

## PAMAS S40

# Portable Particle Counting System for Oil and Water Based Hydraulic Fluids



### PAMAS S40

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

- According to ISO 4406:1999 4µm(c), 6µm(c), 14µm(c) based on ISO 11171
- According to ISO 4406:1987 2µm, 5µm, 15µm based on ISO 4402

Pressureless sampling as well as pressurized up to 420 bar (6000 psi)

User friendly operation using touch screen with graphic display

The volumetric cell design of PAMAS sensors guarantees the highest accuracy, resolution and best statistical information

Result according to: ISO 4406:1999, SAE AS 4059D, ISO 4406:1987, NAS 1638, GJB 420A, GOST 17216

Real portability with lab system accuracy

User can configure the system to their needs in profiles

Pressurized sensor avoids degassing

Display and printout provide triple ISO codes, NAS- and SAE cleanliness classes, measurement volumes, and particle numbers

Highest repeatability and accuracy

Password protected user levels

Storage of more than 500 measurement data sets

Built-in battery for data backup

User-friendly download software

Viscosity independent up to 200 cSt (pressurized sampling up to 350 cSt ; Lube oil system up to 1,000 cSt)

Minimess M16x2 and standard connectors (DIN ISO 2353) or user specific

Operates on 90 - 230 V AC (50/60 Hz), or 12 - 30 V DC, or internal battery

External heating device available

External degassing unit available

# 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. A built-in printer provides instant hard-copies of measurement results.

Highly versatile due to a powerful 32-bit microprocessor allowing 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 and German, Finnish, Dutch, French. The system can be programmed to any other language (optional).

## Single particle counting system using the light blockage principle

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 damaged 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

- According to ISO 11171:1999 with ISO MTD (NIST) in oil.
- According to ISO 4402:1991 with ACFTD in oil (optional).

More than one calibration possible in a single system.

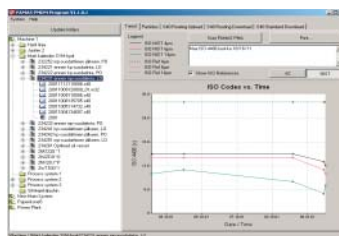
**The S40-H with internal heating** allows sampling of critical fluids i.e. high viscous oils or oils with extreme additivations. The requested temperature conditions are free adjustable by two controllers depending from the application.



## Standards

Display shows particle numbers, cleanliness classes, and size. Printout according to many international standards (e.g. ISO 4406:1987, NAS 1638, ISO 4406:1999, SAE AS 4059D, others on request).

## Software (optional)



## PAMAS CMDM is the state-of-the-art Preventive Maintenance Data Manager.

With CMDM the S40 can be programmed from a PC to get all the necessary measurement parameters for the future measuring points and the linked measurement schedules (profiles). After a done measurement "route", S40 results will be downloaded towards PMDM.

Together with results coming from PAMAS SBSS and digital membrane pictures, CMDM allows perfect and flexible Trend Monitoring of the different measuring points so that the necessary actions can be taken in time to create economical payback in Hydraulic Maintenance.

PAMAS CMDM is compatible with Windows® 95/NT or higher (incl. XP® Prof.).

## Technical data

### Sampling system:

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

### Pressure range:

- From pressureless up to 7 bar (100 psi)
- 3 bar to 420 bar (6000 psi)

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

#### Size range:

- 4 - 70 µm(c) (ISO 11171:1999)
- 1 - 100 µm (ISO 4402:1991)
- 1 - 400 µm (ANSI/NFPA)

### Max. particle concentration:

- 20,000 p/ml at flow rate 25 ml/min at 5% coincidence

### Counter:

- 8-channel particle counter, standard calibration 4µm(c), 6µm(c), 10µm(c), 14µm(c), 21µm(c), 25µm(c), 38µm(c), 70µm(c) (ISO 11171:1999) and: 2µm, 5µm, 10µm, 15µm, 20µm, 25µm, 50µm, 100µm (ISO 4402:1991)

### Controller:

- 32-bit high performance CPU with sophisticated programmable digital domain signal conditioning and 4096 internal channels
- Data printout: 32 column thermo printer
- Data transfer: 8 bit ASCII code through RS232 port (57600 baud)
- Power supply: 90 - 230 V AC (50 - 60 Hz) 12 - 30 V DC, internal battery (for up to 2h operation) LiCl battery for memory backup
- Weight and Size: Approx. 9 kg 300mm x 140mm x 300mm

### Options:

- Alarm
- Lube-oil
- Skydrol compatible
- Water hydraulic
- Heating Unit S40HU
- Degassing Unit S40DU

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