


# RC-U Universal Wireless Receiver Installation Manual


**PIMA**  
FOR BETTER PROTECTION





PIMA Electronic Systems Ltd.

5 Hatzoref Street, Holon 58856, Israel

 +972-3-5587722

 +972-3-5500442

 [support@pima-alarms.com](mailto:support@pima-alarms.com)

 <http://www.pima-alarms.com>

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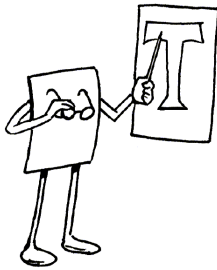
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You can contact us at:  
PIMA Electronic Systems Ltd.  
5 Hatzoref Street, Holon 58856, Israel

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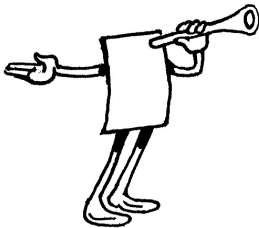
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## INTRODUCTION

Congratulations on your purchase of the RC-U, Universal Wireless Add-On Receiver. Much care has been taken in developing the RC-U, which will provide you with unprecedented peace of mind. The RC-U's user-friendly operation and programming will professionally help you with Intruder Alarm Systems installations.

It is important to familiarize yourself with the RC-U in order to take full advantage of the complete range of its features. To assure optimum safety and security, you should test the overall Intruder Alarm System operation once a week.

## Features

- ◆ Simple Installation (Install & Forget)
- ◆ Code Hopping Remote Control Technology (remote devices can not be copied by scanning or code grabbing)
- ◆ Remote Functions include Arm/Disarm & Panic
- ◆ Up to six Remote Controls and unlimited number of Panic Buttons
- ◆ Ability to quickly add/delete wireless devices to/from your system
- ◆ Four wireless zones
- ◆ Wireless Detector Supervision Output
- ◆ Low Battery Warning Output (Intelligent 1 trigger only, until batteries replaced)
- ◆ Detector Tamper Warning Output
- ◆ Intelligent Detector Learning Program to prevent accidental detectors' code duplication
- ◆ Memory Recall Function to identify individual detectors' signals (i.e., Low Battery, Supervision, and Tamper)
- ◆ Available Wireless Detectors include: PIR, Internal or External Reed Switch, Impact Sensor, Smoke Sensor, and Wireless Emergency Pendants

## RC-U Panel Description

The RC-U (seen in Figure 1) is a universal receiver that can be configured with up to four wireless detectors (i.e., PIR, Reed Switch, etc.) and five remote control units (used to arm/disarm the system and send a panic signal). The receiver is a Narrow-Band type with the unique ability to “learn” the detectors and remote controls connected to it. Installing and programming wireless devices is easily done. The detectors also transmit Supervision, Low Battery, and Tamper signals.

The RC-U has the following inputs, outputs, indications and buttons:

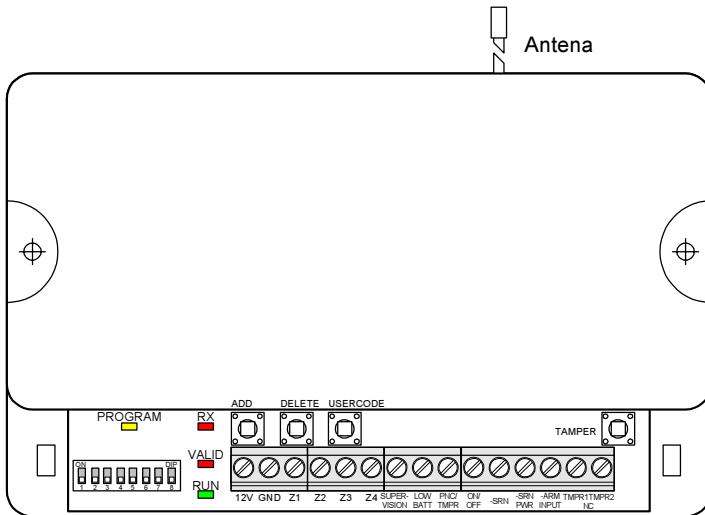


Figure 1 - RC-U General Layout (cover removed)

## Input and Outputs

### Inputs

- ◆ 12V Operating power input
- ◆ GND Operating ground input
- ◆ -ARM INPUT Used as arm/disarm trigger when connecting a siren

### Outputs

All outputs are open collector. The output is Normally Closed (NC) and shall disconnect ground (GND) for one second when triggered.

