

# MODEL 3010 MINIFID Gas Analyser



Portable Flame Ionisation Detector (FID) analysers for the discontinuous measurement of the mass concentration of gaseous and vaporous organic substances in stationary source emissions. Typical applications include the emissions testing of solvent-using and combustion processes, engine emissions, and VOC abatement systems, as well as checking and calibrating installed CEMS and providing interim backup when CEMS are out of operation.

## Compliant

- USEPA: 40 CFR Part 60 method 25A
- China: CPA 2015-C174
- EN14181 QAL1 (MCERTS).  
Applied for.

## Flexible & reliable

- Designed for portability
- Military style design
- Thousands sold globally
- Many still in operation after years of rigorous work

## Easy to use

- Warm-up typically 20 mins
- No microprocessor or software
- Just 5 simple functions
- 0-10v output or optional logger



Rack-mounted  
FID for continuous  
monitoring

# MODEL 3010 MINIFID

## Signal MODEL 3010 MINIFID portable flame ionisation detector

### A rugged, well-proven, certified FID for the measurement of VOC emissions

The Model 3010 MINIFID will soon be certified with EN14181 QAI 1 type approval, together with EN 15267-4:2017 which provides the performance requirements for discontinuous (periodic) measurements, and EN 12619:2013 which specifies the flame ionisation detector (FID) as a standard reference method (SRM) for the measurement of the mass concentration of gaseous and vaporous organic substances in stationary source emissions. The instrument is also compliant with USEPA 40 CFR Part 60 method 25A, and the China Standard: CPA 2015-C174.



FIDs work by connecting a polarisation voltage to a hydrogen flame. Any hydrocarbons entering the flame cause a flow of ions from the flame to a cylindrical metal collector which surrounds the flame. The picoamp current generated is directly proportional to the hydrocarbons' carbon number and concentration, so propane C<sub>3</sub>H<sub>8</sub> (3 carbon atoms) will produce 3 times the response for the same concentration of methane CH<sub>4</sub> (1 carbon atom). The signal from the Model 3010 MINIFID portable flame ionisation detector is linear throughout its range.

Hydrogen fuel and air is required to create the flame. The instrument can be ordered with a small gas bottle of compressed hydrogen (in practice it is common to use a mixture of Hydrogen / Helium to minimise variations in readings caused by variations in oxygen in the measurement sample). This gas bottle is installed in a detachable gas bottle container. The air needed for the flame is delivered internally using a small compressor, and there is an activated carbon filter fitted in line with the air flow to remove any hydrocarbons in the outside air.

The instrument can be ordered with a small bottle of compressed calibration gas. This is also installed in the detachable gas bottle container.

Signal group has been producing FIDs for over 40 years. The Model 3010 MINIFID for example, is well-proven with thousands supplied globally. As one of the world's leading FID manufacturers, Signal continually invests in the development of advanced FID technology.

The Model 3010 MINIFID is a high quality instrument, supplied as a complete transportable package for field testing of VOC emissions from industrial processes. The unit comes with a number of optional extras to allow the user to go to site with everything needed to start taking readings within 20 minutes of switching the instrument on.

For low level readings, especially from waste incinerators, a catalytic air purifier is available which purifies the air even more efficiently than activated carbon. This version is known as the MINIFID PURE.

The standard instrument is made for 120V AC power source in order to comply with UK standards for portable power tools used on site. 230V AC can be ordered if preferred. The instrument also powers heated lines, which are available in a variety of lengths. Maintaining an elevated temperature prevents the dropout of heavy hydrocarbons along the sample line, and means that even hot, wet samples can be measured.

For safety, the instrument has an automatic shut off valve to close the flow of Hydrogen if the flame goes out, thus preventing any build-up of flammable gas inside the instrument.

Signal Group enjoys an enviable reputation for customer support and maintenance. A team of field service technical staff and factory trained distributors from around the world are available for scheduled maintenance contracts, on site support and emergency call-outs.

## GASES

- Total Hydrocarbons
- Methane (with optional cutter)
- Non-Methane (with optional cutter)

## APPLICATIONS

- Regulatory monitoring
- Verifying and calibrating installed CEMs to EN 14181
- Temporary back-up when permanent CEMs are not operating
- Process optimisation
- Checking abatement performance
- Hydrocarbon gas leak detection

## 3010 MINIFID base model. Heated (191 DegC) portable Flame Ionisation Detector (FID).

The analyser is available with readings displayed in mg/m<sup>3</sup> and with certified measuring ranges of 0-15/30 and 500 mg/m<sup>3</sup>. Alternatively, in ppm with the measuring ranges of 0-10, 0-50, 0-100, 0-500, 0-1000, 0-5000, 0-10,000ppm. Or 0-0.01, 0-0.5, 0-0.1, 0-0.5, 0-1, 0-5, 0-10% Power 110V AC. 500 watts. Fuel set for H<sub>2</sub>He. Internal sampling pump. Internal burner air supply pump with activated carbon scrubber. 0-10V DC output. Fuel shut off safety feature. Sampling inhibition until set temperature achieved.

