

ICM

In-line Contamination Monitor



- Low Cost & Compact
- Water & Dust Resistant
- Real time system analysis
- Easy integration to control systems
- Simple installation & operation
- Available in ATEX version



Applications

When it comes to condition monitoring, MP Filtri Ltd provide the expertise & response required by a fast moving global hydraulic industry.

A continual focus on quality & business improvements means that we can provide the best solution and service for our customers.

- Diesel Systems
- Test Rigs
- Lubrication
- Mining/Heavy Engineering
- Renewable Energy
- Motorsport
- Harbour systems
- Off-shore
- Aviation Systems
- Emerging technologies



ICM

In-line Contamination Monitor

The ICM automatically measures and displays particulate contamination, moisture and temperature levels in various hydraulic fluids. It is designed specifically to be mounted directly to systems, where ongoing measurement or analysis is required, and where space and costs are limited.

- 8 channel contamination measurement & display
- Measures and displays ISO 4406:1999, NAS 1638, AS 4059E and ISO 11218
- Moisture and temperature sensing
- Data logging and 4000 test result memory
- Manual, automatic and remote control functionality
- Multicolour LED and remote alarm signaling
- Robust die cast aluminium construction
- LPA View software (included)
- Previous ten result viewing capability

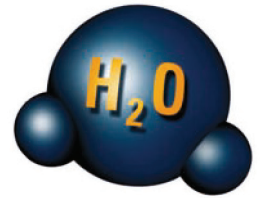


Specification

Technology	LED Based Light Extinction Automatic Optical Particle Counter
Particle Sizing	>4,6,14,21,25,38,50,70 µm(c) to ISO 4406 1999 Standard
Analysis Range \ Formats	ISO 4406: 1999 Code 0 to 25 NAS 1638 Class 00 to 12 AS4059 Rev.E. Table 1&2 Sizes A-F: 000 to 12 ISO 11218 00-12 (Lower Limits are Test Time dependent)
Accuracy	± ½ code for 4, 6 14µm(c). ± 1 code for larger sizes.
Calibration	Each unit individually calibrated with ISO Medium Test Dust (MTD) based on ISO 11171 (1999), on equipment certified by IFTS.
Operating Flow Rate	20 - 400 ml/minute
Viscosity Range	≤ 1000 cSt
Fluid Temperature	-25 to +80 °C *Pressure limited
Pressure Max	400 barg. *Temperature limited * For high frequency pressure pulse applications contact MP Filtri Ltd
Test Time	Adjustable 10 - 3600 seconds. Factory set to 120 seconds. Start delay & programmable test intervals available as standard
Moisture Sensing	% RH (Relative Humidity) ±3%

Temperature Measurement	±3°C
Flow rate measurement	Indication only
Data Storage	4000 tests.
Comms Port	RS485, RS232, MODBUS, CANBUS
Ambient Temperature min/max	-25°C to 80°C non K version -25°C to 55°C K version
Environmental Protection	IP 65/67 versatile IK04 Impact Protection
Weight	1.15kg
Electrical Supply	Voltage 9-36V DC
Supply Current	12V 24V 36V Basic Unit 70mA 40mA 30mA With -K (Keypad) 150mA 80mA 60mA
Power Consumption	<2.2W
Outer Casing Finishes	Polyurethane BS X34B. Colour BS381-638 (Dark Sea Grey) Approval: BS2X34A & BS2X34B, MM0114 & SP-J-513-083 T. II Cl. A Performance: MIL-PRF-85285
Wetted parts	M - C46400 Cu alloy, 316 stainless steel, viton, FR4, sapphire. N - 316 stainless steel, viton, sapphire. S - 316 stainless steel, perfluoro elastomer, sapphire, EPDM.

W Water and Temperature Sensing



The ICM “W” option indicates water content as a percentage of saturation and oil temperature in degrees centigrade. 100% RH corresponds to the point at which free water can exist in the fluid. i.e. the fluid is no longer able to hold the water in a dissolved solution.

