

# icountOS

## Oil Sampler



### Portable condition monitoring for hydraulic oil and fuel systems

The icountOS (Oil Sampler) from Parker offers users a compact, lightweight, robust and truly portable oil and fuel sampling and analysis solution that is both quick to use and accurate in its results. Utilising on-board, laser based, leading-edge technology, the IOS brings to all industries a truly innovative portable oil sampler as a remarkable, cost effective market solution to fluid management and contamination control.



### Contact Information: Product Features:

Parker Hannifin  
**Hydraulic Filtration**

**European Product  
Information Centre**  
**Freephone: 00800 27 27 5374**  
**(from AT, BE, CH, CZ, DE, EE, ES,  
FI, FR, IE, IT, PT, SE, SK, UK)**  
**filtrationinfo@parker.com**

[www.parker.com/hfde](http://www.parker.com/hfde)

- Fluid viscosity as high as 300cSt (usable range) will be able to pass through the detector at the proper flow rate.
- Quick connections for testing hydraulic fluid online and offline.
- Reporting Standards ISO4406:1999, NAS1638 and RH% moisture sensor display in high intensity OLED format.
- Data Storage up to 250,000 test points of information.
- Compact, lightweight and robust, truly portable IOS makes field analysis simple, quick and easy.

- Able to sample directly from a hydraulic reservoir, barrel and vehicle fuel tank or from a high pressure, online hydraulic system with the addition of a pressure reducing adaptor.
- Completely self contained, with laser detection particle counter (icountPD), rechargeable battery and flow management pump.
- No special software needed. Embedded web page generator for data download onto any PC or laptop via a universal RJ45 connection interface.
- Fast detection of the presence of contamination with a sampling period from 5 seconds to 999 seconds.



# Accurate condition monitoring made quick, simple and cost effective

The icountOS (IOS) is an innovative solution to the challenge of measuring the quality of hydraulic oils and hydrocarbon fuels in many different applications: from renewable energy, marine and offshore, to manufacturing, mobile, agriculture, military and aerospace.

Compact, lightweight and robust, the truly portable IOS makes field analysis simple, quick and easy.

Able to sample directly from a hydraulic reservoir, barrel, vehicle fuel tank or from a high pressure online hydraulic system with the addition of a pressure reducing adaptor; the IOS

is undoubtedly the most adaptable contamination service tool available today.

The system is completely self contained, with laser detection particle counter, battery and pump plus memory with web page generator for data download onto any PC or laptop - combined into a single unit.

The IOS uses Parker's proven laser detection technology, which delivers precise, repeatable, reproducible results, in real time detection of both particulates, down to 4 microns (c) and dissolved water.

Just as importantly, the IOS has been developed to offer a wealth of features, combined with simplicity and ease of use, at a cost that is far lower than competing systems, and which fits within most maintenance budgets.



Powerful and easy to use



Lightweight and portable



# Wherever, whenever you need to be 100% sure of oil and fuel quality

With its robust carrying case, sealed to IP67, and proven laser and diagnostics technologies, the IOS is the perfect tool for maintenance and plant engineers to use with all fixed and mobile plant and machinery.

IOS technology is proven in many different applications, under the most demanding conditions, and is used by leading companies around the world.



In the construction and mining sector, IOS is ideally suited to service and fluid monitoring of essential equipment and services.



Dans l'industrie de la défense, l'IOS fournit un soutien de contrôle d'état essentiel pour les chars de combat destinés à opérer sur la ligne de front et des véhicules militaires en missions critiques.



The IOS is the primary diagnostic instrument to help automotive manufacturers develop predictive monitoring programmes.



Ease of on-site use, light weight and portability are key IOS features for monitoring fuel quality in military bulk fuel installations in theatre.



Accuracy and speed of use make the IOS ideal for wind turbine engineers, for both routine maintenance and emergency repairs, flushing and commissioning.