- ◆ Z1 Zone #1 detector output
- ◆ Z2 Zone #2 detector output

- ◆ Z3                      Zone #3 detector output
- ◆ Z4                      Zone #4 detector output
- ◆ SUPERVISION        Detectors supervision output
- ◆ LOW BAT              Detectors Low Battery signal output
- ◆ PNC/TMPR            Panic and/or detectors tamper signal output<sup>1</sup>
- ◆ ON/OFF                Remote control signal output
- ◆ -SRN                  Used as siren GND when connecting a siren
- ◆ -SRN PWR            Used as siren trigger when connecting a siren

RC-U Box Tamper

- ◆ TMPR1                } Box cover tamper switch (NC) dry contacts
- ◆ TMPR2                }

**LEDs**

There are four indication LEDs on the RC-U PCB: PROGRAM (yellow), RX (red), VALID (red), and RUN (green).

The LEDs indicate the following:

- ◆ PROGRAM (YELLOW)      Turns ON when any of the switches (in the eight dip switch bank) is in the ‘ON’ position;  
Flashes when more than one switch is in the ‘ON’ position
- ◆ RX – Receive (RED)        Turns ON when data packets are received (data can be either valid or not valid, in line with programming)
- ◆ VALID (RED)                Turns ON while valid data is decoded (e.g., a PIR is transmitting);  
Flashes six times when in program mode and valid data is received for storage
- ◆ RUN (GREEN)                Normally flashes at 0.5 Hz indicates that the microprocessor is running

**Buttons and Switches**

There are four visible switches on the PCB. Three are used with programming and operating the receiver. The fourth (TAMPER) can be

---

<sup>1</sup> The Panic output is activated with the remote control’s panic

connected (using the Tmpr1 & Tmpr2 outputs) to a control panel's tamper input.

- ◆ **ADD**
  - In programming mode:  
Used to add a detector or remote code to the receiver
  - In normal operation mode:  
Used to display, on the keypad, the zone number with Low Battery signal
- ◆ **DELETE**
  - In programming mode:  
Used to delete a detector or remote from the receiver
  - In normal operation mode:  
Used to display, on the keypad, the zone number that failed to transmit a Supervision signal
- ◆ **USER CODE**
  - In normal operation mode:  
Used to display, on the keypad, the zone number where the Tamper was activated

## REM-1 Remote Control Functions

The REM-1 is used to arm/disarm the system and send a panic signal. The REM-1 is a Code-Hopping type remote control (i.e., the code is changed with each operation and thus prevents "code stealing") with a key holder for carrying with ones keys.



- ◆ **ARM / DISARM:**

The ON/OFF output (in the receiver) shall change status (i.e., from GND to NO) upon pressing and releasing the button (i.e., when connected to an alarm system, it can be used to arm/disarm the system or cancel an active siren).  
For configuring the ON/OFF output with PIMA's control panels see *Connecting to a Control Panel* on page 11.
- ◆ **PANIC:**

The PNC/Tmpr output shall change status (i.e., from GND to NO) when pressing and holding the remote control's button for more than three seconds.

## PAN-W Wireless Emergency Pendant

The PAN-W code is selected with its internal dipswitch (see Figure 2). Each RC-U can work with several Panic Buttons that all have the same code.



### ◆ PANIC:

The PAN-W is used to send a panic signal to the receiver. This signal triggers the programmed zone output that shall change status (i.e., from GND to NO).

See the PAN-W manual for more information.

