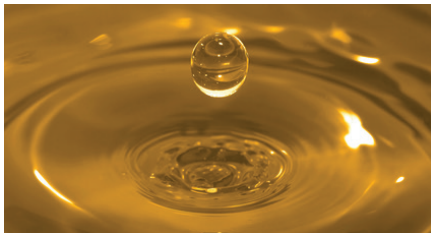
SetaAnalytics

AvCount

Laser Particle Counters

Rapid particle counting of air and liquid samples - bench top and portable precision advanced laser based analysis

- Fuels
- Lubricants
- Air
- Pharmaceuticals
- Hydraulic fluids
- Water
- Power generation equipment
- Manufactured parts
- Environment
- Clean rooms



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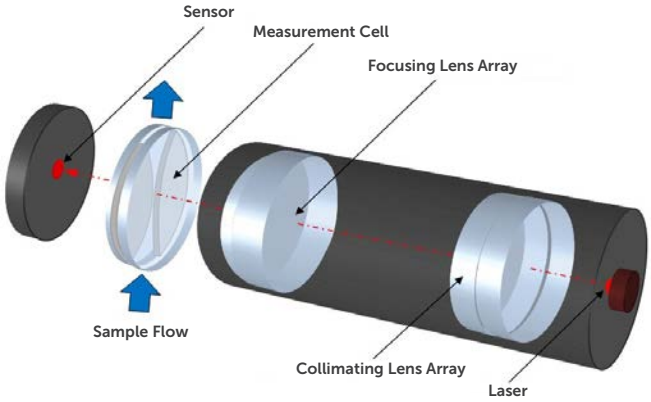
What is particle counting?

Particle counting is used to determine the 'quality' of a sample. The size, number and distribution of particles help to determine the cleanliness or suitability of the sample for its intended application.

Routinely monitoring particles can save both time and money by reducing equipment downtime. Hard particles that become embedded into the surfaces of moving parts can cause abnormal machinery wear.

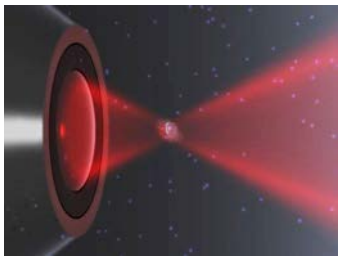
Particle counting is also used to assess fuel cleanliness, where the problems caused by particles are blockage, wear and erosion in fuel systems.



Laser particle count

The preferred test for sample cleanliness

Laser obscuration particle counting uses the light emitted by a laser to illuminate a cell through which the sample is passed. Particles present in the sample cast a shadow onto the sensor behind the cell and as the shadow passes across the cell the voltage output of the sensor drops. The voltage drop is proportional to the area of the shadow. AvCount calculates the size of the particle as the diameter of a circle of equivalent area. Laser obscuration is mainly used for measuring particles in liquid in the 4µm to 200µm size range.



Laser scatter particle counting uses a measurement cell similar to laser obscuration, except the sensor detects the light that is scattered by the surface and edge of the particle. The most effective size range of laser scatter is 0.5µm to 20µm making it especially useful for measuring particles in air and the droplet size of aerosols.

The advantages of AvCount

- Cumulative or Distributive results
- Particles/volume or Cleanliness Codes
- Simple operation
- Stand-alone or PC controlled versions
- Quick test time
- Portable
- Programmable via PC

Where is AvCount used?

AvCount complies with the following test methods and specifications;

IP 565; ASTM D7619; ASTM D975; Defence Standards 91-91 & 91-86; ASTM D6786; ASTM D7647; ISO 60970; ISO 11500; GOST 17216; AS 4059F; SAE A6D; GB 5930; NAS 1638

Applications: which instrument suits my sample?