The sensor can help provide early indication of

costly failure due to free water, including but not exclusive to;

- Corrosion
- Metal surface fatigue e.g. bearing failure
- Reduced lubrication & load carrying characteristics

M N S Fluid Compatibility

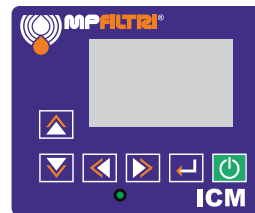
The ICM can operate across a number of fluid types meeting the needs of most major hydraulic markets.

	Wetted parts	Typical fluids
M	Brass, Viton & FR4	Synthetic, diesel, petroleum & mineral based
N*	Austenitic Stainless Steel & Viton	Off-shore & water based fluids
S*	Austenitic Stainless Steel & Perfluoroelastomer	Phosphate Ester & Aggressive**

*Please note: N & S versions are not available with water sensor option. Consult MP Filtri Ltd where necessary for guidance on fluid compatibility.

K Keypad Option

Keypad – Adds 6 key keypad and 128 x 64 pixel back-lit graphical display.



K version



Non K version
(OEM Product)

R Relays



The ICM “R” option displays & operates over 8 channels comprehensively covering all of the applied standard formats. It allows fully customisable alarm settings and indicates these via a multicolour LED and/or remote customer control systems.

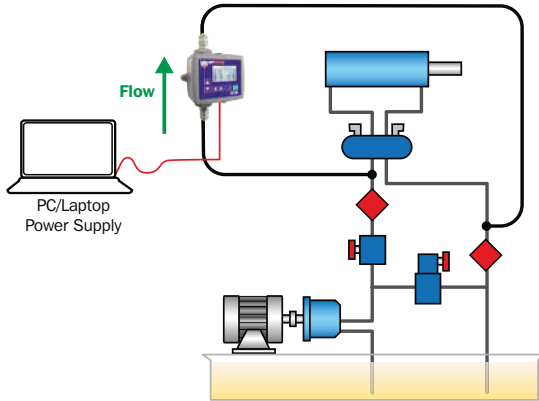
Alarm Types

- Contamination codes and/or individual particle sizes
- Water content
- Temperature

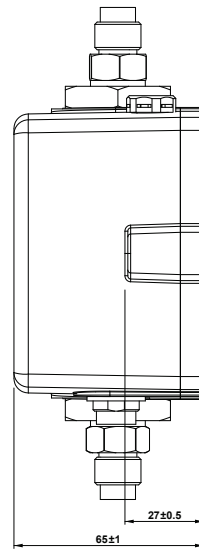
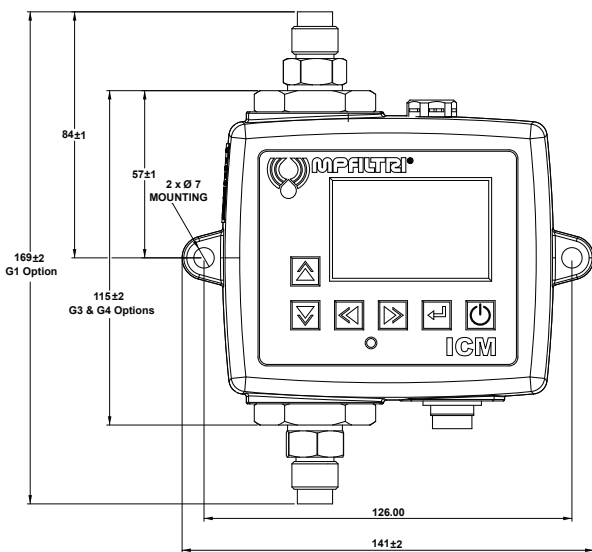
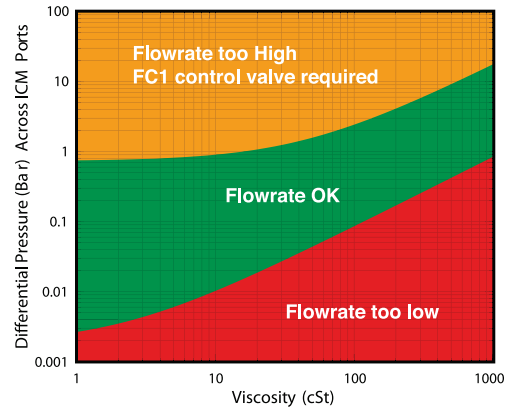
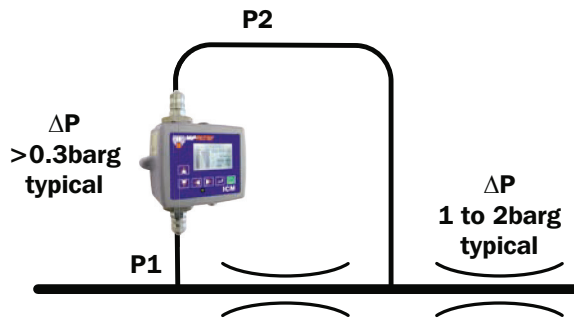
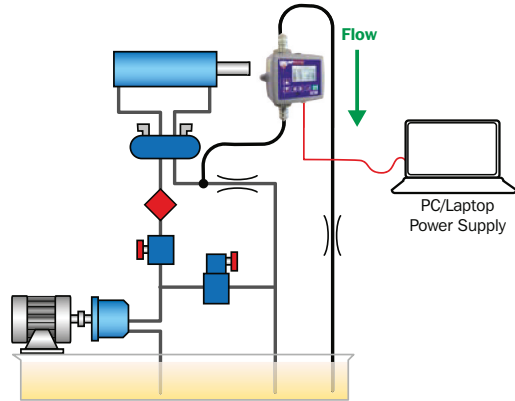
* Note; When purchasing an “R” model, the alarms are factory set to off, and must be activated via LPA View

