



Instruction Manual

DS51

***Piston type flow switch for
low-flow applications***



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Safety Information

General Instructions

To ensure safe operation, the device should only be operated according to the specifications in the instruction manual. The requisite Health & Safety regulations for a given application must also be observed. This statement also applies to the use of accessories.

Every person who is commissioned with the initiation or operation of this device must have read and understood the operating instructions and in particular the safety instructions!

The work safety instructions in this manual as well as the safety, accident prevention and environmental protection regulations generally valid for the work area must be observed.

The liability of the manufacturer expires in the event of damage due to improper use, non-observance of this operating manual, use of insufficiently qualified personnel and unauthorized modification of the device.

Proper Usage

The flow switches of the model DS51 are designed to monitor continuous flow rates of low viscous liquids which do not attack the device materials. All other usage is regarded as being improper and outside the scope of the device.

In particular, applications in which shock loads occur (for example, pulsed operation) should be discussed and checked in advance with our technical staff.

The series DS51 flow meter devices should not be deployed as the sole agents to prevent dangerous conditions occurring in plant or machinery. Machinery and plant need to be designed in such a manner that faulty conditions and malfunctions do not arise that could pose a safety risk for operators.

Dangerous substances

For dangerous media such as e.g. Oxygen, Acetylene, flammable or toxic substances as well as refrigeration systems, compressors, etc. must comply with the relevant regulations beyond the general rules.

Qualified Personnel

The DS51 devices may only be installed by trained, qualified personnel who are able to mount the devices correctly. Qualified personnel are persons, who are familiar with assembling, installation, placing in service and operating these devices and who are suitably trained and qualified.

Inward Monitoring

Please check directly after delivery the device for any transport damages and deficiencies. Additional with reference to the accompanying delivery note the number of parts must be checked.

Claims for replacement or goods which relate to transport damage can only be considered valid if the delivery company is notified without delay.

Functional Description

The model DS51 flow monitors are rugged, heavy duty devices that are to a great extent immune to faults. A piston with integrated permanent magnet is forced by the flow against a stainless steel spring in the direction of flow and actuates a reed switch attached to the enclosure.

The reed contact closes upon flow and opens when the flow drops below a preset value.

Attention:

The flow direction is specified. It is shown on the label of the device and must be observed.

Electrical Connection

The switching contacts used in the devices are potential-free and do not require a power supply.

Attention:

The reed contacts used in the switching contacts are very sensitive to overload due to their design. None of the values such as voltage, current or power may be exceeded, even for a short time.

Connecting devices equipped with Reed switches

Reed switches are basically designed for small contact ratings. To connect a load with higher power consumption it is indispensable to use a contact protection relay (e.g. our series MSR01)

If you connect directly a load to a Reed contact the following recommendations should be considered.

None of the contact rating values printed on the switching unit must not to be exceeded, even momentarily. This is valid for each of the given values individually: voltage, current, power. The Reed contact integrated in the switching unit is very sensible to electrical overload

Danger of overload is given by the following applications:

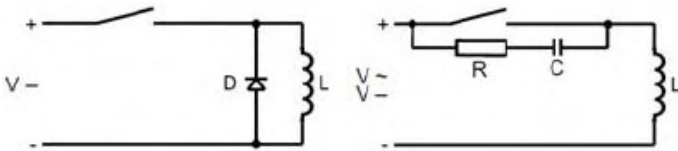
- inductive load
- capacitive load
- lamp load

Inductive Load

Inductive loads consist e.g. of relay, contactors, solenoid valves, motors, electric engines, etc.

⚠ WARNING: Voltage spikes at shut down (up to 10 times of nominal voltage)

Protective measures: (examples)



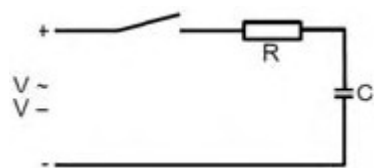
(Flyback diode, e.g. type 1N4007)

Capacitive Load

Capacitive loads consist e.g. of long connection cables or capacitive consumers.

⚠ WARNING: High current spikes at switching on (this will exceed the nominal current)

Protective measures: (examples)



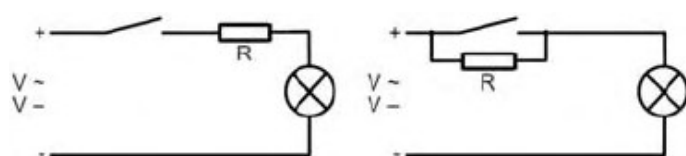
Limitation of current by a resistor

Lamp Load

Lamp loads consist e.g. by light bulbs, starting motors .

⚠ WARNING: High current spikes at switching on, because the glowing spiral has low resistance at low temperature.

Protective measures: (examples)



Limitation of current by a resistor or preheating of the glowing spiral.

Connecting to a PLC

There is no need for protective measures by connecting the Reed switch to a PLC. The Reed contacts are plated by Tunsten, Gold, and Rhodium located in a protective atmosphere. They can be directly connected to the input terminals of a PLC without problems.

RC-Circuits as protective measures (Boucherot cell, Snubber)

In practice the following values of resistor/capacitor cells give good results. Nevertheless, the values given in the following tables are only recommendations for general purposes. But it cannot be guaranteed that for specific applications more adequate Boucherot cells may exist.

