

Manual of
KWR174002/01BR,
KWR174002/01BRS,
KWR174002/01BRU
KWR174003/01BR,
KWR174003/01BRS &
KWR174003/01BRU

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.

RF exposure warning

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.

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

1. Product Description

1.1 Product Features

- Dual button entry RC and KWR.
- Number of keys: 42 for Keyboard, 40 for RC.
- 4 main functions. Remote control, mouse cursor control and QWERTY KB for text entry and downstream data transfer.
- 3-D Gyro meter for motion pointing.
- Infrared (IR).
- Low voltage alert through LED blinks.
- Compatible with USB RF4CE Receiver dongle for the RF portion.

- Product



Picture for illustration only

2. RF Functions

2.1 RF Pairing

- 1) Make sure RC is within 1m distance from the STB and no other RF RCs are present.
- 2) Make sure the Qwerty keyboard faces upwards.
- 3) Press and hold **Keyboard W** and **Keyboard O** keys together for at least 5 seconds.
- 4) The KEYBOARD LED will start blinking, and RC is now in pairing mode.
- 5) Activate pairing mode on STB (STB sends activate command or reset dongle power).
- 6) Once the pairing is successful, the KEYBOARD LED will be turned off; otherwise, the KEYBOARD LED will stay lit till timeout.

There will be a 30 seconds timeout for RC to be in pairing mode. Previously paired receiver shall be retained as long as the STB did not initiate the pairing. See Note below on different pairing scenarios. User can start from Step 1 again if pairing failed.

Note:

When a previously paired RC starts pairing with

1. Different receiver
 - o Only upon successful pairing, the RC shall replace the previously paired receiver with the new receiver.
 - o If the pairing process fails or pairing timeout occurs, the previously paired receiver will be retained.
2. Same receiver
 - o Previously paired information of the same receiver shall first be erased from the RC before pairing process starts.
 - o If the pairing process fails or pairing timeout occurs, the previously paired receiver will not be retained.

At any one time,

- Only one RC is allowed to be in pairing mode, i.e. no concurrent pairing is allowed.
- Each RC can only work with one receiver, i.e. 1-to-1 pairing.

2.2 RF Un-Pairing

The following steps for un-pairing:

- 1) Make sure the Qwerty keyboard faces upwards.
- 2) Press and hold **Keyboard X** and **Keyboard UP** keys together for at least 5 seconds.
- 3) The KEYBOARD LED will start blinking slowly after 5 seconds.
- 4) Reset the power or battery and the RC is ready to pair again.

2.3 Remote Idling, RF Link Timeout with connection

When detected no activity, the RC will enter SLEEP mode. During SLEEP mode, RF link will be disconnected to preserve power. Pressing any key or any gesture action will resume the RC to ACTIVE mode almost immediately. The key-press that resumes the RC from SLEEP mode will be remembered and transmitted.

When the RC wakes up from SLEEP mode, there may be reconnection latency depending on the RF link condition with the receivers.

Once the RF (2.4G) link has been established, the RC will execute upon **ANY** key-press. Key presses prior to successful RF link connection will not be transmitted.

2.4 RF Broken Link

RF link is broken when the RF (2.4G) connection is lost or when the receivers sleep or during system shutdown states (S3, S4 or S5) or due to out-of-range.

2.5 RF ACTIVE / SLEEP

From RF ACTIVE >> SLEEP User action	Remote Control action
No key-press for about 8 seconds.	RF goes to SLEEP. In SLEEP mode, all LEDs are OFF.
No motion senses for about 8 seconds.	RF goes to SLEEP. In SLEEP mode, all LEDs are OFF.

2.6 RF Auto Connection

When the RC wakes up or resumes from SLEEP mode or come back within range of a powered-on paired receiver, the RF link will be reconnected automatically. No RF re-pairing is needed.

2.7 RF Out-of-Range

When the RF link is broken or out-of-range and is stationary, the RC goes to SLEEP immediately to conserve power.

3. Operational Features

3.1 Mode Switch

3.1.1 RC to Keyboard

When in RC mode, KEYBOARD keys will be locked to prevent accidental presses. KEYBOARD keys can only be unlocked by tilting 90 degrees clockwise or anticlockwise. Once tilted more than 90 degrees, mouse cursor will stop moving if it is in Mouse mode.

If KEYBOARD keys are faced up upon power up, a command will be sent from the RC.

3.1.2 Keyboard to RC

When in KEYBOARD mode, user can change to RC mode by tilting 90 degrees clockwise or anticlockwise. When in KEYBOARD mode, RC keys will be locked to prevent accidental presses. Once tilted more than 90 degrees, mouse cursor will start moving if it is in Mouse mode.

If RC keys are faced up upon power up, a command will be sent from the RC.

3.2 Remote IR Keys

STANDBY is the only IR command key. With RC faced up and in a portrait orientation, pressing this button will fire the respective IR codes from the IR LED of the remote.

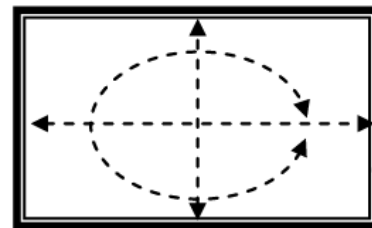
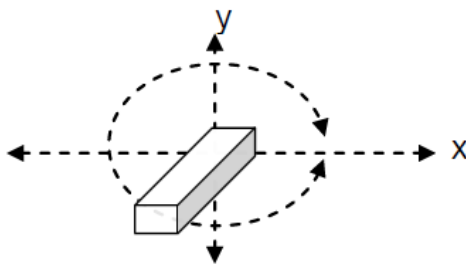
3.3 Remote RF keys

Remote RF keys will be sent in the form of HID Keyboard keys.

