

Advanced Environmental Instrumentation

Harnessing the Power of Mobile Computing



✓ Surveyed

✓ Documented

✓ Reported



ADVANCEDSENSE[®] IAQ

DIRECTSENSE[®]

Indoor Air Quality Meters

Realtime

File	Log	Probe	View
TVOC		56	ppb
Carbon Dioxide		945	ppm
Carbon Monoxide		0.3	ppm
Ozone		0.01	ppm
Temperature		18.9	°C
Relative Humidity		37.3	%RH
PM 2.5		5.1	µg/m3
PM 10		38.6	µg/m3

Photo(s) attached

Time Tagged Event Note attached

Audio Note attached

Text Note attached

Drawing attached

Live: Bldg 6/General Office

Example Screens

Click the SNAP icon (or the LOG button on DSII probes) to record measurements, time, date and detailed location name

Snap-Shot Log

TVOC	367 µg/m3
CO2	747 ppm
CO	0.0 ppm
O3	0.00 ppm
Temp	77.2 °F
RH	24.3 %RH

Log at intervals of your choice. Optionally display trend graphs on meter

Trend Log Graph

Logging: Carbon Dioxide ppm

Options Full Screen Select

Carbon Dioxide ppm

Audio Note

WolfSense 2013

Audio Note: Hospital/Nurses Stn

ERASE Play Stop Rec

OK

GrayWolf is transforming the way that environmental measurements are taken. GrayWolf's IAQ kits harness leading edge sensor technology with the power and performance of mobile computing. Efficiently display, document, access educational info (on-site) and report on IAQ parameters.

- An essential component of any professional IAQ program
- Organizes ALL survey info; data, text, calibration history and more...
- Measures VOCs, CO₂, CO, O₃, NO₂, %RH, Dewpoint, Temperature and more... accurate and fast. Industry leading CO₂ accuracy at +/- 35ppm over the IAQ range
- Options for Particulate, other Toxic Gases (e.g. HCHO, Cl₂, H₂S), Differential Pressure, Airspeed and more... all simultaneously
- WolfSense[®] PC desktop software is included for data review, graph creation, cut & paste report generation
- Optional Advanced Report Generator software for automated, ultra-efficient, detailed IAQ reports
- Tap the screen for educational info: sensor tips, on-board help videos, IAQ documents and guidelines
- Intuitive and extremely Easy-To-Use



Choose Your Platform:

AdvancedSense Handheld Embedded PC Meter



WolfPack® Modular Area Monitor



GrayWolf Supplied Win10 Tablets
Standard or rugged tablets with great standard features (built-in camera, Bluetooth, WiFi). Or use your own.

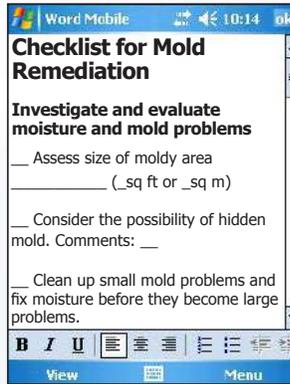


MN10-RT2 Rugged tablet includes durable hand-strap

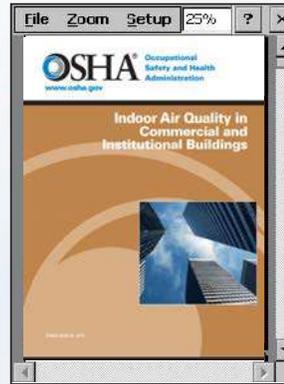
Remote Data Access to, and email/text alerts from, any WiFi enabled platforms via optional **GrayWolfLive®**

Example AdvancedSense/WolfPack Screens

Field Form



On-Board Docs



Video Help



Realtime (multi-probe)

File	Log	Probe	View
TVOC			1364 µg/m3
Carbon Dioxide			766 ppm
Carbon Monoxide			0.2 ppm
Hydrogen Sulfide			0.34 ppm
Temperature			23.2 °C
Relative Humidity			28.7 %RH
Formaldehyde			18 ppb
Particulate			49.4 µg/m3
Barometric			760 mmHg

