HYDAC INTERNATIONAL

ContaminationSensor
CS 2000 Series

Description

The ContaminationSensor
CS 2000 series is a stationary sensor for permanent monitoring of particle contamination in fluids.

It has been developed for applications in test rigs, lubrication systems and critical hydraulic systems for which dynamic trend measurement of the contamination is required.

The ContaminationSensor CS 2000 series benefits from the field-tested sensor technology used in the FCU 2000 series.

It has been developed for use in conjunction with pressure connections up to 40 bar (higher pressures possible with external pressure relief valve).

Applications

- Industrial hydraulic and lubrication systems
- Mobile hydraulics

Advantages

- Combined hydraulic and electronic compensation for fluctuations in pressure and viscosity
- Continuous self-diagnostics
- Analogue output (4 ... 20mA) or digital output (RS 485/RS 232/ Ethernet)
- PLC output
- Relay outputs (operation, warning, alarm)
- RS 232 interface for ISO Code indication

Technical specifications

Self-diagnostics	Continuous with error indication via relays and serial interface
Measuring range (calibrated)	ISO 13/11/10 ... 23/21/18. Sensor is calibrated within this range. Displays from ISO class 12/10/09 up to ISO 25/23/21.
Operating pressure	INLET: depending on the model, max. 40 bar OUTLET: max. 10 bar, rated to 350 bar
Connections	INLET: Thread G 1/4, ISO 228 OUTLET: Thread G 1/4, ISO 228
Measurement flow rate	10 ... 200 ml/min
Total flow rate (depending on model)	10 ... 800 ml/min (depending on pressure)
Fluid temperature range	0 ... + 70 °C
Supply voltage	24 V DC, ± 25%
Power consumption	25 Watt max.

Electrical data	– Output for ContaminationSensor Display
	– 3 relay outputs:
	  - 1 x "ready" relay
	  - 2 x "limit" relays
	– PLC output
	– Additional electrical output
	  (see model code)

Ambient temperature range	0 ... +55 °C
Storage temperature range	-20 ... +85 °C
Relative humidity	max. 90%, non-condensing
Protection rating	III (safety extra-low voltage)
Protection class	IP65
Weight	4 kg

Model code

CS 2 2 3 0 - 1 - U - 3 - 2 / -

Type
CS = Contamination**S**ensor

Resolution
2 = 4 particle size channels

Contamination codes
0 = ISO 4406 : 1987; NAS 1638 / >5 µm>15 µm
>25 µm>50 µm
1 = ISO 4406 : 1991; NAS 1638 / >2 µm >5 µm
>15 µm >25 µm
2 = ISO 4406 : 1999; SAE AS 4059 (D) / >4 $\mu m_{(c)}$
>6 $\mu m_{(c)}$ >14 $\mu m_{(c)}$>21 $\mu m_{(c)}$