Industry:	Application:	AvCount2:	AvCount Lite:	AvCount Lube:	AvCount Air:
Petroleum fuels & oils	Cleanliness of fuel is an important factor in ensuring optimum engine performance and preventing damage or component failure. Particle analysis of fuel provides data on filter efficiency and system cleanliness. It is also an indicator of cross contamination or oxidation of fuels in storage and distribution systems.	•	•		
Lubricants	In hydraulic and lubricating oil systems, particle counters are used for oil contamination analysis. Particle monitoring of hydraulic and lubrication oil systems is an important part of preventative and predictive maintenance, reducing running costs.	•	•	•	
Power generation	Particle counting has become a standard method for monitoring transformer and insulating oils for metallic particles and products of oxidation.	•	•	•	
Filter manufacturers	Measuring particle size and content at different points in a Multipass Filter Test provides a common particle testing format for filter manufacturers to validate liquid filter performance.	•	•		
Component cleanliness	The cleanliness of components in some industries (aerospace, optical electronic) is monitored by measuring the particle count of flushing fluids during and after processing.	•	•		
Pharmaceutical industry	With water being the largest component of pharmaceutical products, especially injected products, control of the quality of water in both systems and finished product is paramount. The particulate burden of finished product is a common Pharmacopoeia regulation.	•			
Water	Particle counters are used to measure the effects of non soluble products on the quality of process and effluent water especially with reference to discharge into the environment.	•	•		
Component assembly	Many industries require a standard of air cleanliness during assembly and finishing. Although requirements are not as stringent as cleanroom standards, unwanted particles can cause manufacturing issues. Dust settling on surfaces prior to applying coatings or laminations is a common issue. A clean environment is also important to prevent entrained dust during decanting operations.				•
Cleanroom monitoring	For life science and electronic cleanroom applications, air particle counters are used to classify and monitor cleanliness and to detect airborne viable particles in conformance with ISO 14644-1.				•
Environmental air monitoring	Air particle counters are used to monitor air quality and to support regulations designed to reduce particulate emissions.				•

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Seta AvCount2 (SA1000-2)

ASTM D7619; ASTM D975; Defence Standard 91-86; Defence Standard 91-91; IP 565

AS 4059; ASTM D7647; GB 5930; GJB 420-1987; GJB 420-A-1996; GJB 4208-2006; GOST 17216; ISO 4406:1991; ISO 4406:1999; NAS 1638; SAE A6D; SAE 749D;

› SA1000-2

Why use AvCount2?

- Simple operation
- High visibility colour touch screen
- Portable design for laboratory and field use
- Rugged, stainless steel case
- Integrated printer
- 14 embedded test methods

The AvCount2 determines the particle distribution in a liquid sample, whether checking the quality of fuel, filter systems or in-service lubricants, fast and precise results are produced. Its compact design makes it ideal for laboratories with limited space, whilst its portable, rugged, stainless steel build also suits mobile testing in harsh environments.

Product number:	SA1000-2
Particle size range:	ISO 11171: 4µm(b) to >70µm(b) ISO 4402: 2µm to >100µm GOST 17216-71: 2µm to >200µm
Calibration:	ISO 11171 (ISO 4402 by correlation)
Number of measuring channels:	15
Results:	2 000 internal, unlimited on PC
Counts per measurement (max):	600 000 particles
Coincidence error limit	50 000 particles/ml (@ <5% error)
Sample viscosity (max):	68mm²/s (250mm²/s @ 10barG maximum)
Sample temperature range:	0 to 70°C
Total sample volume used (typ):	80ml (includes rinse cycles) for IP 565 & ASTM D7619, 20ml other methods
Connectivity:	USB connection for PC and Storage
Voltage / Power:	100 to 250 Vac 50/60 Hz or 24 Vdc 30W
Size (HxWxD) / Weight:	24 x 33 x 24 cm / 12kg

Ease of operation

A large LCD touchscreen display with a simple 'press to start' control ensures ease of operation and minimises the need for operator skill or expertise.

