

Specifications and Optional Extras

Product Specifications:			
Parameter	Resolution	Accuracy	Range
Carbon Monoxide (Infrared)	0.01%	±5% of reading *1 ±0.06% volume *1	0-10% Over-range 20%
Oxygen (Fuel Cell)	0.01%	±5% of reading *1 ±0.1% volume *1	0-21%
Hydrocarbon *2 (Infra Red)	1ppm	±5% of reading *1 ±12% volume *1	0-5,000ppm Over-range 20,000ppm
Carbon Dioxide (Infra Red)	0.1%	±5% of reading *1 ±0.5% volume *1	0-16% Over-range 20%
NOx *3 (Electro-Chemical)	1ppm	0-4,000ppm ±4% or 25ppm *1 4,000-5,000ppm ±8% *1	0-5,000ppm
Oil Temperature Optional: (only on some models)	1°C/F	±2°C ±0.3% of reading ±4°F ±0.3% of reading	0-150°C 32-302°F
RPM Optional: (only on some models)	1rpm	50rpm	200-6,000rpm
Lambda	0.001		0.8-1.2
AFR Petrol	0.01		11.76-17.64
AFR LPG			12.48-18.72

*1 Using dry gases at STP *2 Applies only to Petrol and LPG *3 Applies to 5 Gas models only

Sensor Response T95 (Class 1)	15 Seconds
Pre-programmed Fuels	Petrol, LPG and CNG
Dimensions Weight Handset Probe	1.1kg 220 x 55 x 120mm Insertion depth 350mm x Dia 15mm Clip handle to secure to exhaust, 4m long hose
Ambient Operating Range	+5°C to +45°C/10% to 90% RH non condensing
Storage Temperature	Minimum 0°C Maximum +50°C
Battery Charger	Input 110 Vac/230 Vac nominal Output 10 Vac off load
Analyser Battery Run Time	>4 hours from full charge with the pump running

Optional Extras	
KMIRP	Infrared Printer with thermal printer and AA batteries
IMPRINT	Infrared Printer with standard paper roll and ink ribbon, supplied with rechargeable batteries, battery charger and 2 paper rolls
NOX4-1	NOx upgrade for Auto 4-1
NOX4-2	NOx upgrade for Auto 4-2
AUTOSWKIT	Auto software kit with CL3 lead for PC interface
14102/2	Laptop style carry case
17590	Metal Carry Case
EPAUTO03	High temp. EPAUTO02 probe with 17702 inline filter
EPAUTO05	High temp. probe with black hose
EPAUTO06	Motorbike Probe with emission temperature measurement



Auto 4-1 or Auto 5-1 Pro Kit



Available from:



Our energy makes yours cleaner

IMPCO Technologies Europe

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I: www.impc0-europe.com

Warranty

All Impc0 products are warranted from the date of purchase. This warranty covers any defects in materials or manufacturing and applies worldwide.

Impc0 is a division of Kane International Limited who specialise in the design and manufacture of electronic instruments for monitoring and optimising both energy usage and emissions from energy processes. Our Policy is to continuously develop and improve our products and so we reserve the right to change any part of our specifications without prior notice.



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Hand Held Exhaust Gas Analysers



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Our energy makes yours cleaner

Hand Held Exhaust Gas Analysers



IMPCO Technologies Europe with its headquarters in the Netherlands develops and supplies custom-made systems that allow internal combustion engines to use cleaner fuels. Products and services include everything from key components to completely dressed engines and from fuel storage to complete engine management systems. Exhaust after treatment systems also form a key product focus in addition to a range of emission analysers for monitoring and optimising both energy usage and emissions from energy processes. As a leading system supplier to the material handling market, IMPCO Technologies Europe is proud to really "help you keep your energy cleaner".

The IMPCO range of exhaust gas analysers are truly portable that set new standards of convenience and ease of use. Weighing just 1 kg, the handset fits comfortably in the hand and can run for up to 4 hours on its internal re-chargeable battery.

With accuracy standards to OIML class 1, this range is ideal for emission checking and monitoring for health and safety legislation and for optimising fuel efficiency. Extended warranty offers are available for up to 5 years based on economical and fixed price service arrangements to minimise cost of ownership.

2 Measures

Carbon Monoxide, Hydrocarbons, Carbon Dioxide and Oxygen. Nitrogen Oxides measurement is available on 5 gas models and can be fitted retrospectively to 4 gas models.

3 Fast start up

The analyser is ready to go in just 150 seconds from first power on. Re-zeroing takes just 30 seconds.

4 Full Infra Red Measuring Bench

Unlike some portables which calculate CO2 the infra red gas measuring bench measures all three infra red gases (CO, HC and CO2) to give true 4 or 5 gas capability. Oxygen and NOx are measured using automotive electrochemical sensors.

5 Logging and Auto-Logging

The analyser can store up to 255 sets of full test results in its internal memory. Test results can be recorded manually by the press of a key, or automatically timed so that during a drive test no driver intervention is required. They can then be downloaded to a PC (using optional software).