In the aviation sector, the ability to meet strict quality controls makes the IOS the ideal choice for ground handling support companies, ensuring clean and dry fuel deliverance.



# How the IOS works

The IOS quality condition monitor for hydraulic oils and hydrocarbon fuels uses advanced technology to produce extremely repeatable results.

At the heart of the system is a sophisticated laser detector, using a light obscuration flow cell, providing continuous measurement of fluid flow passing through a sample tube.

Measurements are taken every second as standard, although measurement intervals and test period can be defined by the user, with results being reported immediately and updated in real time.

Data is displayed on a built-in OLED digital display and can also be stored for subsequent upload via the embedded icount's web page interface connecting through an RJ45 cable.

## Proven laser detection technology

Parker's experience in developing laser light obscuration or blockage and applying that technology in portable particle counting and detection is what makes Parker's range of contamination analysers so very special.



Fig 1. In simple terms a controlled column of contaminated fluid enters the laser optical scanner chamber. This design maintains contamination distribution within the fluid.

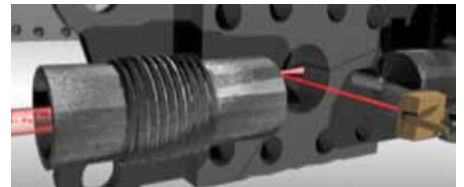


Fig 2. On reaching the photo diode cell, the highly accurate laser light is applied and projected through that oil column. The laser diode projects an image of the sample onto a photo diode cell.

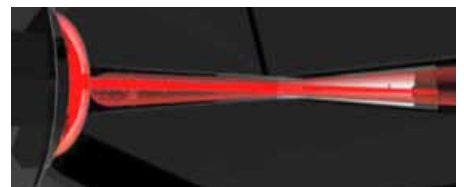
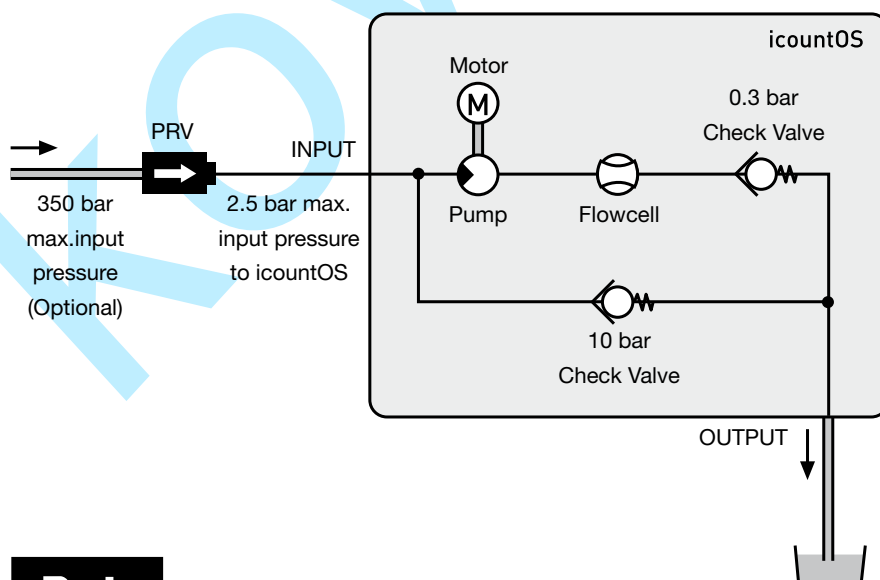


Fig 3. A cast image or shadow created by the contaminant in the oil creates a measurable change in the light intensity.



## Hydraulic circuit



# Features that boost your productivity



## Proven laser detection technology

The IOS uses light obscuration, light blockage technology. A light source is projected through a moving column of oil or fuel. Contaminants in the fluid interrupt the light beam, casting images on a photo diode cell, where the resulting change in light intensity produces a directly proportional change in electrical output.