### OTHER OPTIONS

#### 1. Power

230V AC to 110V AC isolation transformer  
(as required by UK IEE for onsite duty)

#### 2. Hydrogen fuel version

#### 3. "PURE" catalytic air purifier

(for lowest ranges)

#### 4. 0-10% range

(0-100ppm lowest range)

#### 5. On-board data logger.

With program to download to spreadsheet

#### 6. Heated line options

- 5 metres 110V ¼ inch
- 5 metres 220V ¼ inch
- 10 metres 110V ¼ inch
- 10 metres 220V ¼ inch

#### 7. Gas bottles (empty)

- 1 litre (water capacity) gas bottle for FUEL  
(empty for transportation)
- 1 litre (water capacity) gas bottle for  
CALIBRATION GAS (empty for transportation)

#### 8. Bottle pressure regulator for FUEL

#### 9. Bottle pressure regulator for CALIBRATION GAS

#### 10. Gas bottles (filled)

- 1 litre gas bottle filled to pressure  
with 40% H<sub>2</sub>/ 60% He
- 1 litre gas bottle filled to pressure with  
calibration gas
- 1 litre gas bottle filled to pressure with H<sub>2</sub> fuel

#### 11. Detachable bottle cage

(fuel and calibration gas)

#### 12. Stainless steel probe with sintered filter

#### 13. Spare activated carbon scrubber

(field replaceable)

#### 14. Non-methane hydrocarbon cutter

An external non-methane hydrocarbon cutter is available for customers wishing to measure methane only. This also enables the derivation of non-methane values.



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## SPECIFICATIONS

### ACCREDITATIONS

EN14181 QAI 1 (applied for)  
EN 15267-4:2017  
EN 12619:2013  
EN 61000-6-1:2007  
EN 61000-6-3:2007+A1:2011  
EN 61000-6-4:2007+A1:2011  
EN 61010-2-081:2015  
USEPA: 40 CFR Part 60 method 25A  
China: CPA 2015-C174

### SENSITIVITY

0.1% of range

### LINEARITY

2% of measured value

### ZERO DRIFT

2% of reading per week

### RESPONSE TIME

T90 in 2 seconds

### POWER

110V AC or 220V AC, 500 Watts

### HEATED SAMPLE LINE TEMPERATURE

190 °C

### ANALYSER SAMPLING SYSTEM TEMPERATURE

190 °C

### WEIGHT WITH GAS BOTTLES

12 Kg (25 lbs)

### WEIGHT WITHOUT GAS BOTTLE

9Kg (18 lbs)

### DIMENSIONS

210 x 300 x 240mm

### SAFETY INTERLOCK

Fuel shuts off if flame goes out

### SAMPLE INTERLOCK

Sample pump cannot start until analyser is at set temperature

### SAMPLE FILTER

0.4 microns (accessible from rear of analyser)

### SAMPLE FLOW

0.4-3 l/min. (internal sample pump)

### SAMPLE LINE LENGTHS

5 or 10 metres of 6mm Teflon heated to 190 °C controlled by the analyser. Plug in socket is wired so that the 5 and 10 metre lines connect to different contacts

### EASY CARRY

Shoulder strap with attachment clips

### OPERATING CONTROLS

3 ½ digit LCD display. Temperature reading for heated line & sampling system. Ignition switch. Range select and calibration controls

### RECORDER OUTPUTS

0-10 V DC and 4-20 mA isolated

### DATA LOGGER

Built into analyser with software for PC to log to spreadsheet

### GAS - QUICK CONNECTS

Colour coded for fuel and calibration gas

### GAS BOTTLE CAPACITY

1 litre water capacity

### FUEL CONSUMPTION H2

60ml/ min

### FUEL CONSUMPTION. H2/HE

180ml/min

### CAL GAS FLOW RATE

0.4 l/min

### ZERO AIR

Internal air compressor and activated carbon filter. Or optional catalyst

### FLAME AIR

Internal air compressor and activated carbon. Or optional catalyst

### ANALYSER WEATHER PROTECTION

IP 20 (IP 55 when fitted with tailored fabric cover)

### OPERATING AMBIENT TEMPERATURE

+5 to +40 °C

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