For Reed switches of 10 – 40 VA

| Voltage [V] | Resistance [Ohm] | Capacitance [nF] |
|-------------|------------------|------------------|
| 230 | 1500 | 330 |
| 115 | 470 | 330 |
| 48 | 220 | 330 |
| 24 | 100 | 330 |

For Reed switches of 40 – 100 VA

| Voltage [V] | Resistance [Ohm] | Capacitance [nF] |
|-------------|------------------|------------------|
| 230 | 1000 | 330 |
| 115 | 470 | 330 |
| 48 | 100 | 330 |
| 24 | 47 | 330 |

DS51

Piston Type Flow Switch for Low-Flow Applications

- for low-viscosity liquids
- low-cost model
- customised set switching point
settable between 0,1 and 2,5 l/min
- small dimensions
- housing made of brass, nickel plated brass
or stainless steel, piston made of POM
- available for any mounting position
- max. pressure: PN 16,
max. teperature: 100 °C



Description:

The flow monitors of the DS51 type series are characterised by their robust and trouble-free design.

A piston with integrated permanent magnet is moved by the flowing medium against a stainless steel spring in the direction of flow and thus switches a reed contact attached to the housing. The contact is closed at flow and opens when the flow drops below the set value.

Typical applications:

The flow monitors DS51 are mainly used where flows of low-viscosity media have to be monitored at low cost.

These are for example

- cooling circuits
- heating systems
- welding machines
- laser cooling systems

Models:

| | |
|-------------|------------------------------|
| DS51.M...: | housing brass |
| DS51.MN...: | housing brass, nickel-plated |
| DS51.E...: | housing stainless steel |
| DS51.S...: | special housing |

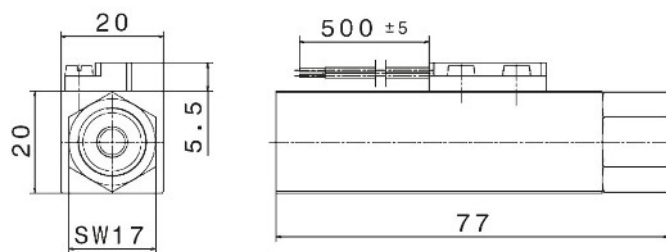
Switching Point:

Customised set, between
0,1 to 2,5 l/min water
rising or falling flow rate

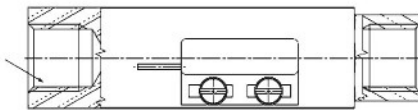
other material versions, process connections and
switching points on request

Dimensions:

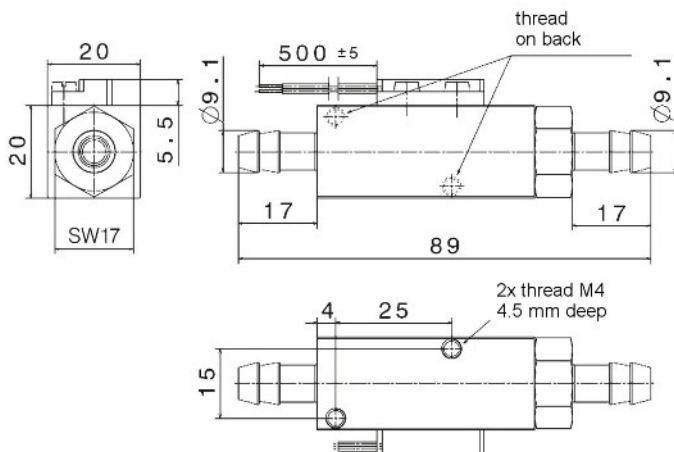
DS51...GG08... (1/4" R female thread bilateral):



2x thread
R 1/4"



DS51...SS08... (hose fitting 8 mm bilateral):



Order Code:

Order number: DS51. M. GG08. F0,5. 0

OEM Piston-type flow switch

Models:

M = housing brass, piston POM
MN = housing brass, nickel-plated, piston POM
E = housing stainless steel, piston POM
S = special version

Process connection:

GG08 = 1/4" R-thread female bilateral
GS08 = input 1/4" R-thread female, output
hose connection, 8 mm
SG08 = input hose connection, 8 mm,
output 1/4" R-thread female
SS08 = input hose connection, 8 mm,
output hose connection, 8 mm
S = special connection

Switching point (xx = 0,1...2,5 l/min, please specify):

Fxx = for falling flow
Sxx = for rising flow

Options:

0 = without
9 = please specify in plain text

Special versions with higher switching points,
lower pressure loss or other connections
on request.

Technical Data:

Material:

housing: brass, nickel plated brass or stainless steel
piston: POM
spring: stainless steel 1.4401
magnet: hard ferrite OX300

Pressure loss: 1 bar at 2,5 l/min

Max. pressure: PN 16

Max. medium-
temperature: 100 °C

Switch point: 0,1...2,5 l/min water

Mounting
position: any

Contact: reed contact, N/O, casting,
200 V_{DC} / 1 A / 15 W

Electrical
connection: 2-wire strand, 50 cm