ICM – Installation Guidance

Typical Pressure Line



Typical Return Line



The ICM must be in a vertical orientation, with the oil flowing upwards through it.

Accessories

Auxiliary Communications

Two auxiliary communication devices are available to order with the ICM. A USB interface which allows for communication via a laptop (RS485 to RS232 converter) & an ethernet device for remote access via a network hub.

Both devices can transmit power to the ICM/RDU electrical circuit using a DC power adapter. The USBi has the additional benefit of supplying power via the USB cable directly.

Both devices come with a DC Power adapter and 3m twisted pair cable as standard.



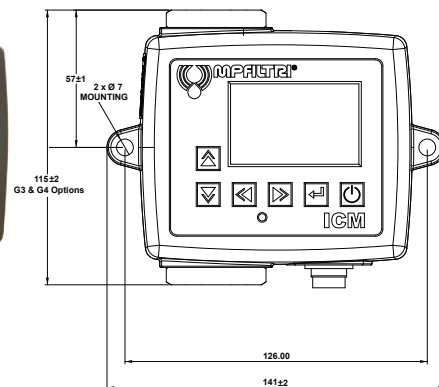
How to Order

ICM	USBi
ICM	ETHi

ICM-RDU

The ICM RDU (Remote Display Unit) is advantageous when the ICM is out of reach or in a location unsuitable for viewing. The ICM can also be controlled via the RDU.

*Note; Installation dimensions are the same as the ICM.



How to Order

ICM	RDU	0 (painted)
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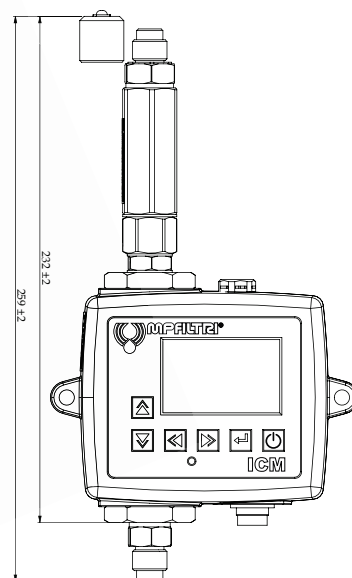
ICM-FC1

A pressure compensated flow control valve specifically designed to fit the ICM. This may be needed if the application produces an oil flow greater than 400ml/min through the ICM.

ICM-FC1 - is supplied with adaptors which enable the valve to be fitted to the ICM.

Max Pressure - 400barg

Usable Flow Range - 4barg to 400barg ΔP



ICM with Flow Control Valve and Minimes fitting

How to Order

ICM	FC1	M	G1
ICM	FC1	M	G3
ICM	FC1	N	G1
ICM	FC1	N	G3
ICM	FC1	S	G1
ICM	FC1	S	G3