RR2 Manual

RR2 is the advanced receiver for the Windsond and Sparvio systems. It receives radio transmissions from the airborne systems and translates these into USB or Bluetooth for a computer or Android device to log.

Features

Twin SMA antenna connectors
Power button
USB micro connector
Two status LEDs
Bluetooth
Barometer
Weather-proof enclosure
Battery: 1800 mAh lithium-polymer battery
Battery time: 10 hours (estimated)
USB power consumption: 500 mA (when charging), 120 mA (when fully charged)
RR3 only: Ethernet port
GPS (not supported yet)
SD-card (not supported yet)
Physical connector for sonde configuration and charging (not supported yet)

Installation

RR2 comes with an internal lithium-polymer battery which is already installed and partly charged. Push the button to start RR2. Three rising tones are emitted and the power LED (the LED closest to the push button) turns green.

For Bluetooth, turn on RR2, then pair the computer with Bluetooth device “Windsond RR2 #xxx”. In the Windsond application, press “Select COM port” and try each listed Bluetooth port until the application says “Receiver connected”.

For USB, turn on RR2 and connect to a USB port. RR2 should be discovered automatically. If it is not, install a suitable driver:
For 32-bit Windows: http://windsond.com/VCP_V1.4.0_Setup.exe
For 64-bit Windows: http://windsond.com/VCP_V1.3.1_Setup_x64.exe
Once Windows accepts the USB device, run the Windsond application and press “Select COM port”. Select the listed USB port and make sure the application says “Receiver connected”.

Operation

Use either one of the antenna connectors, or use both for a more stable radio link. Angling the two antennas differently helps to capture the signals when the sonde swings under the balloon. The magnetic antennas (with a lead) are strongly recommended as they have better reception than the short stub antennas. Place then on a flat metallic surface with clear view of the sky (such as a car roof). See the “sounding guide” for more details on antenna placement and general operation.

Turn on the RR2 before starting a sounding. RR2 makes three rising tones when starting. Make sure the battery LED is not blinking red.

By default, RR2 beeps each time a radio packet is received, providing a “heart beat” for the crucial radio link. The pitch of the beeps indicate the reception strength of each received radio packet. This is useful during a sounding to hear whether the receiver has a good radio link with the sonde. The user can turn off the beeping in the software, as well as activate the same functionality for the computer.

Battery conservation

A blinking red LED indicates the RR2 is dangerously low on power and will shut down soon. A shutdown means any incoming sounding data will be lost until the RR2 is powered up again. RR2 will not start again until connected to a USB power source. Don’t forget to turn off the RR2 when done using it, to avoid draining the battery. RR2 makes a series of descending tones when turning off and becomes invisible to the computer.

If the running time of 10 hours isn’t enough, RR2 can be charged in the field from a power bank.

In ‘off’ mode, the RR2 battery will last at least a year without topping up the battery. If RR2 will not be used for a long time, it’s anyway best to unscrew the one screw on the long side of the enclosure and disconnect the battery by pulling the wires straight up.

Battery charging

RR2 automatically charges from USB when plugged in. RR2 runs from USB power when plugged in, so a sounding can be performed even with a depleted battery. RR2 will charge the battery from USB both in ‘on’ and ‘off modes.
Charge time: < 5 hours (from empty battery)
The battery holds its charge for at least two years.

Status LEDs

Power status

(closest to the button)

off	Turned off. No sounding data can be received.
green	Turned on. Ready to communicate with sondes and computer.
purple	In bootloader, for firmware upgrade. Normal operation is disabled.

Battery status

(closest to the USB port)

off	Battery level is OK.
yellow	Battery is charging from USB.
blinking red	The battery is about to discharge and the RR2 will turn off soon.

Firmware upgrading

The software (“firmware”) of RR2 can be upgraded by the user when new features become available or some issue is discovered. See the separate document “RR2 upgrade instructions” for this.

Fixed installation

While RR2 itself is weatherproof, water might leak into the SMA connectors for antennas and the USB connector, potentially ruining the electrical connection and making the connectors rust. To withstand heavy rain, place the RR2 in a weatherproof box to also protect the connectors.

Long cable runs

Longer USB cables than 5 meter requires active amplification, such as this: https://www.amazon.com/PTC-Meters-Extension-Repeater-Supports/dp/B0040IASMS and micro-USB converter
With converter to micro-USB:
https://www.amazon.com/UGREEN-Adapter-Samsung-Controller-Smartphone/dp/B00LN3LQKQ
For cables up to 100 m long, instead buy the RR3 receiver with Ethernet support.