



REMOTE PC SOFTWARE OPERATING SYSTEM



NDIR: CO, CO<sub>2</sub>, NO, SO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> + MORE



FID: THC, CH<sub>4</sub> & NMHC



CLD: NO<sub>x</sub>, NO<sub>2</sub>, NO

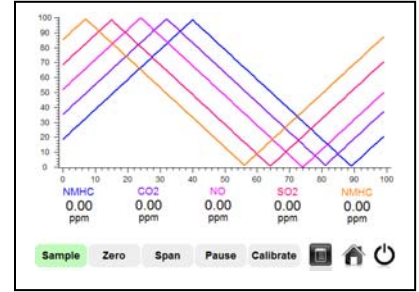
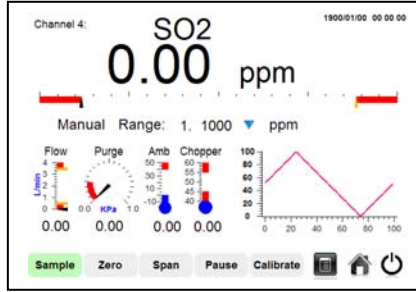
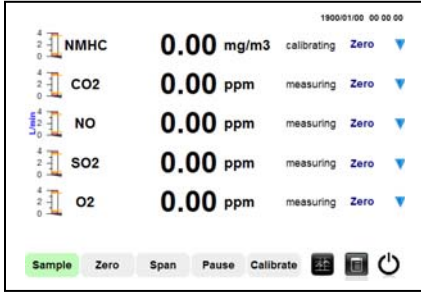


PMG: O<sub>2</sub>



INTERNET CONNECTIVITY

## GRAPHICAL USER INTERFACE (GUI)



Colour touch screen

SD card flash memory logging all channels

USB for uploads/downloads

Displays: readings, chart traces, flow rates, alarms, faults, linearization function

## COMMUNICATIONS

I/O RS232, Ethernet, (TCP/IP with IP address), AK Protocol, CAN Bus (optional), 0-10VDC, 4-20mA, 35 contact closures (all programmable).

