VOC / Formaldehyde / Benzene / Toluene / Xylene Air Quality Monitor

Model: FBXYF3DL (ForBiX YellowFox3 Data Logger)

Technical Product Specification Document



The model **FBXYF3DL** set includes the following core components:

- **1 × VOC/Formaldehyde Air Quality Monitor**
- **1 × Power Adapter** (110-240V AC to 12V DC)

The FORBIX SEMICON® VOC/Formaldehyde/Benzene/Toluene/Xylene Air Quality Monitor is a high-sensitivity, real-time detection module designed for continuous assessment of indoor and industrial air quality. Utilizing advanced metal-oxide semiconductor (MOS) sensing technology, the device delivers precise measurement of formaldehyde (HCHO) alongside broad-spectrum sensitivity to volatile organic compounds (VOCs), including hazardous aromatic hydrocarbons such as Benzene, Toluene, and Xylene (BTX).

Ideal for smart HVAC systems, air purifiers, IAQ monitors, and automotive cabin air management, this monitor translates raw gas concentrations into an intuitive, user-friendly air quality grading system.

Model: **FBXYF3** (Standalone Air Monitor)
Model: **FBXYF3DL** (Air Monitor with datalogger)

Onboard Datalogger – Logs air quality data directly to an internal SD card for long-term recording and offline analysis

Built-in Real-Time Clock (RTC) – Time-stamps every reading for accurate trend tracking and event correlation

Integrated TFT Display – Shows real-time air readings, grade status (Good/Fair/Poor/Alarm), and historical data directly on the device

Wi-Fi Connectivity – Streams live readings to any external computer monitor, smartphone, or mobile device via local network or web dashboard

Broad VOC Sensitivity – Detects not only formaldehyde but also other hydrocarbons including Benzene, Toluene, and Xylene for comprehensive air quality assessment

Technical Data

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VOC/Formaldehyde Air Quality Monitor: Technical Product Document

Product designed and manufactured by FORBIX SEMICON®

VOC / Formaldehyde / Benzene / Toluene / Xylene Air Quality Monitor

Model: FBXYF3DL (ForBiX YellowFox3 Data Logger)

Technical Features





Dimensions:

- Device size: 180 x 180 x 25 mm
- Weight: 250-280 gms

Features:

- VOC / Formaldehyde (gaseous form) measuring range: 0.000 to 5.000 ppm
- Accuracy: ±5%
- Resolution: ≤ 0.1 ppm
- Long term stability: ±0.5 %rH
- Operating temperature: 0°C to +50°C
- Operating humidity: 0 to 100 %rH (relative humidity)
- Relative sensitivity for various different vapors
  - LPG / CNC, highly sensitive
  - Formaldehyde (HCHO), highly sensitive
  - Benzene, Toluene, moderately sensitive
  - Gasoline and petroleum products, highly sensitive

Display details:

- Ambient concentration of VOC (near the sensor)
- Reading is in ppm (parts per million)
- Colour coded air quality reading (GOOD/NORMAL/POOR/ALARM), shown by corresponding background screen colors, viz. GREEN / YELLOW / MAGENTA / RED)
- RTC (Real Time Clock) status: OK/ FAIL
- Log status: OK / FAIL (for models enabled with datalogger)
- Present Time
- Present Date

Data logging:

- 24×7 data logging capability
- Wi-Fi data download
- SD Card data download2/4/8/16GB information
- New file created on daily basis
- Only readings with a variation of more that ±0.005 ppm is recorded on the SD card

Operating voltage:

12 volt DC (FBXYF3T monitor comes with an adapter 110-220VAC to 12VDC)

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Air Monitor Readings at a Glance