Housing
3 = For stationary use

Fluids
0 = For standard mineral oils
1 = For phosphate esters

Options
1 = Standard, without options

Supply voltage
U = 24 VDC

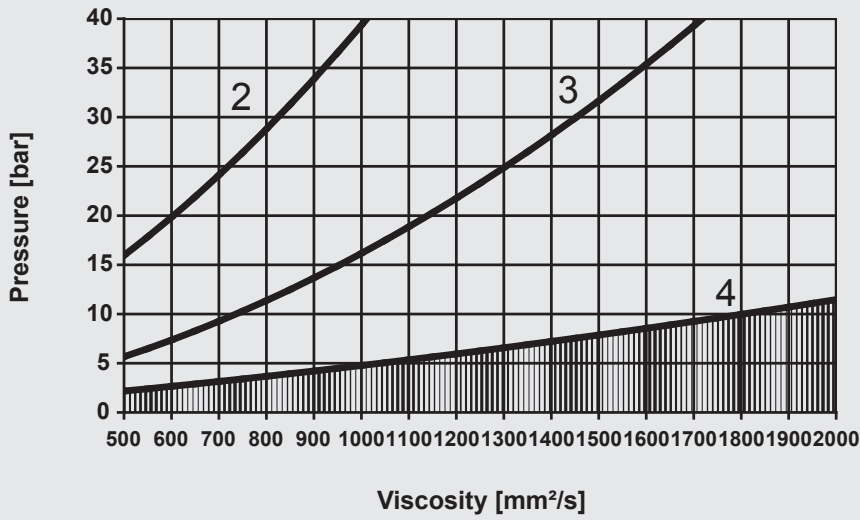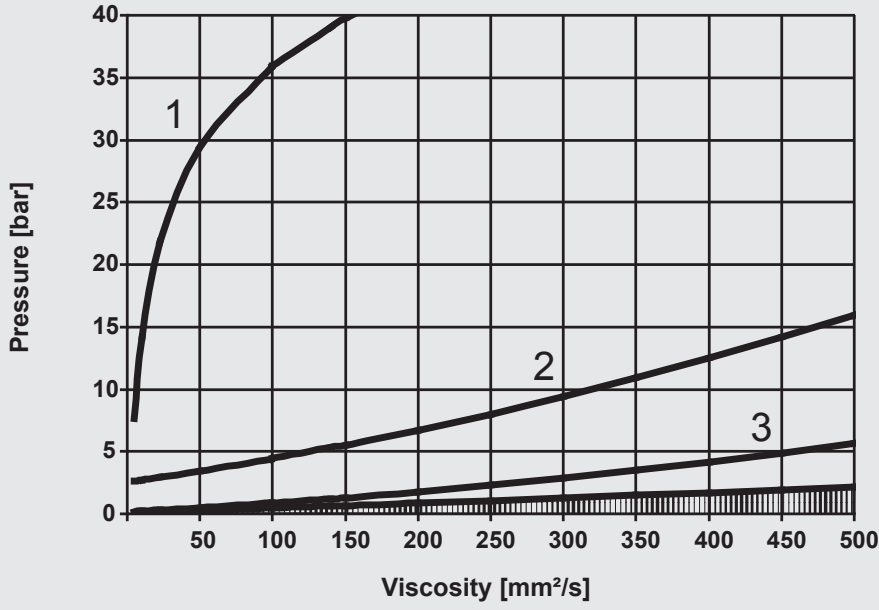**Pressure/viscosity range**
1
2
3   see "Pressure/viscosity range" graphs
4

Electrical output
0 = RS232 (DIN-66348 protocol)
1 = Analogue output (only SAE/NAS and particle counts) (4-20 mA)
2 = RS485 (DIN-66348 protocol)
5 = Ethernet (IEEE 802.3TCP / IP)

