

***FLEX**MINI*

User's Manual

Service Information

Your New Radio System

Thank you for your purchase of ARC FLEX MINI radio remote control system. Without a doubt, our FLEX MINI system is the ultimate solution for providing precise, undeterred, and safe control of your material.

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Table of Contents

| | Page |
|--------------------------------------|-------------|
| 1. General System Information | |
| 1.1 Transmitter | |
| 1.1.1 External Illustration | 3 |
| 1.1.2 Internal Illustration | 4 |
| 1.2 Receiver | |
| 1.2.1 External Illustration | 5 |
| 1.2.2 Internal Illustration | 6 |
| 2. Function Settings | |
| 2.1 Transmitter | |
| 2.1.1 Channel Setting | 7 |
| 2.1.2 Keypad Type Setting | 8 |
| 2.1.3 Remote Pairing | 9 |
| 2.2 Receiver | |
| 2.2.1 Dipswitch Setting | 10 |
| 2.2.2 Fuse Ratings | 10 |
| 3. Receiver Installation | 11 |
| 4. Operating Procedure | 13 |
| 5. Status & Warnings | 14 |
| 6. Channel Frequency Table | 15 |
| 7. System Specifications | 16 |

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

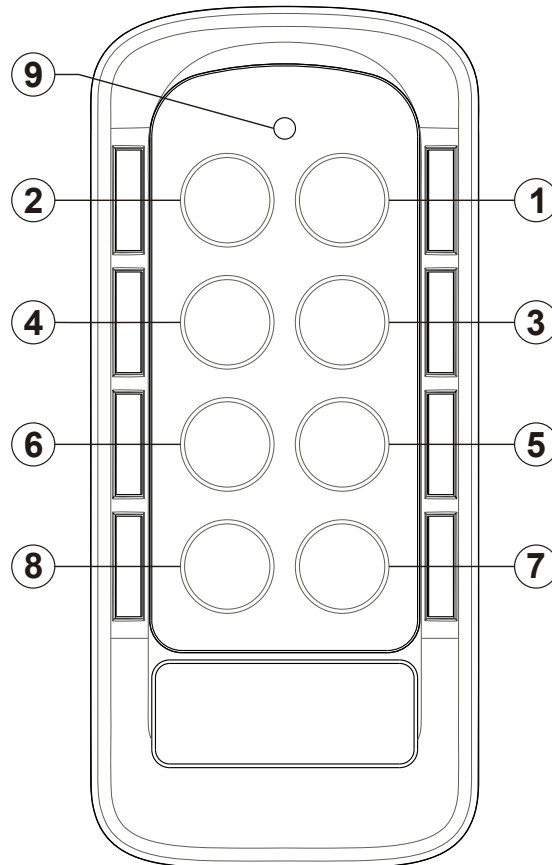
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference and
- 2) This device must accept any interference received, including interference that may cause undesired operation of the device.

