WIRELESS TRANSCEIVER SYSTEM

User Guide:CCR24PNA

•Read this user guide carefully for safe operation and proper use of the product.
•Features and specifications are subject to change without notification.

Safety Approval

FCC ID: ROYCCR24PNAR
ROYCCR24PNAT

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.

CAUTION : Changes or modifications not expressly approved by the party responsible for compliance could void the user s authority to operate this device.

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.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Safety Approval

Industry Canada

IC ID: 5479A-CCR24PNAR

5479A-CCR24PNAT

Operation is subject to the following two conditions:

(1) This device may not cause interference and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

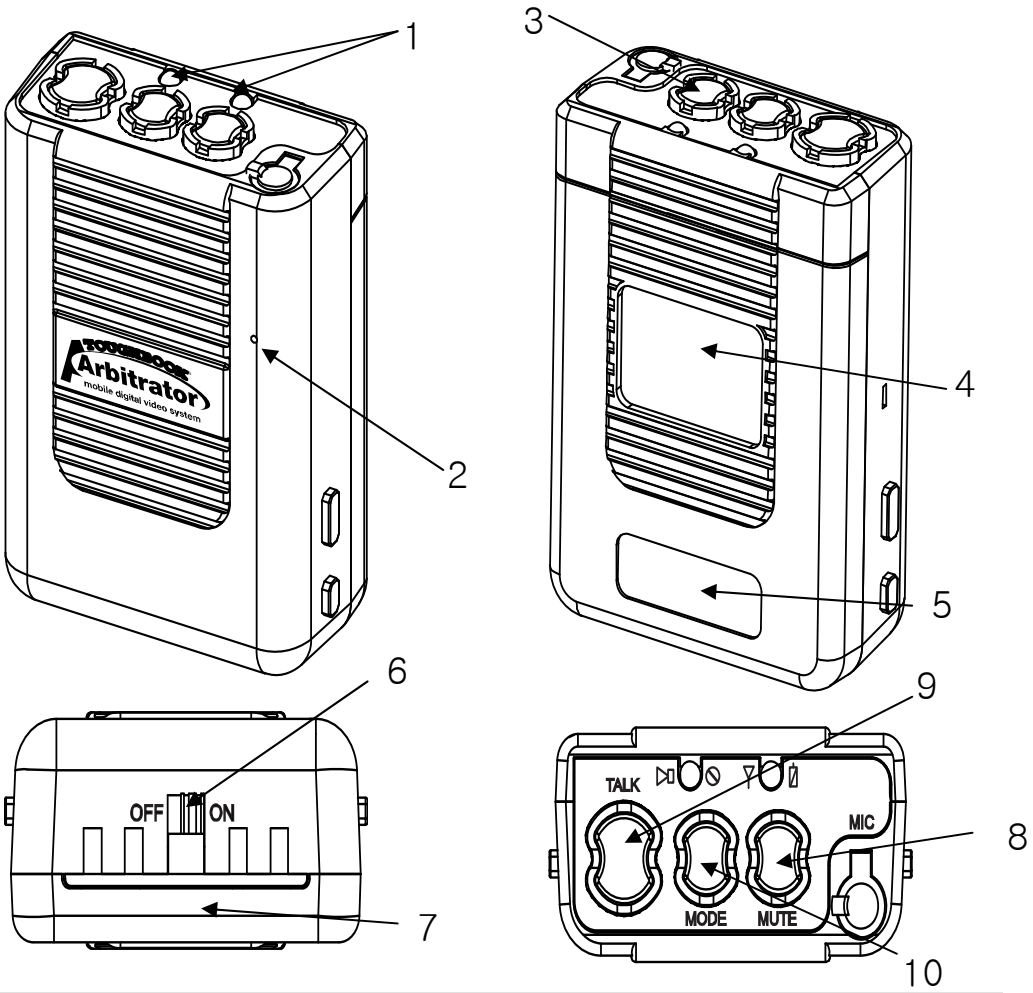
The term “IC:” before the certification/registration number only signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met.

