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WA25 Wind Set for Arctic Conditions

The WA25 resists snow build-up and ice formation. The result is accurate wind measurement in cold environments.

Features/Benefits

- Non-freezing, high-performance wind set
- Cups and vane, sensor bodies and bearings are heated to prevent snow buildup and ice formation
- Accurate wind speed and direction measurement
- Low measurement starting threshold
- Conical anemometer cups provide excellent linearity

The Vaisala Wind Set WA25 is a high-quality cup and vane wind measurement station designed for arctic conditions.

The WA25 consists of a Vaisala Anemometer WAA252, a Vaisala Wind Vane WAV252, an optional crossarm, a power supply and cabling.

Heating provides resistance to snow and ice

Most of the heating power is consumed where it is needed most – in the cups and vane. Foil heaters, integrated into the cups and vane, prevent snow buildup and ice formation.

Heating power is also supplied to the sensor shafts, bearings and bodies. This keeps the sensor bodies free of ice, which is important for maintaining the aerodynamic performance.

Anemometer with excellent linearity

The WAA252 is a fast-response, low-threshold anemometer. Three lightweight, conical cups mounted on the cup wheel, provide excellent linearity over the entire operating range, up to 75 m/s.

A wind-rotated chopper disc attached to the shaft of the cup wheel cuts an infrared light beam 14 times per revolution. This generates a pulse output from a phototransistor.

The output pulse rate is directly proportional to wind speed (e.g., 246 Hz = 24.6 m/s). However, for the highest accuracy, the characteristic transfer function should be used to compensate for starting inertia. (See technical data.)

Sensitive wind vane

The WAV252 is a counterbalanced, low threshold, optoelectronic wind vane. Infrared LEDs and phototransistors are mounted on six orbits on each side of a 6-bit GRAY-coded disc. Turned by the vane, the disc creates changes in the code received by the phototransistors. The output code resolution is ±2.8°.

Complete package available

The anemometer and vane are designed to be mounted on Vaisala crossarms.

The WHP25 power supply provides the needed operating and heating power for the WA25. The power supply, as well as the signal and power cables are available as options.

The WHP25 power supply provides the operating and heating power needed by the WA25.

Technical Data

Vaisala Anemometer WAA252

Wind speed

Measurement range	0.4 ... 75 m/s
Starting threshold	< 0.5 m/s *
Distance constant	3.4 m
Transfer function	U = 0.39 + 0.10 × R
(where U = wind speed [m/s], R = output pulse rate [Hz])	
Accuracy (within range 0.4 ... 60 m/s)	
with characteristic transfer function	± 0.17 m/s **
with transfer function U = 0.1 × R	± 0.5 m/s

General

Transducer output level	
with Iout < +5 mA	high state > 11V
with Iout > –5 mA	low state < 2V
Operating power supply	U_{in} = 24 VDC ± 10%, max. 3.2 A
Typical power consumption (U_{in} = 24 VDC)	
	72 W below +2 °C (+36 °F) (heating on)
	1 W above +6 °C (+43 °F) (heating off)
Plug	MIL-C-26482 type
Recommended connector at cable end	SOURIAU MS3116F10-6P
Operating temperature	–55 ... +55 °C (–67 ... +131 °F)
Storage temperature	–60 ... +70 °C (–76 ... +158 °F)
Material	
housing	AlMgSi, grey&black anodized
cups	PA, reinforced with glassfibre
Dimensions	264 (h) × 90 (Ø) mm
Swept radius of cup wheel	91 mm
Weight	800 g

Test compliance

Wind tunnel tests	ASTM standard method D5096-90
(for starting threshold, distance constant, transfer function)	
Exploratory vibration test	MIL-STD-167-1
Humidity test	MIL-STD-810E, Method 507.3
Salt fog test	MIL-STD-810E, Method 509.3

Complies with EMC standard EN61326-1:1997 + Am1:1998 + Am2:2001; Generic Environment

* Measured with cup wheel in position least favoured by flow direction. Optimum position gives approx. 0.35 m/s threshold.
** Standard Deviation

Vaisala Wind Vane WAV252

Wind direction

Measurement range	0 ... 360°
Starting threshold	< 0.4 m/s
Resolution	±2.8°
Damping ratio	0.23
Overshoot ratio	0.47
Delay distance	< 0.5 m
Accuracy	better than ±3°

General

Operating power supply	24 VDC ± 10%, max. 2.1 A
Typical power consumption (U_{in} = 24 VDC)	
	50 W below +2 °C (+36 °F) (heating on)
	1 W above +6 °C (+43 °F) (heating off)
Output code	6-bit parallel GRAY
Output levels	
With Iout < +3 mA	high state > 11V
With Iout > –3 mA	low state < 2V
Plug	MIL-C-26482 type
Recommended connector at cable end	SOURIAU MS3116F12-10P
Operating temperature	–55 ... +55 °C (–67 ... +131 °F)
Storage temperature	–60 ... +70 °C (–76 ... +158 °F)
Material	
housing	AlMgSi, grey&black anodized
vane	carbon fibre + glassfibre
Dimensions	355 (h) × 90 (Ø) mm
Swept radius of vane	218 mm
Weight	850 g

Complies with EMC standard EN61326-1:1997 + Am1:1998; Am2:2001; Generic Environment

Test compliance

Wind tunnel tests	ASTM standard method D 5366-93
(for starting threshold, distance constant, transfer function)	
Exploratory vibration test	MIL-STD-167-1
Humidity test	MIL-STD-810E, Method 507.3
Salt fog test	MIL-STD-810E, Method 509.3

Vaisala Wind Set WA25 for arctic conditions

Options and accessories

Crossarm and termination box	WAC151
16-lead signal cable	ZZ45048
6-lead power cable	ZZ45049
Crossarm and analog transmitter	WAT12
6-lead cable for signal and power	ZZ45049
Crossarm and serial RS485 transmitter	WAC155
Serial RS485 transmitter card	WAC155CB
Set of bearings and gasket	1664WA
Cup assembly	WA35066
Power supply	WHP25