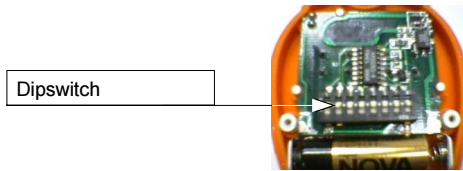


Figure 2 - PAN-W with Cover Open

## PIR-W Wireless PIR Detector

The PIR-W is a high quality infrared body movement sensor, which is battery operated and communicates with the receiver via Radio Frequency (RF) transmission. This detector is easy to install, provides excellent detection sensitivity and has a long battery life span (approximately 3 years). This sensor can transmit four different codes to the Receiver:



### ◆ Alarm:

Sent when a valid movement is detected

### ◆ Tamper:

Sent when the detector tampered with (i.e., case is opened)

### ◆ Supervision:

Sent every 3 hours to the receiver

### ◆ Low-Battery:

Sent when the batteries need replacing

See the PIR-W manual for more information.

## RS-W Wireless Reed Switch

The RS-W is a wireless reed switch for doors or windows and with a built-in option to be used, alternatively, as a universal transmitter.



- ◆ **Reed Open:**  
Transmitted when the magnet is moved away from the main unit or when the universal transmitter input is opened (i.e., not connected)
- ◆ **Reed Close:**  
Transmitted when the magnet is moved next to the main unit or when the universal transmitter input is shorted
- ◆ **Low Battery:**  
Transmitted when battery voltage drops below 4.5V
- ◆ **Supervision:**  
Transmitted at least once every 3 hours
- ◆ **Tamper:**  
Transmitted when either the top case of the main unit is removed, or the main unit is removed from the wall.

See the RS-W manual for more information.

The universal transmitter terminals are serially connected with the reed switch. To “seal” this zone, the universal transmitter terminals must be shorted and the magnet must be next to the main unit.

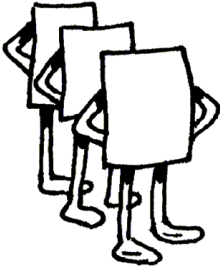
If only the Universal Transmitter terminals are required to operate, the magnet should be fixed next to the RS-W unit.

If you wish to use both Reed and Universal Transmitter terminals then the connections to the terminals should be Normally Closed as on alarm conditions when either the reed or the terminal become open, the “open” signal will be sent and “close” when they are both sealed again.



### NOTE:

The Universal Transmitter connections must not have anything other than a switched contact connected to it (i.e., nothing that supplies power or draws current). Common connections would be to the alarm output wires from a hardwired sensor (to make it wireless) or any reed / push button switch / other alarm sensor etc.



## CONNECTING TO A CONTROL PANEL



**IMPORTANT!**  
It is important to be familiarized with the relevant control panel's Installation and Programming Manual before connecting and configuring the RC-U.

**C**onnecting to a Control Panel

### Connecting with the CAPTAIN-i

Figure 3 illustrates a suggested connecting method of the RC-U to the CAPTAIN-i control panel, using three wireless detectors.