GOOD

value < 0.10 ppm



NORMAL

0.10 ppm < value < 0.50 ppm



POOR

0.50 ppm < value < 1.50 ppm

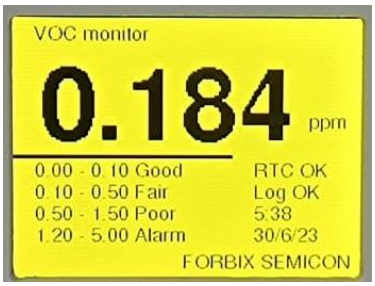


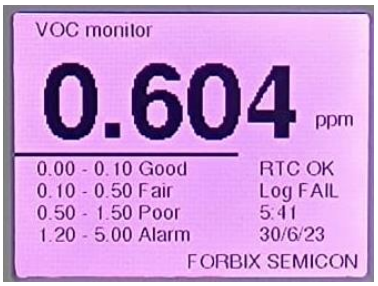
ALARM

1.20 ppm > 5.00 ppm

Level of VOC gas content range









Contents of VOC Monitor TFT display interface

VOC / Formaldehyde / Benzene / Toluene / Xylene Air Quality Monitor

Model: FBXYF3DL (ForBiX YellowFox3 Data Logger)

Air Monitor WiFi Connection



The VOC air quality monitor launches a WiFi Hotspot and acts as a local server device.

Any external client machine line a computer or smart phone can connect to this secured WiFi network. It is also possible to connect to an existing WiFi network.

It then gives access to the configuration control page of the air monitor device.

The current ambient readings visible on the monitor screen as well (apart from the TFT).

The 24x7 data logger records the changing data into a log file (corresponding to present date). It is a .csv (comma separated), that keep a track of any ongoing change in the data value.

VOC / Formaldehyde / Benzene / Toluene / Xylene Air Quality Monitor

Model: FBXYF3DL (ForBiX YellowFox3 Data Logger)

Steps to connect to WiFi and Precautions

Note:
The gas must reach the sensing point via the air inlet cavity holes for the monitor to detect VOC concentration. Therefore, the VOC monitor will only detect VOCs that diffuse or are carried into the immediate vicinity of the sensor. It will not detect VOCs located at a distance from the device, nor will it detect VOCs originating from a localized point source that is not distributed throughout the air reaching the sensor.

Precautions:

- When not in use, keep the machine in turn OFF position
- Do not expose the unit to high concentration of VOC for prolonged duration.
- If the measurement reaches ALARM condition, then it is recommended to turn off the unit after noting the readings and place this apparatus at a relatively clean location
- For accurate readings, avoid exposing the device to polluted environments that are over 1.000ppm for a duration over 2-3 minutes
- Recalibration time nearly 4000 working hours.

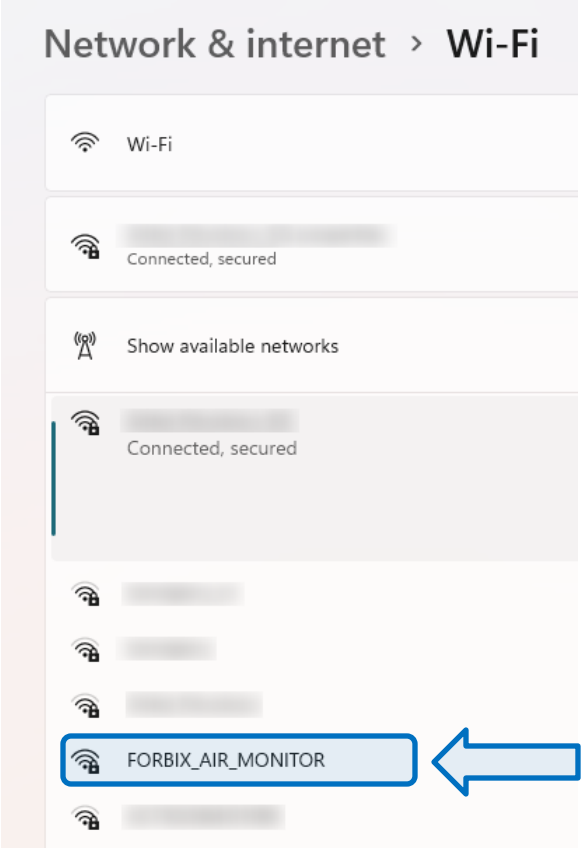
Environmental Requirement:
Operating Temperature: 0°C to 40°C
Storage Temperature: 5°C to 25°C
Relative Humidity: 5% (0°C) ~ 95% (40°C) RH

Step by Step procedure to Connect to Device WiFi:

Step1: Connect to Wifi network

- Search of active wifi network of the device
  WiFi name: **FORBIX_AIR_MONITOR**
  WiFi password: *Request from the sales team*

- Connecting the device for the first time, url on any browser type **http://192.168.4.1** on the url



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Step2: Connect to Wifi network

Connect to available WiFi network, using WiFI SSID (user ID) and WiFi password for eventual connections.