Supplementary details
without details = standard

Items supplied
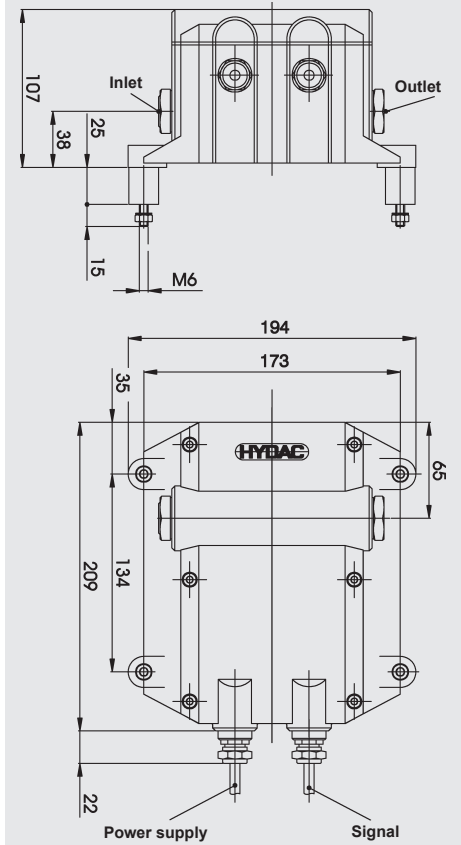– CS 2000
– Programming cable
– Operating and maintenance
  instructions
– Calibration certificate
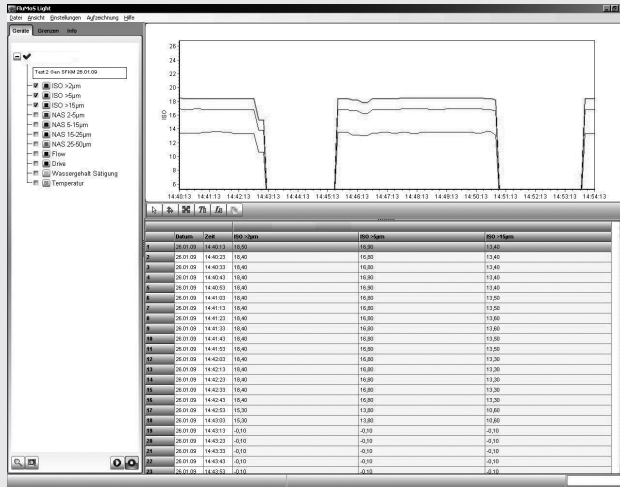
HYDAC

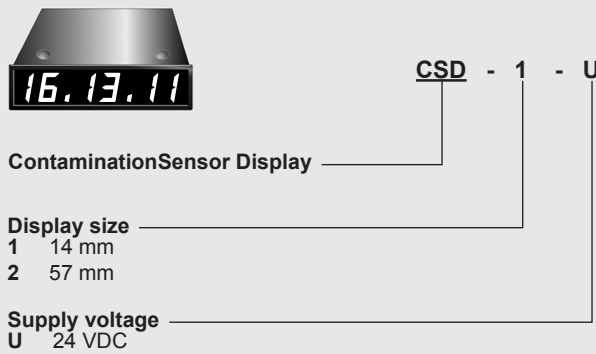## Pressure / viscosity range

Dimensions

Accessories

FluMoS Light, Part No.: 3355176
FluMoS Professional, Part No.: 3371637

FluMoT, Part No.: 3355177

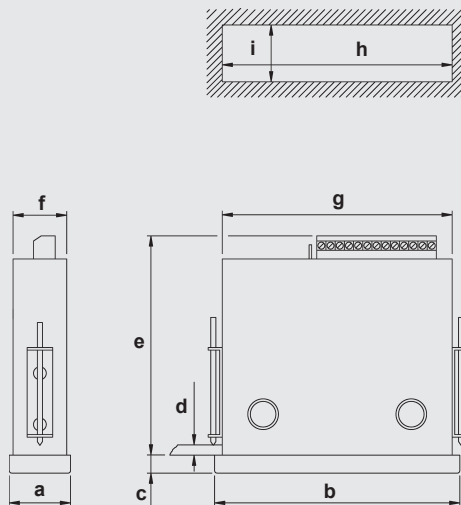**PC Software Package CoCoS Professional, Part No.: 3141522**

ContaminationSensor Display CSD

CSD - 1 - U

ContaminationSensor Display

Display size
1   14 mm
2   57 mm

Supply voltage
U   24 VDC

	Part No.
CSD-1-U	3078272
CSD-2-U	3078273

Dimensions

	a	b	c	d	e	f	g	h	i
CSD-1-U	48	96	8	..6	70	44	90	92	45
CSD-2-U	96	336	3	..6	61	88	328	329	89

FluMoS

FluidMonitoring Software to read, display and process data from HYDAC fluid sensors.
(Part No.: 3355176)

FluMoT

FluidMonitoring Toolkit to integrate HYDAC sensors in customer-owned PC software.
(Part No.: 3355177)

CoCoS

ContaminationControl Software for convenient operation, graphic and tabular display, processing and transfer of CS 2000 measuring data.

Note

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

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

Subject to technical modifications.

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