## High onboard test data storage capacity

Class leading onboard memory provides storage capacity for up to 250,000 sets of test results. Data is displayed instantly, stored or downloaded to a PC or laptop for analysis via a standard IP68 RJ 45 patch cord connection; a 2m cable is supplied as standard. (File types - text/CSV or XMI)

## Tough storm casing

The robust waterproof IP54 (When open) case and fully sealed impact resistant brushed stainless steel front panel provide excellent protection in the most demanding of applications. The combined unit weighs under 5.5kg, making it an ideal 'first use' diagnostic service tool.

## Fast contamination detection

The IOS provides fast detection of the presence of contaminants, with the results being shown on the front panel mounted, high visibility OLED digital display. This provides easy identification of fluid condition, showing measured codes, the sizes per channel in microns (c), the user definable limits and moisture sensor readings as a % of relative humidity..

## Quick connection

Connecting the IOS is quick and reliable. The fluid connectors are on the front panel, with two secure push fittings: 6mm diameter inlet and 4mm diameter outlet/drain. Parker can supply dedicated hoses and fittings for use with most hydraulic and hydrocarbon fluids.

## Long life remote operation

The IOS uses a long life regulated 12 Vdc power supply, with an M12, 4 pin connector, plus a rechargeable NiMH detector battery unit for use onsite or in remote locations.

## Complies with the latest standards

The IOS is designed in accordance with the latest global standards including:

- CE marking
- EC Declaration of Conformity
- Machinery Directive
- EMC EN61000-6-3:2001
- EMC EN61000-6-2:2001
- EN 61010-1:2001

## Fluid and pressure control

The IOS automatically adjusts flow rates, to an optimum level of 60ml/min. Total flow range is between 40 and 140ml/min, with maximum online operating pressure being 2.5Bar (36psi). An optional inlet reduction valve is also available for high pressure applications.



Results are viewed in the OLED digital display window

## Pressure reducing valve (PRV)

A pressure compensated PRV device (Parker Hannifin part number ACC6NN027) has been developed to enable testing where flow pressures in the hose exceeds 2.5 bar, up to a maximum of 350 bar.



Parameter	Value
Working pressure range	0 to 2.5 bar
Working pressure with PRV	2.5 to 350 bar
Working viscosity	1 to 300 cSt



## High Pressure Connection

Manual Connection: Press the Pressure Reducing Valve firmly into the **INLET** port



