

ACMU

Auxiliary Contamination Monitoring Unit



Where can it be used?

- Wind/Tidal/Wave Energy
- Gearbox applications
- Gearbox monitoring
- Offshore & ship systems
- Lubrication & Oil systems
- Mobile Equipment
- Test Benches

When should it be used?

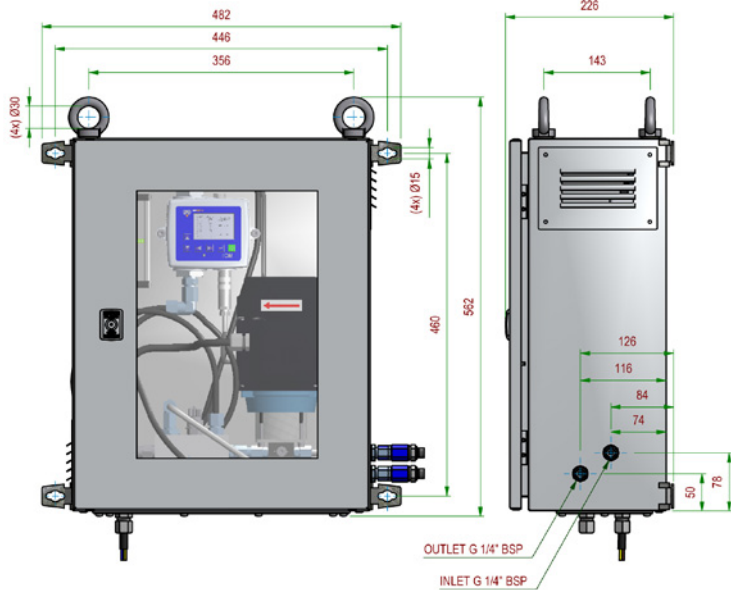
- Entrained air or turbulent flows
- Higher viscosity fluids
- Un-pressurized systems

Why should it be used?

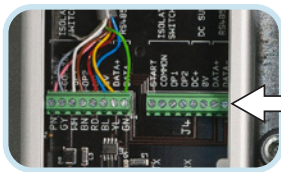
- Easy to retro-fit.
- Exceptional communication & 4000 test memory.
- Reliable & accurate performance.



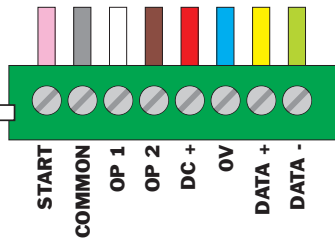
C ACMU Cabinet version



USBi communication box wiring



See specification table



MP Filtri's ACMU combines technology to enable sampling on low pressure hydraulic and lubrication systems where aeration can be an issue. The ACMU suppresses the air bubbles so they are no longer counted as particles.

The ACMU can be installed in most low pressure hydraulic and lubrication systems ranging from zero bar pressure to a max of 50 bar (D version pump). A further option (B version pump) can be installed on systems with a max of 6 bar on inlet of ACMU pump and a max of 3 bar on system return. These two options give the user the versatility to install the ACMU in a variety of different system applications.

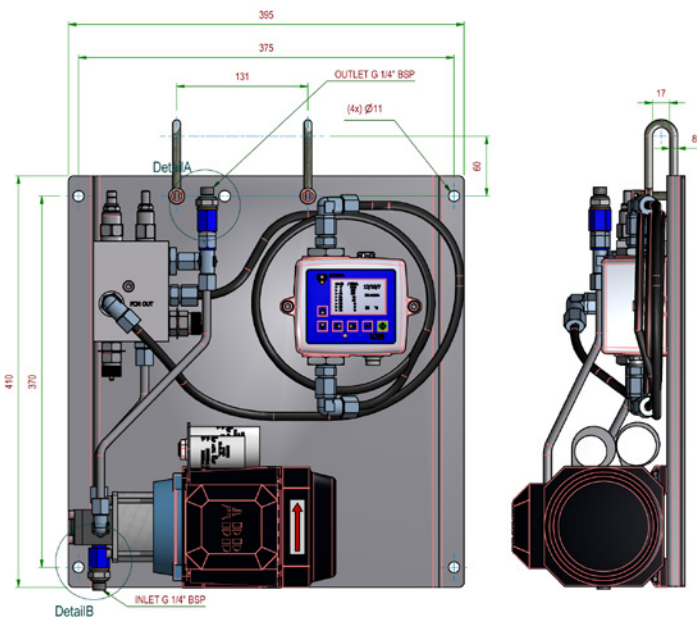
Utilizing the best particle counter in its class as standard, the ACMU delivers simplicity, practicality & accuracy for the most demanding of applications. Proven optical technology and algorithms, ensure consistent monitoring of your system, providing peace of mind for your operators/investors.