## REMOTE COMPUTER SOFTWARE (running on Windows™ OS)

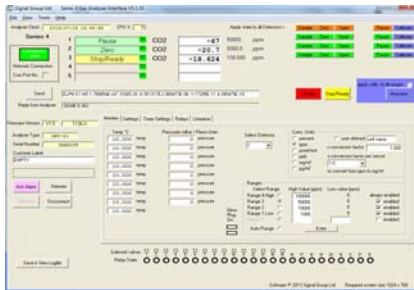


FIGURE 1. SELF CONTAINED LOCAL NETWORK

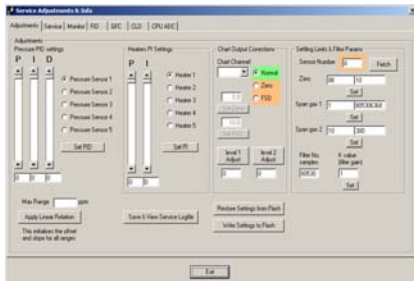


FIGURE 2. LOCAL CONTROL VIA WIRELESS LINK

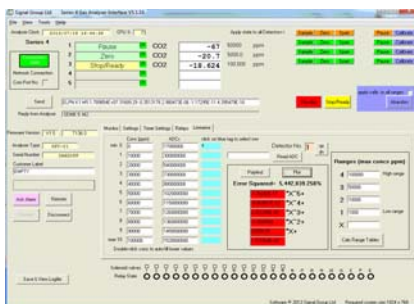
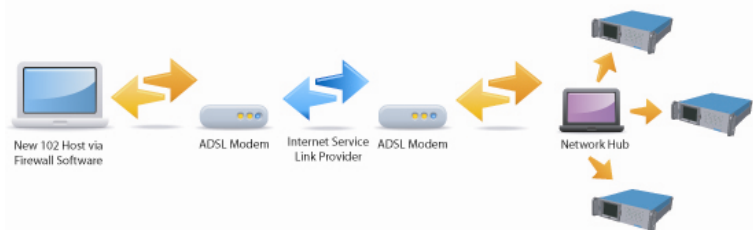
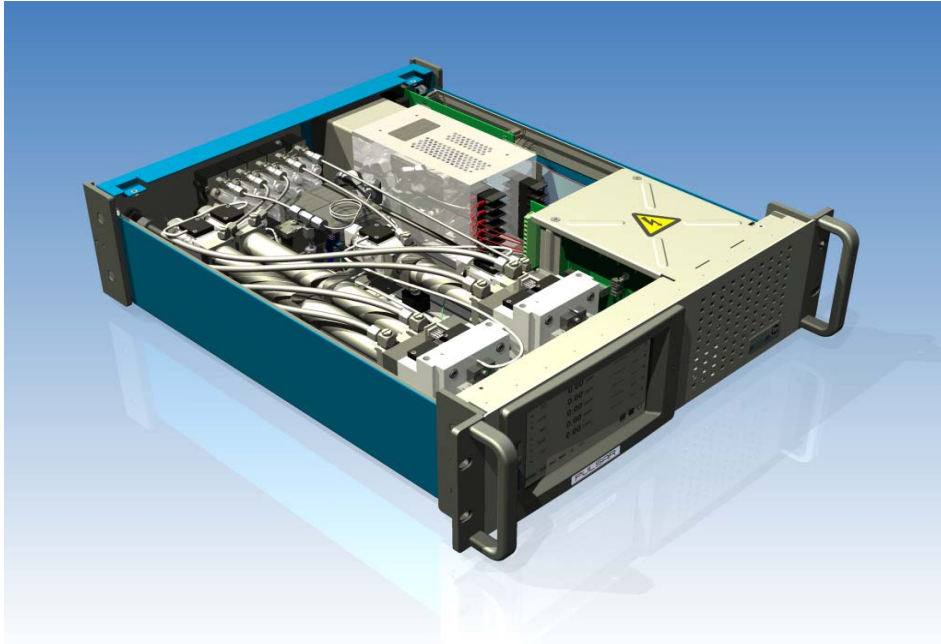


FIGURE 3. REMOTE CONTROL OVER AN INTERNET LINK





### **TYPICAL GASES: CO, CO<sub>2</sub>, NO, SO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> + MORE**

Gas Filter Correlation is the best type of NDIR for combustion gas analysis. Instead of a dual beam sample cell and a separate reference cell, this method uses only a single cell for both sample and reference.

This method reduces problems with cell contamination causing a difference in readings. Also, with Gas Filter Correlation we fill the filter wheel with interfering gases e.g. H<sub>2</sub>O, CO<sub>2</sub> to eliminate the effects of these gases when measuring, for example, low CO in the presence of percent levels of these other gases.

The PULSAR class also provides superior levels of linearity throughout the 10,000:1 range ratio.



