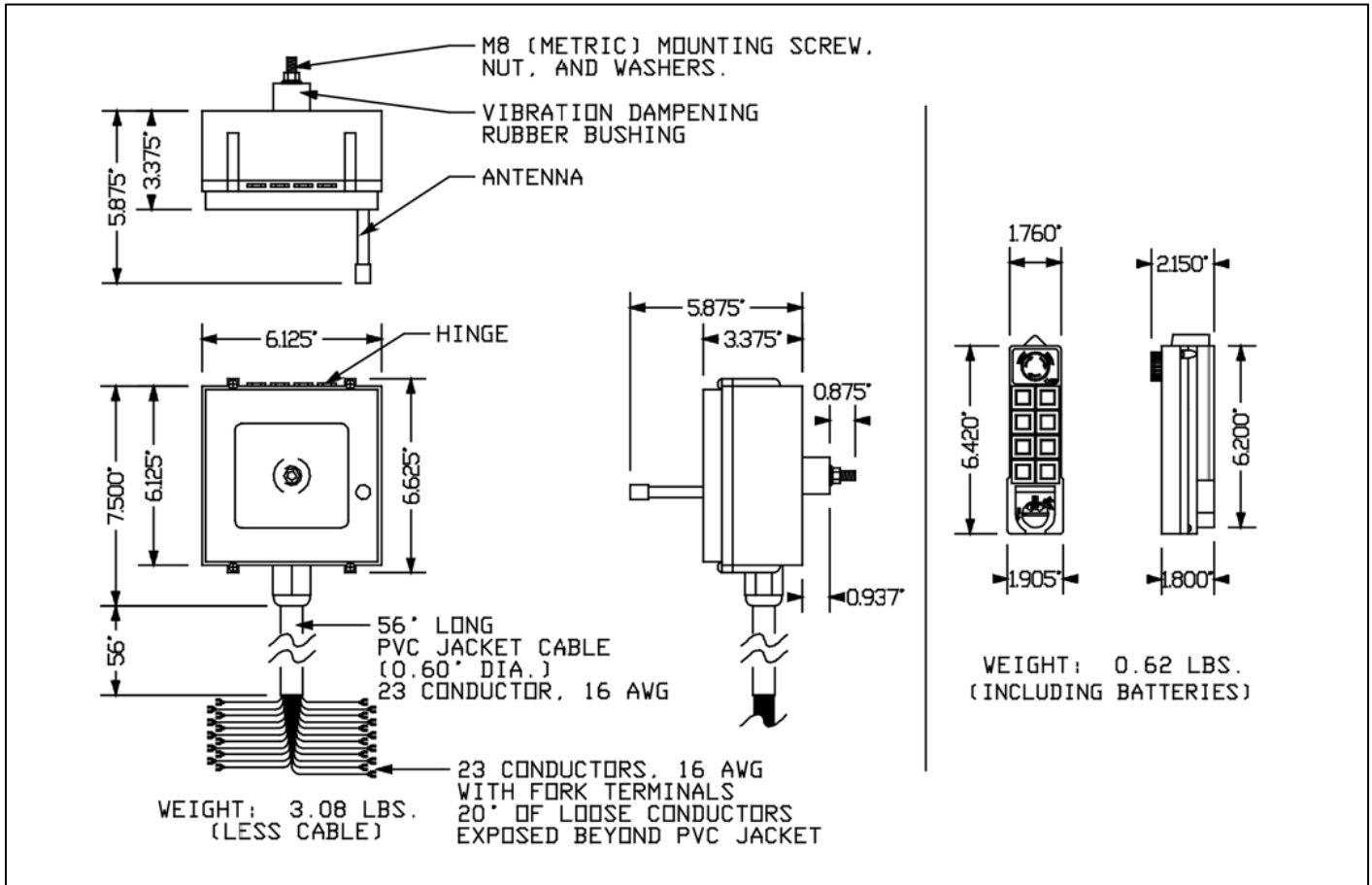
Wiring Diagram (500 Series: Model 50011) Note: Default wiring diagram shown. Custom programming might alter relay outputs.