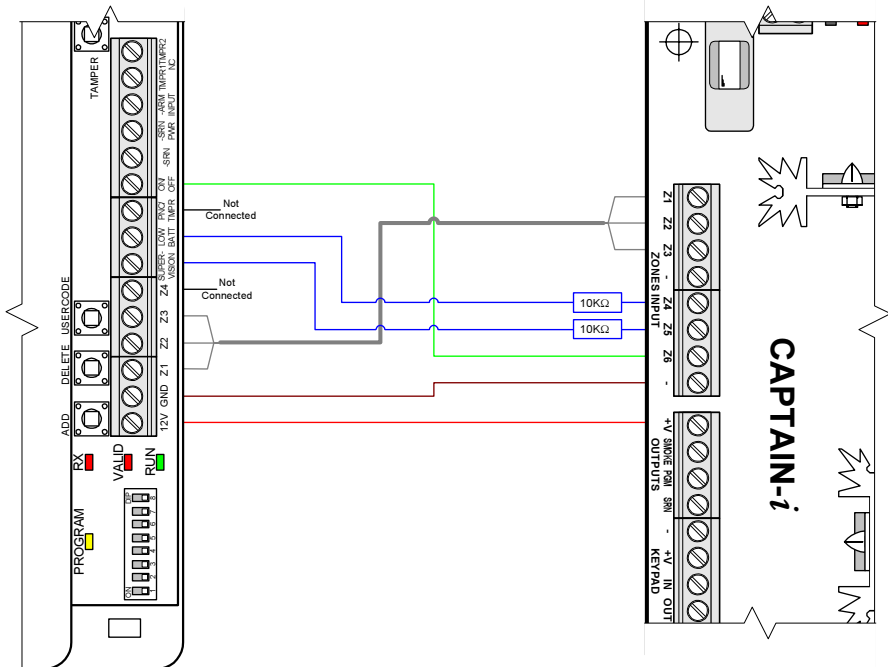


Figure 3 - Suggested Connection of RC-U to CAPTAIN-i

- ◆ The 12V is connected to the +V output in the control panel
- ◆ The GND is connected to the “-” output in the control panel
- ◆ Zones 1 through 3 are connected to the corresponding zone inputs in the control panel (Z1 through Z3); the zones are configured as with standard wired zones
- ◆ The Low Battery output is connected to zone #4 input in the control panel; zone 4 should be configured as a 24h zone (silent) with an EOL resistor
- ◆ The Supervision output is connected to zone #5 input in the control panel; zone 5 should be configured as a 24h zone (silent) with an EOL resistor

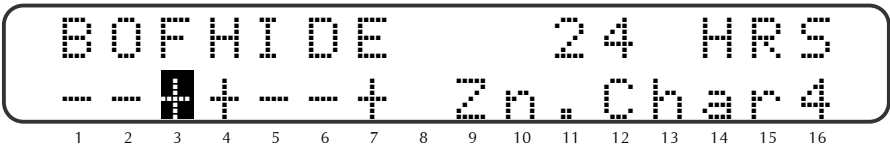


Figure 4 - CAPTAIN-i Zone Characteristics (menu #2)

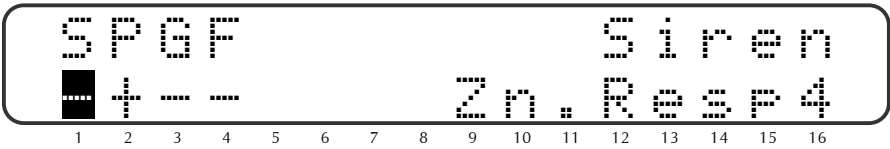


Figure 5 - CAPTAIN-i Zone Response (menu #3)

- ◆ The Panic/Tamper output remains unconnected (i.e., only panic signal from the Panic Button can be received); if connected, to a zone rather than one of the zone outputs, this zone should be configured as a 24h zone (either silent or alarm)



**NOTE:**

It is recommended to program System Responses (menu #9) / Zone Fault screen as 'communicate' enabled (i.e., set a "+" under the P in the Zone Fault screen).

- ◆ The ON/OFF output is connected to zone #6 input in the control panel; zone 6 should be configured as a momentary key input  
Enter system configuration #3, set a "+" under the first K (Zone 6 Key) and a "-" under the second K (Type of Key) as shown in Figure 6

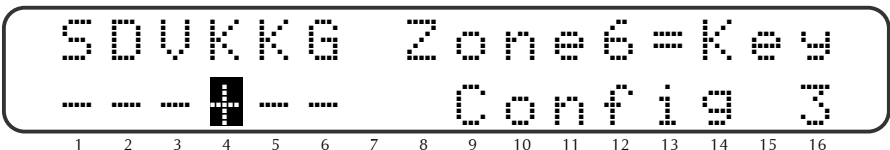


Figure 6 - CAPTAIN-i System Configuration #3



**NOTE:** For activating the siren indication for arm/disarm, program System Responses (menu #9) / Key Status screen as 'Siren Check' enabled (i.e., set a "+" under the S in the Key Status screen).

## Alternate Connecting Suggestions

- ◆ When all four zones are required, only one of the supervision outputs (i.e., Supervision, Low Battery, or Tamper/Panic) can be used
- ◆ Alternatively, if no remote arm/disarm functionality is needed, the ON/OFF output can be left unconnected while Z1 to Z4 are connected respectively, the Supervision and Low Battery outputs are connected to Z5 and Z6 inputs respectively

## Connecting with the HUNTER

Figure 7 illustrates a suggested connecting method of the RC-U to the HUNTER control panel.