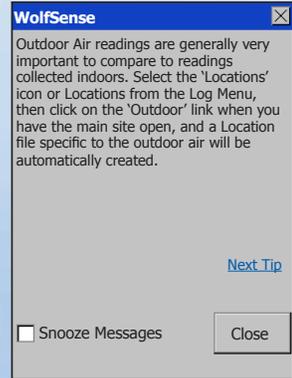
Interactive Data template attached

Live: Bldg 6 Teacher Lounge

Video attached

Text template Attached

Probe Cal Info attached



Operational Tips (extensive on-board meter and sensor info)

Display measurements in realtime. Access "sensor tips", IAQ documents and guidelines on-screen. Store "snapshot" readings. "Trend" log over hours/days/weeks/months. Document each measurement location with text, graphic, even audio notes. Also attach photos, Word field forms, time-stamped event notes, calibration history and other info to data files.

- Optimize the balance between ventilation energy efficiency and occupant performance, health and wellness.
- Easily establish baseline data & respond immediately to complaints
- Test conditions before and after building modifications
- Screen for additional testing requirements
- Track down (bloodhound) pollutant sources

Example Tablet/Laptop Screens

Realtime (DSII plus Particulate & Formaldehyde)

File	Log	Probe	View
TVOC			317 ppb
Carbon Dioxide			793 ppm
Carbon Monoxide			2.1 ppm
Ozone			0.05 ppm
Temperature			23.8 °C
Relative Humidity			25.0 %RH
PM 0.5			2.71 µg/m3
PM 1.0			6.19 µg/m3
PM 2.5			7.93 µg/m3
PM 5.0			12.22 µg/m3
PM 10.0			24.67 µg/m3
TPM			37.62 µg/m3
Formaldehyde			18 ppb

Realtime (IQ-410 w/ PM10 Particulate Concentration)

Temperature	75.1 °F
Relative Humidity	51.4 %RH
Carbon Monoxide	1.4 ppm
Carbon Dioxide	950 ppm
Particulate	1.1 µg/m3

DirectSense probes can also connect directly to Windows 8/Vista/10 PCs using GrayWolf's WolfSense LAP software app.

TVOCs

Carbon Dioxide

Carbon Monoxide

Relative Humidity

Temperature

+ up to 3 more gases

Highly accurate, extremely fast response sensors. Perfect for walk-through surveys, rapid response to complaints, quick outdoor air comparisons, for long-term IAQ trending and for continuous monitoring (on-board and/or via WiFi). Track VOCs over time, rapidly blood-hound VOC sources or determine optimum locations and times to take air samples for VOC speciation via lab analysis.



DSII-8

Choose the sensors that you need for IAQ applications, up to 8 total (5 for the DSII-5). Typically TVOCs, CO₂, CO, %RH and C/F. Add O₃, NO₂ and/or other parameters, choosing from:

- Ozone
- Nitrogen Dioxide
- Nitric Oxide
- Ammonia
- Chlorine
- Hydrogen Sulfide
- Sulfur Dioxide
- Oxygen

And even toxic gases such as: CH₂O, HCN, HCl, H₂, EtO, SiH₄, AsH₃, ClO₂, HF, F₂ and more...



IQ-610

TVOCs, CO₂, CO, %RH & °C/°F. The IQ-610 also includes a socket for 1 additional EC (specific gas) sensor.



IQ-410

CO₂, CO, %RH & °C/°F. The bare basics for IAQ testing.



AS-202A

Air Velocity probe (telescoping with 90° articulating tip and laser etched cm & inch scales)



FM-801

Formaldehyde (ppb HCHO)



PC-3500

Particulate Meter (PM1, PM2.5, PM10, TSP and 2 others Simultaneously)



PM-601

Particulate Concentration (PM1, PM2.5, PM10 or TSP)

Interface these meters to GrayWolf platforms; and/or use as stand-alones

A 2nd or 3rd DirectSense probe (+airspeed +DP +BP for AdvancedSense or WolfPack), may be connected simultaneously with the option to also add a particulate and/or very low L.O.D. formaldehyde meter. All parameters display and log to the same data file.

Expand your GrayWolf system as your measurement needs grow and as industry and legislative requirements change.