1. GENERAL SYSTEM INFORMATION

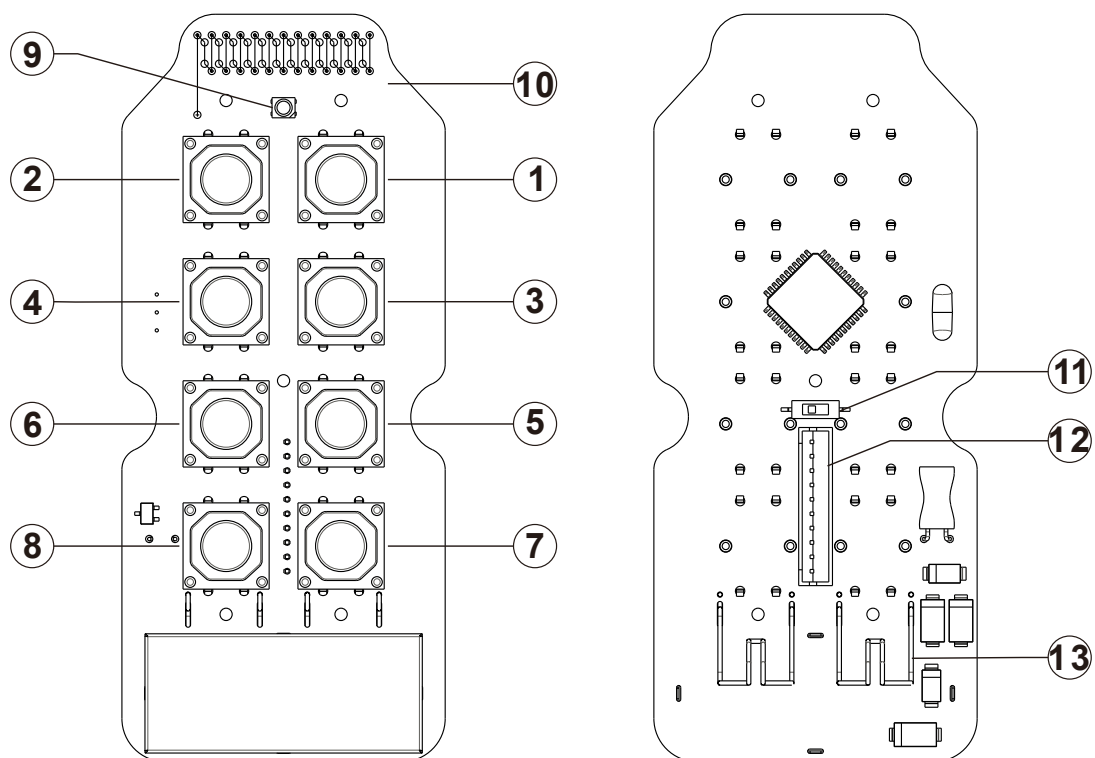
1.1 TRANSMITTER

1.1.1 External Illustration



- | | | | |
|----|--------------|----|--------------|
| 1. | Pushbutton 1 | 6. | Pushbutton 6 |
| 2. | Pushbutton 2 | 7. | Pushbutton 7 |
| 3. | Pushbutton 3 | 8. | Pushbutton 8 |
| 4. | Pushbutton 4 | 9. | Status LED |
| 5. | Pushbutton 5 | | |

