HYDAC INTERNATIONAL

# FluidControl Unit
## FCU 1000 Series

## Description

The FluidControl Unit FCU 1000 is a portable service instrument designed for short-term measurement of solid particle contamination, the water saturation (in %) and fluid temperature in hydraulic systems and diesel fuels.

The integrated pump and the hoses included in the FCU 1000 series scope of delivery allow operation in:

- Control circuits,
- pressure circuits and
- non-pressure containers

All measurement data (ISO, SAE/NAS, water saturation in %, and temperature in °C or °F) is time-stamped and stored in files (measurement value file) and folders (measurement points) in the internal data memory of the FCU 1000.

The measurement values can be stored, transmitted to a PC and analysed using HYDAC's own fluid monitoring software FluMoS.

## Fields of application

- Hydraulic systems
- Diesel storage, diesel transfer and diesel refuelling applications (e.g. in/at mines, refineries, transhipment ports, emergency power generators, mobile machinery, etc.)
- Service
- Maintenance

## Advantages

- Suitable for hydraulic oils up to 350 mm²/s
- Suitable for diesel fuels according to DIN EN 590 and ASTM D975 4-D
- Purity classes according to ISO and SAE or NAS
- Integrated data interfaces (wireless and wired) for direct connection to the HYDAC fluid monitoring software FluMoS
- USB interface for transferring measurement data to a memory stick

## Technical data

| | | | FCU 1310 | FCU 1315 |
|---|---|---|---|---|
| **General data** | | | | |
| Operating mode | Periodic intermittent operation, S3<br>Relative duty cycle 40%<br>(S3, according to DIN EN 60034/VDE 0530) | | x | x |
| Self-diagnosis | Continuously with error indication via status LED and display | | x | x |
| Display | LED, 6 / 4 / 4 digits, each with 17 segments | | x | x |
| Measured variables | Solid particle contamination | according to ISO 4406, SAE AS 4059 | x | x |
| | | NAS 1638 | x | x |
| | Water saturation | in % | x | x |
| | Temperature | °C / °F | x | x |
| Measuring ranges | Solid particle contamination | ISO 9/8/7 … ISO 25/24/23 | x | x |
| | Water saturation | 0 to 100 % | x | x |
| | Temperature | -25 to 100 °C | x | x |
| Calibration accuracy | Contamination | ± ½ ISO code in the calibrated range of ISO 13/11/10 … ISO 23/21/18 | x | x |
| | Water saturation | ± maximum 2 % (Full scale) | x | x |
| | Temperature | ± maximum 2 % (Full scale) | x | x |
| Sealing material | FPM | | x | x |
| Ambient temperature range | 0 to +45 °C / 32 to 113 °F | | x | x |
| Storage temperature range | -40 to +80 °C / -40 to 176 °F | | x | x |
| Protection class | IP50 in operation<br>IP67 closed | | x | x |
| Weight (without accessories) | ≈ 13 kg | | x | x |
| **Hydraulic data** | | | | |
| - *Operation with hydraulic fluids*<br>Operating pressure | IN: | - 0.5 to 45 bar / -7.25 to 650 psi | x | x |
| | OUT: | 0 to 0.5 bar / 0 to 7.5 psi | | |
| With high-pressure adapter | IN: | 15 to 345 bar / 217 to 5000 psi | x | x |
| | OUT: | 0 to 0.5 bar / 0 to 7.5 psi | | |
| - *Operation with diesel according to*<br>DIN EN 590 / ASTM D975 4-D | IN: | 16 bar / 232 psi | – | x |
| | OUT: | 0 to 0.5 bar / 0 to 7.5 psi | | |
| Pressure stable up to max. | 345 bar / 5000 psi | | x | x |
| Measurement flow rate | ≈ 180 ml/min (viscosity dependent) | | x | x |
| Max. suction height | 0.5 m | | x | x |
| Permitted viscosity range | 2 to 350 mm²/s; 33 to 1622 Sus | | x | x |
| Fluid temperature range | 0 to +70 °C / 32 to 158 °F, however<br>$T_{max}$ (Fluid) < $T_{flash\ point}$ (Fluid) -10 °C | | x | x |
| **Electrical data** | | | | |
| Supply voltage | 24 V DC ±20 %, residual ripple < 10 %<br>The use of the FCU on vehicle electrical systems without load dump protection of maximum 30 V DC is not permitted. | | x | x |
| Max. power/current consumption | 100 Watt / 4000 mA | | x | x |
| Interfaces | USB (A) for memory stick and 5-pin connector, M12x1, pin | | x | x |
| | Bluetooth 4.2, Class 3<br>(**H**YDAC **S**ensor **I**nterface - **HSI** only) | | x | x |

