S4 SOLAR Gas 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
- Optional touch screen colour front panel with logging facility

Easy to Use

- Totally automatic operation
- Comes with Windows VB software for remote operation

Accurate

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

Non-screen Version available for system integrators

SIGNAL GROUP

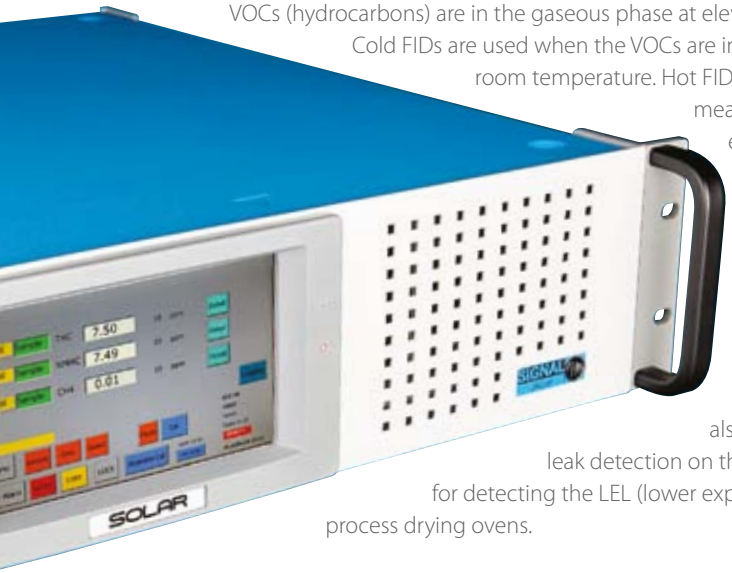
S4 SOLAR

Signal Series 4 SOLAR flame ionisation detector (fid) gas analysers

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.

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

- Methane
- Non Methane
- Total Hydrocarbons

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).

There are many options available for these analysers:

- a colour touch-screen front panel with a built-in SD card and USB connector for data logging and uploading software upgrades
- 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
- bypass air pump (heated version)

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.

Signal Series 4 SOLAR flame ionisation detector (fid) gas analysers

	Detector Temperature	Ranges
Fixed Cold FID (CFID-THC)	120°C single detector	0-1ppm up to 0-1000ppm User settable response time
Fixed Hot FID (HFID-THC)	200°C single detector	0-10 up to 0-10,000 or 0-100 up to 0-100,000 User settable response time
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 User settable response time Cutter efficiency 98 %

Signal Series 4 SOLAR analyser screens

MAIN SCREEN

Shows up to 3 channels of information (error condition, measure state, gas type, concentration, range in use, unit in use). Has links to further detail for each channel. Buttons for menu and logging measure state (sample, zero, span, pause, standby and sleep), calibration, abandon calibration, whether to apply calibration to a single range or every range, alarm clearance and user lockout. Also gives general analyser details (time/date/serial number/software versions/etc).

MENU SCREEN

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.

CAL GAS SETUP

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

DATE/TIME SET SCREEN

Set current date/time. Exit returns to Main screen.

DATALOGGING SCREEN

Set log rates and choose data location (USB or SD card), start and stop logging. Exit returns to Main screen.

CHANNEL DETAIL SCREEN

This gives channel specific details such as controlled temperatures, pressures and flows, and allows individual selection of controls for this specific channel, i.e. measurement modes (sample/zero/span/pause), calibration, abandon calibration, errors and choice of range or autorange.
Exit takes you to Main screen.

S4 SOLAR

SPECIFICATIONS

MEASUREMENT TECHNIQUE
Flame Ionisation Detector

MEASURING UNITS
PPM or mg/Cu.Mtr. user selectable

MEASURING RANGES
Range A: 0-1000ppm. User settable to e.g. 0-1ppm, 0-5ppm, 0-10ppm, 0-50ppm,0-100ppm, 0-500ppm, 0-1000ppm. Resolution:0.01ppm
Range B: 0-10000ppm.User settable to e.g. 0-10ppm, 0-50ppm, 0-100ppm, 0-500ppm, 0-1000ppm, 0-5000ppm. 0-10,000ppm. Resolution: 0.1ppm
Range C. 0-100,000 ppm. User settable, with resolution of 1ppm

RESPONSE TIME
THC <1.5 secs
CH_4 and NMHC <2.5 secs

REPEATABILITY
<1% FSD

OXYGEN EFFECT
0.3% from 0-10% O_2 in sample (Heated versions only)

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

ZERO DRIFT
< 2% FS/24hrs

TEMPERATURE EFFECT ON ZERO
<0.15% per °C

TEMPERATURE EFFECT ON SPAN
<0.3% per °C

SAMPLE INLET PRESSURE
With sample pump option:
-0.5bar to +0.5bar.
Without sample pump option:
Max +0.5bar

ZERO NOISE
EURO VI -
THC <0.05%FSD
CH4 - <0.05%FSD
CFR40 part 1065 -
THC - <2.5%FSD
CH4 - <1%FSD
EPA1065 - THC <2.5% FSD

SPAN NOISE
<0.5% FSD

ACCURACY
<0.2% FSD
Precision
EURO VI - <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
panel or 7" colour display

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

INLET PRESSURE
-0.5barg - 1barg

FUEL CONSUMPTION
35ml/min for H_2 single (Heated version)
70ml/min H_2, 360ml/min H_2He for dual
180ml/min for single detector

AIR SUPPLY
1.1L/min minimum
1.6L for dual FID

OPERATING CONDITIONS
5-40°C ambient temperature

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

POWER REQUIREMENTS
220-240 V AC
110-12 V AC
24 V DC
600 W 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

3010 MINIFID PURE Portable Heated FID THC Analyser

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

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