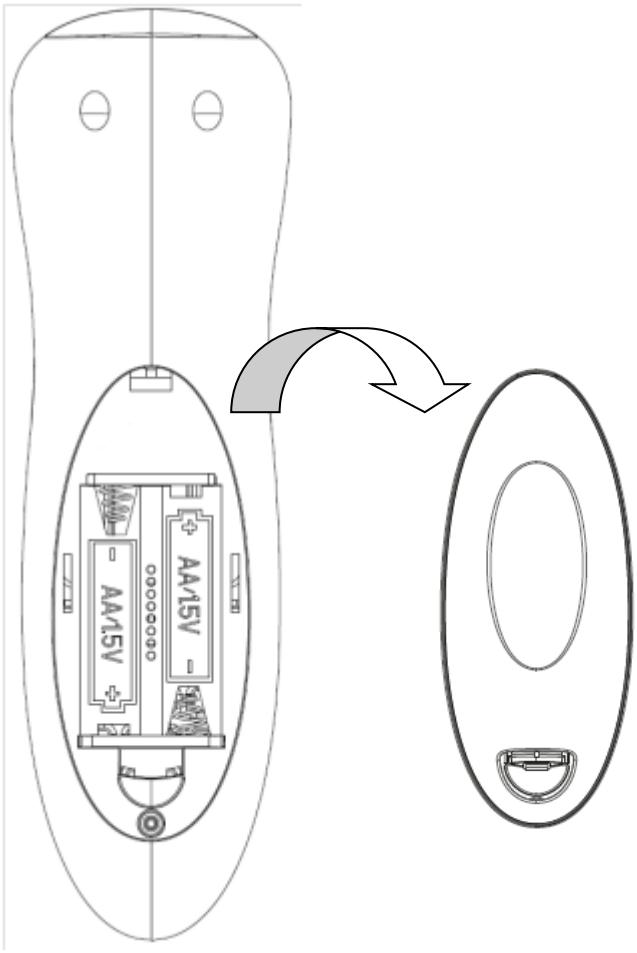
Remote Control User Manual

DocID:
Date: 2014-07-11
Version: 0.1
Status: Draft
Model: RC1534059/01B

Table of contents

1. Battery Installation

Battery installation



Open battery cover at bottom side of remote control. Insert 2 x AA batteries. Ensure batteries are properly installed. Install back the battery cover. The remote control is ready to be used.

2. Remote Features Overview

Remote control functions

Key No	Key Name	Key Function
1	TV_BOX_POWER	Power On/Off -- TV_BOX
2	TV_POWER	Power On/Off -- TV
3	INPUT	TV input sources
4	STOP	Stop
5	RECORD	Record
6	REWIND	Rewind
7	PLAY	Play
8	FAST_FORWARD	Fast Forward
9	SKIP_BACKWARD	Skip Backward
10	PAUSE	Pause
11	SKIP_FORWARD	Skip Forward
12	MENU	Menu
13	BACK	BACK
14	Guide	Guide
15	UP	Up
16	LEFT	Left
17	OK	OK
18	RIGHT	Right
19	DOWN	Down
20	Exit	Exit
21	Info	Info
22	Vol+	Volume Up
23	Search	Search
24	CH+	Channel Up
25	Vol-	Volume Down
26	MUTE	Mute
27	Live	Live
28	CH-	Channel Down
29	DIGIT_1	Numeric key 1
30	DIGIT_2	Numeric key 2
31	DIGIT_3	Numeric key 3
32	DIGIT_4	Numeric key 4
33	DIGIT_5	Numeric key 5
34	DIGIT_6	Numeric key 6
35	DIGIT_7	Numeric key 7
36	DIGIT_8	Numeric key 8
37	DIGIT_9	Numeric key 9
38	DEL	DEL
39	DIGIT_0	Numeric key 0
40	Prev	Previous

3. General product description

3.1 Input devices

Key Buttons

3.2 Output devices

IR LED:	It is used to transmit the selected codes and protocols via IR.
RF:	It is used to send data over Bluetooth Low Energy
Indicator LED:	“TV” Led Indicator – For IR related operation. “TV Box” Led Indicator – For BLE related operation.

4. Functional requirements

4.1 LED Indication

RC	Before TV Setup/ Learn		After TV Setup / Learn	
	TV LED	TV Box LED	TV LED	TV Box LED
Unpaired RC	IR keys send IR (**except <Input>**) for TV Box. TV Box Led blinks continuously for IR key*. <TV> key send IR code (TV Power) for TV Box. TV Box Led does not blink.	BT keys send IR for TV Box. TV Box LED blinks continuously for BT key. TV Led **does not blink** for all keys.	IR keys send IR for TV. TV Led blinks continuously for IR key*.	BT keys send IR for TV Box. TV Box Led blinks continuously for BT key.
Paired RC	IR keys send BT code. TV Led blink once for IR keys. .TV Led **does not blink** for all keys.	BT keys send BT code. TV Box Led blinks once for BT key.	IR keys send IR code for TV. TV Led blinks continuously for IR key*	BT keys send BT code. TV Box Led blinks once for BT key.