The AvCount2 delivers maximum operability, with 14 preprogrammed test methods and results in under 5 minutes.

› Screen display

Automatic test sequence

AvCount2 is fully automatic once the particle count test sequence is started. The instrument flushes the cell with sample prior to commencing the measurements. A precise volume of sample is then analysed. The flushing / sample analysing sequences are automatically repeated in accordance with the selected test method.

- The sample is drawn into analyser by an integral double pump
- Automatic changeover valve means that no operator intervention is required
- 10ml sample flows at 30ml/min through the measuring cell
- Particulate is measured by light reduction across the cell
- Light reduction is proportional to particle size
- Results are automatically reported
- ASTM D7619 and IP565 results are automatically averaged

Results analysis

Once a test is complete, results are shown on screen for 6 particle size bands in Particles/ml and Cleanliness Code, these are stored within the AvCount2's internal memory with space for up to 2000 sets of results. Results can be printed from the integral printer or downloaded to a USB memory stick to allow printing from a computer.

› Watch an AvCount2 video demonstration:
www.stanhope-seta.co.uk/4161/AvCount2-Particle-Counter
Or scan the QR code above.

AvCount Lite

Seta AvCount Lite (SA1800-0)

ASTM D7619; ASTM D975; Defence Standard 91-86; Defence Standard 91-91; IP 565; ISO 4406:1999

The following test methods require connection to a computer running the optional ProTrend software:
ASTM D7647; ASTM D6786; NAS 1638; AS 4059F; SAE A6D; SAE 749D; GOST 17216; GB 5930; GJB 420-A-1996; GJB 4208-2006

› SA1800-0

Why use AvCount Lite?

- Easy to use
- Portable, compact instrument
- Quick and accurate results
- Under 4 minute test time for D7619/IP 565
- Programmable via PC
- Battery power optional

The AvCount Lite provides reliable results for determining the particle concentration in liquid fuels and oils. A combination of innovative features and rapid measurement technologies make the AvCount Lite highly flexible. Its portable design allows use in the field and the laboratory, without ease of use or accuracy of results being affected.

Product number:	SA1800-0
Particle size range:	ISO 11171: 4µm(b) to >100µm(b) ISO 4402: 2µm to >100µm (via Protrend software)
Calibration:	ISO 11171 (ISO 4402 by correlation via Protrend software)
Number of measuring channels:	6 (15 when connected to a PC), programmable via PC
Results:	600 internal, unlimited on PC
Counts per measurement (max):	600 000 particles
Coincidence Error Limit:	50 000 per ml (@ <5% error)
Sample viscosity (max):	68mm²/s (250mm²/s @ 10barG maximum)
Sample temperature range:	0 to 70°C
Total sample volume used (typ):	80ml (includes rinse cycles) for ASTM D7619 & IP 565, from 20ml other methods
Connectivity:	USB connection for PC control and results downloaded
Voltage / Power:	12 Vdc, 1A Optional 3000mAh battery (2.5h operational time typ) Charger/mains adaptor 100 to 230 Vac, 50/60Hz, 650mA
Size (HxWxD) / Weight:	25 x 33 x 15 cm / 9kg

Simple to use

A simple test procedure and user friendly features make the AvCount Lite easy to use, so operators do not require high levels of skill and expertise. When used as a stand-alone instrument, AvCount Lite's simple menu system is operated using a turn and push control, allowing users wearing gloves to easily perform a test.

When connected to a personal computer, using the optional ProTrend software, tests can be controlled and viewed in real time, multiple instruments can be monitored from a single PC. Linked instruments can be used for trend analysis, for example for monitoring particulate content before and after a filter.

Helping to save time, the AvCount Lite offers a number of automated sub 4 minute test procedures which include rinse cycles, that deliver accurate results in the fastest time possible.