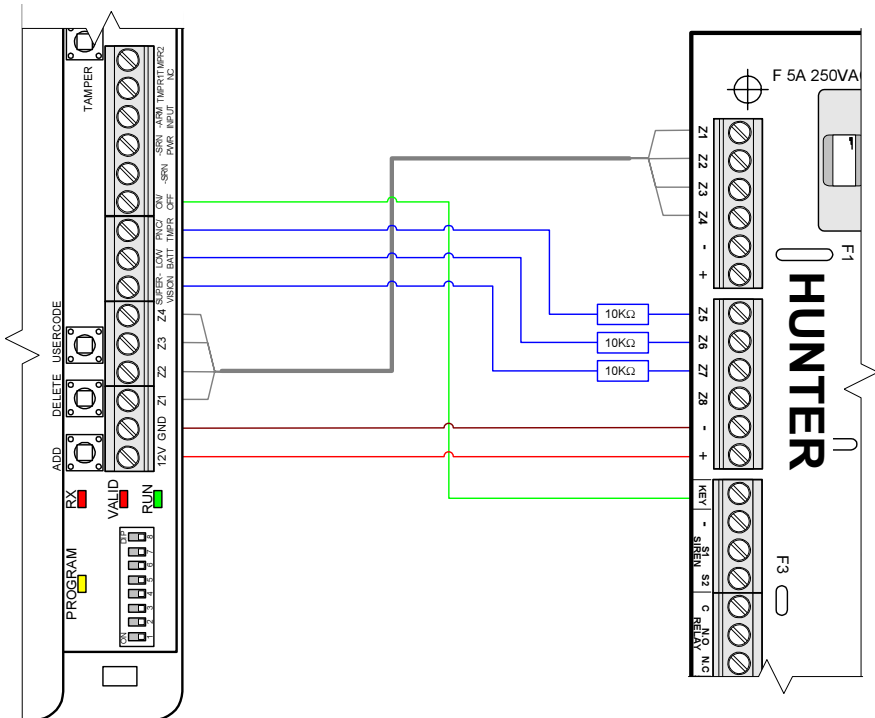


Figure 7 - Suggested Connection of RC-U to HUNTER

- ◆ The 12V is connected to the +V output in the control panel
- ◆ The GND is connected to the “-” output in the control panel
- ◆ Zones 1 through 4 are connected to the corresponding zone inputs in the control panel (Z1 through Z4); the zones are configured as with standard wired zones
- ◆ The Supervision and Low Battery outputs are connected to zone #5 and zone #6 inputs in the control panel; these zones should be configured as a 24h zone (silent)
- ◆ The Tamper/Panic output is connected to zone #7 input; this zone should be configured as a 24h zone (either silent or alarm)
- ◆ The ON/OFF output is connected to KEY input in the control panel

## Configuring the HUNTER to work with the key input

- ◆ Enter system configuration (2) second screen (see Figure 8) and set a “” under the K. (sets the key state to be momentary)

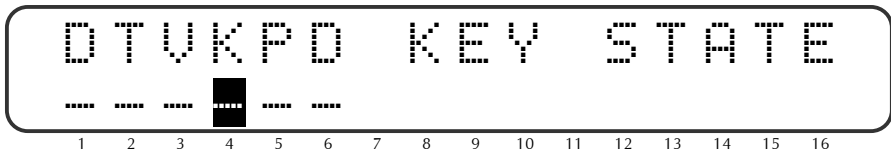


Figure 8 - System Configuration (2) 2<sup>nd</sup> Screen



### NOTE:

For activating the siren indication for arm/disarm, program 'System Response During ON and OFF state' (menu #8) / System State screen as 'Siren Check' enabled (i.e., set a "+" under the S in the System State screen).