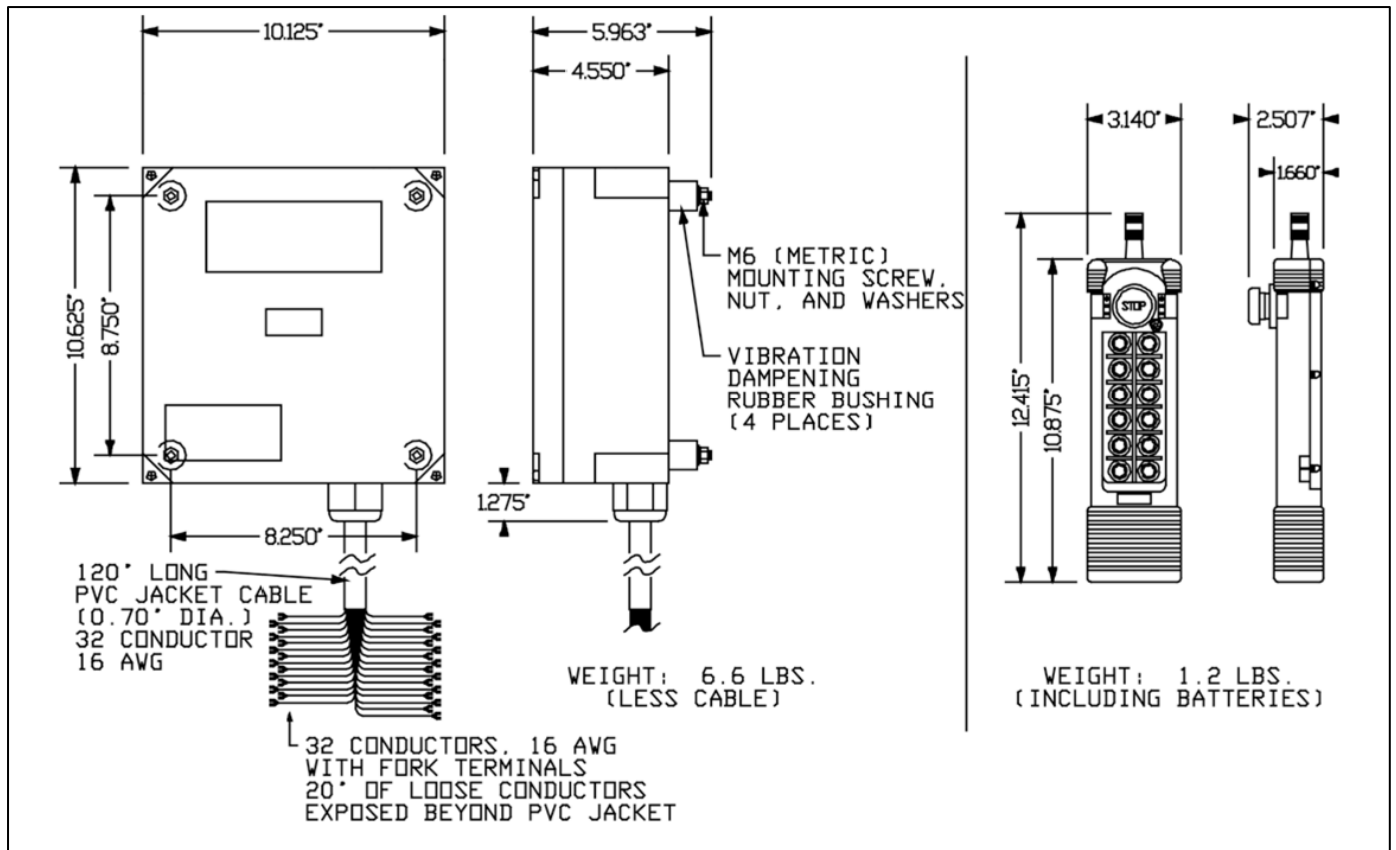
12.0 DIMENSIONS & SPECIFICATIONS

12.1 Dimensions

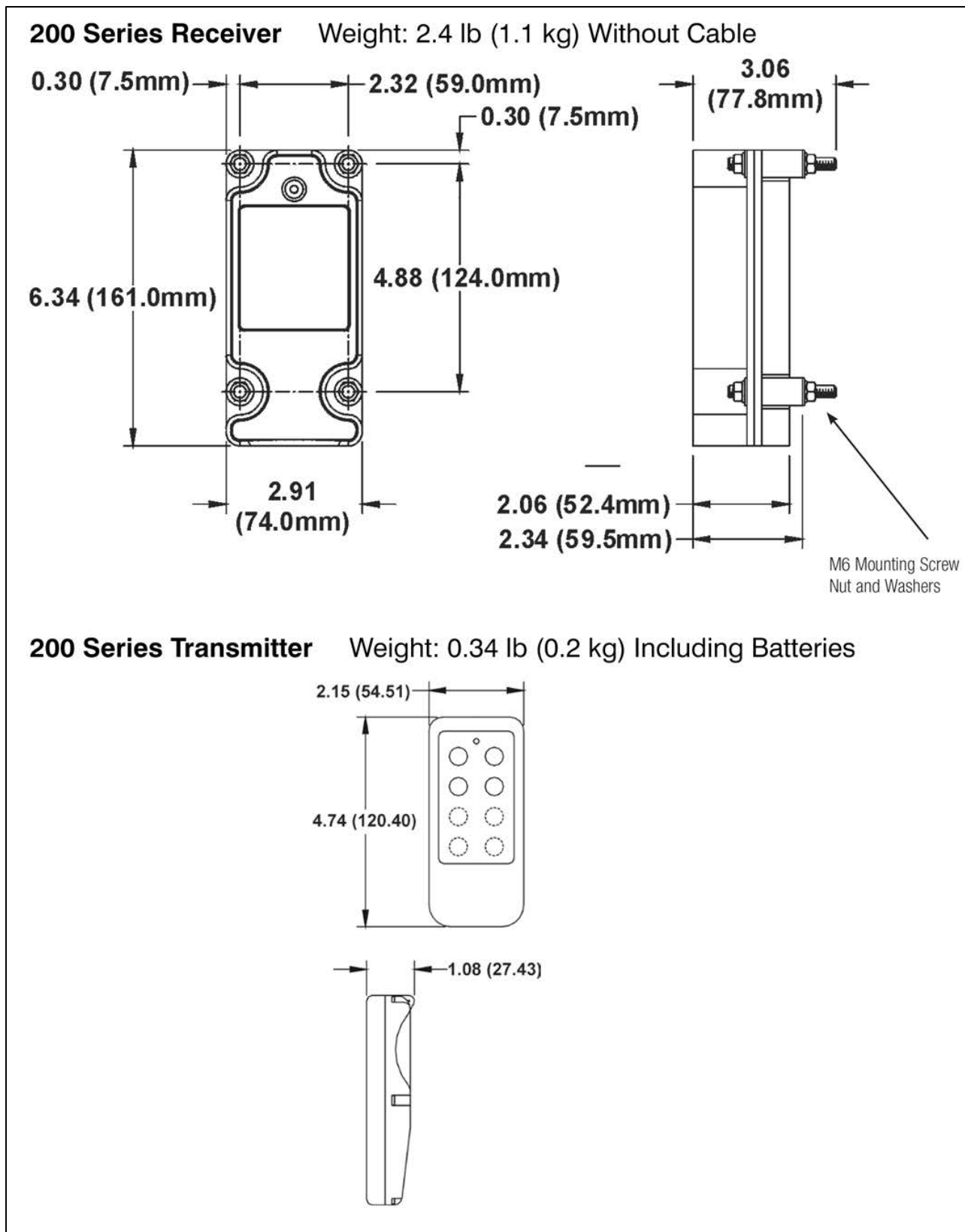
12.1.1 500 Series: Model 5008



12.1.2 500 Series: Model 50011

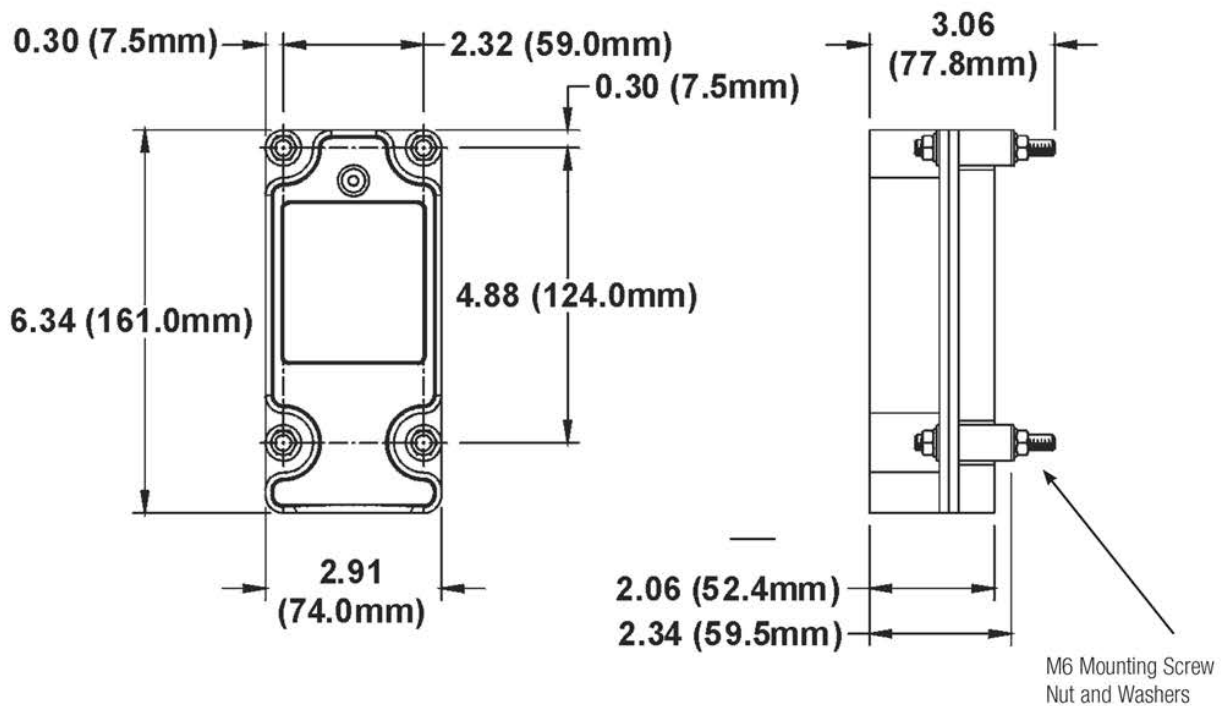


12.1.3 200 Series Receiver & Transmitter