Programmable

AvCount Lite can hold up to three ISO 4406 based methods in the on-board memory. The factory default methods are ASTM D7619, IP 565 and a basic ISO 4406. When connected to a personal computer running the optional ProTrend software, test methods that use other cleanliness codes are available (i.e. NAS 1638, AS 4059).

Custom test methods can be created on a PC or laptop before being uploaded to the AvCount Lite's memory via the USB port. Particle sizes, flushing volume, number of measurements and number of repeats can all be programmed.

› Watch an AvCount Lite video demonstration:
www.stanhope-seta.co.uk/5138/AvCount-Lite-Particle-Counter
Or scan the QR code above.

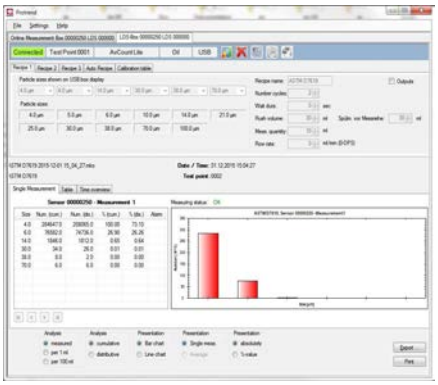
Precision and accuracy

AvCount Lite is fitted with a new precision dual piston pump featuring dual brushless motors. When measuring samples from a bottle, the pump draws an aliqot of sample through the measurement cell at a consistent flow rate. If Avcount Lite is connected to a pressurised line, the pump provides accurate metering and control. A pressure reduction system is available for applications above 10 barG.

Results analysis

Test progress and results for up to 6 size bands are displayed on the screen as cumulative particles/ml and ISO 4406 cleanliness codes. Results are stored within the AvCount Lite's internal memory which can store up to 600 sets of results. The last 20 results can be recalled to view on the screen. All results can be downloaded to a computer for further analysis and printing.

When connected to a personal computer, the graphical interface, shown to the right, can display results for up to 15 size bands, as well as plotting trend analysis for each size band over time. Data can be downloaded from the AvCount Lite and exported into a spreadsheet.



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AvCount Lube

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Seta AvCount Lube (SA1900-0)

ASTM D7647*; ISO 4406*; ISO 60970*; ASTM D6786; NAS 1638; AS 4059F; ISO 11171; ISO 11500; SAE A6D; SAE 749D; GOST 17216; GB 5930; GJB 420-A-1996; GJB 4208-2006

*Does not require connection to a computer

› SA1900-0

Why use AvCount Lube?

- Up to 200 mm^2/s viscosity
- FFKM seals resistant to many synthetic oils
- PC controlled via ProTrend software (supplied) (stand alone for ISO 4406 based methods)
- Ideal for lubricating oils
- User friendly software
- Integral compressor
- Programmable via PC
- 3 minute test time for ASTM D7647

The AvCount Lube is a fully configured particle counter and sample delivery system suitable for testing higher viscosity samples such as lubricating, insulating and transformer oils. The compact design makes it ideal for laboratories with limited space.

Product number:	SA1900-0
Particle size range:	ISO 11171: 4µm(b) to >100µm(b) ISO 4402: 2µm to >100µm (via Protrend software)
Calibration:	ISO 11171 (ISO 4402 by correlation via Protrend software)
Number of measuring channels:	6 (15 when connected to a PC), programmable via PC
Results:	600 internal, unlimited on PC
Counts per measurement (max):	600 000 particles
Coincidence error limit:	50 000 per ml (@ <5% error)
Sample viscosity (max):	200mm2/s with integral Sample Delivery System
Sample temperature range:	0 to 70°C
Total sample volume used (typ):	80ml (includes rinse cycles) for ASTM D7647, from 20ml other methods
Connectivity:	USB connection for PC control and results
Voltage / Power:	Automatic particle counter: 12 Vdc, 2.5A (mains adaptor supplied 100 to 240 Vac, 50/60Hz, 650mA) Sample delivery system: 24 Vdc, 2A (mains adaptor supplied 100 to 240 Vac, 50/60Hz, 1A)
Size (HxWxD) / Weight:	50 x 32 x 28 cm / 16kg

User friendly

The latest in built technology and a range of features ensures ease of operation and minimises the need for operator skill or expertise. The simple menu system is operated using a turn and push control. When connected to a personal computer, the instrument can be controlled and tests viewed in real time. Fast and reliable results are delivered in 3 minutes, enabling maximum operability by decreasing the time between tests.