It does not imply that Industry Canada approved the equipment.

BOX CONTENTS

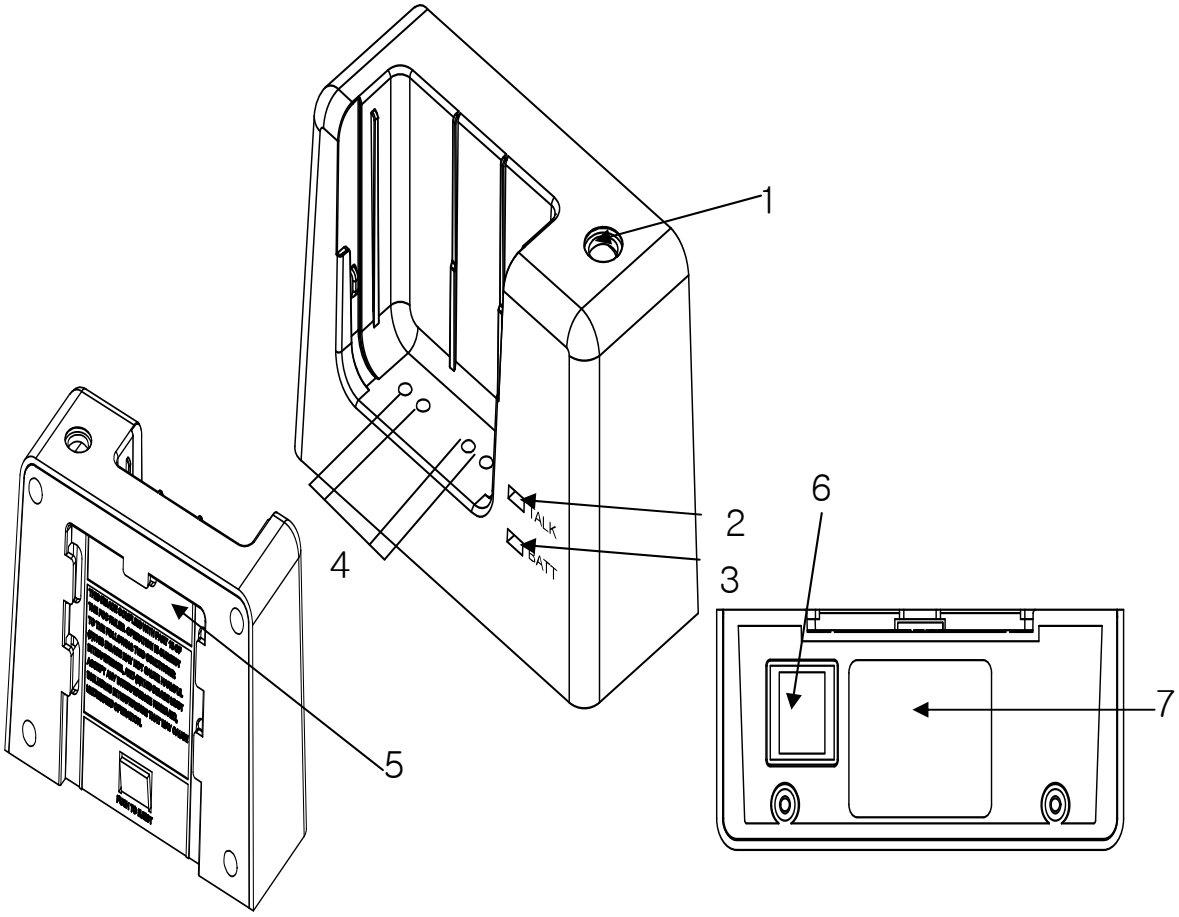
- 1. Transmitter (TX)
- 2. Receiver (RX)
- 3. Plug-In Microphone (MONO)
- 4. Mounting Bracket for Receiver with screws
- 5. Rechargeable Li-Ion Polymer Battery
- 6. Leather Pouch
- 7. External antenna
- 8. Desktop charger for transmitter
- 9. AC Power supply for desktop charger
- 10. Charger Stand for Desktop Charger
- 11. RF Main Cable
- 12. In-car MIC
- 13. User Guide

