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climate control  
electromechanical  
**filtration**  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



**WiFi** WIFI  
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## icount Fuel Sampler (IFS)

Portable condition monitoring for distillate and alternative fuels.



ENGINEERING YOUR SUCCESS.

# Accurate fluid testing. Exactly where and when you need it.

## Portable, easy-to-use fuel sampler.

The Parker icount Fuel Sampler (IFS) is an innovative, solution to the challenge of measuring the quality of fuels in many different applications.

The IFS delivers highly accurate, instant data, operating effectively in virtually every type of environment. In addition, the IFS can also be used to monitor various fuels from existing sampling points in locations from the refinery through the distribution system to final delivery into aircraft, ship, truck or train.

The cost-effective IFS offers a wealth of advanced features, within a portable and easy-to-use design which fits within most maintenance budgets – benefiting from nearly 30 years of experience in fluid contamination monitoring.

- Compact, lightweight and robust - the portable IFS makes field analysis quick and easy.
- Maximum versatility and adaptability - direct sampling from fuel tanks, barrels, vehicle fuel tanks and upstream and downstream of fuel filtration systems.

- Completely self-contained - laser light particle counter, battery, pump, plus memory with web page generator for data download onto any PC or laptop, combined into a single unit.
- WiFi option - available via Smart Phone, laptop or tablet.
- Established and proven technology from Parker - precise, repeatable, reproducible results, real time detection of particulates, down to 4 microns (c).



### Failure to monitor your fuel can...

...lead to rapid filter blockage which in the application of emergency systems could have major consequences with life-threatening potentials.





## Take the guesswork out of fuel contamination.

Previously, heavily contaminated fuel was only identified through filter blockage and subsequent engine shut down.

The IFS provides instant real-time analysis to allow the user to 'see inside the fuel' – for identification of solids and the inference of water.

Used either as a permanently installed on-line monitoring tool or as an offline maintenance diagnostic instrument, the IFS offers users accurate fuel quality analysis to ensure the sampled fuel is in accordance with machinery specifications and international standards.

### Fuel Condition Monitoring and Control

In today's challenging economy, the ability to measure and monitor the quality of fuel is key to ensuring on-spec quality and transfer liability is identified immediately through the application of on-line condition monitoring using an icountFS.

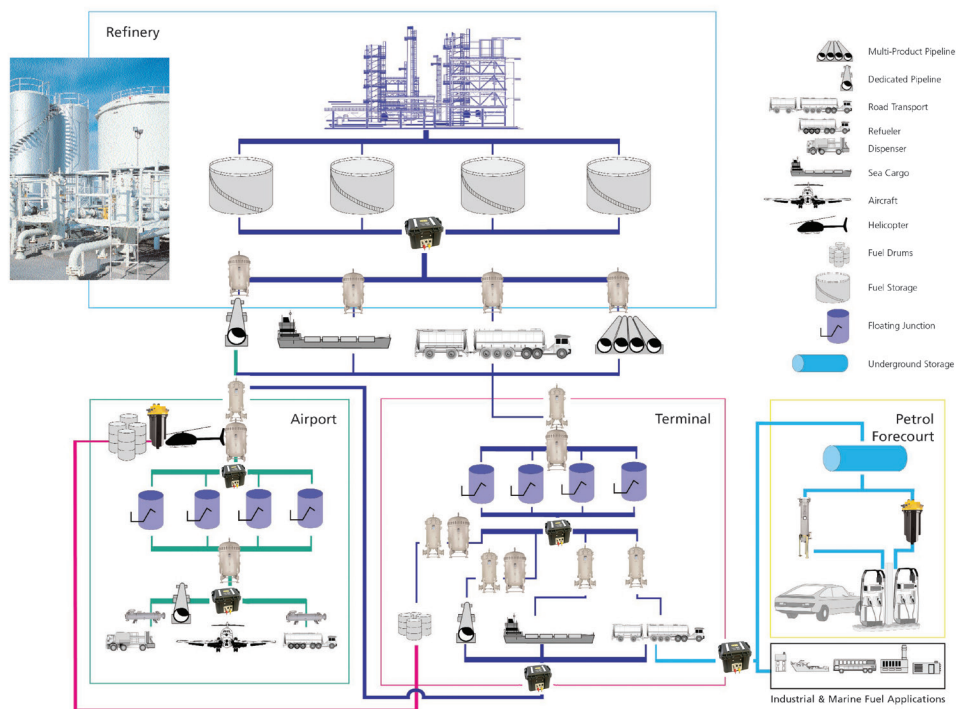


# Applications:

Also included are:

- Refinery
- Pipeline and Distribution
- Storage Tanks
- Bulk Transportation - Marine, rail, road etc.
- Forecourt Operations
- Power Gen - Prime power and Emergency
- Mining
- Agriculture
- Military
- Fuel Testing Laboratories
- Marine - Commercial, leisure and Bunkering (Distillate)

An example of an aviation fuel delivery system



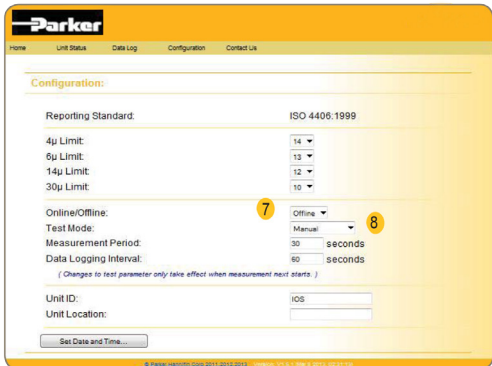
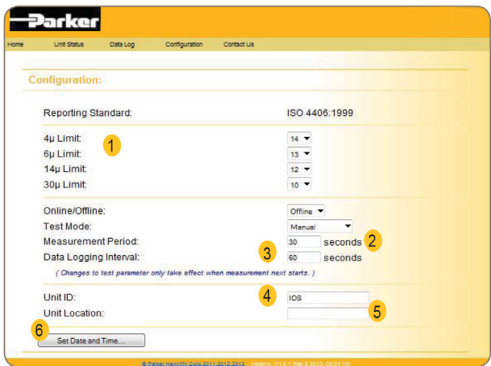
## Features, Benefits and uses

- ISO 4406:1999 reporting fuel compliance to worldwide fuel charter
- Filtration performance determination
- Storage tank inspections
- Certification in accordance with specifications
- System flushing and commissioning
- Independent monitoring of system contamination trends - repeatable and reportable
- Calibration by recognised online principles confirmed by relevant International Organisation procedures for Standardisation (ISO)
- Free water detection
- Self-diagnostic software
- Cost reduction in lab expenditure
- On-board Web page generation allowing users to set their own testing parameters and code alarm limits
- On-board memory capable of storing in excess of 250,000 test results
- Flexible data exporting - as XML, CSV and TXT files
- Stand - alone, portable instrument incorporating an on-board, high quality pump, motor, battery and software



# Configuration

The IFS is configurable by the user via either a laptop for the non WiFi version or via Smart Phone, tablet or laptop for the WiFi version. This enables a unique set-up of alarm levels, reporting intervals and other operating parameters to suit the application requirements.



- KEY
1. Alarm limit settings for:
    - 4µm channel (c)
    - 6µm channel (c)
    - 14µm channel (c)
    - 30µm channel (c)
  2. Measurement period
  3. Data logging interval
  4. Unit name
  5. Unit location
  6. Proceed to set time and date page
  7. Online/offline selection
  8. Test mode

Arguable, one of the most important aspects of testing regime is to ensure a representative sample. The IFS is designed for quick connection to the process line via either M16 fittings or push fittings with flexible tube adaptor for offline connection set up.



Fig 1.  
Low pressure/offline connection set-up via push fittings with flexible tube adaptor.



Fig 2.  
High pressure (20 bar max.) connection via M16 x 2 test points in conjunction with the IFS sampling connector.

