

Manual of KWR164501/01

FCC Statement

FCC Part 15.19

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.

NOTE:

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.

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

No special accessory is required to enable the equipment to comply with the emission limits.

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1. Introduction

1.1 Purpose

This document of KWR164501/01 should be understood by all people with sufficient knowledge of the application domain.

2. General product description

2.1 Product functions

This KWR164501/01 product is a RF (2.4GHz) keyboard + RF(2.4GHz) & Infrared Remote (IR).

From the whole system point of view, the TV will be the host; the remote is a dummy slave.

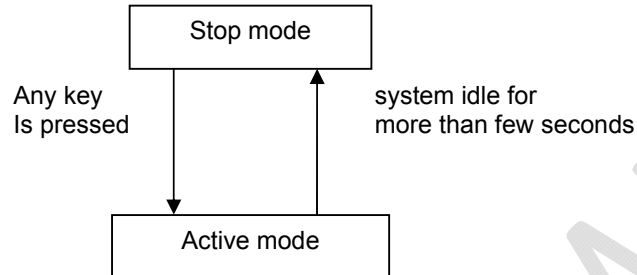
In normal working mode, the IR host always report key information to the TV and wait instruction from the TV.

There is no mode indicate on the remote, all remote mode info are displayed on the TV.

IR database auto / manual search will be done by remote/TV mutual active.

3. Functional requirements

3.1 Description of processes



This remote will contain below functions:

Inputs:

- key scan info
- data from Bluetooth interface

Outputs:

- Data to TV
- IR transmit

When the keyboard facing to the user side, pressing any keyboard button will trigger the product send key event to the TV.

3.2 Description of system

The features of this KWR164501/01 as follows:

- Default TV IR mode
- Normal operation
- TV off mode
- Device mode change
- Auto search
- Stuck key Timeout
- RF (2.4GHz) keyboard
- Reset feature

3.2.1 Default Vizio BT TV IR mode

This is the default mode when user takes KWR164501/01 out of box, it will be able to transmit IR code for TV IR receiver without any setup after insert battery.

3.2.2 Normal operation mode

This is the normal operation when TV is turned on; remote is paired with TV, micro-controller is in active mode, keyboard/remote function as RF (2.4GHz) HID device.

3.2.3 TV off mode

This is when TV is power off, if the IR device (for example DVD) is set and selected before TV turns off, remote will function as an IR remote control, the device mode will be the last device mode before TV switch off.

3.2.4 RF (2.4GHz) pairing

The RF (2.4GHz) device needs to be paired before enable its function. This KWR164501/01 equipped with a 2.4GHz RF module. It must pair with the TV before use it as a RF (2.4GHz) remote control.

3.2.5 Delete pairing information

After KWR164501/01 paired with TV, if user want go back to default IR remote mode, press and hold buttons <Q> + <P> + <Space> on keyboard for 5 seconds, then release all of them will erase the pairing information.

3.2.6 Device mode change and device ID

For the remote function, there are RF (2.4GHz) TV mode and IR device mode. Under IR device, there are multiple physical devices, they are SAT/CABLE, VCR, DVD / Blue ray / HD, PVR, Audio (Tuner/Receiver) and Amplifier.

The device name or icon will display on TV when change device function on the TV. User can use navigate key to move between devices, press <ok> key on remote will inform TV to make device selection.

3.2.7 Code set ID setup for a device

This function is heavily depends on TV and many mutual active between TV, KWR164501/01 & user. There is a load list contain devices, brand names and code set IDs table stored in TV. This load list is for setup IR database code set ID for an IR device.

For example user has a Philips DVD player. User intends to use this KWR164501/01 to control this DVD player. Setup the code set ID, DVD device should be selected. Then select brand name Philips. Under the brand name Philips, there may have multiple code sets. Each code set represents a physical remote control. After make the selection, the KWR164501/01 will set a control code set.

TV application can assign default code set for each device, or leave it blank.

3.2.8 Stuck Key time out function

The KWR164501/01 will shut down after 25-30 seconds when the last key transition to consume minimal power. After all keys are released, the remote resumes normal operation.

3.2.9 Simultaneous Keypress

If more than one key press is detected, the KWR164501/01 will stop sending IR code.

3.2.10 Standby mode

The standby mode of the KWR164501/01 shall be entered as soon as possible after the pressed key is released.

3.3 Real time requirements

There will be data transmit latency on both Bluetooth interface and GPIO interface, compare the timing, the BT latency is much heavy, around 20 ~ 50 ms. This timing is pending confirm from Broadcom.

4. Default IR code

4.1 Button and Code Mapping

Protocol: NEC
 Carrier Frequency: 38kHz, Customer ID: 04FBH
 Remarks: All codes are described as hexadecimal.

1 INPUT 0x2F	2 Device power No code	2 TV POWER 0x08
3 Vizio APP1 (Amazon) EA	4 Vizio APP2 (NETFLIX) EB	5 Vizio APP3 (VUDU) EC
6 REW 0x35	7 PAUSE 0x37	8 PLAY 0x33
10 List 0x1D	11 Record 0x34	9 FF(Fast forward) 0x36
14 EXIT 0x49	15 ArrowUP 0x45	13 INFO 0x1B
17 ArrowLeft 0x47	18 Select/OK 0x44	16 MENU 0x4F
19 ArrowRight 0x48	20 BACK 0x4A	21 ArrowDown 0x46
22 GUIDE 0x1C	23 Yellow 0x52	24 Blue 0x53
25 Red 0x54	26 Green 0x55	27 Vol + 0x02
28 Vizio Widget 0x2D	29 CH + 0x00	30 Vol – 0x03
31 MUTE 0x09	32 LAST 0x1A	33 CH – 0x01
34 Digit 1 0x11	35 Digit 2 0x12	36 Digit 3 0x13
37 Digit 4 0x14	38 Digit 5 0x15	39 Digit 6 0x16
40 Digit 7 0x17	41 Digit 8 0x18	42 Digit 9 0x19
43 WIDE 77	44 Digit 0 0x10	45 – (DASH) FF