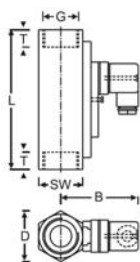


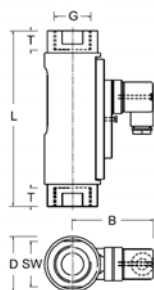
7.1 Dimensions

BFS-10-N / N-Air



	G	G 1	G ½	G ¼
hex	41	27	18	
D	47	31	18	
B	76	52	47	
T	17	14	10	
L	130	90	65	
Weight [g]	1050	350	140	

BFS-10-O / O-Air



	G	G 1	G ½	G ¼
hex	41	27	17	
D	50	32	20	
B	77	53	49	
T	17	14	10	
L	158	114	90	
Weight [g]	900	300	140	

Approval data for BFS-10-...-EXI

Optionally there is an intrinsically safe approved version of the flow monitor for gas and dust environments according to ATEX regulations.

These intrinsically safe switches marked with Ex ia label must be operated with a certified switch amplifier.

Approval:  II 1 GD Ex ia IIB T6 Ga
Ex ia IIIC T100°C Da

Certificate no.: ISSeP08ATEX016X/1

Permissible ambient temperature: $T_{amb} = -40\text{ °C} \dots +75\text{ °C}$, IP6X

Electrical data for intrinsically safe application:
 $U_i = 28\text{ V}$ $I_i = 50\text{ mA}$
 $C_i = 40\text{ pF}$ $L_i = 4\text{ μH}$

Standards applied: IEC 60079-0 : 2011, IEC 60079-11 : 2011

All conductive parts that can become dangerously charged must be connected and fed into the equipotential bonding.

Operating Instructions

Flow monitor type BFS-10-N / N-Air
Flow monitor type BFS-10-O / O-Air



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Specifications are subject to changes without notice!
Refer to data sheet for further technical data.




1 Intended Applications

The flow monitor is designed exclusively for measuring and monitoring fluid media, e.g. in cooling systems, measuring and test equipment and pumps. All non-standard applications should be discussed with our engineers.

Read the operating instructions and the safety instructions carefully before using the flow monitor. Nonobservance may cause injuries to health or material damage.

Barksdale GmbH cannot be held liable for any damage resulting from incorrect use.


 DANGER
The flow monitor may only be used in the specified fields of application (see nameplate).
The temperatures must be within the specified ranges, the pressure values and the electrical rating must not exceed the values specified.
Inside the device no explosive mixture (gas/air, dust/air or hybrids) may occur at any time. This is to be guaranteed by the operator.


Observe also the applicable national safety instructions for assembly, commissioning and operation of the flow monitor.


2 Safety Instructions


The safety instructions are intended to protect the user from dangerous situations and/or material damage.


In the operating instructions the seriousness of the potential risk is designated by the following signal words:

 DANGER
Refers to imminent danger to men.
Nonobservance may result in fatal injuries.

 WARNING
Refers to a recognizable danger.
Nonobservance may result in fatal injuries, and destroy the equipment or plant parts.

 CAUTION
Refers to a danger.
Nonobservance may result in light injuries and material damage to the switch and/or to the plant.

	IMPORTANT
Refers to important information essential to the user.	

	Disposal
The flow monitor must be disposed of correctly in accordance with the local regulations for electric/electronic equipment.	
The flow monitor must not be disposed of with the household garbage!	

3 Standards

The standards applied during development, manufacture and configuration are listed in the CE conformity and manufacturer's declaration.

4 Warranty/Guaranty

Warranty

Our scope of delivery and services is governed by the legal warranties and warranty periods.

Terms of guaranty

We guaranty for function and material of the flow monitor under normal operating and maintenance conditions in accordance with the statutory provisions.


Loss of guaranty

The agreed guaranty period will expire in case of:


- incorrect use
- incorrect installation
- incorrect handling or operation contrary to the provisions of these operating instructions


No liability is assumed for any damage resulting therefrom, or any consequential damage.

5 Installation

	IMPORTANT
The flow monitor may only be installed and commissioned by trained staff.	

The instrument can be installed in any position in a system due to the use of a spring resetting the float to its initial position. Flow direction is from the lowest to the highest value indicated on the scale.


	IMPORTANT
The medium must be free of solid contamination and magnetic particles. We recommend the use of dirt filters.	


	IMPORTANT
The flow monitors must not be positioned in inductive or strong magnetic fields. The screw connection should be non-magnetic.	

All standard connections comply with DIN ISO 228-1. Ensure that only suitable threads and sealing materials are used for installation, otherwise correct functioning and tightness of the equipment may be impaired.

To avoid the risk of measuring faults the upstream line should be 10 x D and the downstream line 5 x D (D = nominal diameter of the tube).

The highest accuracy will be reached by installing the flow monitor vertically, with the flow direction from the bottom to the top. When the flow monitor is installed in any other position, deviations may occur due to the weight of the float.

	CAUTION
BFS-10-N: Too long threads may impair the function of the flow monitor or cause damage to the flow monitor.	
Observe the maximum length when screwing in the fittings.	

	CAUTION
BFS-10-O: Twisting of the flow monitor fitting inside the aluminium sleeve may cause leakage or breaking of the glass.	
When screwing in the fittings the flow monitor connection must be fixed with a spanner. Use only suitable tools (fork wrench of correct size) for fixing.	


