

CML2 – Compact Twin Laser Contamination Monitor

CML2

The CML is a portable, accurate instrument-suitable for 'on-site' applications. It can automatically measure and display particulate contamination, moisture and temperature levels in various hydraulic fluids.

Features & Benefits

- ◆ Compact
- ◆ Super lightweight
- ◆ Mains Operated/battery (if fitted)
- ◆ Full Calibration based on ISO11171
- ◆ Measures and displays the following international standard formats; ISO 4406, NAS 1638, AS 4059E and ISO 11218
- ◆ Data logging and 600 test result memory
- ◆ Manual and remote control flexibility
- ◆ Full accessories kit included



Technical data

Technology	Twin laser and twin optical diode detectors Based Light Extinction Automatic Optical Contamination Monitor
Particle Sizing	>4,6,14,21,25,38,50,70 µm(c) to ISO 4406 Standard
Analysis range	ISO 4406 Code 8 to 24, NAS 1638 Class 2 to 12, AS4059 Rev.E. Table 1 Size Codes 2-12 AS4059 rev E, Table 2 Size Codes, A:000 to 12, B:00 to 12, C:00 to 12, D:2 to 12, E: 4 to 12,F: 7 to 12
Accuracy	Better than 3% typical
Calibration	Each unit individually calibrated with ISO Medium Test Dust (MTD) based on ISO 11171, on equipment certified by I.F.T.S. To ISO 11943
Viscosity range	Up to 400 cst
Fluid temperature	From +5°C to +80°C
Pressure Max	400 bar (gauge) - minimum 2 bar (gauge) required
Sample Volume/Test time	8 ml. (short): 2:50, 15 ml. (normal): 5:00, 30 ml. (dynamic): 10:00 24 ml. (bottle sampler): 8:00, 15 ml. (continuous): 5:00
Moisture Sensing	% RH (Relative Humidity) ±3%
Temperature Measurement	±3°C
Data Storage	600 test
Communication options	RS232 9 pin D plug
Ambient Temperature min/max	-10°C to +60°C
Environmental Protection	IP51 (lid open)
Weight /Dimensions	4.75 kg, Height 152 mm., Depth 295 mm., Width 340 mm.
Electrical Supply	Voltage 9-36V DC
Power	Internal rechargeable battery (series 41) or external 12V DC power supply (series 40)
Outer Casing Finish	Injection Molded HPX® high performance resin

Ordering information

Example: **1** **2** **3** **4** **5**
CML2 M S X 41

1 - Version

CML2	Without moisture and temp sensor
CML2W	With moisture and temp sensor

2 - Fluid compatibility

M	Mineral oil
N	Subsea fluids and water based fluids ⁽¹⁾
S	Phosphate ester and aggressive fluids ⁽¹⁾

3 - Options

S	Standard unit
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5 - Series

41	With display and push buttons, with internal rechargeable battery
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4 - Options bottle sampler

X	Without bottle sampling
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LPA2 – Twin Laser Particle Analyser

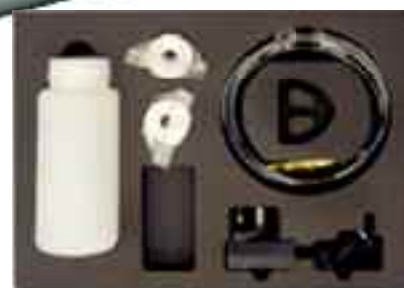
LPA2

The LPA2 is a highly precise, lightweight & fully portable instrument suitable for on-site and laboratory applications.

It can automatically measure and display particulate contamination, moisture and temperature levels in various hydraulic fluids.

Features & Benefits

- ◆ Lightweight (Lightest in class)
- ◆ Fully portable
- ◆ Precision Instrument
- ◆ Full Calibration based on ISO11171
- ◆ Measures and displays the following international standard formats; ISO 4406, NAS 1638, AS 4059E and ISO 11218
- ◆ Moisture and temperature sensing
- ◆ Data logging and 600 test result memory
- ◆ Manual and remote control flexibility
- ◆ LPA View software (included)
- ◆ Full size QWERTY keyboard
- ◆ Various test programme settings
- ◆ Full accessories kit included
- ◆ Internal rechargeable battery capable of performing 100 tests between charges