Integral compressor

Designed to handle samples with a viscosity up to 200 mm^2/s without an external compressed air source, AvCount Lube comprises a sample delivery system and a light extinction automatic particle counter on a common base plate.

The sample chamber accepts standard 250ml glass sample bottles and is pressurised to 3 barG by an integral compressor. A mechanical interlock prevents the sample chamber from being opened whilst still under pressure and pressure relief and automatic shut of valves ensure maximum operator safety.

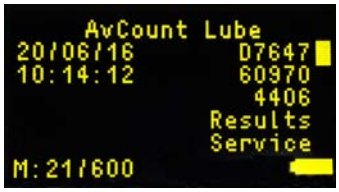
Programmable

AvCount Lube is pre-programmed with three ISO4406 based test methods that use ISO 11171 calibration. The factory default methods are ASTM D7647 (lubricants), ISO 60970 (insulating oil) and ISO 4406 (hydraulic oil).

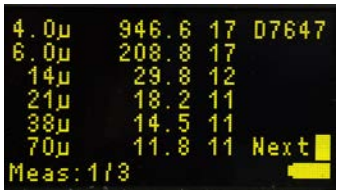
The supplied ProTrend software supports test methods with calibration to ISO 4402 (by correlation) and alternative cleanliness codes (i.e. NAS 1638 and AS 4059). All key parameters are programmable, allowing the User to create custom test methods or edit existing ones.

Results analysis

Normally, AvCount Lube is connected to a computer running the supplied ProTrend software. The graphical interface displays results for up to 15 size bands, as well as plotting trend analysis for each size band over time. Data can be downloaded from the AvCount Lube and exported to spreadsheets.



When using tests based on ISO 4406, AvCount Lube can be used as a stand-alone instrument. Test progress and results are displayed on the built-in screen. Results are displayed for up to 6 size bands in cumulative particles/ml and ISO 4406 cleanliness codes on the onboard display screen, shown right.



Up to 600 sets of results can be stored in the AvCount Lube's internal memory and if required, results can be saved to a computer for printing or further analysis.

Seta AvCount Air (SA1400-0)

ISO 21501; ISO 14644; GMP EU Class

Applications

- Monitoring of clean rooms and laboratories
- Monitoring of air cleanliness in hospitals and pharmaceuticals, cosmetics and food industry
- Air cleanliness in the automotive, aviation and safe engineering industries and other industrial applications
- Air cleanliness in coating and lamination industries
- Controlled environments in the Nanotechnology industry

› SA1400-0

A 3-channel air particle counter which can display up to six freely adjustable size classes. Particle measurements are made using a laser scatter sensor and a state-of-the art analyser with an integral microcontroller. The sensor laser automatically switches off during the 'pause phase' of each test to optimise in service life. An Ethernet connection allows several counters to be configured and operated together. Output for three channels is available as 4-20mA current output.

