



Product Datasheet

icountOS Oil Sampler (IOS)

Portable Condition Monitoring

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.



Overview

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 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 storage onto any PC or laptop - combined into a single unit.

The IOS uses proven laser detection technology, which delivers precise, repeatable and consistent results, for real time detection of both particulates and moisture, down to 4 microns in size.

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

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.



Construction

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



Defence Industry

In the defence industry, IOS provides essential condition monitoring support for mission critical front line battle tanks and military vehicles.



Automotive Manufacturers

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



Military

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



Wind Turbine

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



Aviation

In the aviation sector, the ability to meet strict quality controls makes the IOS the perfect 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 consistent and repeatable results.

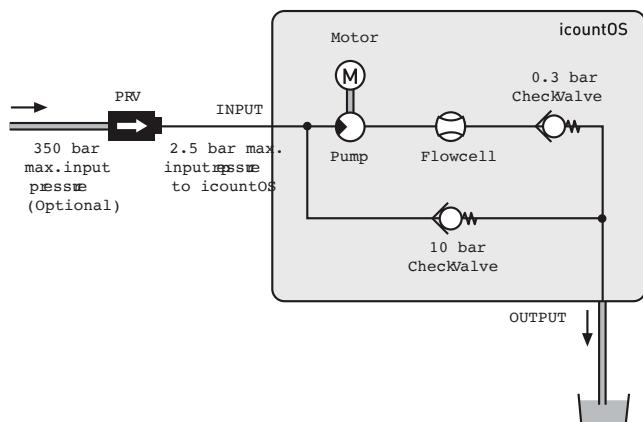
At the heart of the system is a sophisticated laser detector, providing continuous measurement of fluid flow passing through a sample tube.

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 to the embedded iCount's web page interface via a RJ45 cable.



Hydraulic circuit



Proven laser detection technology

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

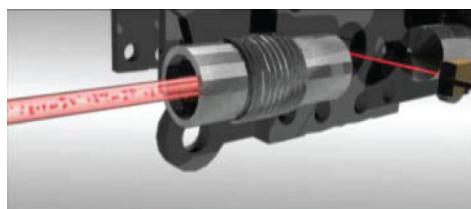


Fig 1.

In simple terms a controlled column or ribbon of contaminated fluid enters the laser optical scanner chamber.

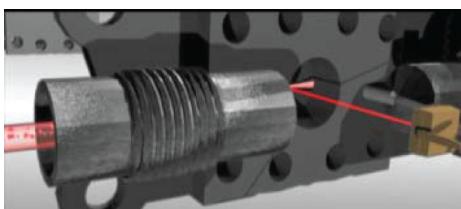


Fig 2.

On reaching the photo diode cell, the highly accurate laser light is applied and projected through that oil ribbon.



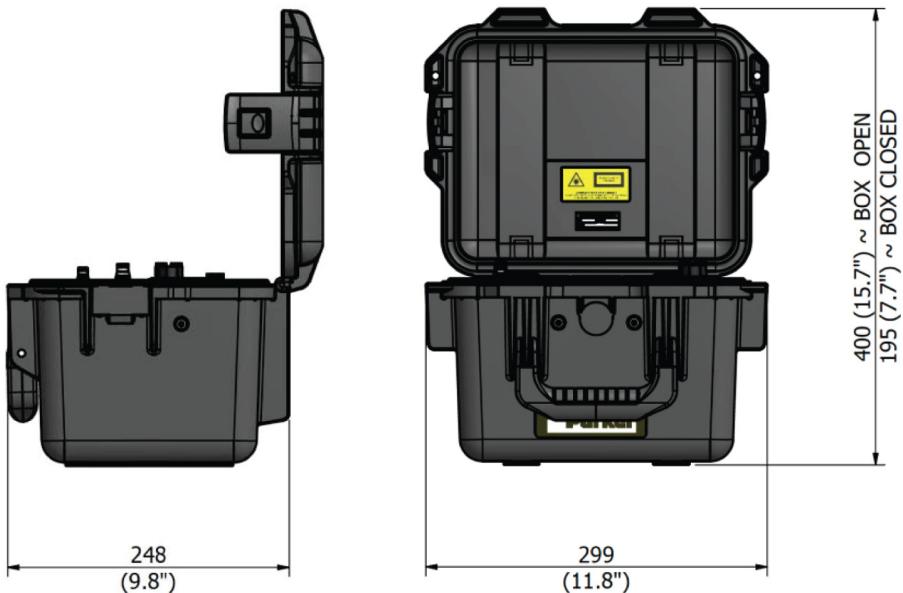
Fig 3.

