

# Windsond

## *Product Catalogue*

Windsond is a weather balloon system for an immediate view of local conditions at different altitudes. The focus on portability and low operating costs makes it perfect for frequent use in the field.



# Radiosonde S1

The S1 is our current radiosonde model. It comes in reusable or single-use variants, and can be equipped with a few different sensors. These options are detailed below. The choice of sensor and reusability are added as suffixes to the part number.

No pre-flight calibration is necessary. All sondes have a styrofoam enclosure and come installed with GPS, radio transceiver and an air pressure sensor. Each sonde includes one 75 mAh or 140 mAh battery and one 9 g or 20 g balloon. For operation above 5000 m AGL, the bigger battery and bigger balloon are recommended.



*The low weight of  
Windsond enables  
low-altitude  
soundings with very  
small balloons,  
giving unprecedented  
mobility.*

# Sonde operating conditions

Temperature	-45 ~ +45 °C
Max altitude	8000 meter above ground level or 9000 meter above sea level
Weight (excluding balloon)	Configuration below 5000 m: 12 gram Configuration above 5000 m: 13 gram
Suggested helium consumption at 1.5 m/s rise rate	Configuration below 5000 m: 30 liters Configuration above 5000 m: 60 liters
Simultaneous soundings per receiver	8 (Standard Sondes). Ask if you need > 8 simultaneous soundings per receiver

# Telemetry

Type	Bidirectional UHF radio
Modulation	GFSK
Frequency	Configurable 400 ~ 480 MHz
Power	Configurable, max 100 mW
Range, with unobstructed view	Omni-directional receiver antenna: >15 km Directional receiver antenna: >60 km
Measurement frequency	1 Hz
Ground station antenna connector type	SMA

# Sensor characteristics

Feature	Range	Resolution	Accuracy	Unit
Air pressure	300 ~ 1100	0.02	1.0	hPa
Wind speed	0 ~ 150	0.1	ca 5 %	m/s
Wind direction	0 ~ 360	0.1	Depends on GPS conditions	degrees

Absolute sensor accuracy and resolution, typical characteristics at 25 °C

# S1 Sensor options

## S1B Basic



### Operating range

-40 ~ +80 °C

### Temperature

Type: Thermistor  
Accuracy: 0.3 ~ 0.7 °C  
Resolution: 0.1 ~ 0.35 °C  
Response time: Not profiled

## S1H2 Humidity



### Operating range

-40 ~ +80 °C  
0 ~ 100 %RH

### Temperature

Type: Band gap  
Accuracy: 0.3 °C  
Resolution: 0.01 °C  
Response time: 6 s

### Humidity

Type: Capacitive  
Accuracy: 2.0 %RH  
Resolution: 0.05 %RH  
Response time: 6 s

## S1H3 Extra accuracy humidity



### Operating range

-40 ~ +80 °C  
0 ~ 100 %RH

### Temperature

Type: Band gap  
Accuracy: 0.2 °C  
Resolution: 0.01 °C  
Response time: 6 s

### Humidity

Type: Capacitive  
Accuracy: 1.8 %RH  
Resolution: 0.05 %RH  
Response time: 6 s

Absolute sensor accuracy and resolution, typical characteristics at 25 °C.

Dew point is calculated from temperature and humidity with corresponding confidence levels.

Each S1 sonde includes one battery and one balloon. The standard battery BL75 can be replaced by the bigger battery BL140. The standard balloon BA9 can be replaced by the bigger balloon BA20. See battery and balloon specifications on the next page.

# Sonde add-on options

Choose number suffix to select the S1 reusability configuration. For example S1H3-R.

Art. number suffix	Description
*-S	Single-time use option. Saves some cost, but sonde can not be expected to be recovered and reused.
*-R	Simplifies sonde recovery: Dual cut-down mechanisms. Strobe light. Loudspeaker.

# System spare parts

## BL75



Extra battery 75 mAh  
Rechargeable lithium-ion  
battery. Weight 1.9 gram.

## BL140



Extra battery 140 mAh  
Rechargeable lithium-ion  
battery for extra long flights.  
Weight 3.3 gram.

