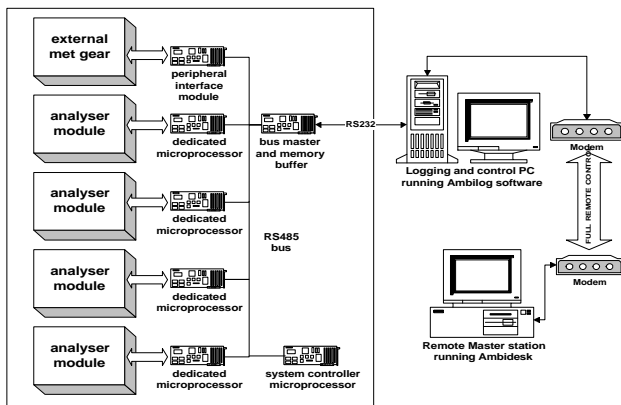


AMBIRAK Air Quality Monitoring System

- Complete AQM measurement system
- Measures up to 7 gases: NO_x, SO₂, O₃, CO, HC, H₂S and NH₃
- Interfaces to external equipment such as PM10 and meteorological sensors
- Compact size
- Complies with NETCEN and EPA specifications
- Easy to operate and maintain
- Built in data logger and chart recorder
- Full diagnostic measurement and logging
- Full remote control using fixed or mobile communications

Ambirak Overview

The **AMBIRAK** is a complete mobile Air Quality Monitoring (AQM) system for the measurement of Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Ozone (O₃), Methane/non-Methane Hydrocarbons, (THC) and Ammonia (NH₃). Packaged in a compact wheeled cabinet, the **AMBIRAK** includes a data logger, paperless chart recorder, and communications system to allow remote collection of AQM data over a telephone line. The analyser outputs are sampled every second by a distributed network of microprocessors, which also monitor for fault conditions and implement safety interlocks. One minute averages are collected and buffered for up to 24 hours by the dedicated bus master, which acts as a secondary back up logger. These one minute averages are then transferred to the PC for permanent storage. A remote control feature allows full access to all **AMBIRAK** functionality from a remote location.



AMBIRAK Base Unit

The base unit is a wheel mounted cabinet which includes analyser sample filters, integrated sampling manifold and blower unit, daily span checkers and audit calibration system. The calibration facilities include daily and audit zero air generators - the daily calibration is fully automated, and the audit calibration is computer assisted.

The sample filters and zero air scrubbers are easily accessible behind a lockable panel, removing the need for access to the main analyser and electronics compartments. The control computer, which is PC based, is mounted separately, and runs **AMBILOG** software for logging, control and communications. An independent data buffer is built into the base unit, to enhance data security in the event of any PC failure.

A peripheral interface module (PIM), fitted within the base unit, provides a convenient interface for external analysers and ancillary equipment such as PM10 and met gear.

Ambirak Analysis Modules

- **NO_x**: Measures ambient level NO/NO_x/NO₂ using chemiluminescence. Includes permeation bench for span checking. Ranges: 0-1000/10000ppb

Optional NH₃=> NO converter, allowing extension to **NH₃/NO_x/NO₂/NO** measurement

- **SO₂**: Measures ambient level SO₂ using chopped fluorescence. Includes permeation bench for span checking. Ranges: 0-100/1000ppb.

Optional H₂S => SO₂ converter, allowing extension to **H₂S** and **Total Sulphur** measurement.

- **CO**: Measures ambient level CO using Sample Switching Dual Beam NDIR. Ranges: 0-10/50ppm or 0-10/100ppm

- **O₃**: Measures ambient level Ozone by UV photometry. Includes ozone generator for span checks. Range: 0-1000ppb

HC: Measures Methane / Non-Methane Hydrocarbons using Flame Ionisation and a catalytic converter. Includes Zero Air Package with air clean up unit to supply module with hydrocarbon free air. Range: any two of: 0 - 1/2.5/10/25/100/250/1000ppm.

Note that the Methane / Non-Methane Hydrocarbon analyser module is supplied as a separate unit to the AMBIRAK system cabinet.

Interface to External Analysers and Sensors

The **AMBIRAK** can log data from external analysers and sensors via the PIM module. Connections for signal (data) and device status can be measured for the following devices:

- Particulates (PM10 / PM2.5)
- Wind Speed
- Wind Direction
- Solar Radiation
- UVA/UVB
- Barometric pressure
- Temperature
- Relative Humidity
- Rainfall

