ContaminationSensor
CS 1000 Series

CS 1000汙染度偵測器可以線上即時監測流體本身的清淨度，並可隨意切換成ISO/NAS/SAE來顯示。

Description

The Contamination Sensor CS 1000 series is an online fluid sensor for permanent monitoring of particle contamination in fluids.

The cleanliness results can either be given according to ISO/SAE or ISO/NAS classifications.

This instrument combines the latest materials and technologies with proven engineering and provides the user with a compact and robust stationary sensor.

The attractive price-performance ratio makes it especially advantageous in OEM applications for condition monitoring.

Applications

- Industrial hydraulic and lubrication systems
- Mobile hydraulics

Advantages

- As an option, can be switched between ISO 4406:1999 / SAE AS 4059 and ISO 4406:1987 / NAS 1638
- Critical machine conditions are identified in good time
- Continuous oil condition monitoring
- Condition-based maintenance planning

Technical specifications

General data	
Self-diagnostics	Continuous with error display via status LED and display
Display (only with CS 1x2x)	LED, 6-digit, each with 17 segments
Measured variables	ISO 99 (ISO 4406:1999) SAE (SAE AS 4059 (D)) or ISO 87 (ISO4406:1987) NAS (NAS 1638)
Additional variables	Flow (ml/min) Out (mA) or (VDC) Drive (%) Temp (°C) and (°F)
Mounting position	Optional (Recommended: Vertical direction of flow)
Ambient temperature range	-30 °C ... +80 °C / -22 °F ... +176 °F
Storage temperature range	-40 °C ... +80 °C / -40 °F ... +176 °F
Relative humidity	Max. 95%, non-condensing
Material of seal	FPM for CS1xx0 / EPDM for CS1xx1
Protection rating	III (safety extra-low voltage)
Protection class	IP67
Weight	1.3 kg
Hydraulic specifications	
Measuring range	Sensor measures from Class ISO 9/8/7 (MIN) to Class ISO 25/24/23 (MAX) calibrated in the range ISO 13/11/10...23/21/18
Accuracy	+/- ½ ISO class in the calibrated range
Operating pressure	300 bar max. / 4350 psi max.
Hydraulic connection	Inline or hose connection (A,B): thread G1/4, ISO 228 or flange connection (C,D): DN 4
Permitted measurement flow rate	30 ... 300 ml/min
Permitted viscosity range	1 ... 1000 mm²/s
Fluid temperature range	0 ... +85 °C, +32 ... +185 °F
Electrical data	
Connection, male	M12x1, 8-pole, to DIN VDE 0627 or IEC61984
Supply voltage	9 ... 36 VDC, residual ripple < 10%
Power consumption	3 Watt max.
Analogue output (4 conductor technique)	4 ... 20 mA output (active): Max. ohmic resistance 330Ω or 0 ... 10 V output (active): Min. load resistance 820Ω
Switching output	Passive, n-switching Power MOSFET: max. current 1.5 A; normally open
RS485 interface	2-wire, half duplex to transfer the HSI protocol in conjunction with a PC
HSI (HYDAC Sensor Interface)	1-wire, half duplex

Model code

CS 1 2 2 0 - A - 0 - 0 - 0 - 0 / - 000

Type
CS = ContaminationSensor

Series
1 = 1000 series,
4 particle size channels

Contamination codes
2 = ISO 4406 : 1999 ;
SAE AS 4059 (D) /
>4 $\mu m_{(c)}$ >6 $\mu m_{(c)}$
>14 $\mu m_{(c)}$ >21 $\mu m_{(c)}$
3 = ISO 4406 : 1987 ;
NAS 1638 / > 2 µm > 5 µm
> 15 µm > 25 µm
can be switched over
ISO 4406 : 1999 ;
SAE AS 4059 (D) / >4 $\mu m_{(c)}$
>6 $\mu m_{(c)}$ >14 $\mu m_{(c)}$
>21 $\mu m_{(c)}$ can be switched over

Options
1 = Without display
2 = With display (display can be rotated through 270°)

Media
0 = Based on mineral oil
1 = For phosphate ester

Analogue interfaces
A = 4 ... 20 mA
B = 0 ... 10 V

Switching output
0 = Switching output threshold

Digital interface
0 = RS485

Electrical connection type
0 = Male M12x1, 8-pole, pin,
to VDE0627 or IEC61984

Hydraulic connection (see Page 13)
0 = Inline or hose connection
1 = Flange connection