DESCRIPTION – Transmitter



1	LED Indication	6	TX Power On/Off
2	Built in MIC	7	Battery Cover
3	Microphone Jack	8	Mute Button
4	FCC , IC , cULus Labels	9	Talk Button
5	Serial Number Label	10	Mode Selection Button

DESCRIPTION - Receiver

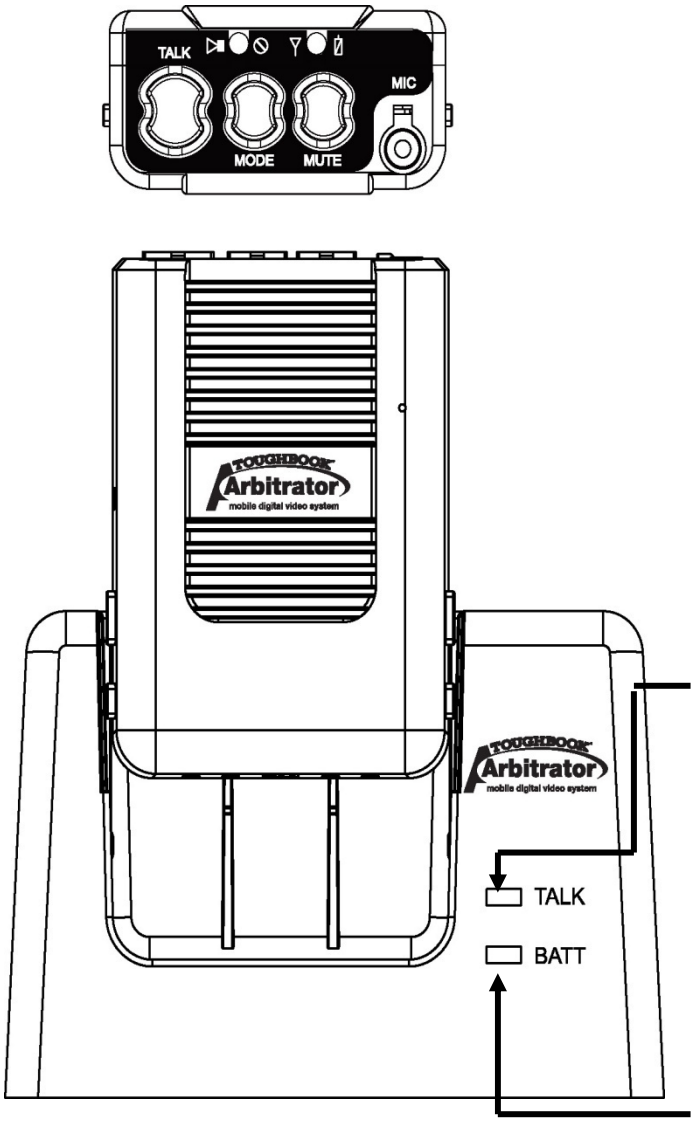


1	Antenna connection	5	Serial Number Label
2	Talk On (Green LED)	6	Main Cable Connection
3	Battery Charger Status (Green + Red LED)	7	FCC , cULus , IC Labels
4	Charging PIN/Matching ID		

#2 Talk On LED
When TX triggers the recording of the system , Green LED light on

#3 Charging Status
Red LED-In Charging
Green LED-Fully charged

DESCRIPTION – Receiver LED function



When TX is docked in RX
If completed ID setting – RX “TALK” LED once blinking
If uncompleted ID setting –LED blinking at TX,RX TALK LED
After ID setting , turn off RX “TALK” LED