**HIGH RESOLUTION**



**WIDE DYNAMIC RANGE 10,000:1**



**LOW CO, for example, 0-10, 0-50, 0-100, 0-500, 0-1000ppm**



**+/- 1% LINEARITY**



**24V DC VERSION**

Gas/Range	Zero Noise/LDL (Raw signal) **	Span Noise (Raw signal)**	Response Time*, T <sub>90</sub>	Cross Sensitivities
<b>Carbon Monoxide (CO)</b>				
-10ppm ~ 0-1000ppm	0.1ppm/0.5ppm	<1% reading	< 3 seconds	100% CO <sub>2</sub> :< ±1ppm
-50ppm ~ 0-5000ppm	<1ppm / 2ppm	<1% reading	<3 seconds	1% CH <sub>4</sub> :< ±1ppm
-0.1% ~ 0-10%	<0.01%/0.02%	<1% reading	< 2 seconds	1% N <sub>2</sub> O :< ±3ppm
-0.2% ~ 0-20%	<0.05%/ 0.1%	<1% reading	<2 seconds	2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±3ppm
<b>Carbon Dioxide (CO<sub>2</sub>)</b>				
-10ppm ~ 0-1000ppm	0.1ppm/0.2ppm	<1% reading	<2 seconds	100% CO :< ±2ppm
0-100ppm~ 0-10,000ppm	<1ppm/ 2ppm	<1% reading	<2 seconds	1% CH <sub>4</sub> :< ±1ppm
0-0.1~ 0.10%	<0.01%/ 0.02%	<1% reading	<1 second	2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±1ppm
0.02~0-20%	<0.05 / 0.1%	<1% reading	<1 second	
0-1% ~ 0-100%	<0.2/0.4%	<1% reading	<1 second	
<b>Nitrous Oxide (N<sub>2</sub>O)</b>				
-10ppm ~ 0-1000ppm	<1.0ppm/2ppm	<1% reading	<5 seconds	1000ppm CO :< ±2ppm
-100ppm ~ 0-10,000ppm	<10ppm/20ppm	<1% reading	<3 seconds	10% CO :< ±36ppm
				10% CO <sub>2</sub> :< ±1ppm
				20% CO <sub>2</sub> :< ±3ppm
				2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±2ppm
<b>Nitric Oxide (NO)</b>				
0-10ppm ~ 0-1000ppm	<2.0ppm / 4ppm	<2% reading	<2 seconds	10% CO :< ±2ppm
0-100ppm ~ 0-10,000ppm	<20ppm / 40ppm	<2% reading	<2 seconds	10%CO <sub>2</sub> :< ±1ppm
				500ppmCH <sub>4</sub> :< ±1ppm
				2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±10ppm
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>				
0-10ppm ~ 0-1000ppm	<1.0ppm / 2ppm	<1% reading	<5 seconds	500ppm CO :< ±4ppm
0-100ppm ~ 0-10,000ppm	<10ppm / 20ppm	<1% reading	<3 seconds	10% CO <sub>2</sub> :< ±2ppm
				500ppm CH <sub>4</sub> :< ±15ppm
				2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±15ppm
<b>Methane (CH<sub>4</sub>)</b>				
-10ppm ~ 0-1000ppm	<2ppm/4ppm	<1% reading	<5 seconds	100% CO :< ±5ppm
0-100ppm ~ 0-10,000ppm	<20ppm/ 40ppm	<1% reading	<4 seconds	100% CO <sub>2</sub> :< ±25ppm
0-1% ~ 0-10%	<0.1% / 0.2%	<1% reading	<2 seconds	2.3%H <sub>2</sub> O/N <sub>2</sub> :< ±5ppm
<b>Hydrogen Chloride (HCl)</b>				
-10ppm ~ 0-1000ppm	<4ppm / 8ppm	<1ppm	<5 seconds	100% CO :< ±2ppm
0-100ppm ~ 0-10,000ppm	<40ppm / 80ppm	<20ppm	<5 seconds	10% CH <sub>4</sub> :< ±150ppm
				500ppmCH <sub>6</sub> H <sub>14</sub> :< ±2ppm

\*based on sample flow at 1 L/min

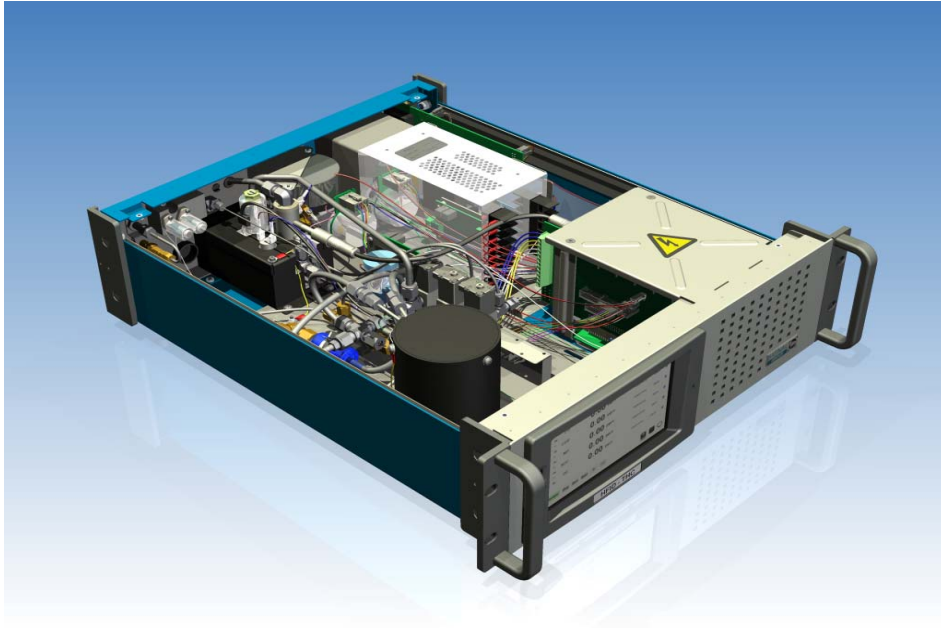
\*\*User configurable adaptive averaging can be used to improve noise specification

