



Next Generation Fast FID

For transient HC: exhaust, intake and in-cylinder applications

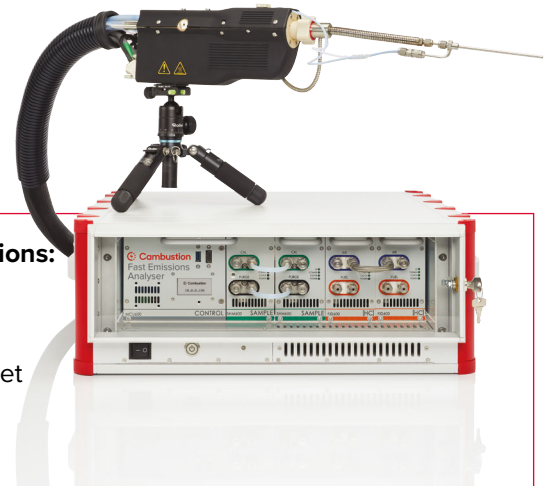
- Fully digital data logging at up to 4 kHz
- Millisecond time response
- Available with 1 or more channels
- Web-based control and configuration

Improved [HC] measurement in terms of:

- Large scale pressure range to include turbo applications
- Linearity
- Oxygen synergism
- Drift
- Crank angle* and analogue inputs

Data output options:

- To file
- Analogue
- AK over Ethernet or serial
- CAN*



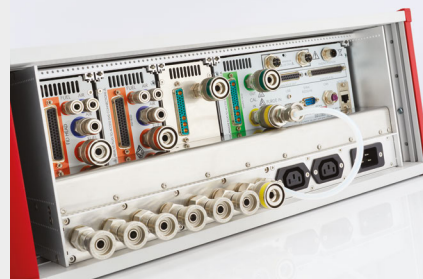
Introduction

Cambustion was founded in 1987 in order to commercialise the world's first fast response flame ionisation detector. We are proud to announce the 6th generation of the fast FID, the result of years of research with the dual aims of making the instrument more user friendly and improving performance, thus opening up new applications.

As in previous versions, the detector is miniaturized and housed in a remote sample "head" close to the sampling point on the engine, in order to yield a millisecond time response to transients. The head incorporates an upgraded constant pressure heated sampling system allowing measurement from a wider range of fluctuating pressure conditions including those found within the firing engine cylinder.

A new digital data platform

The FID600 maintains the HFR500's option for analogue output of data, but now includes the ability to log the data digitally at up to 4 kHz. A new web-browser based user interface not only allows control of the instrument, but also visualisation of the fast data in a real-time in-browser oscilloscope.



It includes the facility to combine other inputs such as engine mass flow and lambda with the real-time data to calculate e.g. cumulative emissions.

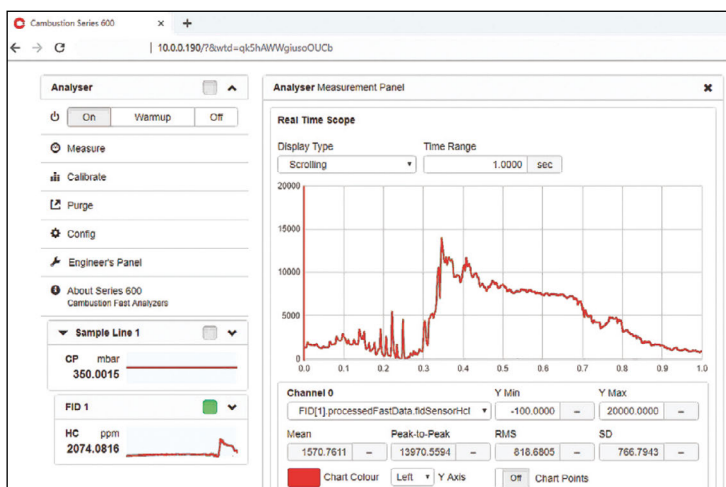
FID600: Next generation fast FID

Improved FID performance

The sensitivity to sample pressure, linearity, oxygen synergism and drift are all improved over the HFR500, meaning the “fast FID” can now be used in applications where other performance metrics are just as important as speed of response. There is now just a single gain range across the full concentration scale.

Improved soot filtration

Improvements to the soot filter option mean that all-day operation on diesel engines is now possible (at 20 ms time response). Sample flow monitoring indicates to the operator when it is time to change the sample filter. This opens up real-time engine mapping applications to the fast FID.



Specifications

Measurement principle	Flame Ionisation Detection (FID)
Sample heads	1 or 2
Time response	1 ms (fast mode, software selectable) 1.5 ms (standard mode, software selectable) 20 ms (filtered mode)
Data rate	4 kHz
Sample pressure range	0.4 – 2.5 bar absolute
Sample flow extracted	3 lpm sample + 3 lpm bypass

Sample probe temperature	191 °C / 375 °F
Concentration range	up to 100,000 ppm C ₃
Zero noise	< 1 ppm C ₃ rms (at 4 kHz)
Zero drift	< 1 ppm C ₃ / hr (with zero gas)
Span drift	< 1% rdg / hr (with span gas)
Linearity	< 3% rdg or 1.5% FS (whichever is smaller, standard mode) < 3% rdg (up to 10,000 ppm C ₃ , fast mode)
Oxygen synergism	< 3% rdg for 5000 ppm C ₃ at 0 – 21% O ₂
User interface	Web-browser based over Ethernet, including real-time data visualiser
Data logging	To internal HDD, USB flash drive, or networked storage*
Engine crank angle Inputs*	Variable reluctance (VRS) and digital (Hall effect)
Test bench remote control	AK over RS232 and Ethernet, CAN*
Head to control unit umbilical length	10 m standard
Analogue inputs and outputs	16 inputs and 16 outputs, 0-10V, all software configurable, at full data rate
Ambient conditions (control unit)	0 – 40 °C, < 90% RH
Gases required	40% H ₂ /He fuel (H ₂ /N ₂ option) HC span gas, Zero air and N ₂
Electrical supply	90 – 240 V 50/60 Hz 1800 W max
Vacuum pump requirements	Depends on sample pressure range and number of channels
Dimensions (mm) / weight	Sample head, excluding probe: 260 (l) x 120 (h) x 70 (w), 2.5 kg. 19" control unit in tabletop case, (full rack available on request): 560 (w) x 210 (h) x 600 (d), 37 kg (1-channel) or 45 kg (2-channel)
All specifications subject to change without notice	

* with a future software update

To learn more, visit: cambustion.com or contact: support@cambustion.com

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