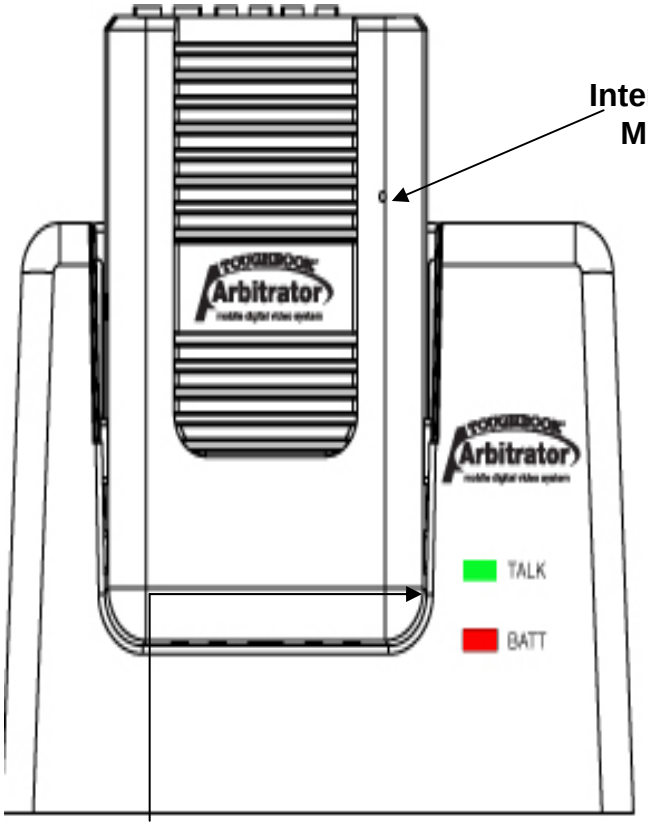
When TX is docked in RX
RX LED indicate TX’s power status.
GREEN LED on RX “TALK” LED blinking- TX off status, in charging
GREEN LED off on RX “TALK” LED- TX power on

AUDIO recording indication
RX “TALK” LED OFF- none AUDIO recording
RX “TALK” LED GREEN – AUDIO recording.

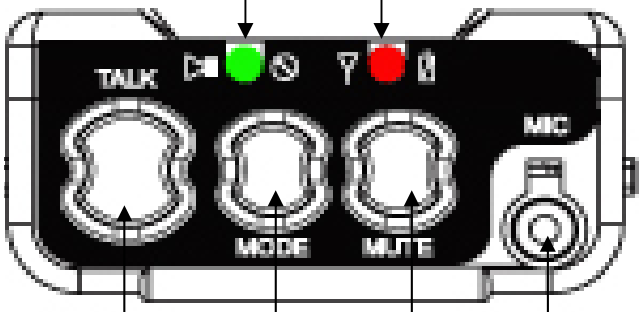
BATTERY charging indication
RX “BATT” LED RED- in charging
RX “BATT” LED GREEN- fully charged
If indicate GREEN LED on RX “BATT” LED, it prevents overcharging by removing current.

DESCRIPTION – Control Reference Guide

Transmitter (TX) with Receiver (RX)



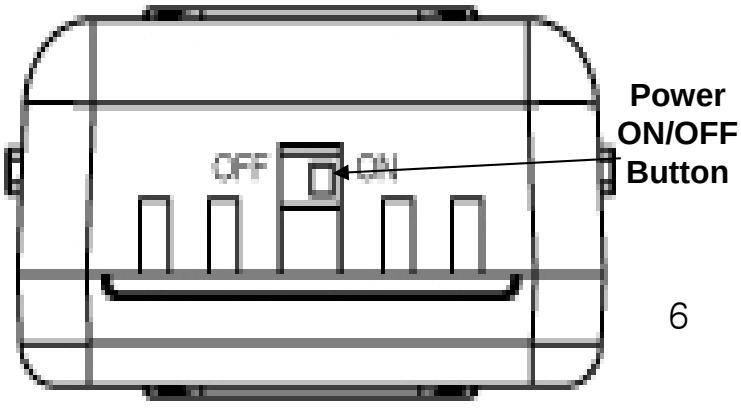
Top of Transmitter(TX)



[TALK]
Green LED ON/OFF: REC ON/OFF
Green LED Blinking: ID Matching (Synch) ON

[BATT]
Red: In Charging
Green: Fully charged

Bottom of Transmitter(TX)