## Model code

FCU 1 3 1 5 - 4 - U - AS - 1

**Type**
FCU = FluidControl Unit

**Series**
1 = 1000 series, 4 particle size channels

**Coding the contamination**
3 = ISO 4406:1987; NAS 1638 / 2-5 µm, 5-15 µm, 15-25 µm, > 25 µm switchable to ISO 4406:1999; SAE AS 4059 (D) / > 4 $\mu m_{(c)}$ > 6 $\mu m_{(c)}$ > 14 $\mu m_{(c)}$ > 21 $\mu m_{(c)}$

**Housing**
1 = For mobile use (plastic case with attached bag for hoses and cables)

**Media**
0 = Mineral oil-based hydraulic and lubricating fluids
5 = Mineral oil-based hydraulic and lubricating fluids and diesel according to DIN EN 590 / ASTM D975 4-D

**Options**
4 = With integrated pump

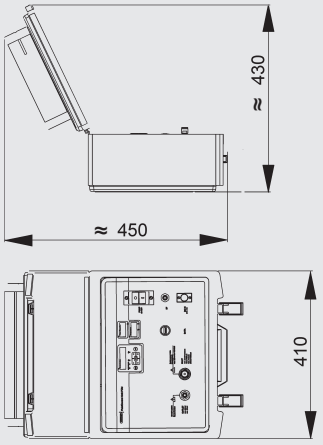
**Supply voltage**
U = 24 V DC

**Integrated sensor**
AS = AquaSensor AS 1000

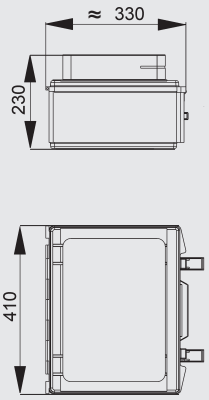
**Mains adapter**
1 = 100 to 240 V AC / 50/60 Hz / 1 Phase / 5000 mA (Europe, US/Canada, UK, Australia, Japan)

## Dimensions

**FCU 131X**
**Open**




**FCU 131X**
**Closed**




(All dimensions in mm)

## Scope of delivery

- FluidControl Unit FCU 1000
- Mains adapter with power supply cable for Europe, US/Canada, UK, Australia and Japan
- High-pressure adapter
- Adapter for suction line (FCU 1315 only)
- INLET Pressure hose with screw connection for measuring coupling type 1620, black, length = 2 m
- INLET Suction hose, open end, transparent, length = 2 m (FCU 1315 only)
- INLET Suction hose, open end, transparent, length = 0.3 m (FCU 1310 only)
- INLET Bottle sampling suction tube, angled
- OUTLET Return hose, open end, transparent, length = 2 m
- Earth connection cable; for potential equalisation between FCU and test object (FCU 1315 only)
- Operating and maintenance instructions/Calibration certificate
- USB memory stick contains operating and maintenance instructions in other languages (PDF viewer software required)

## Accessories

- BatteryPack (item no.: 350 4605)
- Cable with universal plug (for cigarette lighter or vehicle electrical system connection), length = 10 m (item no.: 330 6236)

## Remarks

The information given in this brochure refers to the described operating conditions and applications.

For applications and/or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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