### Dimensions

Height: 142mm  
 Width: 485mm  
 Depth: 530mm  
 Weight: 30kg Max.

### Certified to

ISO 12039:2001  
 ISO 21258:2010



The Signal SOLAR Flame Ionization Detector product line is unique in the market with its precision machined, monobloc arrangement of ceramic isolated flame jet tip cylindrical collector and venturi effect air/fuel/sample design.

This has produced reproducibility of production so that every analyser has exactly the same characteristics.

The need for this uniformity is important when measuring hydrocarbons as there are many different species in the measurement mix and barometric changes can be a problem.

The monobloc design encompasses the hot oven, the heated filter, span/zero/cal valve and the sample pump. Thus, a very compact and leak proof design is provided. The sample pump uses a brushless DC motor for total reliability.

We offer a heated 191°C single FID for total hydrocarbon, a Methane only single FID using a cutter to remove/convert all hydrocarbons except for Methane, and a dual detector for continuous total hydrocarbons, Methane, and non Methane.



**ELECTRONIC PROPORTIONAL BAND FLOW CONTROLLERS**



**AUTOMATIC FLAME OPTIMIZATION PROGRAM**



**SPECIAL HIGH EFFICIENCY HC CUTTER**

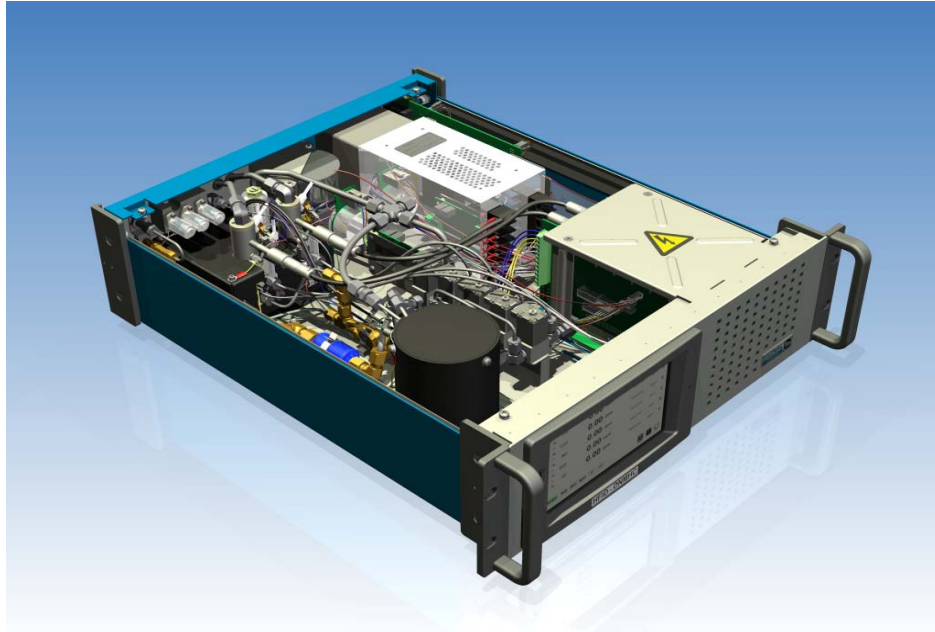


**CERTIFIED CONFORMITY TO EN12619:2013 QAL1**



**24V DC VERSION**

<b>Ranges</b>	0-1 ppm, 0-1000ppm 0-10 ppm, 0-10,000 ppm 0-100 ppm, 0-100,000 ppm
<b>Linearity</b>	± 1% of value
<b>Response Time T90</b>	1.5 seconds
<b>Cutter Efficiency</b>	95%
<b>Cutter Life time</b>	< 3 years
<b>Temperature Effect</b>	0.3%/°C
<b>Effect of Oxygen</b>	0.3% reading from Zero - 10% O <sub>2</sub> in sample
<b>Power</b>	100-240V AC 50/60Hz Universal or 24V DC Power Save Mode available
<b>Certified to</b>	BS EN ISO 25140:2010 EN12619:2013
<b>Fuel</b>	Hydrogen 80 ml/min Hydrogen/Helium 160 ml/min
<b>or Air</b>	Self contained using a catalytic scrubber * for 0-1 ppm bottled synthetic air is recommended
<b>Versions available</b>	Single FID 90°C Single FID 191°C Dual FID (CH <sub>4</sub> /THC/NMHC) 191°C
<b>Dimensions</b>	Height: 142mm Width: 485mm Depth: 530mm Weight: 30kg Max.



The Signal QUASAR series of Chemiluminescence NO<sub>x</sub> analysers is unique in the market with the very special ozone generator and the low level of quenching effects from CO<sub>2</sub> and H<sub>2</sub>O.