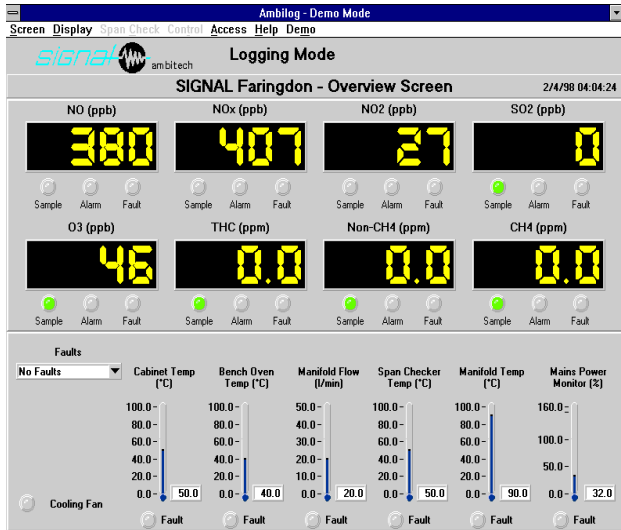
This data may be logged, displayed and stored on the **AMBIRAK** PC, and is available for remote data collection alongside the gas analysis data. *Note: Some of the above sensors are 'passive' devices, and require external power supplies and signal conditioning. These requirements are fully catered for within the AMBIRAK interface, and the Ambilog software.*

Ambilog Software

Ambilog software runs under the Windows™ operating

system, and provides a consistent operator interface to the **AMBIRAK** system. Using a high resolution graphics display, the instrument front panels are replicated in software as 'virtual instruments', with all functions controlled via the PC keyboard and mouse. System operation is therefore straightforward for anyone familiar with conventional Windows™ programs, making the **AMBIRAK** easy to learn about and use. Ambilog provides the following functions:

- Control of all analysis modules and associated sample



- components
- Data logging
- Local data display in digital or graphical form
- Full system and analyser diagnostics
- Communication with remote computers for data transfer
- On-line help screens for operation and maintenance.

The Ambilog software logs raw one minute data in mV, along with validity tags, to meet rigorous QA requirements. A secondary file is created of user defined secondary averages, which may be scaled to ppb using the correction factors derived from the latest audit calibration. The **AMBIRAK** also monitors and logs up to 39 diagnostic parameters to support full remote management of the system. Alarms, diagnostics, calibration, system and analyser configuration data are stored in separate files but are linked and organised on a calendar basis for easy retrieval and post processing. All logged data may be viewed at the **AMBIRAK** in tabular or graphical form, and may be transferred to a separate PC if required. Ambilog software also restarts automatically on power up, removing the need for re-configuration of the system after a power cut. Full remote control of the system is achieved using a proprietary software package. This can even allow calibrations to be carried out from the convenience of the administration office. Signal's service personnel can remotely diagnose any maintenance or repair requirements, and can use the remote control package to provide on-line help and support to operators on site. Data transfer from the **AMBIRAK** is by a fast, robust proprietary protocol with full error checking and correction. The **AMBIRAK** also emulates the serial communications protocol of Odessa data loggers, allowing the **AMBIRAK** to interface without modification to nearly all existing data collection networks. All communications take place without affecting any other software functions, so that no data is lost during file retrieval.

Ancillary Items

As well as the basic **AMBIRAK** system of analysis modules and software, a wide range of additional items can be supplied to make up a complete AQM package. Separate data sheets are available for these items.

Ambidesk Software

Ambidesk software provides remote control and data acquisition (using either fixed or mobile telephone lines), as well as display, graphing and reporting software, all of which can be automated using the **AMBIDESK** scheduler.

Public Display Software

A public display, which may be either a high visibility LED display or a large screen PC monitor, may be provided as part of an **AMBIRAK** installation. This facility requires **AMBIDESK** software

Caller Software

This package, which works in conjunction with **AMBIDESK** and a dedicated telephone line, provides voice announcements of air quality data to incoming callers.

Housings

A range of fixed and mobile housings for the **AMBIRAK** and associated equipment are available, so that a complete turnkey AQM station may be supplied.

Particulate Monitors

PM10 and PM 2.5 measurement can be catered for using external monitors

Meteorological sensors

A full range of sensors and interfaces are available, including extendable masts for fixed or mobile installations

Installation, Commissioning and Training

Signal Ambitech offer a complete range of installation and commissioning services to ensure satisfactory start up of **AMBIRAK** stations. Training courses at any level can be undertaken at either the AQM site, or at Signal Ambitech's Faringdon, Oxfordshire base.

Ambirak Specifications

Base Unit Size (W x D x H):	600mm x 700mm x 975mm (Excluding PC)
Weight:	200Kg, fully loaded
Power requirements:	240VAC 50Hz 850VA
Operating temperature range:	20 - 25°C
Data transfer rate: (within modem constraints)	up to 115200 baud
Ambilog PC Specification: (Typical)	Pentium, 1.2Gb HDD, 16Mb RAM, Windows 3.1x or Windows 95 Operating system

Full specification details for the analysis modules are available in a separate data sheet, ref RAE021, which also describes the principles of operation of all the sensors.

Whilst an **AMBIRAK** may be configured for any combination of gases, this data sheet covers both the base unit and all gas modules and interfaces.