AETHLABS SCOUT SD1

Measurements (details on page 2 and 3)
Real-time multi-pollutant air monitor with dual PM sensors
- Particulate Matter Mass Concentration (PM_1, $PM_{2.5}$)
- Particle Count ($PM_{0.5}$, PM_1, $PM_{2.5}$)
- Carbon Dioxide (CO_2)
- Nitrogen Oxides (NO_x)
- Total Volatile Organic Compounds (tVOC)
- Temperature (T)
- Relative Humidity (RH)

Dimensions and Weight
- Height: 152.5mm (6 inches)
- Width: 75mm (2.95 inches)
- Depth: 100mm (3.94 inches)
- Weight: 154 grams (5.43 ounces)

Wireless Communications / Data Output
- Data stored in local removable microSD card
- WiFi transmission to cloud data management system
- Real-time and bulk data transfer when network is available
- 802.11 b/g/n Wi-Fi

Connections
USB-C (Power)

Physical Features
- Passively ventilated to reduce effects of direct solar radiation and optimize sensor response
- Integrated mounting bracket with power cord strain relief
- Secure encrypted communication

Key Features
- Dual PM sensors optimizes data QA, longevity
- Aerosol conditioning to reduce optical humidity effects in aerosol measurements
- Setup, configuration, and management over local WiFi network
- Remote device management via internet over WiFi
- Data are accessible directly from microSD card (included) and remotely via AethLabs website & API
- Store-and-forward data buffering to reduce impact of network outages

Data Storage
16 GB removable microSD card (must be installed to operate), providing local data storage

Data Logging to Internal Storage and Transmission to Cloud (User setting)
Standard: 120 or 300 seconds
Paid subscription: 30, 60, 120 or 300 seconds

Power Supply Adapter
Outdoor-rated IP67 territory specific USB-C wall adapter, length 6m (20')
Input: 100~240 VAC 50/60 Hz 0.3 A
Output: 5VDC / 2A, USB-C

Operation Environment
-10 ~ 50 °C operating (aerosol conditioning off), 20% - 90% RH - non-condensing

Included
- SCOUT SD1
- 1 Removable 16 GB microSD card
- 1 Outdoor-rated IP67 territory specific USB-C wall adapter, length 6m (20')
- 2 14.5" Length, black polypropylene plastic cable ties
- 2 3/4" Length, polyethylene plastic drywall anchors
- 2 1" Length, No. 6 rounded head, 316 stainless steel wood screw

Specifications are subject to change without notice.

Dual Sensirion SPS30 PM Sensors		
Parameter	**Conditions**	**Value**
Mass Concentration Tested Range	-	0 - 1,000 µg/m³
Mass Concentration Size Range	PM_1	0.3 - 1.0 µm
	$PM_{2.5}$	0.3 - 2.5 µm
Mass Concentration Precision	0 - 100 µg/m³	± [5 µg/m³ + 5 % mv]
	100 - 1,000 µg/m³	± 10 % mv
Mass Concentration Max Long-Term Precision Limit Drift	0 - 100 µg/m³	± 1.25 µg/m³/yr
	100 - 1,000 µg/m³	± 1.25 % mv/yr
Particle Count Tested Range	-	0 - 3,000 #/cm³
Particle Count Size Range	$PM_{0.5}$	0.3 - 0.5 µm
	PM_1	0.3 - 1.0 µm
	$PM_{2.5}$	0.3 - 2.5 µm
Particle Count Precision	0 - 1,000 #/cm³	± 100 #/cm³
	1,000 - 3,000 #/cm³	± 10 % mv
Particle Count Max Long-Term Precision Limit Drift	0 - 1,000 #/cm³	± 12.5 #/cm³/yr
	1,000 - 3,000 #/cm³	± 1.25 % mv/yr
Sampling Interval	-	1 ± 0.4 s
Additional Temperature-Dependent Mass Concentration & Count Precision Limit Drift	Temperature difference to 25°C	± 0.5 % mv / °C

Aerosol Conditioning
- Novel integrated sensor inlet heating element
- User configurable for relative and absolute setpoints

Carbon Dioxide (CO_2) Sensor		
Parameter	**Conditions**	**Value**
Output Range	-	0 - 40,000 ppm
Accuracy	400 - 2,000 ppm	± [50 ppm + 5%]
Repeatability	400 - 2,000 ppm	± 10 ppm
Response time	τ63%	60s
Accuracy Drift	after 5-years	± [5 ppm + 5%]

Total Volatile Organic Compounds (tVOC) and Nitrogen Oxides (NO_x) Sensor*		
Parameter	**Conditions**	**Value**
tVOC Reporting Range	-	0 - 500 VOC index units (100 = average)
tVOC Specified Range	Ethanol in clean air	500 - 10,000 ppb

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tVOC Tested Range	Ethanol in clean air	0 - 1,000,000 ppb
tVOC Limit of Detection	Ethanol in 50 ppb ethanol and 0 ppb NO_2	< 50 ppb (or < 10% of concentration setpoint [the larger])
tVOC Inter-Device Variability	-	< ± 15 index units (or % mv [the larger])
tVOC Repeatability	-	< ± 5 index units (or % mv [the larger])
tVOC Response Time	τ63%, raw signal changing concentration from 5,000-10,000 ppb of ethanol at sampling interval of 1 s	< 10 s
NO_x Reporting Range	-	1 - 500 NO_x index units (1 = average)
NO_x Specified Range	NO_2 in clean air	50 - 650 ppb NO_2
NO_x Tested Range	NO_2 in clean air	1 - 10,000 ppb
NO_x Limit of Detection	NO_2 in 500 ppb of ethanol in else clean air	< 20 ppb (or < 10% of concentration setpoint [the larger])
NO_x Inter-Device Variability	-	< ± 15 index units (or % mv [the larger])
NO_x Repeatability	-	< ± 5 index units (or % mv [the larger])
NO_x Response Time	τ63%, raw signal changing concentration from 150 to 300 ppb of NO_2 at sampling interval of 1 s	< 250 s

* Reported using Sensirion's open source VOC & NO_x indexes, not concentration.

Relative Humidity (RH) Sensor		
Parameter	**Conditions**	**Value**
Humidity measurement range	-	0 %RH - 100 %RH
Accuracy (typical)	15 °C – 35 °C, 20 %RH – 65 %RH	± 6 %RH
	-10 °C – 60 °C, 0 %RH – 100 %RH	± 9 %RH
Response time	τ63%, typical	90 s
Accuracy Drift	-	< 0.25 %RH / year

Temperature (T) Sensor		
Parameter	**Conditions**	**Value**
Temperature measurement range	-	-10 - 60 °C
Accuracy (typical)	15 °C – 35 °C	± 0.8 °C
	-10 °C – 60 °C	± 1.5 °C
Response time	τ63%, typical	120 s
Accuracy Drift	-	< 0.03 °C / year

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