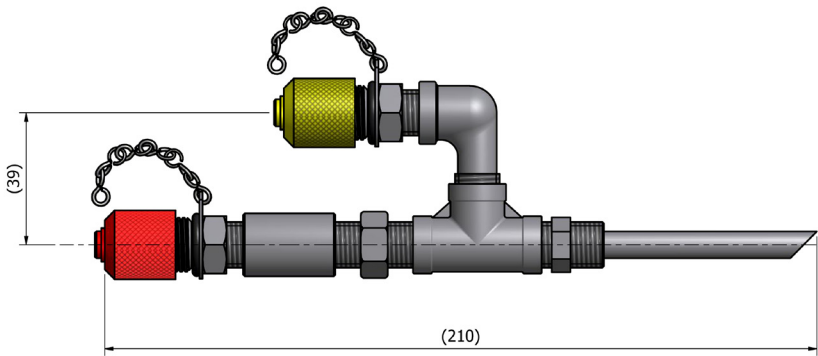


Fig 3. IFS Sampling Connector P/N ACC6NN046

# Improved productivity for fuel applications

The visual appearance of the product is a good indication of contamination and remains a key requirement for fuel throughout the distribution system. However, interpretation of the appearance requirement can lead to problems due to the subjective nature of the visual assessment.

Therefore, depending on the geographical specification body, a quantitative limit will be established for particulate contamination in accordance with ISO 4406:1999.

It is anticipated that fuels containing particulate with levels greater than 18/16/13 will require additional handling procedures such as extended settling and/or additional/improved filtration.

Although not widely mandated, ISO code limits are well recognised and form the basis of a global fuel cleanliness limit at the point of delivery. Other applications, such as aviation, will have tighter specifications.



A technician carrying out a 'clear and bright' analysis of a fuel sample. An extremely subjective method due to the fact that the human eye can only see down to 40 microns unaided.



In nature solid particles tend to have an exponential distribution from infinitely small reducing in number to infinitely large.

The fuel market has adopted the same measurement of cleanliness standard as was developed by the hydraulics industry, utilizing  $>4\mu(c)$ ,  $>6\mu(c)$  and  $>14\mu(c)$  channel sizes from which the ISO 4406:1999 code is derived.

Unlike the hydraulic version icountOS, the IFS incorporates an additional channel reporting particulate  $>30\mu(c)$ . It has been found that water droplets auto-agglomerate and are clearly visible in this channel size; allowing the user to identify, through inference, the presence of free-water.

$>4\mu_{(c)}$	Every particle measured that has a diameter of $> 4\mu_{(c)}$	
$>6\mu_{(c)}$	Every particle measured that has a diameter of $> 6\mu_{(c)}$	
$>14\mu_{(c)}$	Every particle measured that has a diameter of $> 14\mu_{(c)}$	
$>30\mu_{(c)}$	Every particle measured that has a diameter of $> 30\mu_{(c)}$	

IFS ISO4406 code numbers ( $>4\mu(c)$  and  $>30\mu(c)$  with two intermediate  $>6\mu(c)$   $>14\mu(c)$ ).

### The development of the IFS has led to:

- Durable HPX® case, with soft carry handle and optional shoulderstrap for portability
- 4 channel particle detector :  $>4\mu(c)$ ,  $>6\mu(c)$ ,  $>14\mu(c)$ ,  $>30\mu(c)$
- Sampling period for 5 to 999 second.
- Embedded web page generator for data downloads and IFS parameter configurations.
- IP67 connection for charging internal battery
- IP68-rated RJ45 connection for communications with laptop or network
- IP54 protection (unit open)

The IFS provides rapid detection 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), Numbers are ISO codes, directly indicating contamination levels in ISO 4406:1999 reporting standards respectively.





# Refineries

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Where it all starts... From production to delivery, refineries need to ensure product quality remains constant



# Terminal Fuel Ports

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Fuel storage and distribution centres see a constant movement of fuel. At every stage, the opportunity for contamination occurs through poor filtration, tank breathing and poor system maintenance. The IFS can be used to identify specific issues where previously bottle sampling and expensive lab analysis has been the norm.



# Fuel Delivery

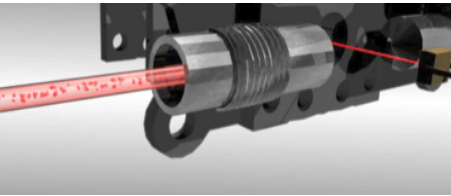
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Every time fuel is supplied, there is the potential of adding millions of tiny particles which could destroy injectors, pumps, valves and other machinery and components operating with critical tolerances such as those found in common-rail fuel systems.

