RF Repeater 2.0

Contents

Fits USB Type A sockets.

Electrical Specification

Input Power	DC 5V, 500mA
Working Power	10 ~ 110 milliwatts
Working Temperature	0℃ ~ 45℃
Working Current	3mA ~ 33mA
Radio Frequency	433.92MHz
Wireless Standard	FSK
Radio Range	100 meters open space, 35 meters indoor (results may vary)

Hardware Details

Orange LED	Configuration Indicator
Blue LED	RF Activity Indicator
Push Button	Select Function and Factory Reset
Size	83mm x 31mm
IP Rating	IP20 (indoor use only)

Operation Specification

Basic Operation as a Repeater

Plug in RF Repeater to USB Type A power block or USB port.

Normal Operation: RF Repeater will perform 3 orange blinks (bootloader startup), then 3 blue blinks (target firmware startup) upon power up.

Repeater will receive valid PowerShades protocol packets (matching preamble and sync words) and push them into a buffer. Repeater will filter out duplicate commands as well as commands that it has sent within a given historic period. Once 250ms has expired from last valid packet, repeater will iterate through the queue and start repeating the buffered packets. Repeater will transmit two commands for one valid command it receives.

Button Actions

The button action operation is as follows.

1. User clicks the button X times to select function.
2. User then presses and holds the button to execute the function.

Function #	Function Detail
1	Send Test TX for range and field strength testing.
2	Pair RA Wind Sensor and PS Remote
3	Future
4	Future
5	Future

Function #1 – Test TX

This purpose for this function is to force the repeater to TX by button press. This TX can be used to measure field strength as well as range testing.

1. Plug in RF Repeater to power source.
2. Click the push button once (1 blink pattern)
3. Press and hold push button for 2 seconds (blue blink to indicate TX)

Example of Test TX Transmission

14:29:53.192 W433 RX[1] 12 C1 DEADBEEF:DEADBEEF 0001 {02 02 03}
14:29:53.270 W433 RX[1] 12 C1 DEADBEEF:DEADBEEF 0001 {02 02 03}

Function #2 – Pair and Translate RA Wind Sensor

4. Pair PowerShades RF Remote to Outdoor shade and set upper and lower limits. Leave shade in down position.
5. Plug in RF Repeater to power source.
6. Click the push button twice (2 blink pattern)
7. Press and hold push button for 2 seconds (constant medium blink)
8. Press P2 on the RA Wind Sensor (constant fast blink)
9. Press Stop button on PowerShades RF Remote (orange LED turns off)
10. Press the UP button on the RA Wind Sensor to verify functionality.

Timeout

If user does not complete the button action within 5 minutes. The RF Repeater will go back to normal repeating operation.

Factory Reset

Press and hold the pushbutton for 10 seconds. This function will delete any paired remotes and sensors.

Firmware Update

1. Unplug RF Repeater
2. While holding push-button, plug-in RF Repeater to power source.
3. RF Repeater LEDs will indicate alternating blue and orange.
4. RF Repeater can now be recognized as DFU device. Target firmware can be loaded at Address 0x08004000.

Caution:

This device complies with Part 15 of the FCC. 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.

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

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.

VERSION	DATE	AUTHOR	NOTES
V001	3/17/2023		Initial Version