3.4 Motion Control Mouse Mode

Mouse mode allows user to use the 3-D gyroscope and accelerometer of the RC as a floating mouse or joystick. In this mode, user is also expected to operate the remote control in free air and not laid down and operating it in a stationary position.

The relative movement of panning and lifting (roll, yaw and pitch) will control the mouse cursor to move in the same relative direction on the screen.



For mouse cursor control, toggle motion sensor ON:

- Move remote control in the air to use motion mouse control
- Press OK key will be Mouse Left Click function only, press and hold Mouse Left Click is supported
- Provides RAW data for gesture processing, enable/disable with downstream command from host.

3.5 Keyboard Mode

The Qwerty keyboard will be held by both hands and used in landscape orientation.

The keyboard also supports secondary keys by using **FN** or **SHIFT**; this allows the keyboard to support uppercase characters, symbols and digits with the limited number of Qwerty keys.

There are 2 ways of activating secondary keys:

1. Press and release **FN** or **SHIFT** key followed by pressing another key. For example, press **FN** then Q will send „1” , press **SHIFT** then Q will send “Q”. After “Q” is released and pressed again, „q” will be sent.
2. Press and hold **FN** or **SHIFT** key followed by pressing another key. For example, press and hold FN and then press Q will send “1”, press and hold **SHIFT** and Q will send “Q”.

As long as the secondary key is pressed and held, the secondary character will have the same repeating behavior as the normal primary key „press and hold” .

To minimize accidental presses of the Qwerty keys while in RC or Mouse Cursor Control, the Qwerty keys will be deactivated. When not in SLEEP mode and the keyboard side is detected faced down, the Qwerty keys will be locked, key presses on the keyboard will be ignored. When device is not in SLEEP mode and the keyboard side is detected faced up, the Qwerty keys are unlocked.

3.6 LED Indicator Behaviour

Total 2 Indicator backlit LED – Red and Blue LED:

Location	Indication purpose	Status description
BLUE LED	Indicate RF code transmission	1 short blink in blue each time a valid key is pressed
RED LED	Indicate IR code transmission	1 short blink in red each time a valid key is pressed
RED LED	Low battery warning	2 short blinks in red each time a valid key is pressed
BLUE LED	Mouse Left Click	1 short blink in blue each time Mouse Left Click is pressed
Blue LED	Show successful RF pairing	Flashes rapidly in blue until pairing is successful or time out occurs

4. Non-Functional Requirements

4.1 Simultaneous Key Press (RC)

If more than one key-press is detected, the remote control will stop sending IR/RF code.

Example:

i. When Key 1 is pressed, Key 1 code is transmitted. Pressing Key 2, with Key 1 still pressed, RC will stop transmitting Key 1 code. Then, releasing Key 2, with Key 1 still pressed, Key 1 code will be transmitted again.

ii. When Key 1 is pressed, Key 1 code is transmitted. Pressing Key 2, with Key 1 still pressed, RC will stop transmitting Key 1 code. Then, releasing Key 1, with Key 2 still pressed, Key 2 code will be transmitted.

4.2 Simultaneous Key Press (Keyboard)

The remote support multiple key presses but only limited keys are able to do so. When two or more remote KB keys that do not support simultaneous press are pressed simultaneously, the remote will not send codes. When only one key is still pressed the remote will restart and send the code of this key as per normal.

Workable 2 keys simultaneous key presses are;

SHIFT with any Alphabets: Capital Letters of the Alphabets
FN with keys with Blue options (numbers and symbols, etc.)

4.3 Consecutive Key Press (Keyboard)

When **FN** key is pressed or still pressed, the RC will not transmit or do any action. After release and then press any keys that have alternate function on the same key, e.g. Q key shares the same as Numeric '1' key, the RC will transmit Numeric '1' code.

E.g. **FN** key + Q key = Numeric '1' key transmit
FN key + A key = Symbol '?' key transmit

The same is true for **SHIFT** keys. For **SHIFT**, after release of the key, an alphabet key is pressed; the RC will transmit the capital letter of the particular key.

4.4 LED Indicator

Blinking Definition

Short Blink: Approximately 10ms ON, then OFF.
Long Blink: 500ms ON, 500ms OFF.

4.5 Stuck Key Timeout

Stuck key means a button has been pressed for a very long time in normal operating mode. To preserve battery power, the remote will stop sending code and shut down at about **30** seconds after the last key transition to consume minimal power. After all keys are released, the remote resumes normal operation.

Exceptions:

- Mouse L click, navigation keys and "OK" key will not have stuck key timeout.

Typical Stuck Key Timeout is around +/- 20% tolerance, except for IR with exceptional long repeat timings or RF long latency.

The application will have some mechanism to stop mouse data transmission to save battery life. In TV Control Setup there are situation where a key is allowed to be pressed for longer than the stuck key timeout.

4.6 Auto-repeating

All the buttons have auto-repeat function, that is, when a key is continually pressed, the RC will transmit the corresponding code until the 30 seconds Stuck Key timeout.

4.7 Low Voltage Detection

The RC comes with 2 pairs of 2 pieces 1.5V batteries working in series to give a total maximum of 3.0V ~ 2.5V.

The depletion of the battery power will be in 2 stages.

Note: Remote side will only show low voltage indication when remote is flipped from KB to RC side at least once when remote is in low voltage.

1) Stage 1, Working voltage (3.0V to 2.5V)

All keys and functions will work as normal.

2) Stage 2, Very Low voltage (2.5V and below)

Very Low voltage detection triggers from 2.5V and below.

No IR or RF codes will be sent from the RC.

Note: All the voltages have a 0.05V tolerance.