This will ensure on next boot onwards, the url of the page is **http://forbix-voc.local/**

(instead of **http://192.168.4.1**)

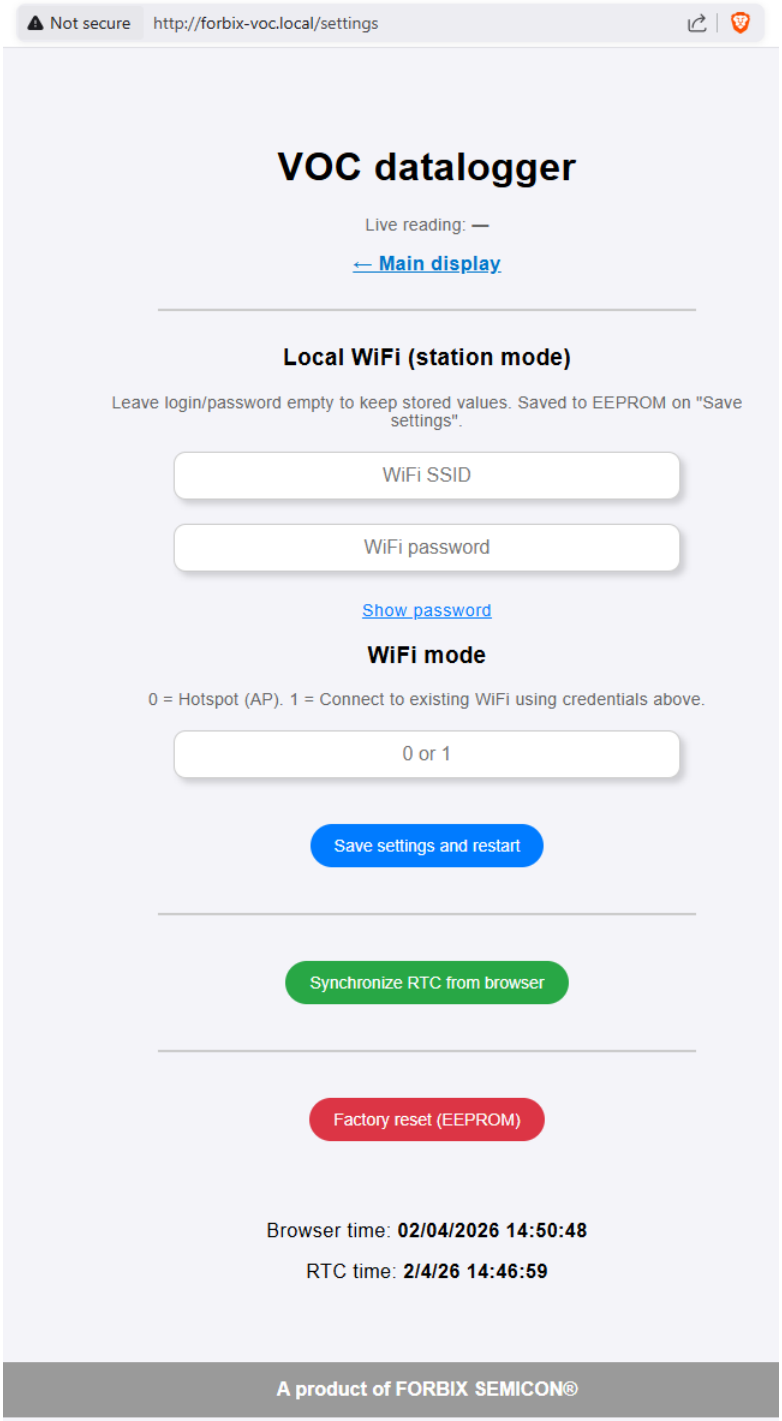
Note: Enable WiFi mode (by 1)

Step3: Synchronize Clock / Factory Reset

Synchronize RTC from browser (as the name suggests), matches the internal Real Time Clock to the browser data and time.