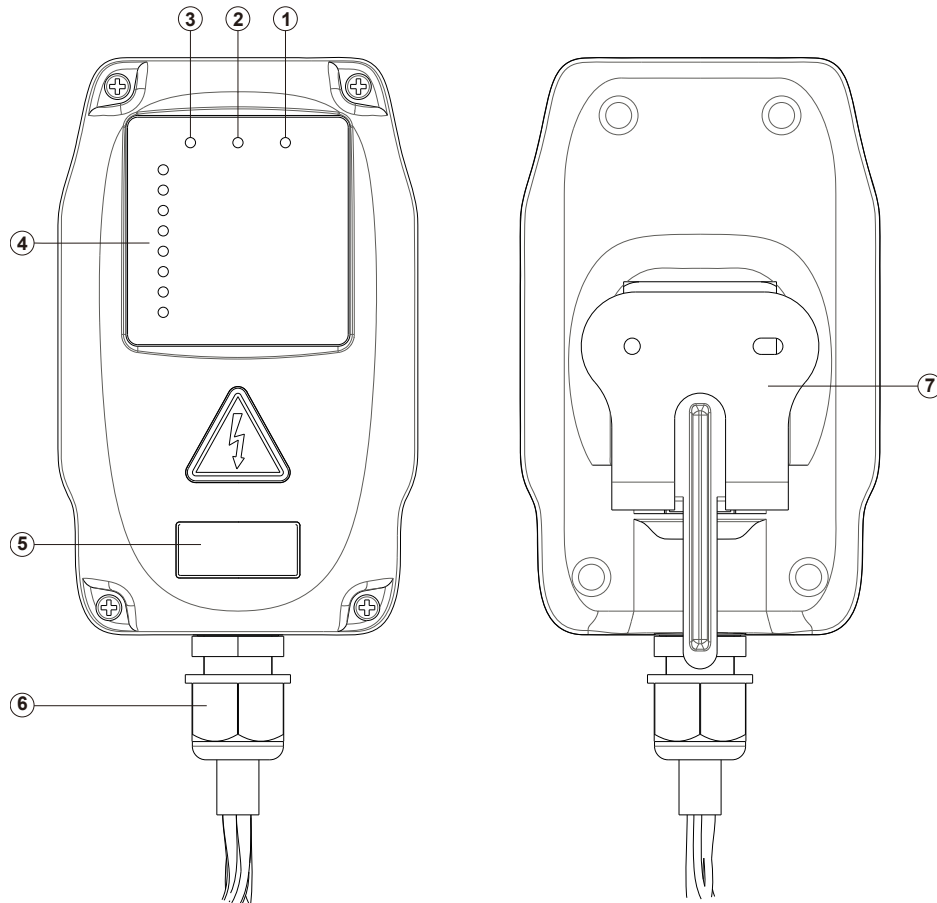
1.1.2 Internal Illustration



- | | | | |
|----|--------------|-----|--------------------|
| 1. | Pushbutton 1 | 8. | Pushbutton 8 |
| 2. | Pushbutton 2 | 9. | Status LED |
| 3. | Pushbutton 3 | 10. | RF + Encoder Board |
| 4. | Pushbutton 4 | 11. | Function Dipswitch |
| 5. | Pushbutton 5 | 12. | Programming Port |
| 6. | Pushbutton 6 | 13. | Battery Contacts |
| 7. | Pushbutton 7 | | |