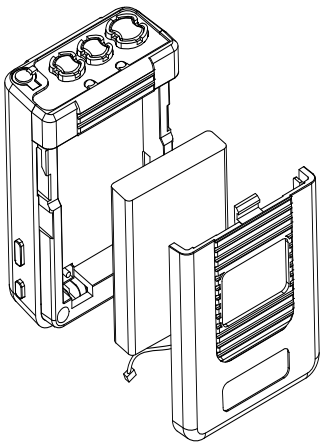


OPERATION

- Install the mounting bracket by using the screws
- Slide RX Set onto the Bracket
- Connect the main cable to RX Set
- Connect external antenna to the RX Set.
- Assemble the battery pack into TX Set

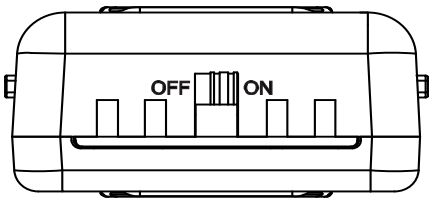
- How to change battery pack

-Separate battery cover as shown next picture.
- Separate battery pack with connector.
- Assemble the new battery pack into TX set.
-Assemble battery cover as initial.



- Before using, battery cover should be assembled completely.

- Charge TX set in the RX set for at least 3 hours (when turn off)



- Switch the power ON (located on the bottom of TX unit)

- Place TX on RX to sync the code

OPERATION

- Indication of LED Button

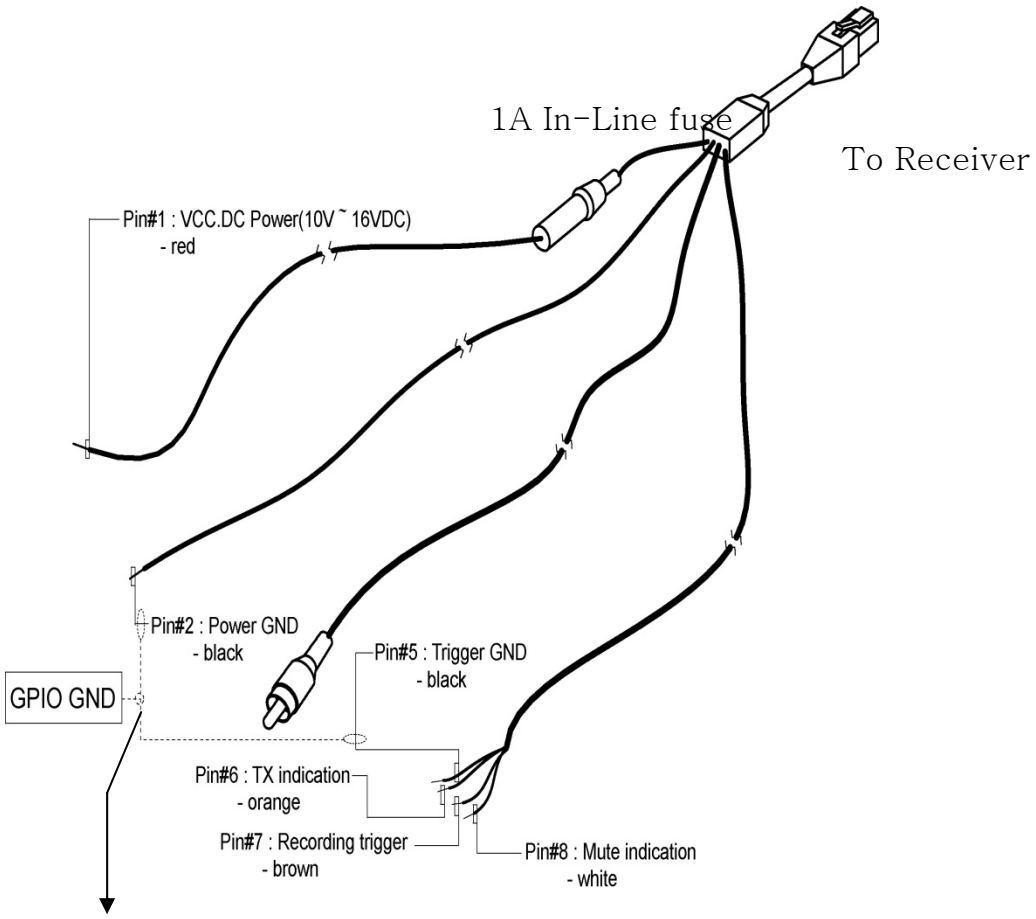
<table>
<tr><th>Mode</th><th colspan="2">TALK  REC</th><th>Low Battery</th><th>Out of Range</th><th colspan="2">Mute
Push
OFF ON</th></tr>
<tr><td></td><td colspan="2"></td><td>  </td><td>  </td><td>  </td><td>  </td></tr>
<tr><td rowspan="2">LED+ Vibration</td><td rowspan="2">Green On</td><td>V(1 time only)</td><td>V(1 time per second)</td><td>V(2 times per 3seconds)</td><td rowspan="2">TALK (REC OFF):
Green ON
REC:
Green Blink</td><td>V(1 time per 5seconds</td></tr>
<tr><td>Green Blink</td><td>Red Blink</td><td>Red On</td><td>TALK: Green ON & Red Fast Blink
REC: Green Blink & Red Fast Blink</td></tr>
<tr><td rowspan="2">Vibration</td><td rowspan="2">LED OFF</td><td>V(1 time only)</td><td colspan="2">V (1 time per second)
V (2 times per 3 seconds)</td><td rowspan="2">LED OFF</td><td>V (1 time per 5 seconds)</td></tr>
<tr><td>LED OFF</td><td colspan="2">LED OFF</td><td>LED OFF</td></tr>
<tr><td>No Vibration No LED</td><td colspan="6">No Vibration
LED OFF (Green OFF , Red OFF)</td></tr>
</table>