## Configuring the Supervision Zones

- ◆ The Supervision outputs (i.e., Supervision, Low Battery, and Tamper), are configured as a 24h zone with an EOL resistor (see Figure 9) and silent or siren as required (see Figure 10)

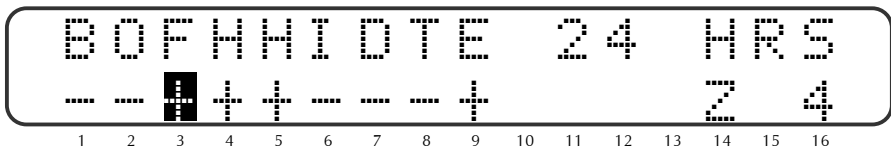


Figure 9 – HUNTER Zone Characteristics (menu #2)

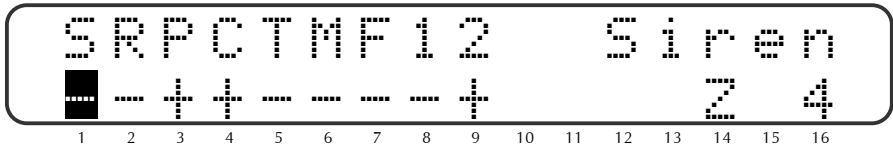


Figure 10 - HUNTER Zone Response (menu #3)

## Connecting Other Control Panels

The RC-U can be connected to any control panel as described above. In general, the RC-U outputs should be connected to the control panel inputs and programmed according to the manufacturer instructions.

When the control panel does not have (as with the PIMA's control panels) an option to get siren indication for arm/disarm (i.e., the siren sounds one beep for arming and two beeps for disarming), it is possible to connect the siren to the RC-U (as described in Figure 11). This feature is most useful when using a remote control to arm/disarm the system.

A buzzer can also be connected to the RC-U (in place of the siren). The reason for connecting a buzzer would be to have the arm/disarm indication without activating the outdoor siren or in cases where the siren cannot be heard.

- ◆ The -SRN input is connected to the control panel's GND
- ◆ The -SRN PWR is connected to the Siren "-" (can be connected in parallel to the Siren output in the control panel)
- ◆ The -ARM INPUT is connected to an arm indication output in the control panel (PGM output with CAPTAIN-I or ON/OFF output with HUNTER)

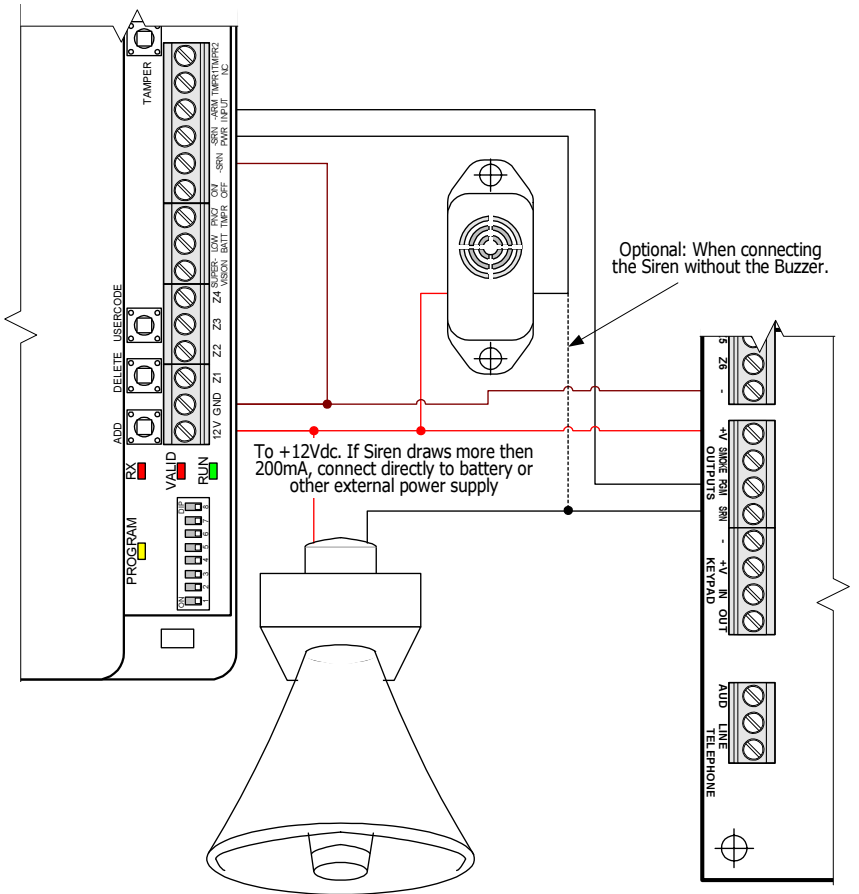


Figure 11 - Connecting a Siren or a Buzzer to the RC-U



### IMPORTANT!

When the Siren is connected to the RC-U output, the following should be done:

In CAPTAIN-i: JP1 MUST be connected between pins 1 and 2.