1.2 RECEIVER

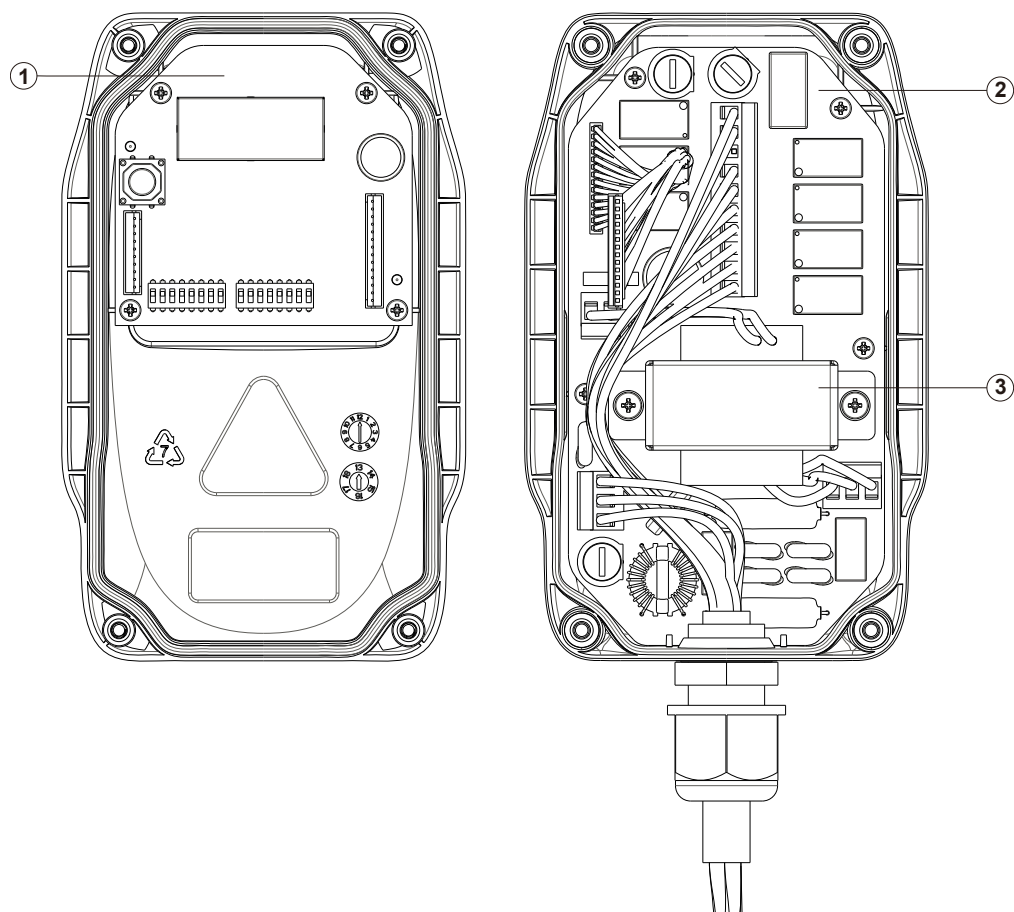
1.2.1 External Illustration



- 1. COM LED
- 2. Status LED
- 3. Power LED
- 4. Output Relays LED

- 5. System Information
- 6. Cord Grip
- 7. Mounting Bracket

1.2.2 Internal Illustration

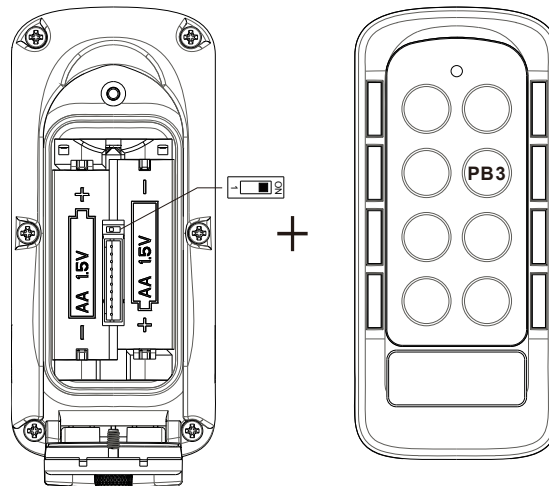


1. RF + Decoder Board
2. AC Line Filter + Relay Board
3. Power Transformer

2. FUNCTION SETTINGS

2.1 TRANSMITTER

2.1.1 Channel Setting



Set transmitter channel by moving the function dipswitch located inside the battery compartment to “on” position. Reinsert the two batteries and press any button to power up the transmitter. At this point the Status LED will display a series of red, green and orange blinks showing the current software version. Then press and hold PB3 for up to 1 second to go into the transmitter channel setting mode. At this point the Status LED will display a series of green and red blinks showing the current system channel. A green blink represents the tens (+10) and a red blink represents the units (+1). For example, one (1) green blink followed by five (5) red blinks is channel 15.

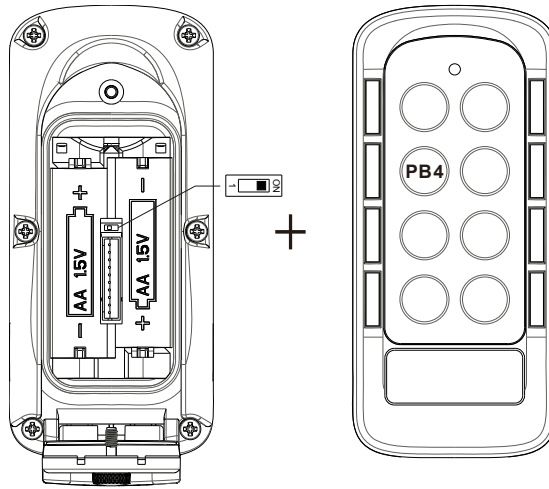
Now select new channel by pressing PB1 and PB2 on the transmitter. Press PB1 to increment the units (+1) and PB2 to increment the tens (+10). For example, press PB2 two times and then PB1 four times is channel 24. When finished the transmitter Status LED will display the newly selected channel. Then press and hold PB3 again to transmit the newly selected channel to the receiver (receiver must be powered on). Let go PB3 only when receiver Status LED displays fast green blinks (transfer complete); this process should only take 1~2 seconds. Exit transmitter channel setting mode by press and hold both PB1 and PB2 at the same time for up to 1 second (Status LED returns to software version). Then take out the batteries and move the function dipswitch back to “off” position.

Note: When selecting a new channel make sure each button press do not exceed 3 seconds.

Important Note:

When you are changing the transmitter channel you must also change the receiver channel at the same time, prior to exiting the channel setting mode (see instruction above). If you exit the channel setting mode without pressing PB3 to transfer the newly selected channel to the receiver then you would have to change the transmitter channel back to its previous setting (same channel as the receiver) and then redo the channel setting process again.

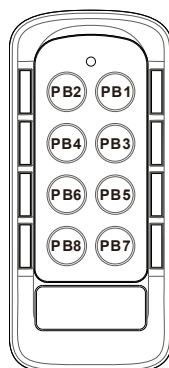
2.1.2 Keypad Type Setting



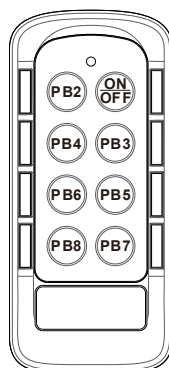
Set transmitter keypad type by moving the function dipswitch located inside the battery compartment to “on” position. Reinsert the two batteries and press any button to power up the transmitter. At this point the Status LED will display a series of red, green and orange blinks showing the current software version. Then press and hold PB4 for up to 1 second to go into the keypad type setting mode. At this point the Status LED will blink red showing the current keypad type. A green blink represents the tens (+10) and a red blink represents the units (+1). For example, two (2) red blinks is keypad type #2.