Both variants of ACMU come with an ICM as standard complete with RS485/232 MODBUS & CANBUS (J1939 typical) protocols for remote control. ICM Communication & Motor power needs to be completed by the customer during installation. Cable for motor power is not supplied.

Designed with you in mind...

The ACMU is configured deliberately to provide customers the versatility they require for existing systems or those in development. The in-built motor/pump assembly and automatic particle counter (ICM) can be wired to directly, allowing control through a wide range of communication protocols and logic controllers. A small footprint & lifting eyes make it the ideal solution for safe installation on new or retrofit applications. A wide range of operating voltages allow us to support a global market, and emerging technologies.

P ACMU Plate version



C version represents the functionality required in the more challenging of applications. The steel cabinet with integral lifting eyes provides protection & practicality during installation.

- Multi-language instructions & smart phone interaction via product markings make installation simple for operators, especially in remote locations
- In built USBi communication box means that diagnostics & ICM set up can be achieved via a laptop.
- Supplied with a 5 metre 8 core shielded cable & instructions for ICM Communication/Power.

P version, though similar to the cabinet product, does not benefit from the same level of protection, interaction & USBi functionality. It is however...

- Lighter at only 13Kg
- More compact
- Supplied with a 3m 8 core shielded cable & instructions for ICM Communication/Power.

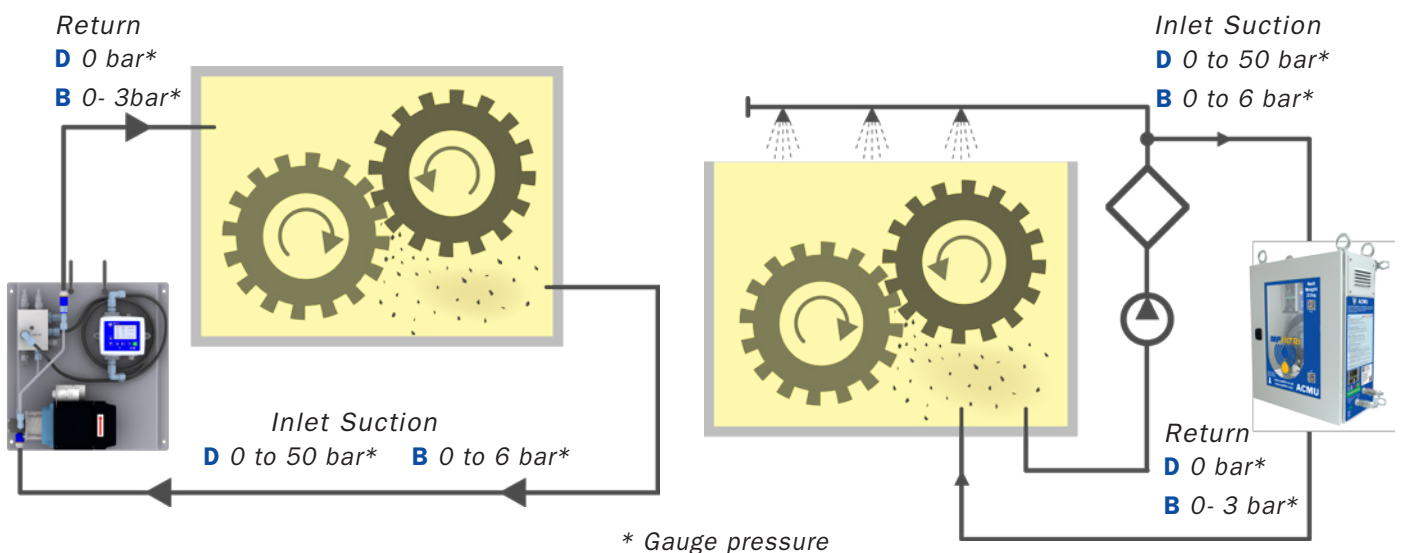
Applications

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.

