VectoDAQ Air

Miniature pressure scanner and data reduction in an all-in-one device

- 5- + static ring and 14-hole probes
- Robust design with aluminum housing and LEMO connector
- Data acquisition over CAN, or USB Port

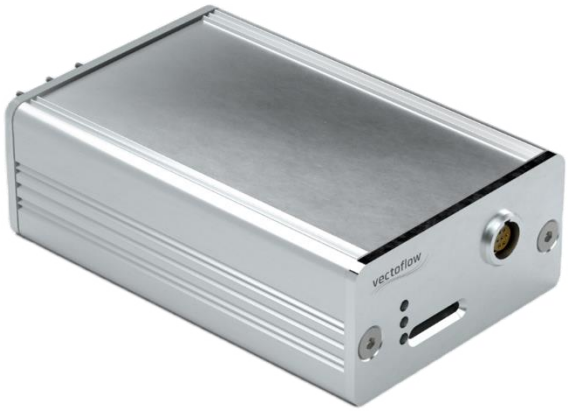

Figure 1 VectoDAQ Air

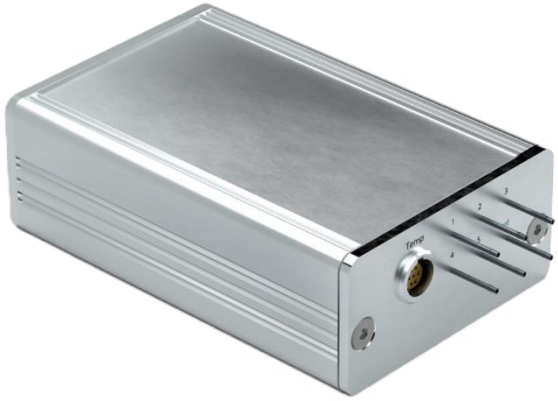

Figure 2 Front panel (Example for 5-hole probes)

Figure 3 5-hole probe

General	
Weight	130 g *
Dimensions	84 x 55 x 28 mm *
Probe options	5- and 14-hole probe heads
Environmental Conditions	
Operating temperature	-20 ... 70 °C (-4 … 158 °F)
Operating medium	Air and other non-corrosive gases
Humidity	0 ... 95%, non-condensing

* for 5-hole version

General

The VectoDAQ Air is designed to measure multiple pressure signals and temperature simultaneously. The device also performs data reduction, allowing you to monitor and record engineering data in real-time. The setup can be used with any laptop, in field or laboratory environment.

Pressure Acquisition	
Pressure acquisition	Up to 14 differential pressure sensors with variable pressure ranges
Accuracy	Max +/- 0.25 % FS (typical +/- 0.1 %)
Acquisition of absolute pressure	Barometric pressure sensor
Accuracy	1.25 hPa

Temperature Acquisition	
Temperature measurement	Thermocouple Type K or PT100
Accuracy	< 1 K

Sensor Options	
Differential pressure range (kPa)	**Max. Mach number**
0.25	0.06
0.50	0.09
1.25	0.13
2.50	0.19
5.00	0.26
7.50	0.32
15.00	0.43
34.00	0.64
100.00	-

Measurement Errors	
Angle	< 1°
Velocity	< 1.0 m/s or < 1.0 % whichever is greater
Temperature	< 1 K

Interface	
USB	Communication with Host PC (configuration and data acquisition)
Power	5 V via USB or 7 – 36 V (via CAN)
Pressure connection	Metal tube ⌀ 1.06 mm or ⌀ 1.6 mm
Cable (included)	1.8 m LEMO (FGG.0B.307 to USB)
Cable (optional)	LEMO (FGG.0B.307 D-SUB 9 (CAN))
Max. data transmission rate	50Hz

Sensors and Electronics

The VectoDAQ Air is equipped with up to 14 differential and one absolute pressure channel. All differential pressure sensors can be selected by pressure range. The temperature-compensated pressure transducers feature high accuracy and a minimal offset drift. The high proof pressure provides sufficient protection against accidental overloads.

PC Communication

The data can be transmitted either by USB or CAN protocol. The transmission rate can be set up to 50 Hz.

When connected via USB the pressure scanner identifies itself to the host PC as a virtual COM port. Thus, any software supporting serial protocols can be used for communication. A 5 V power supply is provided simply via USB.

The CAN-bus protocol is implemented according to the CAN 2.0A or CAN 2.0B specification with Baud rates up to 1 Megabaud. A DBC-file (Vector-format) is supplied for easy integration in measurement environments. CAN/Power connector cables can be supplied, including a CAN termination resistor. Power is supplied over the CAN bus connector (LEMO connector). The grounding of the device is generally recommended.

The data acquisition can be done with VectoVis, where e.g., a live view of all data and data recording function in readable file formats such as .csv is available.

Outputs

The following output values are available:

Output **	
Name	**Unit**
P1…P5 (differential pressure)	[Pa]
Pabs (absolute pressure)	[Pa]
Ttc (temperature of RTD or TC)	[°C]
Theta (cone angle)	[°]
Phi (roll angle)	[°]
Alpha (angle of attack)	[°]
Beta (yaw angle)	[°]
V_{mag} (velocity magnitude)	[m/s]
u (x-component of velocity)	[m/s]
v (y-component of velocity)	[m/s]
w (z-component of velocity)	[m/s]
P_d (dynamic pressure)	[Pa]
P_s (static pressure)	[Pa]
ρ (air density)	[kg/m^3]
T_{tot} (total temperature)	[°C]
T_s (static temperature)	[°C]
M (Mach number)	[-]
Alt (baro altitude)	[m]
AltAbs (absolute altitude)	[m]
Num (counter)	[-]
Error	[-]

** Details see Manual