In HUNTER: JP5 MUST be connected between pins 1 and 2.



# PROGRAMMING THE RC-U

## Initializing the Receiver



**IMPORTANT!**  
It is recommended to initialize the receiver after first time installation.

To completely erase all programming from the Receiver and restore factory default settings, do the following:

**1,2,3...**

- Set all switches in dipswitch Bank1 to ON
- The YELLOW PROGRAM LED should flash
- Press and hold the DELETE button for at least three seconds
- Set all switches in dipswitch Bank1 back to OFF



**P**rogramming the RC-U

# Programming Detectors

## Adding a Detector



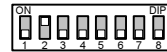
### IMPORTANT!

When adding a detector to a zone that was previously programmed with a different one, the new detector shall override the old one.

When adding a detector that was previously programmed with a different zone, the old, duplicate, programming shall be automatically erased.

### 1,2,3...

- Set a switch (1 to 4 according to the zone to be programmed) in dipswitch Bank1 to ON



- The YELLOW PROGRAM LED should turn ON



### NOTE:

If the YELLOW LED flashes, check that only one switch (in dipswitch Bank1) was set to ON.

- Press the ADD button



- The RED VALID LED should start flashing



VALID

- Trigger the wireless detector<sup>2</sup>

- Once the receiver successfully learned the detector's code, the RED VALID LED stops flashing



VALID

- Set the switch in dipswitch Bank1 back to OFF



<sup>2</sup> The PIR is triggered by pressing and releasing the TAMPER switch, the PANIC button is simply pressed, and the Reed Switch is triggered by bringing the two parts close together and apart again.

## Adding a Panic Button



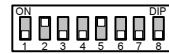
**IMPORTANT!**

To add more Panic Buttons to a zone that was previously programmed with a Panic Button, set its code to match the programmed one.

When adding a Panic Button with a code that was previously programmed with a different zone, the old, duplicate, programming shall be automatically erased.

### 1,2,3...

- Set a switch (1 to 4 according to the zone to be programmed) AND switch #5 in dipswitch Bank1 to ON (e.g., for programming the Panic Button on zone 2, set switches #2 and #5)
- The YELLOW PROGRAM LED should flash



**NOTE:**

Dipswitch #5 is set to disable supervision with the programmed zone.

- Press the ADD button
- The RED VALID LED should start flashing
- Press the Panic Button once
- Once the receiver successfully learned the detector's code, the RED VALID LED stops flashing
- Set the switches in dipswitch Bank1 back to OFF



VALID



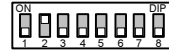
VALID



## Deleting a Detector / Panic Button

### 1,2,3...

- Set a switch (1 to 4 according to the zone to be removed) in dipswitch Bank1 to ON
- The YELLOW PROGRAM LED should turn ON



#### NOTE:

If the YELLOW LED flashes, check that only one switch (in dipswitch Bank1) was set to ON.

- Press the DELETE button
- Set the switch in dipswitch Bank1 back to OFF



#### NOTE:

Detector removal can be tested by triggering its sensor while no indication is displayed on the keypad and/or the VALID LED stays OFF.

## Setting Detector Supervision Reporting

Each of the individual wireless detectors (i.e. wireless PIR, wireless Reed Switch, etc.) can send a Supervision Report to your receiver to confirm that they are fully functional.

When the Supervision Mode is enabled, the receiver is expecting to receive a Supervision Report from each individual detector approximately every 3 hours (i.e., at least 8 reports per day, per detector).

The RC-U only requires one report from each detector during the 24-hour period to satisfy the supervision criteria. The extra nine reports are continuing to be transmitted to ensure that the supervision report is received.

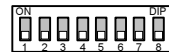
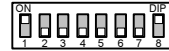
If no supervision report is received from one detector during a 24-hour time frame, then the Supervision Output shall be activated (i.e., it shall switch to high for 1 second).

