



## **PAMAS S40** **Portable Particle** **Counting System for Oil**

### **8 channel high resolution digital system for particle analysis**

- According to ISO 4406:1999 4  $\mu\text{m(c)}$ , 6  $\mu\text{m(c)}$ , 14  $\mu\text{m(c)}$  based on ISO 11171
- According to ISO 4406:1987 2  $\mu\text{m}$ , 5  $\mu\text{m}$ , 15  $\mu\text{m}$  based on ISO 4402
- Pressureless sampling as well as pressurised up to 420 bar (6000 psi)
- User-friendly operation using touch screen with graphic display
- Results according to: ISO 4406, SAE AS 4059 E, NAS 1638, GJB 420, GOST 17216, NAVAIR 01-1A-17
- Real portability with lab system accuracy
- User can configure the system to their needs in profiles
- Pressurised sensor avoids formation of gas bubbles
- Display and printout provide triple ISO codes, NAS and SAE cleanliness classes, measurement volumes, and particle numbers
- The volumetric cell design of PAMAS sensors guarantees the highest accuracy, resolution and best statistical information
- Password protected user levels
- Data storage of more than 4000 measurements
- User-friendly download software
- Power supply: 90-230 V AC / 50-60 Hz or 12-30 V DC or via integrated battery for up to three hours operation

# PAMAS S40

## Easy documentation of contamination, cleaning process, and filtration performance



The **PAMAS S40** is a portable system designed to count and size particles in oil and hydraulic fluids. A backlit touch screen for menu guided user access, and an additional membrane keypad give easy operation. The integrated printer provides instant hard-copies of measurement results.

Highly versatile due to a powerful 32-bit microprocessor allows multiple automated sampling and data storage.

User-friendly download software for transfer of stored measurement data to a PC as a basic feature. Data files are compatible with most spreadsheet software.

Standard languages are English, German, Finnish, Dutch, French, Spanish, Portuguese, Hungarian, Chinese and Russian. The system can be programmed to any other language (optional).

### Single particle counting system using volumetric sensor cells

A highly sophisticated sensor cell and optics guarantees best resolution and accuracy even under high pressure conditions.

Particle counting can be achieved using many methods, but only the use of volumetric cells, like those used in PAMAS sensors, can guarantee that all particles passing through the sensor are counted.

This results in better statistical analysis and prevents the loss of information compared to in-situ cells that detect only a small portion of the whole sample flow, especially as the samples are getting cleaner.

### Applications

- Online measurements at live hydraulic systems up to 420bar
- Online measurements at non-operating systems without supporting pressure
- Offline measurement using sample bottles (laboratory mode)
- Lube oil applications
- Long term analysis
- Online analysis for component cleaning machines
- Bypass filtration monitoring
- Filter verification.

### Calibration

The Automatic Particle Counter is calibrated according to International Calibration Standards. The Calibration is traceable to Standard Reference Material of the NIST (National Institute of Standards and Technology). More than one calibration can be preconfigured in a single system.

### Standards

Display shows particle numbers, cleanliness classes, and size. Printout according to many international standards (e.g. ISO 4406, NAS 1638, SAE AS 4059, GJB 420, GOST 17216, NAVAIR 01-1A-17).



### Different models of PAMAS S40 are available.

All models can be optionally built in the rugged case PAMAS GO for harsh environments. The different S40 particle counter models are compatible to most sample liquids. The product versions are optimised to the different pressure and viscosity ranges that are prevailing in the specific industries.

- **PAMAS S40 Standard version:** for high and low pressure hydraulics (viscosity range up to 350 cSt)
- **PAMAS S40 Lube oil version:** Compatible with oil based liquids of higher viscosities up to 1,000 cSt like hydraulic oil, gearbox oil, motor oil, lubrication oil, etc.
- **PAMAS S40 Fuel version:** compatible with low viscous liquids like Diesel or kerosene
- **PAMAS S40 Skydrol version:** compatible with Phosphate-Ester based hydraulic liquids (e.g. aviation hydraulic fluids)
- **PAMAS S40AVTUR:** for the analysis of Aviation Turbine Fuel according to EI-IP 577 and DEF-STAN 91-91 (see extra leaflet PAMAS S40AVTUR for further details)

### Technical data Sampling system:

- Wear resistant ceramic piston pump with controlled constant flow
- Viscosity range up to 200 cSt (pressurised sampling up to 350 cSt; lube oil system up to 1,000 cSt)

### Pressure range:

- Low pressure: from pressureless up to 6 bar (85 psi)
- High pressure: 3-420 bar (6000 psi)

### PAMAS Volumetric Sensor: HCB-LD-50/50

Calibration ranges:

- 4-70 µm(c) according to ISO 11171 (standard calibration)
- 2-100 µm according to ISO 4402 (optional calibration)

Max. particle concentration:

- 24.000 P/ml at a flow rate of 25 ml/min and a coincidence rate of 7.8%.

### Counter:

- 32-bit high performance CPU with sophisticated programmable digital domain signal conditioning and 4096 internal channels
- 8-channel particle counter
- Data printout: 32 column thermo printer
- Data transfer: 8 bit ASCII code through USB port
- Power supply: 90-240 V AC / 50-60 Hz or 12-30 V DC or via integrated battery for up to three hours operation
- Weight and Size: Approx. 8 kg 310 mm x 145 mm x 360 mm

### Options:

- rugged case PAMAS GO for harsh environments



Rugged case PAMAS GO

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