The IFS can prevent failure by providing real-time point-of-use analysis for immediate reaction and action in the event of a contamination episode.

# How the icountFS works

Fig 1.

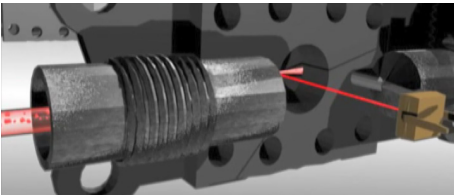


In simple terms, a controlled column of sample fluid enters the laser optical scanner chamber. This design maintains any contamination distributed within the fluid.

### Fluid Management:

Designed for low viscosity fluids, the IFS measuring cell is situated up-stream of the instrument's pump and motor. This allows the IFS to report super-clean fluids. Measurement accuracy is maintained as a result of on-line fluid flow management; testing without the need to waste the sample but return it to the process line via the same sample point.

Fig 2.

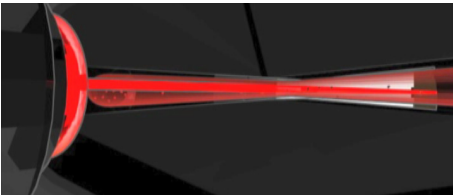


On reaching the IFS's photo diode cell, the collimated laser light is applied and projected through that fuel column. The laser diode projects an image of the contamination within the sample onto a photo diode cell.

### Where to use the IFS

- Fuel Cleanliness and Quality checks
- Pipeline Commissioning
- Filter Element Performance
- Correct Element installation and integrity
- Storage Tank

Fig 3.



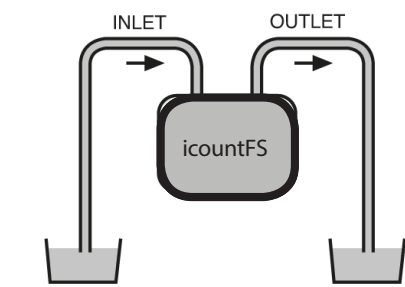
A cast image or shadow created by the contaminant in the fuel creates a measurable change in the light intensity.

### Inspection and Monitoring

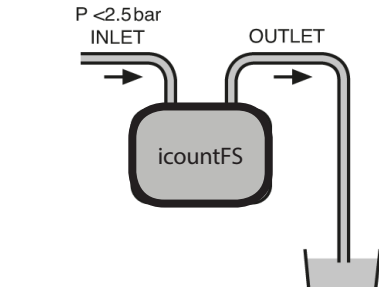
- Service life
- Free water detection
- Go/No-Go Alarm detection
- Remote Monitoring
- Cost reduction in laboratory expense trend analysis.

## Low Pressure connection set up

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



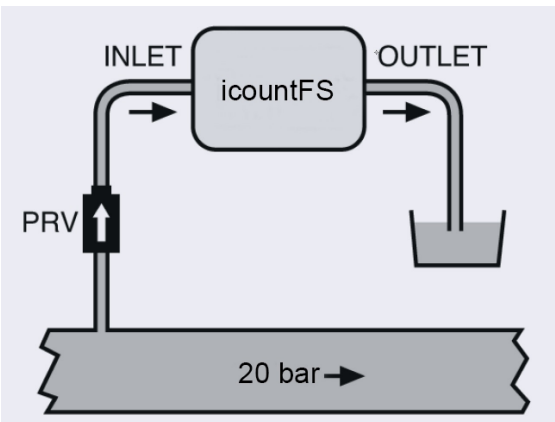
Option 1



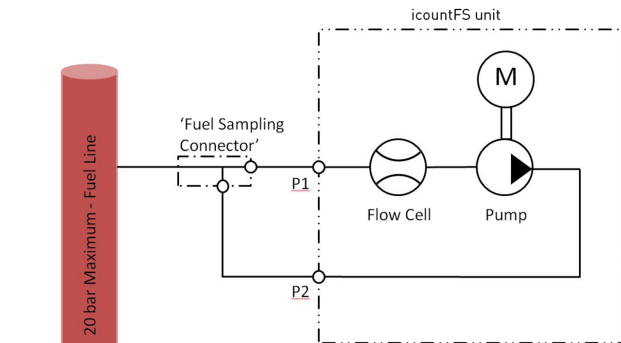
Option 2

## High Pressure connection set up (Optional equipment needed)

(High pressure defined for the IFS as more than 2.5 bar, It is recommended that the IFS is positioned in a safe, stable area, as close as possible to the system output and only the provided hose fittings are used.