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

Installation Guidance



- Priming of pump prior to start up recommended
- Install below level of head of tank
- Keep hose length, inlet and outlet, to minimum lengths
- Max 1000cSt

Specification

C Cabinet Version

P Plate Version

Automatic Particle Counter		
In-line contamination monitor	ICM with keypad and backlit display and relays.	ICM with keypad and backlit display and relays.
Particle Sizing & Channels	As ICM: >4, 6, 14, 21, 25, 38, 50, 70 µm(c) to ISO 4406 1999 Standard	As ICM: >4, 6, 14, 21, 25, 38, 50, 70 µm(c) to ISO 4406 1999 Standard
Moisture Sensing (RH%)	Available with or without moisture sensor	Available with or without moisture sensor
Communication Protocols	PLC compatible. RS485, RS232 & CanBus (J1939 typical)	PLC compatible. RS485, RS232 & CanBus (J1939 typical)
Software	LPAView (Supplied with product)	LPAView (Supplied with product)
Re-calibration	Defined by customer Quality Controls	Defined by customer Quality Controls
Control, Communication & Interface		
On/off & Stop/Start signals (Remote)	Start/Stop signalling & test set up user defined.	Start/Stop signalling & test set up user defined.
Hydraulic Hoses (External)	customer to source their own	customer to source their own
Circuit Flow Rate	40ml/min to 400ml/min (viscosity dependant)	40ml/min to 400ml/min (viscosity dependant)
Electric Motor	110VAC, 230VAC, 415VAC, 690VAC	110VAC, 230VAC, 415VAC, 690VAC
Weight	21Kg	13Kg
Lifting Eyes	Yes x 4 DIN 580, WLL 3400N @ 45° (~340Kg)	Yes x 2 WLL 16000N (~1600Kg)
USBi Comms Junction Box	See USBi user guide	No junction box
Operational Parameters		
Fluid Comptability / Corrosion Resistance	Hydrocarbon based & Synthetic hydraulic fluids	Hydrocarbon based & Synthetic hydraulic fluids
Min Inlet Pressure	positive pressure	positive pressure
Max Inlet pressure	50bar (gauge pressure) (pump option dependant)	50bar (gauge pressure) (pump option dependant)
Min Outlet Pressure	Atmosphere (1.013mbar @ sea level)	Atmosphere (1.013mbar @ sea level)
Max Outlet pressure	3 bar (gauge pressure)	3 bar (gauge pressure)
Max. Fluid Temperature (Continuous)	80°C	80°C
Min Fluid Temperature (Continuous)	Viscosity dependant. Not greater than 1000cSt	Viscosity dependant. Not greater than 1000cSt
Min Temperature (Start Up)	Viscosity dependant. Not greater than 1000cSt ≈ 25°C ISO VG 320	Viscosity dependant. Not greater than 1000cSt ≈ 25°C ISO VG 320
Max. Viscosity	1000cSt	1000cSt
Min. Viscosity	10cSt	10cSt
Min. Start Up Ambient Temperature	-40°C	-40°C
Max. Continuous Ambient Temperature	50°C	50°C
Power Consumption	0.25kW max	0.25kW Max
Warranty	See user guide	See user guide

ICM

In-line Contamination Monitor

The ICM automatically measures and displays particulate contamination, moisture and temperature levels in various hydraulic fluids.

- 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	ISO Medium Test Dust (MTD) based on ISO 11171 (1999), on equipment designed & certified to ISO 11943.
Operating Flow Rate	20 - 400 ml/minute
Viscosity Range	≤ 1000 cSt
Fluid Temperature	-25 to +80 °C *Pressure limited
Pressure Max	400 bar (gauge pressure). *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 test memory
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.

How to Order

Example: ACMU - W - D - C - S230v



ACMU Auxiliary contamination monitoring unit.

For use on systems where aeration or off-line contamination monitoring is required. Supplied with 1/4" BSP fittings and 7/16" JIC adapters

Moisture Sensor (RH%)

W With a temperature & moisture sensor, RH%

0 Without moisture sensor

Pump Option

D Up to 50 bar (gauge pressure) inlet, atmosphere outlet

B 6 bar (gauge pressure) max inlet, 3 bar (gauge pressure) max outlet

Type

C Cabinet version (supplied with 5 metre communication lead)

P Plate mounted version (supplied with ICM 3 metre cable)

Motor Options

110v 110v Motor (Dual frequency 50Hz/60Hz, single phase)

230v 230v Motor (3 phase)

400v 400v Motor (3 phase)

690v 690v Motor (3 phase)



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ACMU User Guide



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