***IR key : <TV>, <Input>, <Vol+>, <Vol->, <Mute>, Navigation Keys**
***BT key: All keys except IR key**

Location	Indication purpose	Status description
Bluetooth® status indication		
TV_BOX LED	Blink continuously while key is pressed and held down. (same as TV LED)	• New RC • RC is unpaired. • When BT link is broken.
TV_BOX LED	Blink 1 time (250ms) on keypress. Or turn off LED immediately after key release (whichever is shorter)	• After RC is paired.
Power status indication		
TV_BOX + TV LED	Blinks 5 times at 50ms interval	Whenever any key is released and the Battery is low, RC is still operable.
TV_BOX + TV LED	IR and BT LED does not turn on.	When RC is inoperable at voltage below 2V. RC does not respond to any key

4.2 Backlight

When the RC is picked up, the pickup sensor will wakeup the RC. The RC will turn on the backlight after a delay (See 5.1). The backlight will remain ON for a configurable timeout (See 5.1).

The timeout will restart if any valid key is pressed while the backlight remains on.

When the remote is stationary, and no keys are pressed (timeout from the last key pressed), the backlight will turn OFF.

4.3 TV Input Key

When the TV Input Key is pressed, the navigation keys (UP, DOWN, LEFT, RIGHT, OK) will switch to IR mode for 5s (this value is configurable).

If any other key (such as MENU) is pressed before the 5s timeout, this will cancel the IR mode. The navigation keys will revert to its previously operating mode.

4.4 IR Mode

The host can configure the Remote to enable / disable IR mode). This is meant to be used in cases where the TV box can use CEC to control the TV; hence IR control is not needed for the TV.

In the factory default state, the RCU should generate IR codes for the TV until/unless the TV box sends a command to 'Disable TV IR'.

4.5 Database Function & Learn Function

4.5.1 The Database key table

The RC has Database for TV device. The keys supporting the Database are described as below. All the other keys will act the same as the RC in TV_BOX mode.

Key Name	TV
TV_POWER	YES
INPUT	YES
VOL+	YES
VOL-	YES
MUTE	YES
UP	YES
LEFT	YES
OK	YES
RIGHT	YES
DOWN	YES

YES: This key is available in the current mode.

4.5.2 Set Features for Learn

The RC also supports learn function for keys working in TV mode.

Feature	Key sequence
Learn	<<1+5>>, <learnable key>, <Exit>

Learnable key: TV_POWER, INPUT, VOL+, VOL-, MUTE, UP, LEFT, OK, RIGHT and DOWN.

The procedure is as following.

1. Press Digit 1 and Digit 5 simultaneously for 3 seconds. After 3 seconds the TV Power key LED will blink twice and remain on. Release all keys.

2. Enter a learnable key, the TV Power key LED gives a short inverse blink. After the key is released, the LED will start blinking.

3. Hold the source RC (in of sight) at an optimum distance (3cm to 6cm) and continuously transmit the signal by pressing and holding the key from source RC that you want to learn into the RC.

4. The LED gives 2 blinks and stays on if learning is successful and the new learnt codes will replace the previous one. Release the key from the source RC.

   The LED will give an error blink and stays on if the learning is failed. The previous key code is kept.

5. User can learn other keys or retry learning on the same key by following step 2 to 5.

6. Press the <Exit> key to exit to the use-mode. After pressing the OK key, the LED will turn off and return to use-mode.

Notes:

- ❖ If no key is pressed within 30s after enter into the learn setup mode, the RC will return to use-mode with an error blink to indicate time out.

- ❖ If no signal for the RC to learn within 30s after pressing a learnable key, the RC will return to use-mode with an error blink to indicate time out.

- ❖ If the learnable key has been pressed for 30s, the RC will enter into Stuck Key Time-out.

4.6 Pairing with TV Box

BT Pairing of RC with TV Box will take place in following 3 situations:

- when RC and TV Box are out of the box and install for the 1st time
- when existing RC is lost or broken and a new replacement RC is added
- when TV Box is being replaced or reset, and added to work with existing RC

The RC interacts with the TV Box UI via IR, or BT.

By factory default or after a master reset, the RC does not contain any BT pairing information. The RC will default to be in TV_BOX Mode. The RC will send TV_BOX IR Code.

In BT mode, the TV_BOX Power key will start to use RF until the BT link is disconnected (either due to TV Box out of range or TV Box is off or TV Box is being replaced). BT pairing is described in more detail at section BT Pairing.

Each RC should pair with 1 TV Box. When trying to pair a previously paired RC to a TV Box, the previously paired information will be replaced on both the TV Box and RC.

Before pairing, the TV_BOX Power key will only send IR code.

After Pairing the TV_BOX power key will send both IR and BT.
All other keys will send BT codes.