Modification number
000= Standard

Items supplied

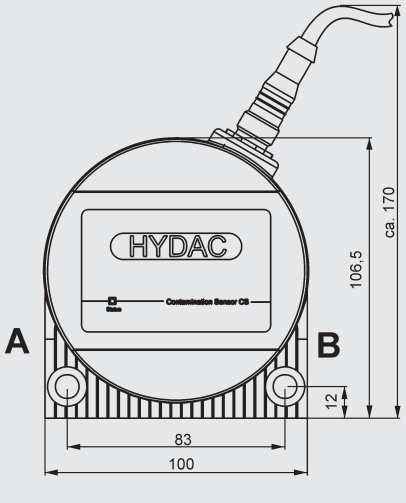
– Contamination Sensor
– CoCoS 1000 Software and Operating and Maintenance Manual on CD
– Calibration certificate
– "Getting started" guide
– 2 O-rings for flange connection version

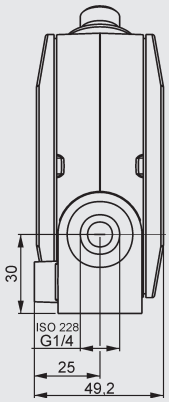
Accessories

– Female connector with 2 m cable, screened, 8-pole, M12x1, Part No.: 3281220
– Female connector with 5 m cable, screened, 8-pole, M12x1, Part No.: 3281239
– Extension cable 5 m, female connector 8-pole, M12x1 / male connector 8-pole, M12x1, Part No.: 3281240
– Female connector with screw terminal, 8-pole, M12x1, Part No.: 3281243