## BA9



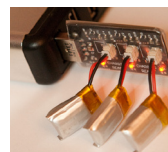
Spare 9 gram latex balloons for  
soundings up to 5000 m AGL,  
using about 30 liters of helium.

## BA20



Spare 20 gram latex balloons  
for higher rise speed, for  
soundings 5000-9000 m AGL.  
Burst size Ø115 cm at 28 °C.

## CU2



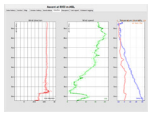
Extra USB charger for  
three batteries.

# Ground station and cases

The Windsond ground station consists of a radio receiver and a software license, running on a Windows device or an Android tablet or phone. *Android tablet and phone operations are not available yet.*

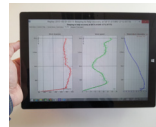
## Software license

### WS-250 for Windows®



Real-time sonde control, visualization and export to 10 data formats. Supports Windows XP, Vista, 7, 8, 10. Includes one year of email support. Works with all available radio receivers.

### AA-100 for Android (Not available yet)



Android ground station application for use with tablets and smartphones. Connects to the RR2 receiver with Bluetooth or USB. Similar to the Windows software, it collects measurement data from the sondes and provides control over sonde settings.

## Cases

### GC2 Case



Large water-proof case with helium canister. GC2 fits all Windsond components:  
4 S1 radiosondes, Radio receiver, Antenna, Balloons, Battery charger, Tether strings and helium canister.

5 kg, external size 47 x 36 x 18 cm  
IP67, MIL C-4150J, STANAGIP67,  
MIL C-4150J, STANAG 4280

### GC1 Case



A water-proof case that fits the Windsond components:  
4 S1 radiosondes, Radio receiver, Antenna, Balloons, Battery charger and Tether strings.

2 kg, external size 34 x 30 x 15 cm  
IP67, MIL C-4150J, STANAG 4280

# Receivers

## RR1-250 Radio Receiver



Provides bi-directional radio communication with radiosondes. Connects to a Windows computer by USB.

## RR2 Radio Receiver



A definite step up from the basic RR1 USB receiver. RR2 supports wireless connection to Android and Windows devices, is water-proof and much more. Built-in barometer and GPS relieves the user from checking the sonde initialization values manually and keeps track of the bearing and distance to the sondes even if the ground station moves during the sounding.

## RR3 Ethernet radio receiver



The same water-proof form-factor as RR2, but communicates with the host computer using wired Ethernet. Power from built-in battery or AC/DC adapter.

### All receivers include:

- Starter pack with battery charger and tether strings.
- Receiver antenna with magnetic base and 3 m lead.
- Short-range stub antenna.

## Customization

Sparv Embedded AB offers hardware and software customization to customer requirements. Development is done by experienced engineers with intimate knowledge of the system. Sondes can be equipped with optical cloud detection, air turbulence detection, etc.

# Complete kits

## KIT1 Ground Station



**Water-proof ground station with radiosondes and USB connection for computer.**

Comes with hard case GC1 and includes RR1 radio receiver with telemetry, 4 S1H3-R radiosondes, antennas, balloons, batteries, tether strings and software license WS-250. (Helium canister and computer not included)

2 kg, external size 34 x 30 x 15 cm IP67, MIL C-4150J, STANAG 4280

## KIT2 Ground Station



**Water-proof ground station with radiosondes and USB or Bluetooth connection for computer.**

Comes with hard case GC1 and includes RR2 radio receiver with telemetry, 4 S1H3-R radiosondes, antennas, balloons, batteries, tether strings and software license WS-250. (Helium canister and computer not included)

2 kg, external size 34 x 30 x 15 cm IP67, MIL C-4150J, STANAG 4280

## GSA1 Mobile Ground Station (Not available yet)



**Complete, water-proof ground station with radiosondes.**

Comes with large hard case GC2 and includes RR2 radio receiver with telemetry, 4 S1H3-R radiosondes, antennas, balloons, batteries, helium canister and tablet TA1.

The tablet comes with pre-installed software license AA-100 (Not available yet) for data visualization and sonde control. The canister fits helium for 3 soundings.

5 kg, external size 47 x 36 x 18 cm IP67, MIL C-4150J, STANAG 4280



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