(It is suggested to restart the machine after changing the time. Once in 2-3 weeks the RTC should be synchronized to catch up for battery related delays)

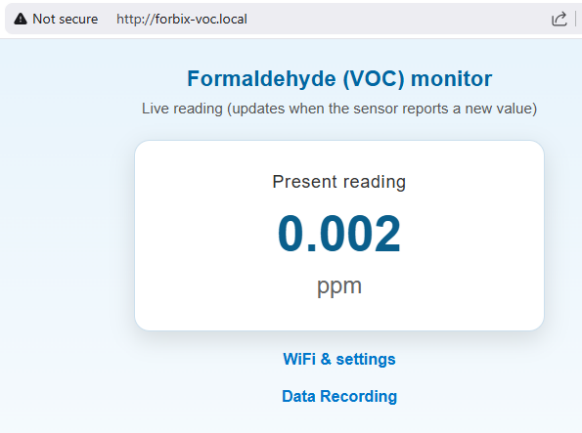
Factory reset button clears all the internal memory structure and starts fresh as a new machine.

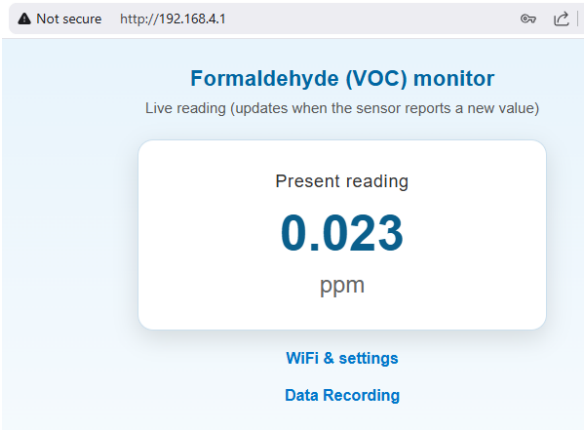


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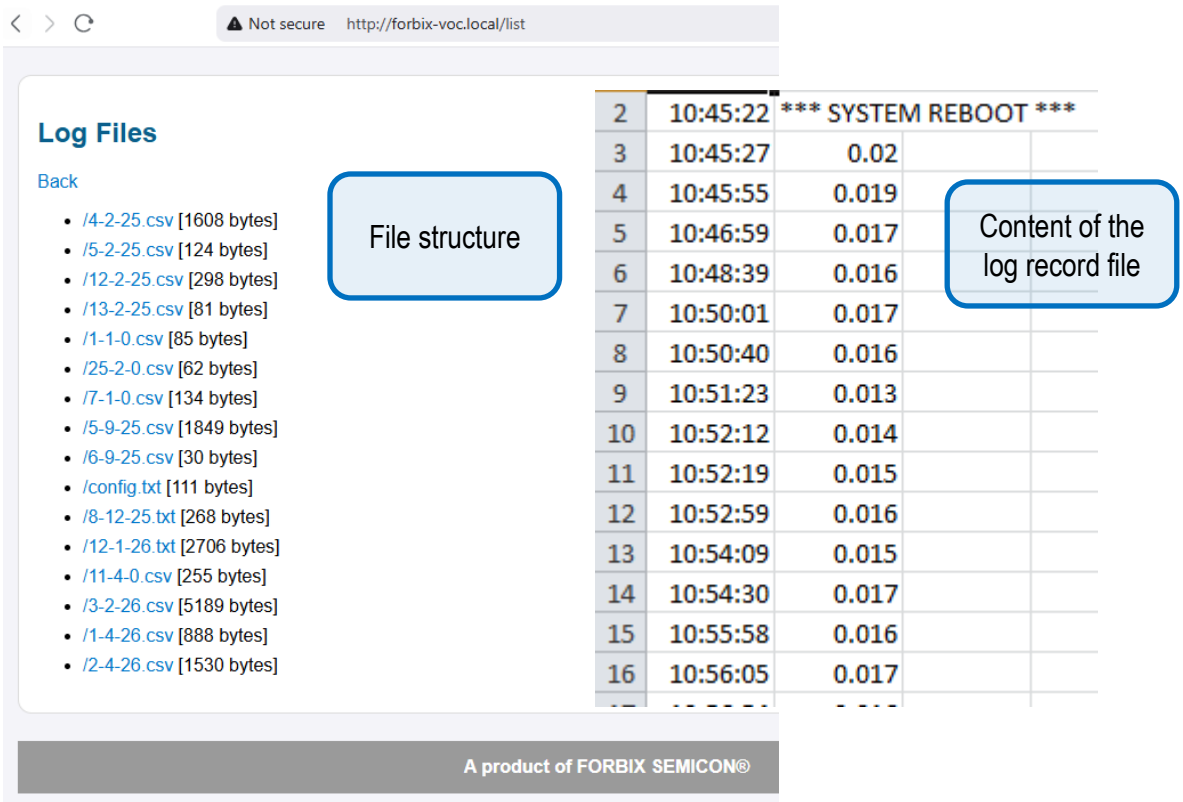
Model: FBXYF3DL (ForBiX YellowFox3 Data Logger)