### Circuit Diagram



20 bar line pressure maximum (0 bar DP) when using the 'icountFS Sampling Pack'.



# Technical specifications

Feature	Specification
Product start-up time	5 seconds minimum.
Measurement period	Default 30 seconds run time; 60 seconds data logging time.
Reporting interval	Once per second.
Principle of operation	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	20 bar line pressure maximum (0 bar DP) when using optional Sampling Connector (ACC6NN046)
Flow range	icountFS system regulates flow to an optimal 60ml/minute (0.016 USGPM)
Viscosity range	0 cSt. to 30 cSt.
Head hight	3 metres typically
Fluid connection interface	INLET: M16x2 test point - OUTLET: M16x2 test point.
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 +60°C ; +41 °F to +140°F
Computer compatibility	IP68-rated RJ45 connection that may be connected to a laptop computer's RJ45 LAN port using the 2m cable supplied, WiFi capability 20 metres indoors.
Power requirement	icountFS units supplied with an internal battery and external power supply. IFS sampling pack is also supplied with 2 x leisure batteries.
Certification	IP54 rating (unit open) EMC EN61000-6-3:2001 EC Declaration of Conformity EMC EN61010-1:2001 Machinery Directive CE Certified

## icountFS Ordering Information

Part Number	Fluid Type	Calibration	Connection	Option
IFS3210EUR	Fuel	MTD	Offline	None
IFS3220EUR	Fuel	MTD	On line	None
IFS3211EUR	Fuel	MTD	Offline	WiFi
IFS3221EUR	Fuel	MTD	On line	WiFi

## Accessory Part Numbers

Description	Part number
Fuel Accessory Kit (Supplied with IFS product) (includes one power supply and electrical connector, RJ45 patch cable, Pressure hoses/tubes and connectors)	ACC6N1003
Fuel Sampling Connector (optional)	ACC6NN046
Verification Fluid	SER.MISC.067
RJ45 LAN Connector Cable	ACC6NN028
Power Pack (UK 2m cable)	ACC6NE023
Power Pack (EUR 2m cable)	ACC6NE024
Power Pack (US 2m cable)	ACC6NE025

# Total system health management - Parker Condition Monitoring

icountBSplus -  
Particle Counter  
Offline + Online  
Bottle Sampler



Product Features

- Quick sample bottle analysis with variable test time options from 15 seconds and volume capacities from 25ml.
- Repeatable and re-producible result performance to ISO4406:1999, NAS1638 AS4509E and GOST 17216:2001 (Differential and Cumulative) particle count distributions.
- On-board compressor and 'shop' air capability.
- CE compliant.

Specifications

- Principle of operation is Laser diode optical detection of actual particulates.
- Fluid compatibility - Mineral-based oils and petroleum-based fuel.
- Viscosity range of the icountBSplus is 1 to 300cSt.
- Online sampling feature for pressures up to 350 bar.

Ordering Information

Key	Version		Options		Region	Part Number
IBS	Plus	3	Online	000	Global	IBS3000
IBS	Plus	3	Offline	100	Global	IBS3100

FPS  
Fluid Property  
Sensor



Product Features

- Simultaneous measurement of viscosity, density, dielectric constant & temperature
- Field or laboratory use
- Data logging
- Programmable sample rates
- Compact rugged construction
- Operates using Harmonics (tuning fork) Technology

Specifications

- Up to 50 cSt viscosity reporting
- Refresh rate - 30 seconds
- 12 Volt operating power supply
- IP68 compatible
- Max. operating pressure - 25 bar (max. 10% of operating time)

Ordering Information

Part Number	Fluid Type	Communication	Cable connector kit
FPS2000	Mineral/Fuel	CAN-bus	4 pin plu connector

icountPD  
Online  
particle detector



Product Features

- Independent monitoring of system contamination trends
- Continuous performance for prolonged analysis
- Visual indicators with power and alarm output warnings
- Self diagnostic software
- Cost effective solution to prolong fluid life and reduce machine downtime