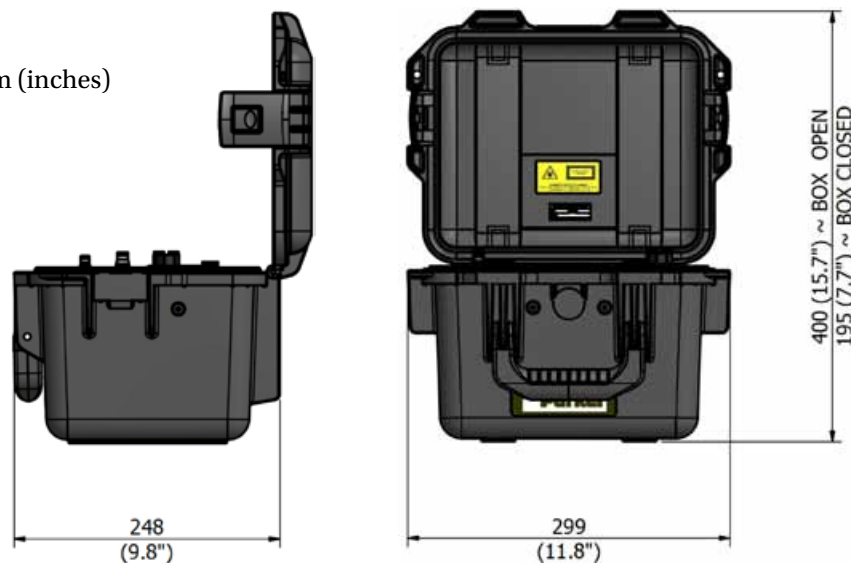
## Low Pressure Connection

Connect **INLET** (Ø 6mm) hose

# IOS Technical Specifications

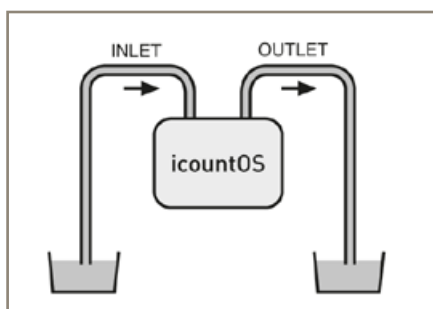
## Dimensions

Dimensions are given in mm (inches)

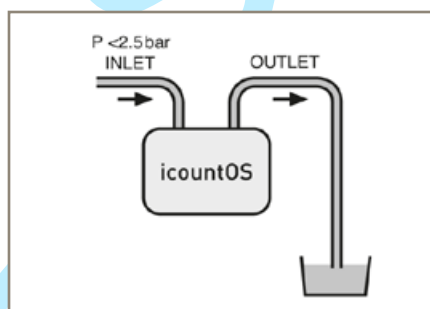


## Low pressure connection setup

We recommend that the IOS is positioned in a safe, stable area, as close as possible to the system output and only the hose fittings provided are used.



Option 1

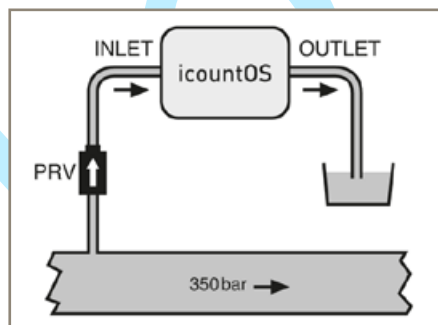


Option 2

## High pressure connection setup (Optional equipment needed)

(High pressure is defined for this unit as more than 2.5 bar, with a maximum of 350 bar)

We recommend that the IOS is positioned in a safe, stable area, as close as possible to the system output and only the hose fittings provided are used. For pressure systems (more than 2.5 bar) one high pressure hose assemblies: ACC6NN034, and a Pressure Reducing Valve (PRV) ACC6NN027 are required.



Attach **OUTLET** (Ø 4mm) hose



To remove the PRV, press down on the removal tool at the same time as lifting PRV off.