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

Dimensions

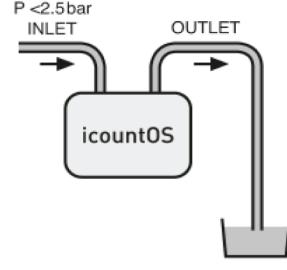
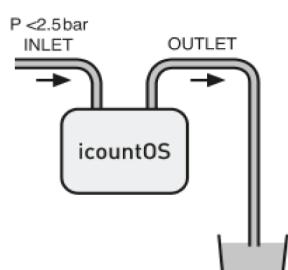
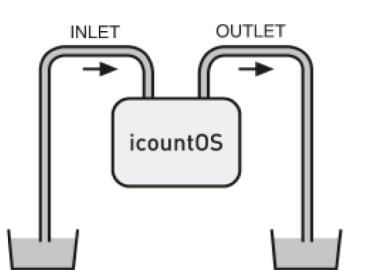
The IOS quality condition monitor for hydraulic oils and hydrocarbon fuels uses advanced technology to produce extremely consistent and repeatable results.

Dimensions are given in mm (inches)



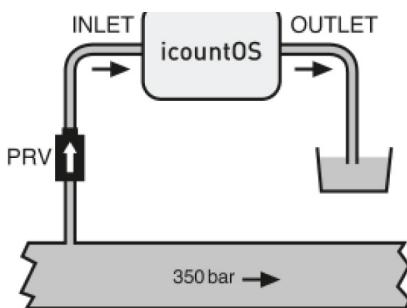
Low pressure connection setup

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.



High pressure connection setup

(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. The IOS is supplied with two high pressure hose assemblies: ACC6NN034, and a Pressure Reducing Valve (PRV) ACC6NN027.



Attach OUTLET (\varnothing 4mm) hose



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

iCount OS

Features

1

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.



2

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 XML)

3

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 5kg and meets airline carry-on regulations, making it easy and safe to use anywhere in the world.

4

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, the user definable limits and moisture sensor readings.

5

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. We can supply dedicated hoses and fittings for use with all hydraulic and hydrocarbon fluids.

6

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.

7

Complies with the latest standards

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

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

8

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.



Flow control - pressure reducing valve (PRV)

A pressure compensated PRV device (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.



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



Connect INLET (Ø 6mm) hose

iCount OS

Web Interface

The IOS is a unique product in that it has its own web page generator which means that the 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. Here are some of the information screens.

Homepage

1. Product description
2. Key features

The screenshot shows the homepage of the iCount OS web interface. At the top, there is a navigation bar with links for Home, Unit Status, Data Log, Configuration, and Contact Us. The main content area has a yellow header titled "Parker iCount Oil Sampler utility application:". Below this, a large callout box (labeled 1) contains text about Parker's Condition Monitoring. Another callout box (labeled 2) lists key features, including 8Mb Internal Memory, ISO and NAS Code Reporting, Instant Result Reporting (Digital Display), Light Weight Portable Product, On Line Capability (Fluid), and Direct LAN Connection Capability. A footer at the bottom of the page includes a registration link and copyright information: "PLEASE REGISTER THIS PRODUCT WITH YOUR LOCAL PARKER REPRESENTATIVE" and "© Parker Hannifin Corp. 2011 Version: 0.9.1 (Mar 13 2011, 22:48:09)".