4.6.1 BT Pairing (Out-of-the-box / Replacement RC)

When the batteries are inserted for the first time, the RC is not paired to any TV Box. To start pairing, the following procedure applies.

1) If any key is pressed in TV_BOX mode (except <TV Power> and <Input>), the TV_BOX IR codes will be sent. When there are no key presses for more than **1**sec, the RC will starts the Pairing Process.

2) The RC starts the pairing process by sending an IR Pairing Code to the TV Box according to IR Pairing Code Format (See Appendix)

3) If the key press is the TV_BOX Power key, the RC will send the TV_BOX Power key IR code. When the TV_BOX Power key is released, the RC will then send the IR Pairing code.

4) The TV Box will start the pairing process on receiving the IR Pairing code.

5) If the pairing fails, the RC will goes to sleep mode.

6) If the pairing is ok, the TV_BOX will then send a Device ID (using RF) to the RC. The RC can now control this TV Box only.

7) Subsequently, when the TV_BOX Power key is pressed, the IR code will contain the Device ID and Command Code information (See Appendix).

The pairing process will timeout after 30 seconds. After 30 seconds, the RC will goes to sleep mode. The RC will remain in an “unpaired” state.

4.6.2 BT Pairing (Replacement of TV Box or TV Box Reset)

1. The RC needs to be setup again in order to work with a new TV Box or TV Box is resetted.

2. The user will need to press “OK” and Digit “2” key simultaneously for 3 seconds to start the pairing process manually as below.

3. The RC starts the pairing process by sending an IR Pairing Code to the TV Box according to IR Pairing Code Format (See Appendix).

4. The TV Box must check and confirm the data are correct with the Checksum.

5. The TV Box will then start the pairing process.

6. If the pairing fails, the RC will goes to sleep mode.

7. If the pairing is ok, the TV_BOX will then send a Device ID (using RF) to the RC. The RC can now control this TV Box only.

8. Subsequently, when the TV_BOX Power Key is pressed, the IR code will contain the Device ID and IR Command Code information (See Appendix).

9. The pairing will timeout after 30 seconds. After 30 seconds, the RC will goes to sleep mode. The RC will remain in the “unpaired” state.

If the pairing fails, or pairing timeout, the RC will fall back to IR mode only. The user needs to do re-pair by pressing and releasing any key or pressing <OK>and <2> keys (repeat step 2) with the TV Box.

4.7 BT Link Disconnected

The BT Link could be disconnected, due to RF interference, RC out of range, or TV Box is off.

The RC can only detect a BT Link disconnection in Active or Standby Mode.

The RC may delete the pairing info, depending on the Configuration item (See 5.1). If the pairing info is deleted, the RC will switch to IR mode, until the BT Link is reconnected again.

4.8 Wake To Listen

When the remote is paired, and RC is in sleep mode, the RC will wake up every 15 minutes briefly to listen for any RF data from the host. If there is no RF data, the RC will return to sleep for another 15 minutes.

4.9 Factory Reset

Pressing the key “DEL” and “TV BOX” together for 3 sec will erase the BT pairing information. The “TV BOX” LED will blink to indicate successful reset.

Pressing the key “DEL” and “TV” together for 3 sec will erase all learn data, and Database codeset. The “TV” LED will blink to indicate successful reset.

4.10 Power Management

The RC has 3 operating modes.

4.10.1 Active mode

In the active mode, the RC is either sending IR or RF code (depending on the Configuration).

4.10.2 Standby mode

RC idle but maintain BT link connection in low power sniff mode.

During STANDBY mode, BT link is still maintained with TV Box. Any keypress will set the RC back to ACTIVE mode almost immediately. Once back to ACTIVE mode, the RC will execute the key events.

4.10.3 Sleep mode

After remain in STANDBY for 60s, the RC will enter SLEEP.

Press any key or pickup up the remote will WAKE UP the RC to ACTIVE mode. When RC wakes up from SLEEP, the Remote will attempt to reconnect to the host. There will be re-connection latency depending on the BT link condition and RF interference of the surrounding. Once the BT link has been established, the RC will execute the key events.

5. TV Box Communication

When the RC is paired, Remote will use the HOGP profile for communication to the TV Box.

RC to TV Box Report ID	Send Condition
0x02	User press a remote key which has a HID keyboard code
0x03	User press a remote key which has a HID consumer control code

TV Box to RC Report ID	Send Condition

***Note :**

- After pairing, the TV_BOX keys will send BT only. Only the TV_BOX Power key will send IR and BT.
- In TV Mode, only the 10 TV keys (TV Power, Input, Mute, Vol+, Vol-, Navigation keys) will send IR.

6. Firmware Updates (OAD)

When there is a new firmware available for the RC, the TV Box will check if the current RC requires a firmware update. If the RC firmware is older, the TV Box will initiate the OAD process by sending the Start OAD process command.

7. Certification information

FCC

Bluetooth QD ID

Place of Origin: Made in Indonesia.

FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

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 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 Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

End of Document