# The IOS web interface

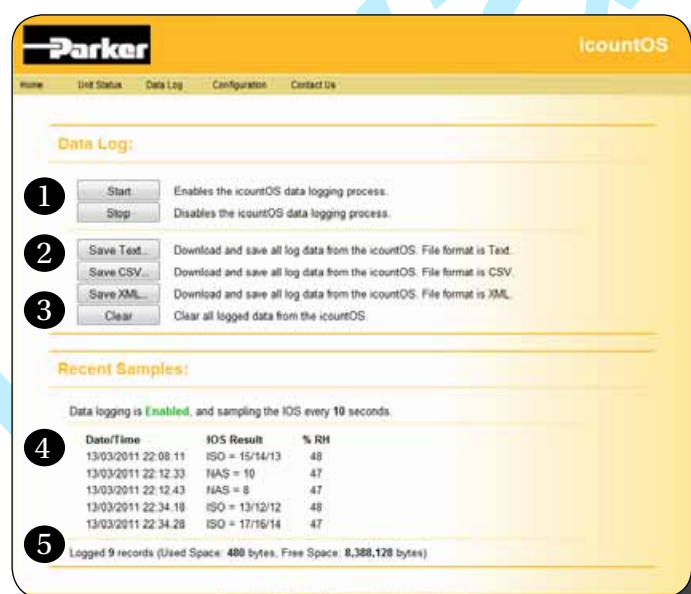
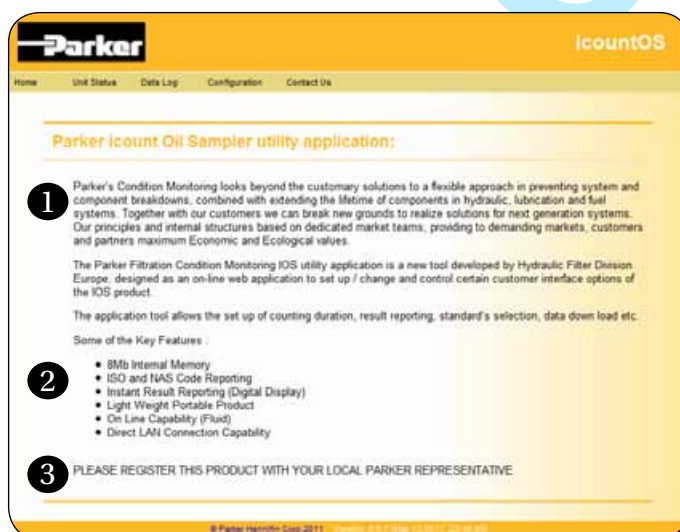
The IOS is a unique product in that it has its own web page generator which means that the stored data can be downloaded or viewed on any PC or laptop.

Utilising a computer's Internet Explorer utility, simply plug in the supplied network cable, open Explorer and enter the IOS's unique IP/MAC address.

## Home page

### KEY

- 1 Product description
- 2 Key features
- 3 Register the product at [www.parker.com/unlock](http://www.parker.com/unlock)



## Data log page

### KEY

- 1 Start and Stop data logging
- 2 Save data in one of three date formats:
  - TXT format
  - CSV (Comma Separated Variables)
  - XML (eXtended Markup Language)
- 3 Clear data logging memory
- 4 List of the five last samples taken
- 5 Memory usage



## Unit status page

### KEY

- 1 The Unit Status page is a list of current values for various parameters for the connected IOS unit.

**Unit Status:**

Unit ID:	IOS	
Alarm Status:	Inactive	
Last Result:	ISO: -/-/-	[ Limits: 19, 18, 15 ]
Relative Humidity (%RH):	50	[ Limit: 50 ]
Measurement Period:	5 seconds	
Sensor Used:	No	
Detector Status:	Idle	
Part Number:	iPD	
Serial Number:	00000000	
Software Version:	1.5.2	
Software Build:	1.5.2-001.195	
Last Calibrated:	01/01/06	
Calibration Due Date:	01/01/06	
Power Status:	Running on Power Supply	

**Configuration:**

4µ Limit:	19
6µ Limit:	18
14µ Limit:	15
Relative Humidity Limit:	50 %
Measurement Period:	5 seconds
Data Logging Interval:	10 seconds
Unit ID:	IOS
Unit Location:	

Buttons: Save Settings, Set Date and Time, Set Reporting Standard

### KEY

- 1 Alarm limit settings for:
  - 4µm channel (c)
  - 6µm channel (c)
  - 14µm channel (c)
- 2 Alarm limit setting for Relative Humidity
- 3 Measurement period
- 4 Data logging interval
- 5 Unit name
- 6 Unit location

## Configuration: set report standard page

### KEY

- 1 Select either the ISO4406:1999 or NAS1638 standard
- 2 Confirm the selected standard

**Set Reporting Standard:**

1	ISO	(ISO4406:1991 or ISO4406:1999 Depending on the dust used to calibrate the IOS)
	NAS	(NAS1638)
2	Save Reporting Standard	