Note:1. LED ON: this mode as initial when Power on .

2. After synchronized, the mode goes back to the last.

3. When TX is Off and inserted to RX, there will be no synchronization.

DESCRIPTION – Main Cable



Important

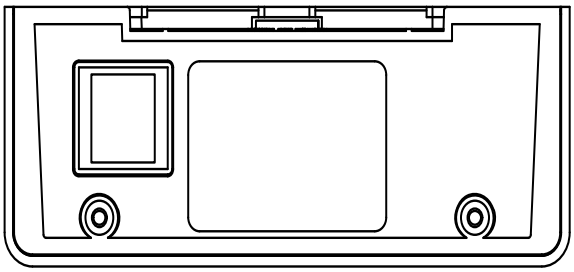
-These three ground wires have to be all connected together

- Power ground wire from CCR24PNA, Trigger ground wire from CCR24PNA,and Ground wire of the Recorder GPIO.

Connection with the system

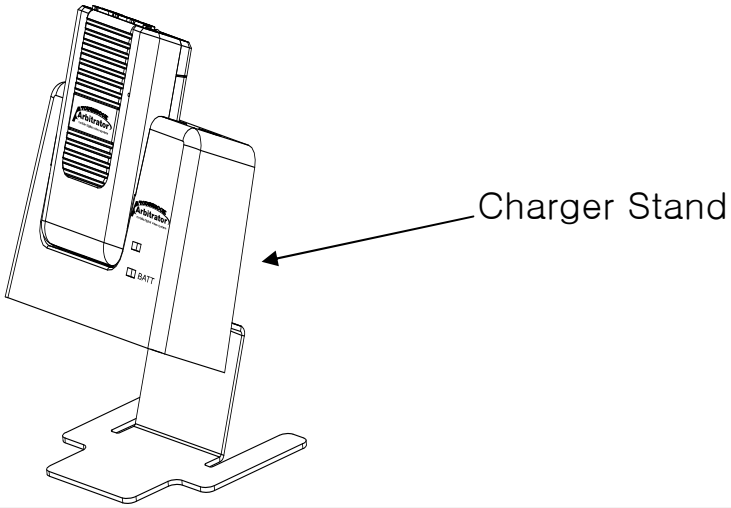
- Power DC12V (Red), Power GND (Black): Power Cables to engine battery.
- Audio Out (RCA Connector) : Connects to “AUDIO IN” port in the back of recorder.
- Trigger REC (Brown): Connect to GPIO cable.
- Trigger GND (Black): Connect to GPIO black cable.