Product Number:	SA1400-0
Particle size range:	0.21µm to 10µm
Number of measuring channels:	3 (16 via USB)
Particle sizes:	6 programmable via PC
Particle concentration (max):	250 000 particles/second
Flow rate:	28.3 l/min
Ambient temperature range:	5 to 40°C
Air temperature range:	0 to 70°C
Results:	600 internal, unlimited via USB
Software:	Protrend via USB
Connectivity:	Ethernet (other options available)
Voltage / Power:	240 Vac +/-10%, 50Hz, 1A
Size (HxWxD) / Weight:	150 x 215 x 260 cm / 5kg
Calibration:	ISO 21501 - NIST traceable

Analysis and control software "ProTrend"

The ProTrend software has a mode that is specific to particle counting in air. The software facilitates an operator to control an AvCount Air instrument from a personal computer via the USB port. It allows the configuration of test parameters, operation and control of the instrument and the download and analysis of data. It also allows operation of multiple instruments simultaneously. The software permits single and periodic measurements. The measured data is displayed and can be retrieved from the data memory later. A spreadsheet template is available for exporting the data. ProTrend can be purchased as an accessory for the AvCount Air.

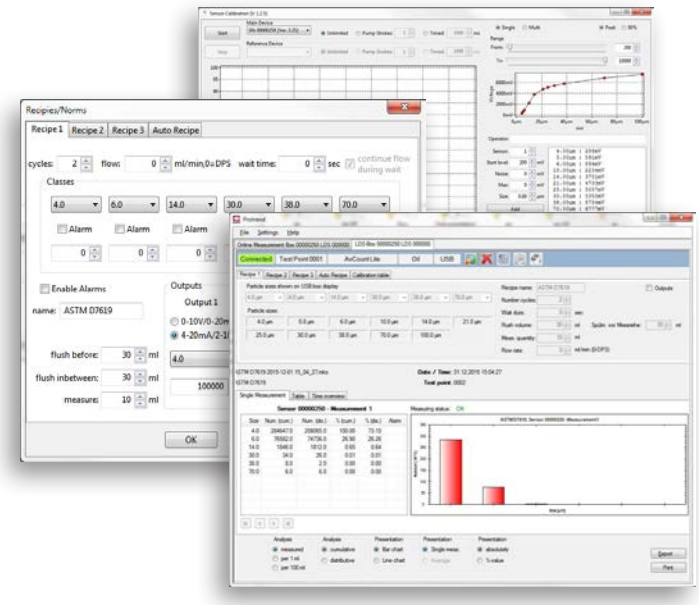
Software for AvCount Lite, Lube and Air

ProTrend - Allows an operator to control an AvCount Lite, AvCount Lube or AvCount Air from a personal computer or laptop. It allows the operator to temporarily create local custom test methods, run tests and download data. ProTrend (SA1810-0) supports up to 3 AvCount Lite, Lube and Air units, synchronising the sampling and measurement to allow system and trend analysis. ProTrend is supplied with AvCount Lube and available to purchase as an accessory for AvCount Lite and AvCount Air.

Partikel - Supplied with AvCount Lite and AvCount Air, Partikel is a basic software that can be used to create, edit and upload up to three ISO 4406 based test methods into the instrument memory. Once test methods are uploaded, the instruments can be used as a stand-alone device. Partikel allows the current instrument configurations to be saved and results data to be downloaded from the instrument

Calibration - Supplied with the instrument for the calibration of AvCount Lite and AvCount Lube. Calibration curves can be generated from Standard Reference Materials, saved and uploaded. Different curves, based on different standards can be created and saved.

Also calibration to a primary or 'Gold Standard' instrument is available.



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AvCount Calibration Material (SA1001-0 and SA1018-0)

AvCount calibration materials are manufactured in accordance with ISO 11171 Annex F using a NIST medium test dust suspended in a super-clean hydraulic oil.

Supplied in 250ml bottles with a Certificate of Conformance. Each bottle is individually identified by bottle number, batch number, Date of Manufacture and Expiry Date.

SA1001-0 is traceable to the last certificate that was issued for NIST SRM 2806a.

SA1018-0 is traceable to the current certificate for NIST SRM 2806b

AvCount Verification Material (SA1006-0)

The AvCount Verification Material is manufactured in general accordance with ISO 11171 Annex F using a NIST medium test dust suspended in a super-clean, clear, mineral-based, technical oil.

