S4 SOLAR

Heated FID VOC analyser

Flame Ionisation Detector (FID) analysers for gas purity, air separation plant, engine emissions, combustion studies and process plant VOC abatement monitoring.

Flexible

- Fixed and portable versions
- 'Hot' and 'Cold' versions
- EN14181 QAL1 (MCERTS) applied for

Easy to Use

- Totally automatic operation
- Wireless tablet
- Software suite for use over ethernet or RS232

Accurate

- Precision monobloc FID
- Trace PPM measurements standard
- High range % available

Non-screen version available for system integrators

SIGNAL GROUP

S4 SOLAR

A new analyser platform for high-performance and ease-of-use

Flame Ionisation Detectors are the recognised method for measuring trace hydrocarbons. They are specified in many standards; for example EN ISO 25140:2010, EN BSI 12619:2013 and USEPA Method 25. These standards cover the measurement of hydrocarbons in municipal waste incinerators, solvent emissions from process plants and monitoring the effectiveness of VOC abatement equipment. Flame ionisation detectors are also used to measure trace hydrocarbons on air separation plants and trace impurities in other applications.

The Signal Group 'SOLAR' range of flame ionisation detectors are the latest 4th generation design; benefitting from knowledge and experience gained over 40 years. FID analysers generally come as either 'Hot FIDs' or 'Cold FIDs'. Hot FIDs are used especially when the VOCs (hydrocarbons) are in the gaseous phase at elevated temperatures. Cold FIDs are used when the VOCs are in the gaseous phase at room temperature. Hot FIDs are used for emissions measurement from engines, especially diesel engines. and they are used in waste incineration plants and solvent based processes. Cold FIDs are used for measurement in gas purity and air separation plants. Cold FIDs are also used in aerosol can leak detection on the production line, and for detecting the LEL (lower explosion level) in coating process drying ovens.

The analyser has built-in relays which can be easily set by the user to operate calibration valves at the end of a heated line. This means that operators can choose to calibrate down the line as well as calibrate at the analyser, locally.

User selectable ranges can be programmed to allow each range to have a calibration value entered and a relay inside the analyser can be used to select that calibration gas and auto-calibrate each range separately.

The advanced intelligence of these analysers allows for ignition of the FID flame to be carried out automatically at any altitude or barometric pressure as the air/fuel ratio is adjusted in small amounts with the electronic flow controllers until ignition is detected. Following this the flows are reset to standard levels.

***NEW* - Every S4 gas analyser can now be supplied with a rugged, wireless tablet which connects wirelessly to the analyser via an inbuilt 802.11 wifi that can connect up to 50 metres away. This provides users with the ability to view live data in a different location, and even manage data logging, alarms and calibration.**

A wide range of user-set alarms are available for conditions such as:

1. Concentration limit (user set)
2. Sample flow (outside limits)
3. Pump failure
4. Heater failure
5. Voltage outside limits
6. Thermocouple failure
7. EHT outside limits
8. Config. error
9. Options incorrectly set
10. Calculations bad (no calibration set)

GASES

- Volatile Organic Carbon (VOC)
- Total Hydrocarbons (THC)
- Non-Methane Hydrocarbon (NMHC)
- Methane (CH4)

APPLICATIONS

- CEMS
- Research
- Compliance
- Gas Purity
- Automotive
- Air Quality
- Process
- Combustion

The SOLAR range of FID gas analysers is based on three different models:

1. a heated version with a single detector for total hydrocarbons.
2. a heated version with two detectors for continuously measuring total hydrocarbons with one detector, and methane-only with the other. An integral cutter with a special catalyst removes all hydrocarbons except for the methane. The efficiency of the cutter is 98% and the speed of response is T90 2.5 seconds. The instrument provides continuous hydrocarbon readings of 'Total', 'Methane' and (by subtraction), 'Non Methane.'
3. a 'cold' version with a single detector for the measurement of trace hydrocarbons in unheated gas streams.

All of these versions have Signal Group's unique precision machined monobloc detector which guarantees uniformity of production in a compact, leak free design and there is a 24VDC version for use on board a vehicle - Real-World Driving Emissions (RDE).

Every analyser is supplied with a memory stick loaded with a full suite of software to operate the analyser remotely using LAN/RS232.