DESCRIPTION – Desktop Charger



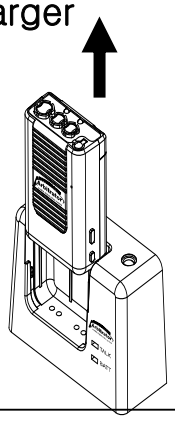
* Battery LED : In Charging – Red LED
Fully Charged – Green LED (4V ~ 4.2V)
(Note) Place TX on the charger at least 4.5sec for the initializing.

Installation for Charger Stand



TIP1 How to undock TX from RX and Home Charger

To prevent units from being broken by the improper use, undock TX unit from RX unit as the drawing described on the right picture.



RECOMMENDATIONS

- Prior to use, charge TX at least 3 hours
- Disconnect the battery or switch the power OFF. when TX Set is not in use for long periods
- Charge TX Set when not in use for short periods

TROUBLESHOOTING

Problems	Check points
No reception,	– Check the battery status – Check the connection and cables – Check the communication range
Poor reception, static, noise	– Change the location of RX Set – Check the communication range – Check to see if unit is placed near TV, speakers, or other electronic devices
Unit does not respond	– Check the battery status – Check the power switch on the bottom of the unit – Check the connection and cables

TIP2 Preserving the Batteries

To maintain the optimum capacity of the pack, the unit has to be fully discharged (by using) approximately every 6 months. Then recharge the battery to full capacity again.

SPECIFICATION

Power	DC 12V for RX
Frequency (MHz)	2.4GHz FHSS with 2,401.056 ~ 2,478.816MHz
Number of Channel	91Channels
Channel Space	864 KHz
Speech Coder	32Kbps ADPCM with Parity
Type of Modulation	GFSK MODULATION / DEMODULATION
Data Rate	576Kbps Time Division Duplex
Receiver Sensitivity	Min : -90 dBm Typ.: -92 dBm to -94 dBm @BER = 0.001 Max : -96 dBm
Power consumption	TX docks with RX: Nor 550mA , Max 610mA RX under communication w/TX : Max 120mA TX under communication w/RX : Max 150mA
Battery	Talking Time : 12Hours Charging Time : 3Hours
Battery Capacity	Lithium-ion Polymer 3.7V DC/1300mA (only for Piloting lot)
TX Power Levels	Less than 260 mW
Temperature Range	0°C ~ 50°C
Dimensions (WxDxH)	TX : 53mm x 25mm x 72.5mm RX : 100.5mm x 38.5mm x 67.5mm

SPECIFICATION

SC14435 2G4HZ Frequency hopping

The number of used frequencies (NUF) in the hopping algorithm is 95.
In base and handset a Primary Hopping Index Number (PHIN) exist.
This number is incremented modulo NUF in the end of the normal downlink half-frame. It is broadcast in Q0 message instead of PSCN.
To a simplex or established duplex bearer a Hopping Index Offset (HIO) is assigned, which is an analogue to the used RF carrier in a FDMA system. This value is broadcast in place of CN in Q0 message. In the base in all unable slots in up-link direction the receiver is scanning with HIO=0. the receiver is scanning with doesn't exclude RF-carriers.
Different base use different hopping sequences. The different sequences are derived from the hopping table by adding an offset, SeQuenceCode (SQC).
A hopping table maps an index I to a carrier number: CN = f(I)
The physical RF carrier is calculated by the formula:
CN = (f ((PHIN+HIO) mod NUF) +SQC)mod NUF for 10.368000 MHz crystal frequencies are derived as: Frequency : 2401.056 MHz + CN*0.864000 MHz

Fast Frequency Hopping : (DCT 2G4) , up to 800 hops/sec

This equipment is made for report by two-way radio in place of business.