The current VOC / Formaldehyde readings will be visible on the main page screen.





Log files:
Of the many files visible on SDCard memory, choose the file of relevance. Click to download on computer.
File format: dd-mm-yy.csv



Regulated AC Power Supply Adapter

Model: FBXADP12V2A



Important Note:
This product (Model: FBXADP12V2A 12V 2A Power Supply Adapter) is sourced from a qualified vendor. FORBIX SEMICON® performs quality verification at the batch level to ensure baseline specifications are met prior to distribution. However, as a non-manufactured part, this adapter is expressly excluded from the standard FORBIX SEMICON® product warranty.

Environmental Requirement:
Operating Temperature: 0°C to 40°C
Storage Temperature: 5°C to 25°C
Relative Humidity: 5% (0°C) ~ 95% (40°C) RH

Mechanical:
Enclosure: 80mm (L) × 50mm (W) × 30mm (H) Input Connector : 2 Pin Input plug
Out Cord: UL1185 18AWG VW-1 80° 300V, FT1 Line with word on the cord Length: 0.6m - 1.2m
DC Plug : 5.5mm × 2.1mm × 12mm

Input Characteristics:
Rated Voltage: 100 – 240V AC Variation
Range: 90 – 264V AC
Rated Frequency: 50/60Hz
Variation Frequency: 47 – 63Hz
Input Current: 0.6A Max. @ Any input AC voltage & output full load
Inrush Current: 35A Max. Cold start @ 240V AC input, rated output load & 25°C ambient
AC Leakage Current: 0.25mA Max. @ 240V AC input

Output Characteristics:
Voltage: 12V
Min. Load: 0.01A
Rated Load: 2A
Output Power: 24W

Combined Load / Line Regulation:
Voltage: 12V
Min. Load: 0.01A
Rated Load: 2A
Line Regulation: ± 1%
Load Regulation: ± 3%

Ripple and Noise :
Under normal voltage & nominal load, the ripple & noise are as follows when measure with Max. Bandwidth of 20MHz & parallel 10μF electrolysis capacitor & 0.1μF ceramic capacitor crossed connect at testing point.
Ripple & Noise (Max.): 120mVp-p

Turn on Delay Time: 2S Max. @ 115V AC input and output Max. Load
Rise Time: 40ms Max. @ 115V AC input and output Max. Load
Hold Up Time: 5msec Min. @ 115V AC input and output Max.
Load Efficiency: Average efficiency 87.4% minimum @ 25%, 50%, 75% & 100% of full-loading and 230V AC input (After warm up 30 minutes).

Revision History

Version	Changes	Time	Verified	Approved
v1.0	Initial Release Copy	Apr'2026	Yes	Yes
v1.1	Added TVOC gases	Aug'2026	Yes	Yes

Company

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