There are many options available for these analysers:

- optional front panel display, detachable for wireless use up to 50 metres distance from the analyser
- sample pump, span/zero valves
- catalytic air purifier for providing detector flame combustion air and zero calibration air
- a wide range of communications options
- programmable contact closures
- internal bypass/zero air pump
- wall mount kit

Specifications by gas/range

To receive a quotation for an analyser that precisely meets your needs, simply send Signal or your local distributor details of your monitoring requirements.

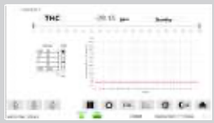
	Detector Temperature	Ranges
Fixed Cold FID (CFID-THC)	120°C single detector	0-1ppm up to 0-1000ppm
Fixed Hot FID (HFID-THC)	200°C single detector	0-10 up to 0-10,000 or 0-100 up to 0-100,000
Fixed Methane and Non-Methane Hot FID (HFID-DNMHC)	200°C dual detector	0-10 up to 0-10,000 or 0-100 up to 0-100,000 Cutter efficiency 98 %

S4 SOLAR analyser screens

MENU

Has links to calibration gas setup, time set, error log, display restart, display refresh, local/remote mode selection and software upgrade. Exit returns to Main screen.

CHANNEL DETAIL



Control and calibration of individual gas measurement channel. Contains chart for visual trace of concentration. Range selection and other channel specific information.

GRAPHS

A visual log of recent concentration measurements for all channels, shown as percentage of range.

DATALOGGING

Enable and set log rates and file title. Allows for exporting to external memory.

ALARMS SETUP

User selectable settings for concentration and flow alarm limits. Useful for safety or process control.

PROGRAMMABLE CONTACT CLOSURE SETUP

Select contact closure output actions, used for alarm outputs, range indication, external calibration gas switching per range or external sample valve selection.

DIAGNOSTICS

Shows current analyser condition (pressures, temperatures and flows).

CAL GAS SETUP

Use this page to set span gas concentrations. Users may set one concentration for each range on each measurement channel.

S4 SOLAR

SPECIFICATIONS

MEASUREMENT TECHNIQUE
Flame Ionisation Detector

MEASURING UNITS
PPM or mg user selectable

MEASURING RANGES
User-selectable ranges:
Range A: 0-1000ppm.
Resolution: 0.01ppm.
Range B: 0-10,000ppm.
Resolution: 0.1ppm.
Range C: 0-100,000 ppm.
Resolution: 1ppm.

RESPONSE TIME
THC <1.5 secs
CH4 and NMHC <2.5 secs

REPEATABILITY
<1% FSD

OXYGEN EFFECT
<2% of reading from 0% to 21% O_2 (H2He)

LINEARITY
+/- 0.5% FSD or 2% of point
EN14181 - dc rel : <0.5 R2 : >0.99

DRIFT
+/-0.2ppm or 2% range per week, whichever greater

NOISE
+/-0.1ppm or 1% range, whichever greater

TEMPERATURE EFFECT ON ZERO
<0.15% per oC

TEMPERATURE EFFECT ON SPAN
<0.3% per oC

SAMPLE INLET PRESSURE
With internal sample pump: -0.6 to +0.4bar *Without internal sample pump:* +0.2 to +0.5bar

ACCURACY
<0.2% FSD

PRECISION
<1%

DETECTION LIMIT
0.05mgC/m3

BYPASS FLOW SENSITIVITY
Less than 2% from 1 to 3 L/min

SAMPLE FILTER
Removable 0.4 micron PTFE
7um non removable stainless steel filter for CFID

DISPLAY
Blank or Detachable Screen

SAMPLE CONDITION
0-200oC (Heated version)
0-80oC non-condensing for CFID

FUEL CONSUMPTION
Single detector:
35ml/min H2 or 180ml/min H2He
Dual detectors:
70ml/min H2 or 360ml/min H2He

AIR SUPPLY
Single detector:
>1.1L/min
Dual detector:
>1.6L/min

OPERATING CONDITIONS
5-40oC ambient temperature

OUTPUTS
0-10 Vdc
RS232
Ethernet
TCP/IP
Optional 4-20 mA

POWER REQUIREMENTS
100 to 250Vac
Optional 24VDC
600W max

REMOTE CONTROL
AK protocol via RS232 port, Ethernet
Comes with S4i remote software operating system.

SIZE AND WEIGHT
19" (w) x 133.5 (h) x 530 mm (d)
Apx. 30Kg

Model 3010 MINIFID Portable heated FID VOC analyser

Customers with non-continuous or multi-site applications may also consider a portable analyser.

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