



Virtual Fluid Lab (VFL)

Intelligent determination of the filter element's remaining service life

Dynamic pressure

Element service life for service planning

smart



Description:

The new generation of smart sensors is designed to generate further relevant information in addition to the classic operation data. This ensures the support of dynamic, real-time optimised and self-organising processes, which optimises the availability as well as the resource consumption and reduces operating costs.

The Virtual Fluid Lab V1/4 ... VFL with CAN bus interface was specially developed to provide a solution that can determine the remaining service life of the filter element on the basis of dynamic pressure measurements. The sensor does this by using an internal algorithm to convert the filter's pressure signal and the temperature of the fluid (which is read via the CANopen bus) into the current remaining service life of the filter element. This means that a signal is available that can be used for optimum planning of service work.

After the start-up phase, during which a constant remaining service life is output (9,999 h), the actual calculated remaining service life [h] will be provided to the CAN fieldbus system via the CANopen protocol. This value decreases linearly as the operating hours of the filter element increase.

The fluid compatibility includes hydraulic oils, lubrication oils and HFD as well as all further environment-friendly fluids¹⁾.

The Virtual Fluid Lab is used in plants where continuous, intelligent monitoring of the remaining service life is needed to enable organised service and to make full use of the filter element's service life. A typical application is installation in a filter housing.

Technical data:

Input data

Measuring ranges	Dynamic pressure 2, 5 bar
Perm. operating pressure	16 bar
Mechanical connection	G 1/4
Tightening torque, recommended	20 Nm
Parts in contact with fluid	Connector: stainless steel O-ring: FKM

Environmental conditions

Compensated temperature range	-25 °C to +85 °C
Operating temperature range	-30 °C to +95 °C
Storage temperature range	-40 °C to +100 °C
CE marking	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 at 10 to 500 Hz	≤ 25 g
Shock resistance acc. to DIN EN 60068-2-27	100 g / 6 ms / half-sine 500 g / 1 ms / half-sine
Protection type acc. to DIN EN 60529 ²⁾	IP 67

CAN bus-specific data

Protocol data	CANopen
Communication profile	CiA DS 301 V4.2
Device profile	CiA DS 404 V2.1
Layer setting services and protocol	CiA DSP 305 V3.0
Automatic bit-rate detection	CiA AN 801
Baud rates	10kbit to 1Mbit acc. to DS 305 V 3.0
Transmission services PDO	Measured value as 32bit float, 8bit status
Transfer	Synchronous, asynchronous, cyclical, measured value change, exceeding boundaries
Node ID / baud rates	Can be set via manufacturer specific profile or layer setting services

Other data

Electrical connection	DT04, 4-pole
Supply voltage	9 to 35 V DC
Residual ripple of supply voltage	≤ 5%
Current consumption	≤ 25 mA
Service life	Min. 1 million cycles (max. perm. operating pressure)
Weight	~ 45 g

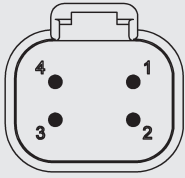
Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

¹⁾ Fluid compatibility with HFC on request

²⁾ With mounted mating connector in corresponding protection class

Pin connections:

DT04, 4-pole



Pin	Signal	Code
1	+U _B	Supply +
2	0V	Supply - / GND
3	CAN_H	Bus line dominant high
4	CAN_L	Bus line dominant low

Model code:

V1/4 5 VFL.x /-V-C4D020

Type

V1/4 = dynamic pressure measurement (G 1/4)

Measuring ranges in bar

2, 5

Version

VFL = Virtual Fluid Lab

Modification number

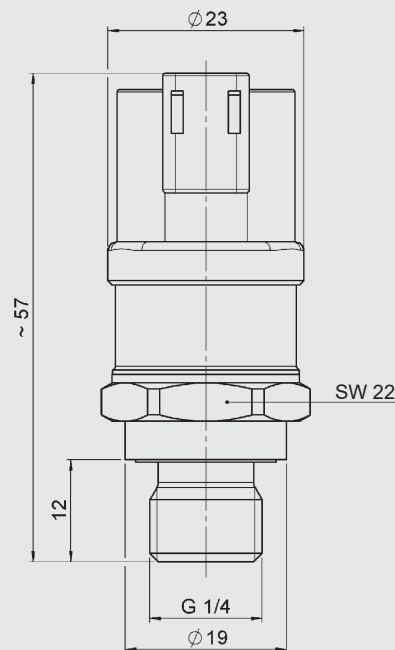
X = the latest version is always supplied

Supplementary details

V = FKM seal

C4D020 = CAN bus, 4-pole, DT04

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described. For applications and/or operating conditions not described please contact the relevant technical department.

Subject to technical modifications.

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