Data log page

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

The screenshot shows the Data Log page of the iCount OS web interface. It features a navigation bar with Home, Unit Status, Data Log, Configuration, and Contact Us. The main content area has a yellow header titled "Data Log:". Below this, a callout box (labeled 1) shows "Start" and "Stop" buttons for enabling and disabling data logging. Another callout box (labeled 2) shows "Save Text...", "Save CSV...", and "Save XML..." buttons for saving log data in different formats. A third callout box (labeled 3) shows a "Clear" button for clearing all logged data. A section titled "Recent Samples:" displays a table of the last five samples taken, with a note that data logging is enabled and sampling occurs every 10 seconds. Callout box 4 points to the table, and callout box 5 points to a message at the bottom stating "Logged 9 records (Used Space: 480 bytes, Free Space: 8,388,128 bytes)".

Date/Time	IOS Result	% RH
13/03/2011 22:08:11	ISO = 15/14/13	48
13/03/2011 22:12:33	NAS = 10	47
13/03/2011 22:12:43	NAS = 8	47
13/03/2011 22:34:18	ISO = 13/12/12	48
13/03/2011 22:34:20	ISO = 17/16/14	47

Unit status page

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

The screenshot shows the 'Unit Status' section of the ETLConMon software. It displays the following information:

Parameter	Value
Unit ID:	IOS
Alarm Status:	Inactive
Last Result:	ISO: --/-/-
Relative Humidity (%RH):	50 [Limits: 19, 10, 15] [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

At the bottom right, it says "© Parker Hannifin Corp. 2011 Version: 0.9.1 (Mar 13 2011, 22:48:09)".

Configuration page

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

The screenshot shows the 'Configuration' section of the ETLConMon software. It displays the following information:

Parameter	Value
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:	[Empty]

At the bottom, there are three buttons: 'Save Settings', 'Set Date and Time...', and 'Set Reporting Standard...'. The footer says "© Parker Hannifin Corp. 2011 Version: 0.9.1 (Mar 13 2011, 22:48:09)".

Configuration: set report standard page

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

The screenshot shows the 'Set Reporting Standard' section of the ETLConMon software. It displays the following information:

1. A radio button group for selecting a reporting standard:
 ISO (ISO4406:1991 or ISO4406:1999 Depending on the dust used to calibrate the IOS)
 NAS (NAS1638)

2. A 'Save Reporting Standard' button.

At the bottom right, it says "© Parker Hannifin Corp. 2011 Version: 0.9.1 (Mar 13 2011, 22:48:09)".

Technical Specifications

Feature	Specifications
Product start-up time	10 seconds minimum
Measurement period	Default 30 seconds run time; 15 seconds data logging time Option: User can define up to 99 minutes run 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	ISO 7-22; NAS 0-12 (+/-1 ISO Code)
Calibration	Calibration by recognised online methods confirmed by the relevant ISO procedures. MTD - via a certified primary ISO 11171 automatic 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 Pressure Reducing Valve (PRV) – ACC6NN027
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 Pressure Equipment Directive / Machinery Directive EMC EN61000-6-3:2001 EMC EN61000-6-2:2001 EMC EN61010-1:2001

What is included?

Offline IOS 1210 EUR/UK/US	Offline 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
+ 1x Low Pressure Hose	+ 1x Low Pressure Hose
	+ 1x PRV

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 Environmental Technologies Ltd, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

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Ordering Information

*Fluid Type 3: Contact Environmental Technologies

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	Online	0	No options	UK
	3	Aviation fuel (4 channels*)			2	Offline			EUR
									USA

Accessory Part Numbers



Power Pack (UK 2m cable)
ACC6NE023



Power Pack (EUR 2m cable)
ACC6NE024



Power Pack (US 2m cable)
ACC6NE025



Pressure Reducing Valve (PRV)
ACC6NN027
(Standard with IOS 1220)



Verification Fluid
SCR.MISC.067



Carry Strap
ACC6NN030



Low Pressure Hoses
ACC6NN031
(4mm and 6mm)



High Pressure Hose Assembly
ACC6NN034
(Standard with IOS 1220)



Hose Kit Bag
(includes one power pack, RJ45 patch cable and low pressure hose connectors)
ACC6NN029
(Standard with IOS 1210 EUR and IOS 1220 EUR)



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