Now select new keypad type by pressing PB1 and PB2 on the transmitter. Press PB1 to increment the units (+1) and PB2 to increment the tens (+10). For example, press PB1 two times for keypad type #2 and three times for keypad type #3. When finished the Status LED will display the newly selected keypad type. Exit keypad type setting mode by press and hold both PB1 and PB2 at the same time for up to 1 second (Status LED returns to software version). Then take out the batteries and move the function dipswitch back to “off” position.

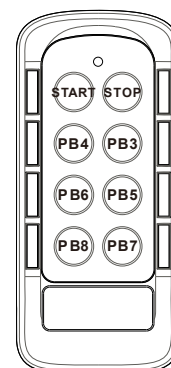
Note: When selecting a new keypad type make sure each button press do not exceed 3 seconds.



Type 1

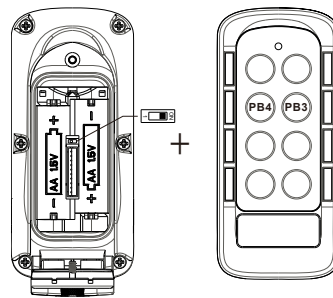


Type 2



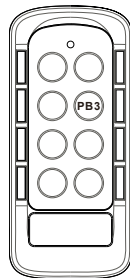
Type 3

2.1.3 Remote Pairing

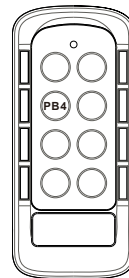


Set remote pairing function by moving the function dipswitch located inside the battery compartment to “on” position. Reinsert the two batteries and press any button to power up the transmitter. Then press and hold PB3 and PB4 at the same time for up to 1 second to go into the remote pairing setting mode (Status LED off).

TX to TX Pairing:



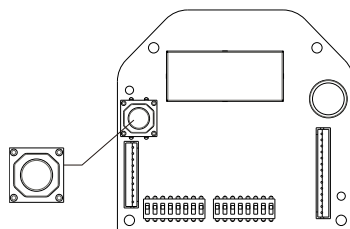
Sending data – original transmitter
(Press and hold PB3)



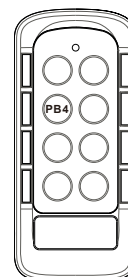
Receiving data – new transmitter
(Press and hold PB4)

Sending data (original transmitter) by press and hold PB3 and receiving data (new transmitter) by press and hold PB4 at the same time. When the Status LED on the receiving data end (new transmitter) turns to constant green while pressing down PB4 the pairing is completed. Exit remote pairing mode by press and hold both PB1 and PB2 at the same time for up to 1 second (Status LED turns to software version). Then take out the batteries and move the function dipswitch on both transmitters back to “off” position.

RX to TX Pairing:



Sending data - receiver
(Press and hold PB1)

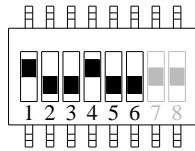


Receiving data – new transmitter
(Press and hold PB4)

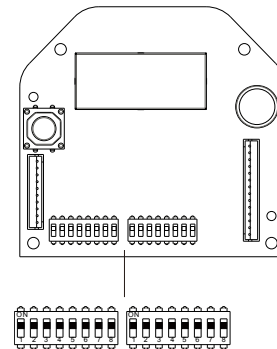
Sending data (receiver) by press and hold PB1 located on the decoder board (see above) and receiving data (new transmitter) by press and hold PB4 at the same time. When the Status LED on the receiving data end (new transmitter) turns to constant green while pressing down PB4 the pairing is completed. Exit remote pairing mode by press and hold both PB1 and PB2 on the new transmitter for up to 1 second (Status LED turns to software version). Then take out the batteries and move the function dipswitch back to “off” position.