The “soft discharge” neon lamp ozone generator is unique among competitors, with its ability to use air as its feed gas without any Nitrogen in the air becoming NO and NO<sub>2</sub>. High voltage corona discharge techniques and UV lamps both suffer from this, and major competitors recommend the use of 100% Oxygen to avoid this effect, and this is expensive compared to air.

The high vacuum and heated design also eliminates quenching and increases signal strength and also avoids any condensation in the sample and measurement which could cause losses of NO<sub>2</sub> in condensate. The vacuum pump is of a dry diaphragm design.

We offer a single NO<sub>x</sub> detector, dual continuous NO, NO<sub>2</sub>, NO<sub>x</sub> detectors, non vacuum for dilute and dry samples (e.g. CVS vehicle testing, off road dry NO<sub>x</sub> testing), and NO<sub>x</sub>, NH<sub>3</sub>, NO<sub>2</sub> using selective converters and dual continuous detectors.



**ELECTRONIC PROPORTIONAL BAND FLOW CONTROLLERS**



**VERY LOW QUENCHING FROM CO<sub>2</sub> and H<sub>2</sub>O**



**SPECIAL OZONE GENERATOR USES AIR AS FEED GAS**



**LONG LIFE NO<sub>x</sub> CONVERTER (5 YEARS)**



**DRY, LOW MAINTENANCE VACUUM PUMP**



**24V DC VERSION**

<b>Ranges</b>	0-1 ppm, 0-1000ppm 0-10 ppm, 0-10,000 ppm
<b>Linearity</b>	± 1% of value
<b>Response Time T90</b>	1.5 seconds
<b>Converter Efficiency</b>	95%
<b>Converter Life time</b>	< 5 years
<b>Temperature Effect</b>	0.3%/°C
<b>Pumps</b>	Vacuum: Dry type Maintenance: 6 months diaphragm change Motor: Maintenance free  Bypass: Maintenance: 6 months diaphragm change Motor: Maintenance free
<b>Power</b>	100-240V AC 50/60Hz Universal or 24V DC Power Save Mode available
<b>Certified to</b>	BS EN 14792:2005
<b>Ozonizer Feed Gas</b>	Self contained air supply
<b>Quenching</b>	CO <sub>2</sub> : less than 1% of reading for 10% CO <sub>2</sub> H <sub>2</sub> O: less than 1% of reading for 3% H <sub>2</sub> O
<b>Versions available</b>	Single detector non-vacuum NOx Single detector high-vacuum heated NOx Dual detector high-vacuum heated NOx/NO <sub>2</sub> /NO
<b>Dimensions</b>	Height: 142mm Width: 485mm Depth: 530mm Weight: 30kg Max.

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