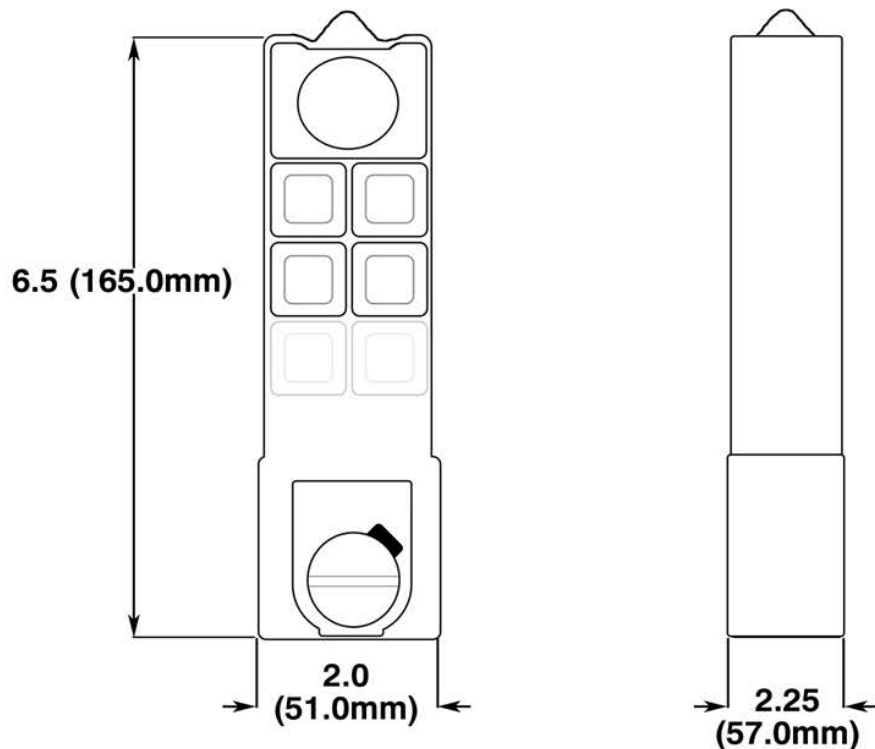


12.1.4 400 Series Receiver & Transmitter

400 Series Receiver Weight: 2.4 lb (1.1 kg) - *Without Cable*



400 Series Transmitter Weight: 0.34 lb (0.2 kg) - *Including Batteries*



12.2 Specifications

12.2.1 200 Series

200 Series Remote Control transmitters are available in 2, 4, & 6 button single-speed configurations. A small compact pocket-size transmitter; fully safety-compliant, simple installation, suitable for SUV,

Winch, Conveyor, Boat Lifting Equipment, Greenhouse Spreader, etc. The major application will be the vehicle market, especially for tow trucks.