# Technical Specifications

Feature	Specification
Product start-up time	10 seconds minimum
Measurement period	Default 30 seconds run time; 15 seconds data logging time
Reporting interval	Onboard data storage every second. Output via RJ45 connection
Principle of operation	Laser diode optical detection of actual particulates
International codes range	Up to ISO 22 (+/- 1 ISO code) NAS 0-12
Calibration	Calibration by recognised online methods confirmed by the relevant ISO procedures. MTD – via a certified primary ISO 11171 automatic particle detector using ISO 11943 principles. Particle distribution reporting to ISO 4406:1999
Recalibration and Servicing	Recommended every 12 months
Working pressure	2.5–350 bar (35–5000psi) Pressures above 2.5 bar require the use of a Parker Pressure Reducing Valve (PRV) – ACC6NN027
Working viscosity	1-300 cSt
Flow range through IOS	40–140ml/minute; controlled at 60ml/min by IOS's internal pump
Fluid connection interface	INLET: 6mm push-fit. DRAIN: 4mm push-fit
Ambient storage temperature for unit	–40°C to +80°C; –40°F to +176°F
Operating temperature for unit	–30°C to +80°C; –22°F to +176°F
Operating humidity range	5%RH to 100%RH
Fluid operating temperature (Oil)	+5°C to +80°C; +41°F to +176°F
Fluid operating temperature (Fuel)	–20°C to +70°C; –4°F to +158°F
Moisture sensor	Linear scale within the range 5%RH to 100%RH
Computer compatibility	IP68-rated RJ45 connection that may be connected to a laptop computer's RJ45 LAN port using the 2m cable supplied
Power requirement	Regulated power supply supplied with the unit
Certification	IP54 rating (unit open) IP67 rating (unit closed) EC Declaration of Conformity Machinery Directive EMC EN61000-6-3:2001 EMC EN61000-6-2:2001 EMC EN61010-1:2001 CE Certified

## What is included?

Offline IOS 1210 EUR/UK/US	Online IOS 1220 EUR/UK/US
1x IOS Oil Sampler Unit	1x IOS Oil Sampler Unit
+ 1x Power Supply	+ 1x Power Supply
+ 1x RJ45 LAN Cable	+ 1x RJ45 LAN Cable
+ Low Pressure Hoses	+ 1x Low Pressure Hose
	+ 1x PRV
	+ 1x High Pressure Hose

## Important Information

### WARNING-USER RESPONSIBILITY

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through their own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the applications are met.
- The user must analyse all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalogue and in any other materials provided from Parker or its subsidiaries or authorised distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems. The operation of the products described here in is subject to the operating and safety procedures details of which are available upon request.

### Sales conditions

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered into by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).



# Ordering Information

Key	Fluid type	Calibration	Connection	Options
IOS1220EUR	Mineral	MTD	Online	No options
IOS1210EUR	Mineral	MTD	Offline	No options

Key		Fluid type		Calibration		Connection		Options	Region
IOS	1	Mineral	2	MTD	1	Offline	0	No options	UK
	3	Aviation fuel (4 channels*)			2	Online			EUR
									USA

\*Fluid Type 3: Contact Parker Hannifin

## Accessory Part Numbers

Description	Part number
Hose Kit Bag (includes one power pack, RJ45 patch cable and low pressure hose connectors)	ACC6NN029UK ACC6NN029EUR ACC6NN029US



Pressure Reducing Valve (PRV)	ACC6NN027 (Standard with IOS 1220)
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Power Pack (UK 2m cable)	ACC6NN040
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Power Pack (EUR 2m cable)	ACC6NN041
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Power Pack (US 2m cable)	ACC6NN042
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Description	Part number
RJ45 LAN Connector Cable	ACC6NN028



Carry Strap	ACC6NN030 The Carry Strap option MUST be selected at the time of placing the IOS order.
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Low Pressure Hoses (4mm and 6mm)	ACC6NN031
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High Pressure Hose Assembly	ACC6NN034 (Standard with IOS 1220)
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Verification Fluid	SER.MISC.067
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