2.2 RECEIVER

2.2.1 Dipswitch Setting



Top position → "1"
Bottom position → "0"



Dipswitch #1 (right) :

| Position | Dip 1 | Dip 2 | Dip 3 | Dip 4 | Dip 5 | Dip 6 | Dip 7 | Dip 8 |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Set to "0" | PB1 Normal | PB2 Normal | PB3 Normal | PB4 Normal | PB5 Normal | PB6 Normal | PB7 Normal | PB8 Normal |
| Set to "1" | PB1 Toggled | PB2 Toggled | PB3 Toggled | PB4 Toggled | PB5 Toggled | PB6 Toggled | PB7 Toggled | PB8 Toggled |

Dipswitch #2 (left) :

| Position | Dip 1 | Dip 2 | Dip 3 | Dip 4 | Dip 5 | Dip 6 | Dip 7 | Dip 8 |
|------------|----------------|----------------|----------------|----------------|-------------------|-------------------|-------------------|-------------------|
| Set to "1" | PB1&2 On & Off | PB3&4 On & Off | PB5&6 On & Off | PB7&8 On & Off | PB1&2 Interlocked | PB3&4 Interlocked | PB5&6 Interlocked | PB7&8 Interlocked |

Set to "0": According to Dip-switch #1 setting

Dip 5~8 set to "1": Pushbutton pair interlocked. When set to interlocked pair you must reconfigure dipswitch #1 below

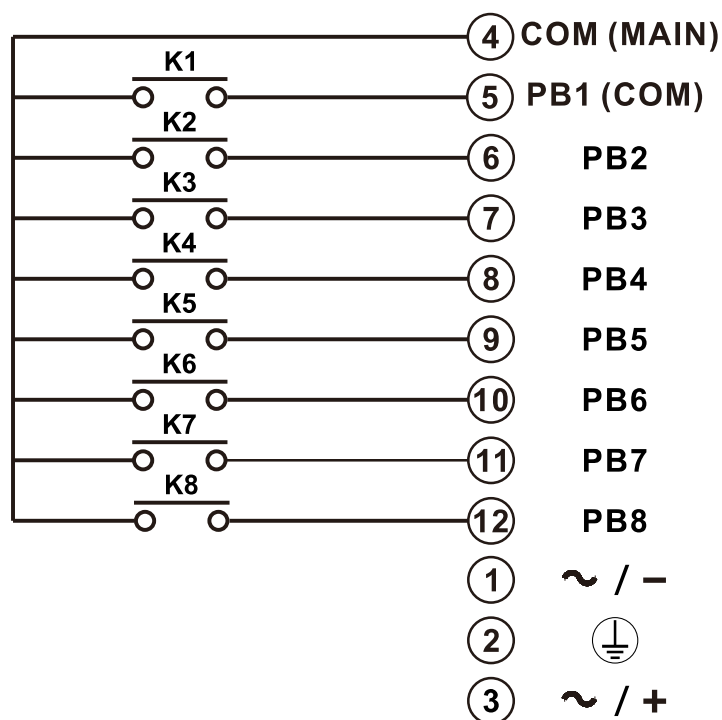
Dipswitch #1 (right) :

| Position | Dip 1&2 | Dip 3&4 | Dip 5&6 | Dip 7&8 |
|-------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Set to "00" | PB1&2 Normal/Normal Interlocked | PB3&4 Normal/Normal Interlocked | PB5&6 Normal/Normal Interlocked | PB7&8 Normal/Normal Interlocked |
| Set to "01" | PB1&2 Toggled/Toggled Interlocked | PB3&4 Toggled/Toggled Interlocked | PB5&6 Toggled/Toggled Interlocked | PB7&8 Toggled/Toggled Interlocked |