Supplied in 250ml bottles with a Certificate of Measurement. Each bottle is individually identified by bottle number, batch number, Date of Manufacture and Expiry Date. The The certificate shows the values for both 2806a and 2806b calibrations and have been statistically derived from tests conforming to IP 565, using multiple instruments that have been calibrated in accordance with ISO 11171, under ISO 9001 conditions.

AvCount PT Scheme (SA1009-0)

PTS is an invaluable quality assurance tool allowing participants to:

- Evaluate and monitor laboratory and instrument performance in accordance with ISO/IEC 17025
- Provide additional confidence by demonstrating compliance with laboratory accreditation requirements
- Identify problems such as inadequate test or measurement processes and procedures

Instrument specifications

	AvCount2:	AvCount Lite:	AvCount Lube:	AvCount Air:
Test methods	IP565, ASTM D7619, ISO 4406-1991, ISO 4406-1999, NAS 1638, SAE-A6D, SAE-749D, SAE-AS4059E, GB5930-86, GOST 17216-71, GJB 420-87, GJB420A-96, GJB420B-2006	3 embedded test methods, supplied with ASTM D7619, IP 565, ISO 4406. (Other test methods available on request) Programmable via PC software	3 embedded test methods, supplied with ASTM D7647 ISO 60970, ISO 4406. (Other test methods available on request) Programmable via PC software	3 embedded test methods, Programmable via PC software
Particle size range	ISO 11171: 4µm(b) to >100µm(b) ISO 4402: 2µm to >100µm GOST 17216-71: 2µm to >200µm	ISO 11171: 4µm(b) to >100µm(b) ISO 4402: 2µm to >100µm	ISO 11171: 4µm(b) to >100µm(b) ISO 4402: 2µm to >100µm	0.21µm to 10µm
Measuring channels	Measured: 15, fixed Displayed: Test Method dependant	Measured: 15, programmable via PC Displayed: 6 max, programmable via PC ASTM D7619: 4/6/14/30µm(b) IP 565: 4/6/14/21/25/30µm(b) ISO 4406: 4/6/14/25/38/70µm(b)	Measured: 15, programmable via PC Displayed: 6 max, programmable via PC ASTM D7647: 4/6/14/21/38/70µm(b) ISO 60970: 4/6/10/14/21/30µm(b) ISO 4406: 4/6/14/21/38/70µm(b)	3 internal, 16 programmable via PC
Results	Particles/ml or particles/10ml (Test Method dependent) Cumulative & distributive Cleanliness codes (Test Method dependant) Automatic averaging for multi-measurement tests 2 000 results in 64 memories; date/time indexed Download via USB port	Particles/ml or Particles/10ml (Test Method dependent) Cumulative & distributive Cleanliness codes Automatic averaging for multi-measurement tests 600 result memory; date/time indexed (last 20 tests can be viewed on screen) Download via USB port with software	Particles/ml or Particles/10ml (Test Method dependent) Cumulative & distributive Cleanliness codes Automatic averaging for multi-measurement tests 600 result memory; date/time indexed (last 20 tests can be viewed on screen) Download via USB port with ProTrend	Particles/second 600 result memory; date/time indexed Download with software
Test duration	Less than 5 minutes (IP 565 - 5 rinses, 3 measurements)	Less than 4 minutes (IP 565 - 5 rinses, 3 measurements)	Less than 3 minutes (ASTM D7647 - 2 rinses, 3 measurements)	Up to 1 hour
Concentration (max)	600 000 particles	600 000 particles	600 000 particles	250 000 particles/sec
Coincidence error limit	50 000 particles/ml (@ <5% error)	50 000 particles/ml (@ <5% error)	50 000 particles/ml (@ <5% error)	N/A
Sample viscosity (max)	68mm²/s (from sample bottle) 250mm²/s (pressurised 10 barG max)	68mm²/s (from sample bottle) 250mm²/s (pressurised 10 barG max)	200mm²/s (from sample bottle)	N/A
Sample temperature range	0 to 70°C	0 to 70°C	0 to 70°C	0 to 70°C
Sample delivery and metering	Integral Dual Pump System (DPS)	Integral Dual Pump System (DPS)	Feed: 3 barG air pressure via internal compressor Metering: Integral Dual Pump System (DPS)	Integral precision air pump
Flush volume	Test Method dependent (User adjustable in 10ml increments)	User programmable in 10ml steps via PC	User programmable in 10ml steps via PC	User programmable via PC
Measurement volume	Test Method dependent (User adjustable in 10ml increments)	User programmable in 10ml steps via PC	User programmable in 10ml steps via PC	User programmable via PC
Repeats per test	Test Method dependant (User adjustable)	User programmable via PC	User programmable via PC	User programmable via PC
Total sample volume used (typ)	80ml (includes rinse cycles) ASTM D7619 & IP 565, from 20ml other methods	80ml (includes rinse cycles) ASTM D7619 & IP 565, from 20ml other methods	50ml (includes rinse cycles) ASTM D7647, from 20ml other methods	User programmable via PC
Voltage / Power	100/230 Vac, 50/60Hz, max 30W or 24 Vdc	12Vdc, 1A. Optional integral 3000mAh battery (typically 2 .5 hours operational time). Charger/mains adaptor 100 to 230 Vac, 50/60Hz, 1000mA	Particle counter: 12 Vdc, 1A (mains adaptor supplied 100 to 240 Vac, 50/60Hz, 650mA) Sample Delivery System: 24 Vdc, 2A (mains adaptor supplied 100 to 240 Vac, 50/60Hz, 1A)	240 Vac +/-10%, 50Hz, 1A
Size (HxWxD) / Weight	24 x 33 x 24cm / 12kg	25 x 33 x 15cm / 7kg	50 x 32 x 22cm / 16kg	26 x 22 x 15cm / 5kg