2002: 2 single-step pushbuttons (Start, Stop, Up, Down)



200 Series Transmitter



200 Series Receiver

2004: 4 single-step pushbuttons (Start, Stop, Up, Down, East, West)



200 Series Transmitter



200 Series Receiver

2006: 6 single-step pushbuttons (Start, Stop, Up, Down, North, South, East, West)



200 Series Transmitter



200 Series Receiver

General Specifications:

Frequency Control: Crystal
Low Power Indicator
Pushbutton Jammed Detector
Operation Range: Up to ~**328** feet (100 meters)
Operating Temperature: -49°F ~ 176°F (-45°C ~ +80°C)
Power Consumption: about 10mW
Structure: Nylon and Glass Fiber
Shock Resistant
Function Programmable

Transmitter Specifications:

L x W x H: 4.72" X 2.17" X 0.98" {120 X 55 X 25 mm} Weight: 0.34 lbs. (0.2 kg) *with batteries
Two {2} AA size batteries

Receiver Specifications:

L x W x H: 6.34" X 2.91" X 2.05" {161 X 74 X 52 mm} Weight: 2.43 lbs. (1.1 kg) *without cable
Input Voltage: AC Type: 24/48/110/220/380V;
DC Type: 12~24V

12.2.2 400 Series

400 Series has unique and outstanding features and is fully programmable. Best use: Monorail, Electric Chain Hoist, Bridge Crane and Jib Crane. 2-motion, 2-speed Model 4004 and 3-motion 1-speed Model 4008 have positive detent positions, e-stop switch, and removable key.

4004: 4 double-step pushbuttons (Up, Down, East, West)



400 Series Transmitter



400 Series Receiver

4006: 6 single-step pushbuttons (Up, Down, North, South, East, West)



400 Series Transmitter



400 Series Receiver

General Specifications:

Frequency Control: Crystal
Low Power Indicator
Pushbutton Jammed Detector
Operation Range: Up to -328 feet {100 meters) Operating
Temperature: -49°F ~ 176°F (-45°C ~ + 80°C)
Power Consumption: about 10mW
Structure: Nylon and Glass Fiber
Shock Resistant
Function Programmable

Transmitter Specifications:

L X W x H: 6.42" X 1.93" X 1.77" {163 X 49 X 45 mm) Weight:
0.55 lbs. {0.3 kg) *with batteries
Two {2) AA size batteries

Receiver Specifications:

L x W x H: 6.34" X 2.91" X 2.05" (161 X 74 X 52 mm) Weight:
2.43 lbs. {1.1 kg) *without cable
Input Voltage: AC Type: 24/48/110/220/380V;
DC Type: 12~24

12.2.3 500 Series

500 Series has unique and outstanding features and is fully programmable. Best use: Overhead Crane and most Heavy Loading Equipment.

The 500 Series Model 5008 is a 2-speed transmitter with eight buttons for control of 3-4 motions. FCC 310-320 Mhz AC models only. Each kit includes receiver, one or two transmitters, four batteries, strap, legend sheet for each transmitter, spare key, spare fuse kit, and instruction manual. This radio has programmable operation.

The 500 Series Model 50011 is a 2-speed transmitter with eleven buttons for control of up to 5 motions. FCC 310-320 Mhz AC models only. Each kit includes receiver, one or two transmitters, four batteries, strap, legend sheet for each transmitter, spare key, spare fuse kit, and instruction manual. This radio has programmable operation.

5008: 8 double-step pushbuttons + Start + EMS

50011: 11 double-step pushbuttons + Start + EMS



500 Series Transmitter

500 Series Receiver



500 Series Transmitter

500 Series Receiver

Transmitter Specifications:

5008

L X W X H: 6.42" X 1.93" X 1.77" (163 X 49 X 45 mm)
Weight: 0.61 lbs. {0.3 kg} *with batteries
Two (2) AA size batteries

50011

L X W X H: 10.79" X 3.03" X 1.65" (274 X 77 X 42 mm)
Weight: 1.19 lbs. (0.5 kg) *with batteries
Four (4) AA size batteries

General Specifications:

Frequency Control: Crystal
Low Power Indicator
Pushbutton Jammed Detector
Operation Range: Up to -328 feet (100 meters) Operating
Temperature: -49°F ~ 176°F (-45°C ~ +80°C)
Power Consumption: about 10mW
Structure: Nylon and Glass Fiber
Shock Resistant
Function Programmable

Receiver Specifications:

5008

L X W X H: 6.58" X 6.06" X 3.47" {167 X 154 X 88 mm) Weight:
3.09 lbs. {1.4 kg} *without cable
Input Voltage: AC Type: 24/48/110/220/380V;
DC Type: 12~24V

50011

L X W X H: 9.96" X 10.51" X 5.91" (253 X 267 X 150 mm)
Weight: 6.61 lbs. {3.0 kg} *without cable
Input Voltage: AC Type: 24/48/110/220/380V;
DC Type: 12~24