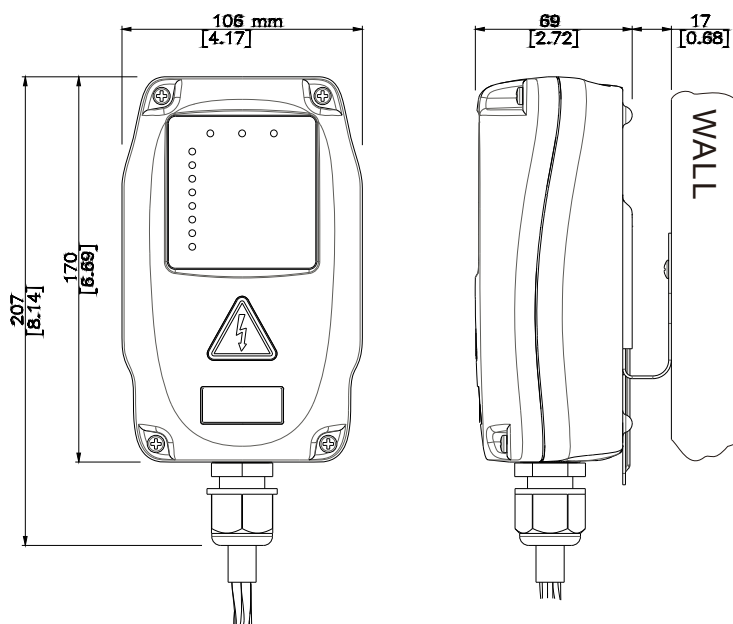
2.2.2 Fuse Ratings

| Fuse # | 250VAC |
|---------|--------|
| F2 & F3 | 5.0A |
| F1 | 0.5A |

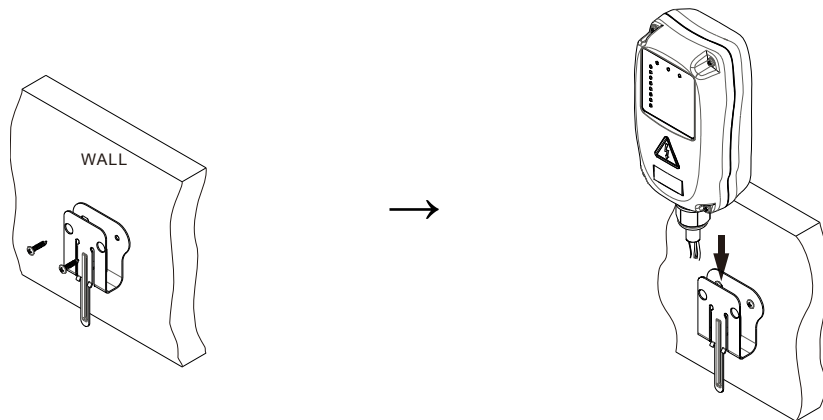
3. RECEVIER INSTALLATION



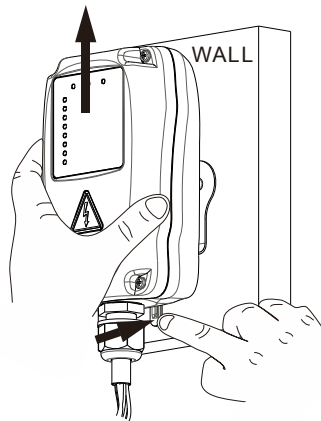
* () For keypad type #2 and type #3 setups.



Secure the mounting bracket to the wall or equipment via two screws (not provided with the system). Slide down the receiver along the guided track to secure the receiver to the mounting bracket (see below). Make sure the screws are tightened after installation.



Remove the receiver by pressing down the bracket release and pull the receiver upward until it clears the guided track (see below).



4. OPERATING PROCEDURE

General Operating Procedure

The Flex Mini transmitter and receiver operate by means of RF transmission. When any of the eight (8) buttons on the transmitter is pressed it will activate the designated output relay in the receiver. When the button is released the designated output relay in the receiver is deactivated. When the button is released the transmission stops within 2 seconds.

Keypad Type #1:

The transmitter is powered on and operated by press any button on the keypad (green blinks on Status LED). The transmitter goes into sleep mode after 5 minutes of inactivity (buttons not pressed). Press any button to wake up the transmitter and continue operation.

Keypad Type #2:

The transmitter is powered on by pressing the On/Off button one time for up to 1.5 seconds (green on Status LED); the receiver main is also activated at the same time. The Status LED will blink green every 4 seconds thereafter for up to 5 minutes when no buttons are pressed (transmitter standby). After 5 minutes the transmitter will go into sleep mode. Press the On/Off button again but within 0.5 second this time to wake up the transmitter and continue operation. Shut off the transmitter power by pressing the On/Off button for up to 1.5 seconds (red on Status LED and then off); the receiver main is also deactivated at the same time. The system will not work when pressing any buttons prior to initiating the On/Off command (Status LED blinks 2 red).

Keypad Type #3:

The transmitter is powered on by pressing the Start button one time for up to 1.5 seconds (green on Status LED); the receiver main is also activated at the same time. The same Start button becomes an auxiliary function thereafter. The Status LED will blink green every 4 seconds thereafter for up to 5 minutes when no buttons are pressed (transmitter standby). After 5 minutes the transmitter will go into sleep mode. Press the Start button again for up to 1.5 seconds to wake up the transmitter and continue operation. Shut off the transmitter power by pressing the Stop button for up to 1.5 seconds (red on Status LED and then off); the receiver main is also deactivated at the same time. The system will not work when pressing any buttons prior to initiating the Start command (Status LED blinks 2 red).