6 PC compatible

The analyser also provides an RS232 output so that using optional PC software, data can be displayed on a PC screen and the PC's printer can be used to produce high quality test reports.

1 So easy to use

Once the analyser has been set-up, there is no need for daily setting or configuration. As a truly portable analyser, you decide where to test. Using the multi fuel selection mode, you can choose between Gasoline, LPG, CNG, and Diesel settings.

7 Long life battery

A fully charged battery has the capacity to allow the analyser to be used all day without the need to recharge. The battery can be charged via the mains or a vehicles 12 volt battery.

8 Additional features

Lambda/AFR measurement
Corrected CO
RPM and Oil/Exhaust gas temperature measurements
Multi lingual software.

9 Nitrogen Oxides (NOx) Testing

The testing of Nitrogen Oxides is becoming more relevant. In order to achieve a "NOx" reading the vehicle being tested needs to be under a load. This would normally involve using a dynamometer or taking your gas analyser with you on a road test. With a Kane hand held analyser this is a simple and easy operation. The built in "Auto store" facility will automatically take and store up to 255 tests that can be recalled, printed and analysed at a later date.

10 Portable Printers -

IMPCO IRP and IMPCO IMPACT
The analyser includes an integral IR transmitter that is compatible with two infrared battery powered printers so that results can be recorded anywhere.

IMPCO IRP Uses thermal paper.

IMPCO IMPACT Uses standard paper roll and ink ribbon.



AUTO 5-1		DATE	15-07-05
		TIME	10:19:26
FUEL		PETROL	
O2	%		0.74
CO2	%		13.4
HC	ppm		08
CO	%		0.43
COK	%		0.46
Lambda			1.027
NOx	ppm		183

Impco Hand Held Exhaust Gas Analyser Range

Product Selection:				
	OIML CLASS 1		Standard	
	Auto 5-1	Auto 4-1	Auto 5-2	Auto 4-2
Measured Gases	CO/CO ₂ /O ₂ /HC/NO _x	CO/CO ₂ /O ₂ /HC	CO/CO ₂ /O ₂ /HC/NO _x	CO/CO ₂ /O ₂ /HC
OIML Class 1 Certificate	✓	✓	Class 1 Accuracy	Class 1 Accuracy
Corrected CO	✓	✓	✓	✓
Test Result Storage - 255 Tests	✓	✓	✓	✓
Auto Store	✓	✓	✓	✓
PC Compatible	✓	✓	✓	✓
Infra Red Printer Compatible	✓	✓	✓	✓
Measures RPM 2, 4 Stroke, DIS	✓	✓	✓	✓
Measures Oil/Exhaust Temperature	✓	✓	✓	✓
Fast Warm Up (150 seconds)	✓	✓	✓	✓
Fuel Types: Petrol/LPG/CNG/Diesel*	✓	✓	✓	✓
Power Supply Internal Battery/12v/Mains	✓	✓	✓	✓
Carry Case - Laptop style softcase	✓	✓	✓	✓
Exhaust Probe - Stainless Steel	✓	✓	✓	✓

*HC is not displayed in diesel mode

Gas Analyser as a Diagnostic Tool

Using the gas analyser as a diagnostic tool enhances its use. Some key faults that have an effect on gas emissions are listed in the table below.

1. Rich mixture
2. Weak Mixture
3. Ignition Missfire
4. Fuel Mis-magagement
5. Tight Valve Clearance
6. Incorrect Ignition Timing
7. Incorrect Valve Timing
8. Faulty Catalytic Converter

In a busy multi-bay workshop there is no need to shuffle vehicles around to get them close to the 'big-box' analyser. Vehicles can even be tested outside on the forecourt and for difficult intermittent faults, exhaust gases can be sampled whilst the vehicle is being driven. This makes the analyser ideal for all types of repair, either in a workshop or mobile.



OIML R99 Class 1 Analysers

The Auto 4-1 and Auto 5-1 series have been certified to be compliant with OIML R99 Class 1 (ISO 3930), under Test Report No N0356 of January 2001 issued by the duly authorised and approved OIML test body SIRA Test and Certification Ltd of the UK. Compliance to OIML standards is often a requirement for regulated emission testing programmes around the world. Each analyser is supplied with a fully traceable calibration certificate.

Why bother?

- Emissions from combustion powered forklift trucks are harmful to the health of the operators and fellow workers in enclosed warehouses
- Check and monitor emission levels to minimise the output of toxic gases such as CO and NO_x
- Optimise engine efficiency by checking and setting the correct air to fuel ratio levels and avoid unnecessary high fuel costs
- Avoid CO "hotspots" and be aware of the consequences of risk assessment in the workplace in terms of permissible levels of harmful gasses in enclosed environments
- Prepare yourself for unexpected health and safety inspections by keeping emission records of your forklift truck fleet
- Practise preventive and predictive maintenance by condition monitoring the trucks whilst in operation