Automatic Sounding Station Vaisala
AUTOSONDE® AS41

Vaisala has a long experience of automated soundings, including over 80 delivered systems during the last 25 years and over 700,000 soundings from these systems. This experience is utilized in Vaisala AUTOSONDE® AS41, which is a completely new upper-air observation system for synoptic and adaptive use.

**Features**

- Completely new upper-air observation system for synoptic and adaptive use
- All benefits of Vaisala Radiosonde RS41 and Vaisala MW41 Sounding System
- Reloading needed once in four weeks
- Safe working environment. The basic rule of Vaisala AUTOSONDE systems has always been that gas lines are never fed inside the container.
- Remote control and configuration on common Vaisala Observation Network platform

**High-quality Data**

The AUTOSONDE AS41 system uses Vaisala DigiCORA® Sounding System MW41. This system together with the RS41 radiosonde provides world-class sounding data. The same proven algorithms and procedures, such as automatic ground check, are utilized in automated operations as well as in traditional manual operations.

Reliable start reference for the sounding data is created by Vaisala Automatic Weather Station, installed according to WMO requirements and utilizing a 10-meter mast for wind measurements.

**High Data Availability**

The target rate of successful soundings has been set high. To achieve the target, each individual detail in AS41 has been carefully designed and tested. AS41 is designed to stand even extreme weather conditions around the world. Selection of components and materials together with thoroughly tested automation control guarantees continuous operation without downtimes.

Operational workflow is optimized by ergonomic design and operator errors are minimized by the user-centric design of interfaces.

**Cost Efficient Operation**

Vaisala AUTOSONDE® AS41 offers the longest autonomous sounding capacity on the market. Reloading once every four weeks minimizes the number of necessary site visits. The loading and stocking of radiosondes does not require user expertise, as site operation is easy thanks to the safe working environment and controlled access.

The capability to utilize hydrogen as balloon filling gas presents great savings for the customer, but it also requires disciplined design of compliant system according to tight international Ex standards.

**Easy Remote Control and Monitoring**

Vaisala Observation Network Manager NM10 is used as a modern Commercial-Off-The-Shelf (COTS) platform for remote controlling and monitoring of AS41. Through secure communication protocol, operators can efficiently control sounding schedule, initiate on-demand sounding, and perform remote diagnostics.
Technical Data

**Automatic Sounding Station Vaisala AUTOSONDE® AS41**

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<tr>
<th>Radiosonde</th>
<th>RS41-SG, RS41-SGP</th>
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**Sounding workstation**
- Sounding system software preinstalled
- Operating system Windows 10 preinstalled
- AUTOSONDE Control Software preinstalled
- System recovery tools, including USB drive with recovery image

**Vaisala Sounding Processing Subsystem SPS311**

**Antennas**
- Directional UHF antenna
- GPS antenna

**Automatic ground check device**
- Sensors on separate 10-m mast, complies with WMO CIMO guide 8, or sensors on short mast or integrated to container

**Electricity**

**Main electrical cabinet**
- Inside container
- Surge arresters, circuit breakers, residual current devices, logic controller, safety controller, servo drives, frequency controllers

**Logic controller**
- Industry standard, microprocessor-based, pre-programmed, analog inputs, digital inputs/outputs, electric motor controls

**Input power**
- Voltage: 230/400 VAC 50 Hz 20 A, 3-phase
- 230 VAC 50 Hz 60 A, 1-phase

**Power consumption**
- 6500 W (max.), under 1000 W (average)

**Cabling and wall sockets**
- Halogen-free cabling, wall socket integrated in the operator desk

**Lights**
- On the ceiling, presence detector
- Remote-controlled robotics room lights

**Heater**
- 750 W with thermostat

**Air conditioner with heating functionality**
- 1000 W

**UPS**
- Capacity for completing one ongoing sounding

**Mechanics**

**Launcher vessel tube**
- Dimensions: Diameter two meters
- Construction: Acid-proof steel frame
- Separate from the container

**Cover lids**
- Two pieces, operated by electric gearmotors

**Vessel tube**
- Laminated fiberglass, inside diameter 2 meters

**Gas flow measurement**
- Measurement unit: Installed on the container roof
- Two flexible input gas hoses controlled by magnetic gas valves
- Connection to gas regulator
- Output hose to nozzle controlled by magnetic valves

**Gas flow meter**
- With electrical current output
- Maintenance-free, no moving parts
- Automatic measurement of gas amount

**Balloon filling and size**
- Balloon nozzle connected to the balloon during loading, gas-proof balloon nozzle connection
- Balloon size: 200 - 1200 g

**Container**

**Physical dimensions**
- During transportation (l x w x h): 6058 x 2438 x 2896 (as CSC-approved 20-feet HC sea container)
- During operational use (l x w x h): 7800 x 3300 x 5100
- Access door with window (l x h): 900 x 2100
- Total weight with launcher vessel: 7.5 tons

**Outdoor environment**
- Operating:
  - -40 °C to + 53 °C, 0 to 100 % R.H., condensing, 25 m/s
- Storage:
  - -40 °C to +53 °C, 0 to 100 % R.H., condensing

**Loading capacity**
- Sixty radiosondes

**Storage capacity for consumables**
- Four months (two soundings a day)

**Certification**
- CE-marked, including machine safety and Ex-issues
- Machinery Directive 2006/42/EC

**Remote Server**

**Server**
- Vaisala Observation Network Manager software NM10 pre-installed
- Operating system Windows 10, pre-installed
- System recovery tools including USB drive with recovery image

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