

Vaisala Radiosonde RS92-AM



Features

- P(Y)-codeless GPS technology for continuous wind data availability
- A higher level of PTU measurement performance
- Stable transmission complies with ETSI standard EN 302 054

P(Y)-Codeless GPS

The Vaisala Radiosonde RS92-AM has a GPS receiver which is independent of the GPS C/A-code signal. This GPS receiver detects Doppler frequencies of GPS P(Y)-code signals. The raw P(Y)-codeless data is sent to the ground equipment, which detects the satellites and calculates wind velocity and direction.

Proven PTU measurement performance

The all-digital Vaisala Radiosonde RS92-AM offers the world's highest level of PTU measurement performance: The sum of the excellent individual performance of the Vaisala pressure, temperature and humidity sensors employed.

Fully digital data transmission

The Vaisala Radiosonde RS92-AM's fully digital data transmission offers important advantages over analog data transmission. Data availability during a sounding is excellent and telemetry errors are always detected. The digital transmitter also consumes less power than analog transmitters and more channels are available in the meteorological frequency band.

Complies with ETSI standard for 400 MHz band

The RS92-AM is fully compliant with the European ETSI standard for digital radiosondes operating in the 400 MHz band, EN 302 054. This standard aims to regulate usage of the 400 MHz meteorological band in order to universally improve meteorological data availability.

CAL-4 Calibrated

The RS92-AM's PTU sensors are calibrated in the CAL-4 calibration machine. Designed by Vaisala and built in-house, CAL-4 is the world's most advanced calibration machine for the mass production of PTU sensors.

Technical Data

Meteorological sensors

TEMPERATURE SENSOR	TYPE: CAPACITIVE WIRE
Measurement range	+60 °C to -90 °C
Response time (63.2%, 6 m/s flow)	
1000 hPa	<0.4 s
100 hPa	<1 s
10 hPa	<2.5 s
Resolution	0.1 °C
Accuracy	
Total uncertainty in sounding*	0.5 °C
Repeatability in calibration**	0.15 °C
Reproducibility in sounding***	
1080 - 100 hPa	0.2 °C
100 - 20 hPa	0.3 °C
20 - 3 hPa	0.5 °C

HUMIDITY SENSOR	TYPE: THIN-FILM CAPACITOR, HEATED TWIN SENSOR
Measurement range	0 to 100% RH
Resolution	1% RH
Response time	
6 m/s, 1000 hPa, +20 °C	<0.5 s
6 m/s, 1000 hPa, -40 °C	< 20 s
Accuracy	
Total uncertainty in sounding*	5% RH
Repeatability in calibration**	2% RH
Reproducibility in sounding***	2% RH

PRESSURE SENSOR	TYPE: SILICON
Measurement range	1080 hPa to 3 hPa
Resolution	0.1 hPa
Accuracy	
Total uncertainty in sounding*	
1080 - 100 hPa	1 hPa
100 - 3 hPa	0.6 hPa
Repeatability in calibration**	
1080 - 100 hPa	0.4 hPa
100 - 3 hPa	0.3 hPa
Reproducibility in sounding***	
1080 - 100 hPa	0.5 hPa
100 - 3 hPa	0.3 hPa

Dimensions and weight

Dimensions	220 x 80 x 75 mm
Weight with water-activated battery	Typically 250 g ¹

¹ Weight does not include rigging, unwinder, parachute etc.

WATER-ACTIVATED BATTERY

Voltage	8V, nominal
Operating time	135 mins

Telemetry

Transmitter type	Synthesized
Frequency band	403 MHz
Tuning range	400 - 406 MHz
Frequency stability, 90 % probability	± 2 kHz
Deviation, peak-to-peak	2.4 kHz
Emission bandwidth	According to EN 302 054
Output power (high-power mode)	40 mW min
Modulation	GMSK
Data downlink	4800 bit/s, digital
Measurement cycle	max. 1 s

P(Y)-CODELESS GPS RECEIVER (PDOP<4)

Navigation accuracy	
Velocity measurement uncertainty***	0.5 m/s
Directional measurement uncertainty****	4 degrees

* 2-sigma (k=2) confidence level (95.5 %), cumulative uncertainty including:

- Repeatability
- Long-term stability
- Effects due to measurement conditions
- Dynamic effect (such as response time)
- Effects due to measurement electronics

For humidity T > -60 °C

For pressure T < 35 °C

** Standard deviation of differences between two successive repeated calibrations, k=2 confidence level

*** Standard deviation of differences in twin soundings, fixed station

**** Standard deviation of differences in twin soundings, wind speed above 3 m/s

Note 1: The pressure, temperature and humidity performance specifications given above are valid only when the Vaisala Ground Check Set GC25 is used to perform the ground check, including reconditioning of the humidity sensor.

Note 2: Requires Vaisala DigiCORA Sounding System MW31 with software version 3.52 or newer and P(Y)-codeless GPS wind finding software add-on. Also required is Rockwell Collins PLGR II (Part No 822-1096-013 and software Part No 612-0910-024) or Rockwell Collins DAGR (Part No 822-1873-002 (ver. 0010), Software Part No 984-3006-002) MIL-GPS Receiver.

PLGR II or DAGR (or other compatible P(Y)-receiver) must be provided by the user (GFE) as Vaisala is not authorized to supply them.