CAUTION

- Li-Ion Battery Safety Precautions (sample document)
- 1. When Using the Battery
- Danger
- (1) Misusing the battery may cause the battery to get hot, explode, or ignite and cause DANGER serious injury.
- Be sure to follow the safety rules listed below:
- . Do not place the battery in fire or heat the battery.
- . Do not install the battery backwards so that the polarity is reversed.
- . Do not connect the positive terminal and the negative terminal of the battery to each other with any metal object (such as wire).
- . Do not carry or store the batteries together with necklaces, hairpins, or other metal objects.
- . Do not penetrate the battery with nails, strike the battery with a hammer, step on the battery, or otherwise subject it to strong impacts or shocks.
- . Do not solder directly onto the battery.
- . Do not expose the battery to water or salt water, or allow the battery to get wet.
- (2) Do not disassemble or modify the battery. The battery contains safety and protection devices which, if damaged, may cause the battery to generate heat, explode or ignite.
- (3) Do not place the battery on or near fires, stoves, or other high-temperature locations. Do not place the battery in direct sunshine, or use or store the battery inside cars in hot weather. Doing so may cause the battery to generate heat, explode, or ignite. Using the battery in this manner may also result in a loss of performance and a shortened life expectancy.
- (4) Do not insert the battery into equipment designed to be hermetically sealed. In some cases hydrogen or oxygen may be discharged from the cell which may result in rupture, fire or explosion.

- Warning
- (1) Immediately discontinue use of the battery if, while using, charging, or storing the battery, the battery emits an unusual smell, feels hot, changes color, changes shape

CAUTION

- or appears abnormal in any other way. Contact your sales location or Panasonic if any of these problems are observed.
- (2) Do not place the batteries in microwave ovens, high-pressure c ontainers, or on induction cookware.
- (3) In the event that the battery leaks and the fluid gets into one's e ye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated the battery fluid could cause damage to the eye.

- Caution
- (1) If the device is to be used by small children, the caregiver shoul d explain the contents of the user's manual to the children. The car egiver should provide adequate supervision to insure that the devic e is being used as explained in the user's manual.
- (2) When the battery is worn out, insulate the terminals with adhesi ve tape or similar materials before disposal.
- Danger
- Be sure to follow the rules listed below while charging the battery. Failure to do so may cause the battery to become hot, explode, or ignite and cause serious injury.
- · When charging the battery, either use a specified battery charger or otherwise insure that the battery charging conditions specified b y Panasonic are met.
- · Do not attach the batteries to a power supply plug or directly to a car's cigarette lighter.
- · Do not place the batteries in or near fire, or into direct sunlight. W hen the battery becomes hot, the built-in safety equipment is activ ated, preventing the battery from charging further, and heating the battery can destroy the safety equipment and can cause additional heating, breaking, or ignition of the battery.
- Warning
- Do not continue charging the battery if it does not recharge within t he specified charging time. Doing so may cause the battery to bec ome hot, explode, or ignite.
- Risk of explosion if battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.

CAUTION

- 2. While Charging
- Caution
- The temperature range over which the battery can be charged is 10 °C to 45°C. Charging the battery at temperatures outside of this ran ge may cause the battery to become hot or to break. Charging the battery outside of this temperature range may also harm the perfor mance of the battery or reduce the battery's expectancy.

- 3. When Discharging the Battery
- Danger
- Do not discharge the battery using any device except for the specif ied device. When the battery is used in devices aside from the spe cified device it may damage the performance of the battery or redu ce its life expectancy, and if the device causes an abnormal curren t to flow, it may cause the battery to become hot, explode, or ignit e and cause serious injury.
- Caution
- The temperature range over which the battery can be discharged is −10°C to 60°C. Use of the battery outside of this temperature range may damage the performance of the battery or may reduce its life e xpectancy.