5.1 Connecting the flow monitor

Flow monitor with contact (standard): the electrical connection values stated on the housing should never be exceeded (not even for short periods). The integrated reed contact is very sensitive to overload. The danger of overloads exist by means of:

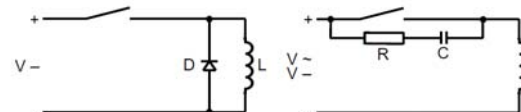
- Inductive loads
- Capacitive loads
- Resistive loads

Inductive load

Inductive loads will be caused by contactors, relays / solenoid valves / electricmotors


	CAUTION
Voltage peaks during switch off (up to 10-times of the nominal voltage)	

Precautionary measure: (sample)

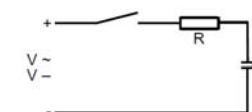


Capacitive load

This kind of load will be caused by extrem long leads / capacitive consumption

	CAUTION
High current peaks during switch on the switch contact (exceeding the nominal current)	


Precautionary measure: (sample)



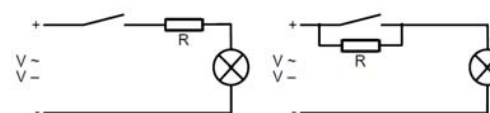
Limiting the current by means of a resistor

Resistive load

This kind of load will be caused by incandescent bulbs / Motor start up

	CAUTION
High current peaks during switch on of the switch contact, because the filament has low resistance at low temperatures.	

Precautionary measure: (sample)



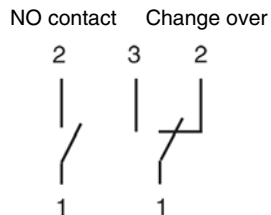
Limiting the current by means of a resistor of heating of the filament.

Connection to SPS

For the connection to high resistance devices (like SPS) a protection circuit is not necessary.

The reed contacts are tungsten, gold-rhodium-plated and are installed in an inert gas atmosphere. Hence direct connection to the inputs of a PLC system is possible.

Wiring diagram for switches provided with connector (standard)




5.2 Adjusting the switching point

The switching point is adjusted via the scale on the flow monitor. Please take into account that the scale always indicates the shut-down point. That means:

- when the flow rate is decreasing the NO (Normaly Open) contact will open when the set volume is reached
- when the flow rate is sufficient, the NO (Normaly Open) contact is closed
- in case of an alarm (flow rate too low) the NO (Normaly Open) contact will open

6 Maintenance/Cleaning

	IMPORTANT
Maintenance of the flow monitor may only be carried out by trained staff.	

The flow monitor has only a few moving parts. Maintenance only involves cleaning these parts from time to time.

7 Technical Data

Operating data	BFS-10-N 1"	BFS-10-N ½"	BFS-10-N ¼"
Pressure MS	250 bar	300 bar	300 bar
Pressure MS with GL	100 bar	100 bar	100 bar
Pressure VA	300 bar	350 bar	350 bar
Pressure drop	0.02 - 0.4 bar	0.02 - 0.3 bar	0.02 - 0.2 bar
Temperature max.	100 °C	100 °C ¹⁾	100 °C
Electrical data – only valid for application in non-explosive atmosphere			
Normally Open NO	250 V - 3 A - 100 VA	230 V - 3 A - 60 VA	200 V - 1 A - 20 VA
Change over*	250 V - 1.5 A - 50 VA	250 V - 1.5 A - 50 VA	200 V - 1 A - 20 VA
System of protection	IP65	IP65	IP65
Materials	Brass Stainless steel	Brass Stainless steel	Brass Stainless steel
Housing	Brass 1.4571	Brass 1.4571	Brass 1.4571
Float	Brass 1.4571	Brass 1.4571	Brass 1.4571
Spring	1.4571 1.4571	1.4571 1.4571	1.4571 1.4571
Seals	none none	none none	none none
Tolerance	±10% of FS	±10% of FS	±10% of FS
Switch housing with connector acc. to DIN EN 175 301-803-C (formerly DIN 43650-C) or 1 m pre-fitted cable			
* Minimum load: 3 VA; contact rating for PLC applications: 200 V, 1 A, 20 VA (Please request)			

¹⁾ HT: max. medium temperature: + 130 °C, max. ambient temperature: +125 °C

Operating data	BFS-10-O 1"	BFS-10-O ½"	BFS-10-O ¼"
Pressure MS	10 bar	16 bar	16 bar
Pressure VA	10 bar	16 bar	16 bar
Pressure drop	0.02 - 0.4 bar	0.02 - 0.3 bar	0.02 - 0.2 bar
Temperature max.	100 °C	100 °C	100 °C
Electrical data – only valid for application in non-explosive atmosphere			
Normally Open NO	250 V - 3 A - 100 VA	230 V - 3 A - 60 VA	200 V - 1 A - 20 VA
Change over*	250 V - 1.5 A - 50 VA	250 V - 1.5 A - 50 VA	200 V - 1 A - 20 VA
System of protection	IP65	IP65	IP65
Materials	Brass Stainless steel	Brass Stainless steel	Brass Stainless steel
Housing	Aluminum anodized 1.4571	Brass 1.4571	Brass 1.4571
Float	Brass 1.4571	Brass 1.4571	Brass 1.4571
Spring	1.4571 1.4571	1.4571 1.4571	1.4571 1.4571
Seals	none none	none none	none none
Tolerance	±10% of FS	±10% of FS	±10% of FS
Switch housing with connector acc. to DIN EN 175 301-803-C (formerly DIN 43650-C) or 1 m pre-fitted cable			
* Minimum load: 3 VA; contact rating for PLC applications: 200 V, 1 A, 20 VA (Please request)			