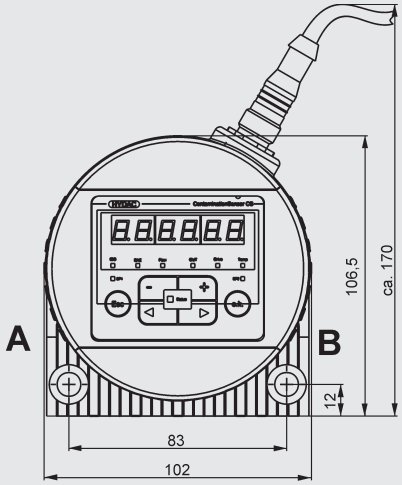
Dimensions

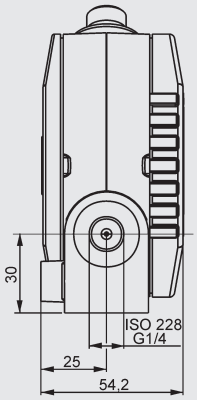
CS1x1x without display





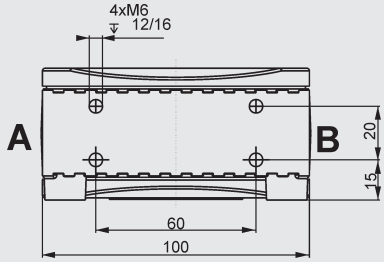
CS1x2x with display



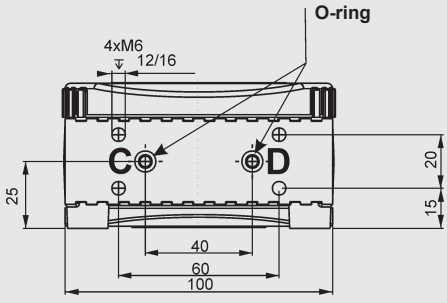


View of underside

Inline or hose connection

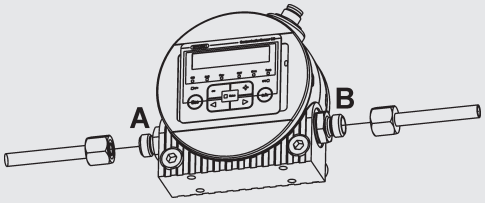


Flange connection

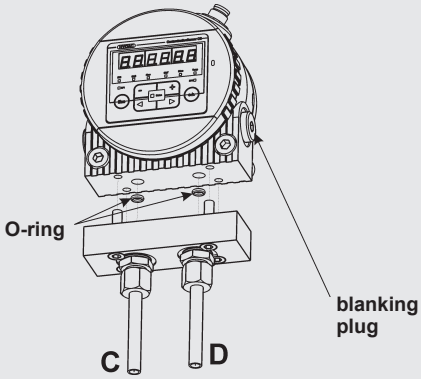


Hydraulic connection types

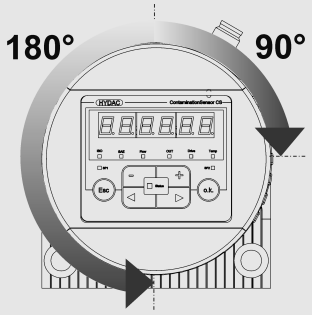
Inline or hose connection



Flange connection

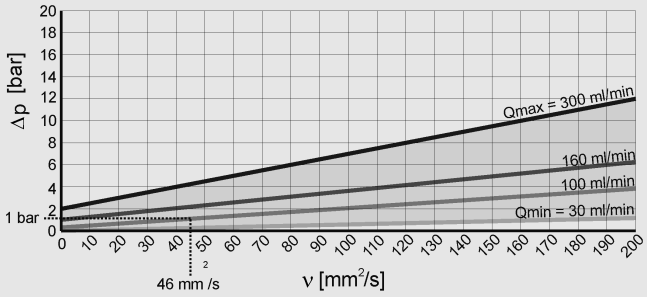


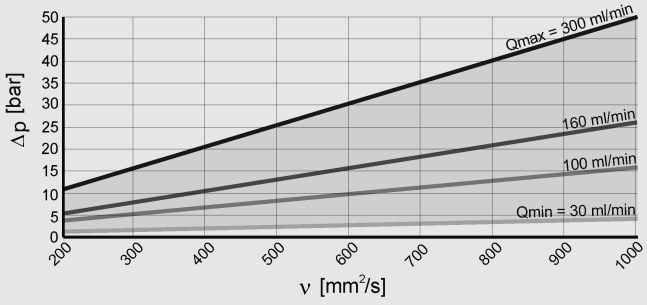
Display rotation



Pressure/Viscosity range

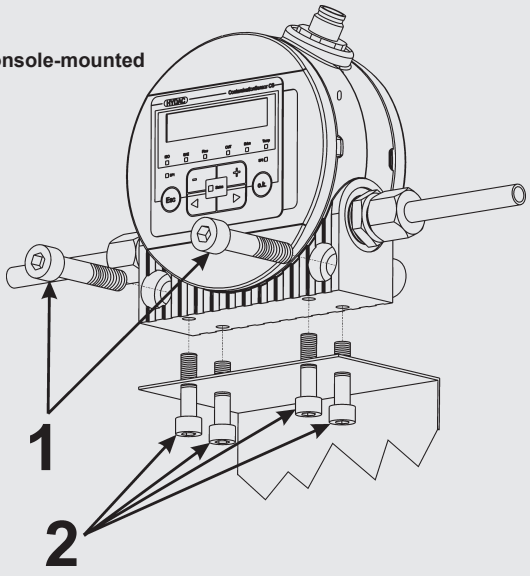
Δp : pressure
ν : viscosity





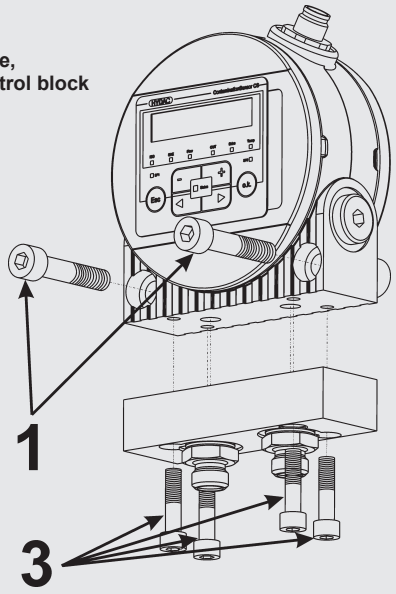
Types of mounting

Wall-mounted or console-mounted



for inline or hose connection

Mounting on flange plate, connection plate or control block



for flange connection

1 : with 2 x M8 (ISO 4762) or
2, 3 : with 4 x M6

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.

HYDAC FILTER SYSTEMS GMBH
Industriegebiet
D-66280 Sulzbach / Saar
Tel.:+49 (0) 6897/509-01
Fax:+49 (0) 6897/509-846
Internet: www.hydac.com
E-Mail: filtersystems@hydac.com