Technical data

Technology	Twin laser and twin optical diode detectors Based Light Extinction Automatic Optical Particle Analyser
Particle Sizing	>4,6,14,21,25,38,50,70 $\mu\text{m(c)}$ to ISO 4406 Standard
Analysis range	ISO 4406 Code 8 to 24, NAS 1638 Class 2 to 12, AS4059 Rev.E. Table 1 Size Codes 2-12 AS4059 rev E, Table 2 Size Codes, A:000 to 12, B:00 to 12, C:00 to 12, D:2 to 12, E: 4 to 12,F: 7 to 12
Accuracy	Better than 3% typical
Calibration	Each unit individually calibrated with ISO Medium Test Dust (MTD) based on ISO 11171, on equipment certified by I.F.T.S. To ISO 11943
Viscosity range	Up to 400 cst
Fluid temperature	From +5 °C to +80 °C
Pressure Max	400 bar (gauge) - minimum 2 bar (gauge) required
Sample Volume/Test time	8 ml. (short): 2:50, 15 ml. (normal): 5:00, 30 ml. (dynamic): 10:00 24 ml. (bottle sampler): 8:00, 15 ml. (continuous): 5:00
Moisture Sensing	% RH (Relative Humidity) $\pm 3\%$
Temperature Measurement	$\pm 3^\circ\text{C}$
Data Storage	600 test
Communication options	RS232 9 pin D plug
Ambient Temperature min/max	-10 °C to +80 °C
Environmental Protection	IP51 (lid open)
Weight /Dimensions	7.6 kg, Height 210mm, Depth 260mm, Width 430mm
Electrical Supply	Voltage 9-36V DC
Power	Internal rechargeable battery (mains charger)
Outer Casing Finish	Anodised Aluminium

Patent app. no. 2354067

LPA2 is supplied with a full software package

LPA2 – Twin Laser Particle Analyser

Exclusive MP Filtri technology. The combination of the two lasers with the unique optics and photodiode package enables the LPA2 to give increased accuracy combined with excellent repeatability.

W-Option

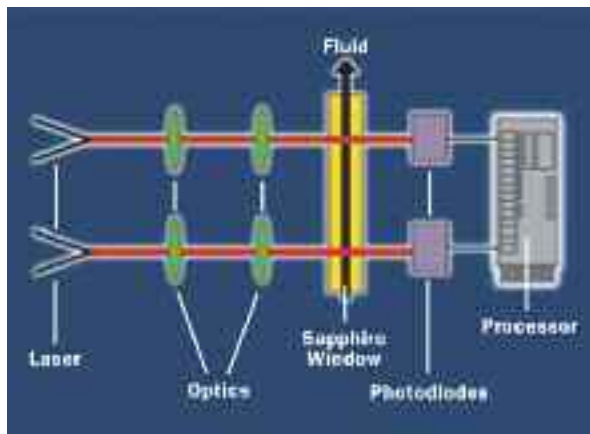
Water Saturation level (RH%) and fluid temperature sensor option.

Laser 1

A single point high accuracy laser measures particles of contamination at 4 µm(c) and 6 µm(c) giving increased accuracy with excellent repeatability.

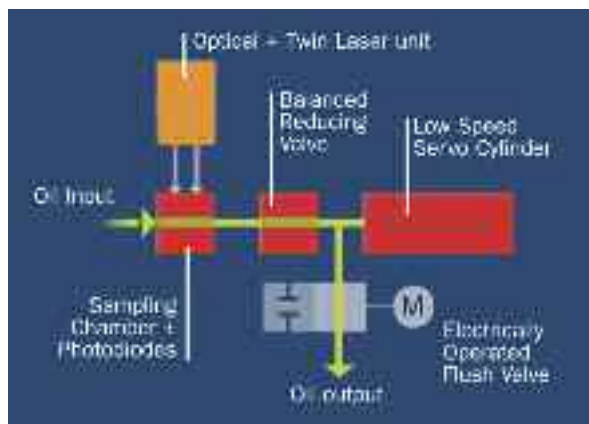
Laser 2

Standard accuracy laser specifically designed for system contaminants between 6 µm(c) and 70 µm(c).



Optional Products	
Carry Bag	CB0001
In line Coarse Screen filter	SK0040
USB to serial port connector	SK0026

The LPA2 Standard Analyser Includes accessories package: LPA-View software, hoses, waste bottle, printer paper, 12V, 2A power adapter with UK/EU/US/CN/AUS adapter heads.



Ordering information

Example: **1** **LPA2** **2** **M** **3** **S** **4** **X** **5** **30**

1 - Version

- LPA2** Without moisture and temp sensor
- LPA2W** With moisture and temp sensor

2 - Fluid compatibility

- M** Mineral oil
- N** Subsea fluids and water based fluids⁽¹⁾
- S** Phosphate ester and aggressive fluids⁽¹⁾

3 - Options carry bag

- S** Standard unit
- C** Standard unit with carry bag

4 - Bottle sampling options

- X** Without bottle sampling

5 - Design Ref.

- 30**

⁽¹⁾ **N** and **S** version, moisture sensor (W) not available