ADVANCEDSENSE® DIRECTSENSE® IAQ

Indoor Air Quality Meters

SPECIFICATIONS: IQ-410, IQ-610, DSII-3/5/7*, DSII-8*

*DSII SENSORS CAN BE MIXED AND MATCHED TO BEST SUIT YOUR APPLICATION; TRH + up to 6 SENSORS (8 total) for DSII-8, TRH + 5 (excepting CO₂) for DSII-7, TRH +3 for DSII-5, TRH + 1 for DSII-3

Carbon Monoxide: (electrochemical) Range: 0 to 500ppm

Accuracy: ± 2 ppm <50ppm, $\pm 3\%$ rdg >50ppm

Carbon Dioxide: (NDIR) Range: 0 to 10,000ppm

DSII Accuracy: ± 35 ppm over the IAQ range (350ppm-2000ppm)
 ± 35 ppm $\pm 3\%$ rdg >2000ppm

DSI Accuracy: ± 50 ppm $\pm 3\%$ rdg over the full range

VOCs: (PID) not for IQ-410 Range: 5 to 20,000ppb

(user selectable units: ppb, ppm, $\mu\text{g}/\text{m}^3$, mg/m³)
Resolution: 1ppb, L.O.D. <5ppb

10.6 eV PIDs do not respond to VOCs with ionization potentials >10.6, such as ethane, methane or formaldehyde. However, they do respond to the vast majority of VOCs. Standard calibration is to Isobutylene. Users may calibrate to alternative VOCs.

Relative Humidity: (capacitive) Range: 0 to 100 %RH

Accuracy: $\pm 2\%$ RH <80%RH ($\pm 3\%$ RH >80%RH)

Temperature: (Pt100) Range: -10° to 160°F (-25° to +70°C)

Accuracy: ± 0.3 °C

Response Time: All sensors exhibit 90% response <1 minute

DSI Probe Dimensions**:

Weight (probe): w/batteries 1lb. 10oz. (0.7kg)

Power (IQ-410): 2 x D cells; probe battery life 100+ hrs.

(IQ-610): typical probe battery life 50+ hrs.

**Refer to DirectSense II brochure for DSII dimensions and battery life.

Operating Range

PID (VOC) sensors: 0 to 90%RH, -15 to 60°C

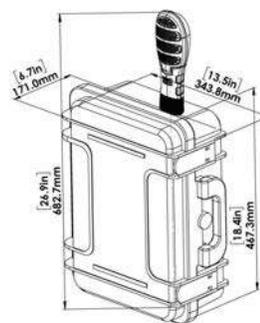
Probe & other sensors: 0 to 98%RH (non-condensing), -15 to 60°C

PC Software Requirements: Windows 7/8/10

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT FURTHER NOTICE

- AdvancedSense IAQ kits include an AdvancedSense meter. DirectSense IAQ TAB kits include a WIN10 tablet PC. These complete kits also come with probe, WolfSense PC desktop data transfer software, hardshell security case, and more. Contact GrayWolf for details.
- Alternative carry cases, pouches, belt clips, extension cables and other accessories are also available from GrayWolf. View them on our website at: GrayWolfSensing.com/Accessories.

Measure Smart



▶ **PCC-AS01**
AdvancedSense pouch and
PCC-05IQ
probe pouch
(shown w/
FM-801
formaldehyde
meter)



▶ **PCC-15** Dual DSI
Probe Security Case
(shown with optional
FM-801 formaldehyde
meter and **PC-3016**
particulate meter)



▶ **CA-HD2**
Gas Calibration Hood
for DSI Probes, may
also be used for fan/
pump air sampling



Report Efficiently



▶ **PCC-20** DSII Security Case
(shown above w/optional
ACC-BRK1 brackets for
external HCHO or other meters)

▶ **ACC-TPDL-KIT** includes tripod
and mounts for various meters/
probes, plus nylon carrying
pouch ▼



▶ **CA-HD4-A1**
Gas Calibration Cap for DSII Probes

▶ **CA-GS25L**
TVOC Calibration Kit for DSI
(specify CA-GS25L-DSII for
DSII). NIST traceable reference
gases are also available for
CO₂, CO and other gases.