The default setting of the Supervision Mode is OFF.

## Turn Supervision ON

**1,2,3...**

- Disconnect the RC-U from power
- Set switches 1 & 8 in dipswitch Bank1 to ON
- Reconnect the power; the YELLOW PROGRAM LED should start flashing at a low frequency
- Within 60 seconds, press the ADD button
- The GREEN RUN LED should turn ON
- Set all switches in dipswitch Bank1 back to OFF



## Turn Supervision OFF

**1,2,3...**

- Disconnect the RC-U from power
- Set switches 1 & 8 in dipswitch Bank1 to ON
- Reconnect the power; the YELLOW PROGRAM LED should start flashing at a low frequency
- Within 60 seconds, press the ADD button
- The GREEN RUN LED should turn OFF
- Set all switches in dipswitch Bank1 back to OFF
- The YELLOW PROGRAM LED should turn OFF and the GREEN RUN LED should start flashing at a low frequency



## Low Battery and Tamper Reports

Each individual detector automatically transmits a Low Battery report to the RC-U receiver when the batteries are nearly “dead”.

The Low Battery report code is also transmitted after an alarm code (i.e., every time a detector is triggered).

When an individual detector has transmitted five consecutive Low Battery reports, the RC-U shall activate the Low Battery Output once (i.e., it shall switch to high for 1 second). The engineer can determine which detector’s battery is nearly “dead” by activating the Memory Recall Function (see page 25).



### NOTE:

The RC-U identifies a different Low Battery report for each individual detector. When replacing batteries, the RC-U receiver automatically detects that the Low Battery report is no longer transmitted from that individual detector. The receiver shall then reset that zone, ready to activate the Low Battery Output only after five consecutive Low Battery reports transmitted again.

The Tamper Output shall switch high for 1 second whenever one of the detectors is tampered with (i.e., the front case is removed and the tamper switch is released on a wireless PIR detector or wireless Reed Switch).

# Programming Remote Controls



## IMPORTANT!

When programming remotes, make sure that there are no detectors transmitting, as they will interfere with the programming procedure.

## Adding a Remote

1, 2, 3...

- Set switch 8 in dipswitch Bank1 to ON



- The YELLOW PROGRAM LED should turn ON



## NOTE:

If the YELLOW LED flashes, check that only one switch (in dipswitch Bank1) was set to ON.

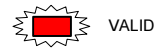
- (A) Press and hold the remote button



- (B) Press the ADD button



- (C) The RED VALID LED should start flashing



- (D) Release the remote button; the RED VALID LED stops flashing



- Repeat steps A to D for any extra remote to be enabled

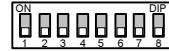
- Set the switch in dipswitch Bank1 back to OFF



## Deleting all Remote Controls

**1,2,3...**

- Set switch 8 in dipswitch Bank1 to ON
- The YELLOW PROGRAM LED should turn ON
- Press the DELETE button
- Set the switch in dipswitch Bank1 back to OFF





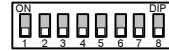
## TROUBLESHOOTING

### Memory Recall Function

The RC-U has the ability to indicate individually which zone (i.e., detector) is reporting either a Low Battery, Supervision Loss, and/or Tamper to the receiver. The indication is displayed on the Alarm System keypad, so one needs to be connected.

#### 1,2,3...

- Make sure the Alarm System is disarmed
- Make sure all switches in dipswitch Bank1 are set to OFF
- Select the desired report type
  - ◆ For Low Battery Report, press the ADD button
  - ◆ For Supervision Report, press the DELETE button
  - ◆ For Tamper Report, press the USER CODE button
- The zones (i.e., detectors) that transmitted the relevant report shall be displayed as Open Zones on the keypad for 20 seconds



#### NOTE:

After displaying the report, the memory is cleared and cannot be displayed again.

## **Proximity to Receiver**

When programming a remote or a wireless detector, due to the high sensitivity and excellent performance of the receiver, you might "swamp" the receiver with too much RF signal if transmitting within 5 meters from the receiver.

To prevent this, simply remove the receiver's antenna while programming. Doing so, shall allow safe programming within 1 meter from the receiver.