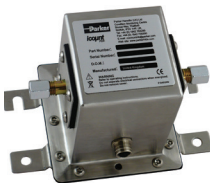
Specifications

- Full PC/PLC integration technology such as:- RS232 and 0-5 Volt, 4-20 mA, CAN(J1939)
- Set up and Data logging support software included
- Moisture % RH indicator (included)

Ordering Information

Part Number	Fluis Type	Communication	Cable connector kit
IPD12322230	Mineral	RS232/4-20mA	M12, 8 pin plug connector
IPD12323230	Mineral	RS232/0-5V	M12, 8 pin plug connector
IPD22322230	Aggressive	RS232/0-520V	M12, 8 pin plug connector

icountPDR  
Robust online  
particle detector



Product Features

- Independent monitoring of system contamination trends
- Rugged design ensures protection against environmental exposure
- Small and compact device constructed in stainless steel
- Continuous performance for prolonged analysis
- Cost effective solution to prolong fluid life and reduce machine downtime

Specifications

- Full PC/PLC integration technology such as:- RS232 and 0-5 Volt, 4-20 mA, CAN(J1939)
- Set up and Data logging support software included
- Moisture % RH indicator

Ordering Information

Part Number	Communication	Cable connector kit
IPDR12115240	RS232/CAN-bus	M12, 12 pin plug connector
IPDR12112240	RS232/4-20mA	M12, 12 pin plug connector
IPDR12113240	RS232/0-5V	M12, 8 pin plug connector





MHC-Bearing  
Checker  
Acoustic Emissions  
Instrument



Product Features

- Simple Acoustic Emission measurement tool to assess bearing condition.
- Simple handheld device for determining the condition of rotating bearings and inadequate lubrication.
- The unit can instantly detect if there is a problem, allowing corrective action to be taken to prevent further damage or machine failure.

Specifications

- Operating temperature: 0°C to 65°C
- Dimensions: 98 mm x 62 mm x 34 mm (including magnetic sensor)
- Weight: 225g

Ordering Information

Part Number	Product Description
FGH11510PA	MHC Bearing Checker

Heated  
Viscometer  
Viscosity  
Measurements



Product Features

- Accurate viscosity measurement in the field
- Rolling ball technique for high accuracy
- Direct readings in cSt @ 40
- Laboratory grade oil viscosity results in minutes

Specifications

- Range: Calculated viscosity @ 40°C, 50°C and 100°C
- Display: 8 digit LED
- Power: 100/240 Volts. User specified

Ordering Information

Part Number	Product Description
FGK1200PA	Heated Viscometer, power supply and all consumables in portable metal case

Ferrous Wear Meter



Product Features

- Simple, graphical user interface
- Immediate ferrous wear measurement in ppm
- Schedule maintenance as require
- Decreased downtime
- Reduced scrapedown oil usage and operating costs

Specifications

- Measurement Range: 0 to 2500 (ppm) in milligrams per kg.
- Display resolution: 5 ppm
- Sample Container FWM test tube
- Accuracy: 0 to 1000 ppm ±10 ppm
- >1000 ppm ±20 ppm or 2%

Ordering Information

Part Number	Product Description
FG-K30258-KW	Ferrous Wear Meter (complete)
FG-K30362-KW	FWM Consumables Pack (500-off FWM Test Tubes & 500-off Sampling Pipettes)
FG-K30366-KW	FWM PSU Pack (Power Supply with UK, US & EU Adaptors)

Low Range  
DIGI Water Kit  
Accurate results  
for water in oil



Product Features

- Electronic display gives simple, step by step instructions
- Fully portable for use on-board or in the field
- Fast, accurate results
- State of the art digital analysis

Specifications

- Range: 0.02 – 1%, 100 – 3000 ppm, 0 – 10%
- Test time: 3 minutes
- Battery Life: Five years

Ordering Information

Part Number	Product Description
FGK17032PA	Low Range DIGI Water Kit
FGK2101PA	EasySHIP Water in oil Reagent Pack (50)

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