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Laser Particle Counters

Method:	Samples:	Sizes (um(b))									AvCount2	AvCount Lite	AvCount Lube	AvCount Air
		4	6	10	14	21	25	30	38	70				
Fuels														
Aviation														
ASTM D7619	Middle distillates	•	•		•						•	•		
ASTM D7619 (US Mil)	Middle distillates	•	•		•			•			•	•		
IP 565	Aviation turbine fuel	•	•		•	•	•	•			•	•		
Defence standard 91-91 & 91-86	Aviation turbine fuel	•	•		•	•	•	•			•	•		
Diesel/bio diesel & blends														
ASTM D7619	Middle distillates	•	•		•						•	•		
ASTM D975	Middle distillates	•	•		•						•	•		
Light fuel oils														
ASTM D7619	Middle distillates	•	•		•						•	•		
Gasolines & blends (extreme caution)														
ASTM D7619	Middle distillates	•	•		•						•	•		
Lubricants/oils/in service oils														
ASTM D7647	Lubricating & hydraulic oils	•	•		•						•	*	•	
GOST 17216	Lubricating & hydraulic oils	•	•		•						•	*	•	
Hydraulic oils														
ASTM D7647 (Without Dilution)	Lubricating & hydraulic oils	•	•		•						•	*	•	
GOST 17216	Lubricating & hydraulic oils	•	•		•						•	*	•	
SAE A6D	Hydraulic oils										•	*		
SAE 749D	Hydraulic oils										•	*		
Electrical/high voltage/power distribution														
ISO 60970	Insulating liquids	•	•		•								•	
ASTM D6786	Mineral insulating oils	•	•	•	•	•			•	•	•	*	•	
Air														
ISO 21501	Clean spaces													•
ISO 14644	Cleanrooms & controlled environment													•
GMP EU Class	Cleanrooms													•
FED STD 209E	Cleanrooms													•

* Requires a PC and ProTrend software

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