Changing Transmitter Batteries

Changing transmitter batteries by unscrewing the battery cover located on the backside of the transmitter counterclockwise. During battery installation make sure the batteries are installed correctly, “+” to “+” charge and “-” to “-” charge. Also make sure the screw is tightened after battery installation to avoid water, moisture, dirt, grease, or other liquid penetration.

CAUTION

**RISK OF EXPLOSION IF BATTERY IS PLACED
BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS.**

5. STATUS & WARNINGS

Transmitter Status Light Indication

| Type | Display Type | Indication |
|------|-------------------------------|--|
| 1 | 1 red blink | Transmitter low battery Change battery immediately |
| 2 | Constant red | Transmitter power off due to low battery condition |
| 3 | 2 red blinks | Pushbutton jammed or defective (for keypad type #2 & type #3 setups only) |
| 4 | Green blinks | Transmission in progress |
| 5 | 1 green blink every 4 seconds | Transmitter on standby (for keypad type #2 & type #3 setups only) |

Note on Type-3 above: A jammed or defected button is shown by 2 red blinks on the Status LED when pressed. For example, when 2 red blinks are shown on the Status LED, press all buttons one at a time to see which one is jammed or defective. A good working button will not display any lights on the Status LED when pressed while a jammed or defected button will blink 2 red when pressed.

Receiver Status Light Indication

| Type | Display Type | Indication |
|------|-------------------|----------------------|
| 1 | Fast green blinks | Decoding in process |
| 2 | Slow green blinks | Decoding on standby |
| 3 | Constant red | Receiver Low voltage |

6. CHANNEL FREQUENCY TABLE

| Channel | Frequency | Channel | Frequency |
|-----------|------------|-----------|------------|
| 1 | 433.050MHZ | 17 | 433.850MHZ |
| 2 | 433.100MHZ | 18 | 433.900MHZ |
| 3 | 433.150MHZ | 19 | 433.950MHZ |
| 4 | 433.200MHZ | 20 | 434.000MHZ |
| 5 | 433.250MHZ | 21 | 434.050MHZ |
| 6 | 433.300MHZ | 22 | 434.100MHZ |
| 7 | 433.350MHZ | 23 | 434.150MHZ |
| 8 | 433.400MHZ | 24 | 434.200MHZ |
| 9 | 433.450MHZ | 25 | 434.250MHZ |
| 10 | 433.500MHZ | 26 | 434.300MHZ |
| 11 | 433.550MHZ | 27 | 434.350MHZ |
| 12 | 433.600MHZ | 28 | 434.400MHZ |
| 13 | 433.650MHZ | 29 | 434.450MHZ |
| 14 | 433.700MHZ | 30 | 434.500MHZ |
| 15 | 433.750MHZ | 31 | 434.550MHZ |
| 16 | 433.800MHZ | 32 | 434.600MHZ |

7. SYSTEM SPECIFICATIONS

| | | |
|-------------------------------|---|--|
| Model no. | : | FLEX MINI |
| Frequency Range | : | 433~434 MHz |
| Frequency Deviation | : | 50 KHz |
| Number of Channels | : | 32 channels |
| Modulation | : | Digital Frequency Modulation based on Manchester Code, 24bit address, and 8bit CRC Parity Check. |
| Encoder & Decoder | : | Microprocessor-controlled |
| Transmitting Range | : | >50 Meters |
| Frequency Control | : | Synthesized PLL (Phase Lock Loop) |
| Receiver Sensitivity | : | -104dBm |
| Antenna Impedance | : | 50ohms |
| Responding Time | : | 50mS |
| Transmitting Power | : | 1mW |
| Enclosure Type | : | NEMA-4 |
| Enclosure Rating | : | IP-66 |
| Output Contact Rating | : | 250V @ 8A |
| Transmitter Operating Voltage | : | 3.0VDC |
| Transmitter Power Consumption | : | 5~22mA |
| Receiver Power Consumption | : | 40~220mA |
| Receiver Supply Voltage | : | 220~240VAC |
| Operating Temperature | : | -25°C~70°C |
| Transmitter Dimension | : | 120mm (L) x 54mm (W) x 28mm (H) |
| Receiver Dimension | : | 170mm (L) x 106mm (W) x 69mm (H) |
| Transmitter Weight | : | 160g |
| Receiver Weight | : | 800g |