CR22 MICROFLOW SWITCH

LOW FLOW CHEMICAL RESISTANT FLOW SWITCH

Compact inline flow sensor for chemical metering and injection systems



FEATURES

- Can detect flows of less than 500 mL per hour
- Maximum continuous flow rate of 4 L per minute
- Suitable for pulsed or continuous flows
- Suits tubes and pipes from 6 mm to 20 mm
- All wetted parts UPVC with Viton seals
- Compact vertical mounting switch
- 18 bar (260 psi) pressure rating
- Fast response to flow loss
- Easy to install and service
- Weatherproof

< 500 mL/h
Switching point on a rising flow

18 bar
260 psi pressure rating

4 L/min
Maximum continuous flow rate

UPVC
All wetted parts, with Viton seals

OUTLINE

The CR22 microflow switch is a compact inline flow sensor designed to detect low flows. Its main application is in detecting loss of flow in chemical metering and injection systems. The CR22 is made from PVC with Viton seals, making it ideal for use with commonly used water treatment reagents.

The CR22 microflow switch operates on the displaced piston principle. Process liquid passing through the switch lifts a precision piston. Every time the piston is lifted, a magnet sealed inside it actuates an external reed switch. The reed switch provides a signal indicating flow. The CR22 can be set up as a normally on or a normally off switch that responds either to flow, or to loss of flow.

The sensitivity to flow of the CR22 microflow switch is not adjustable. It is partially fixed and partially a function of a number of variables. The actual flow rate that the CR22 can detect is affected by the fixed geometry of the switch and by the viscosity of the process liquid. In general, liquids of an SG > 1.0 or kinematic viscosity of > 1.0 will proportionally increase the sensitivity of the switch, and slow down its response time. Low viscosity liquids will have the reverse effect. The CR22 is not suitable for use with highly viscous liquids.

ORIENTATION

The CR22 switch must be oriented vertically with flow passing upward through its body. The switch relies on gravity to return its internal piston to the off position when flow stops. If the switch is installed in horizontal pipework it will not switch off when flow stops.

HAZARDOUS AREAS

The CR22 is simple apparatus under AS/NZS 60079.11 and may be used in a hazardous area only as part of an intrinsically safe circuit, connected through suitably certified associated apparatus. It is not Ex certified in its own right. The full conditions of use are given in the installation sheet.

NORMALLY ON OR NORMALLY OFF

The CR22 microflow switch can be configured to give a normally on or normally off signal. As supplied, the switch is normally off, switching on in response to flow. To reverse this function, simply reverse the inlet and outlet fittings. Unscrew the inlet and outlet adaptors from the switch body and re-assemble with the inlet adaptor fitted to the outlet end of the switch and the outlet adaptor fitted to the inlet end of the switch. Note that the electrical module on the switch can be removed and reversed so the electrical cable enters the switch from either the right or left side. Reversing the electrical module does not reverse its electrical function.

APPLICATIONS

Flow, or loss of flow detection, is a critical part of many scientific and industrial applications. Due to its robust construction and high sensitivity, the CR22 microflow switch is suitable for detection of flow or loss of flow in a variety of liquids, including most mineral salts and many acids and bases.

The wetted parts of the CR22 are made from UPVC with Viton O-ring seals. There are no metal parts within the wet area of the switch. The switch can only be used with clean liquids that are free from suspended solids larger than 30 microns, and free from particulates or sludge residue that is attracted to magnets. Materials such as ferric solutions, organic solvents, esters and ketones in general should not be used with the CR22 microflow switch.

Chemical Compatibility Checker ›

SWITCH OUTPUT

On a rising flow, the CR22 will switch on or off at less than 500 mL per hour. When applied to a pulsing flow such as from a dosing pump, the nature of the flow needs to be considered. Liquid passing through the flow switch causes its reed switch to change state, either turning it on or turning it off depending on how the switch has been set up. If the liquid stops flowing, the switch will change state after a delay. The delayed response time depends on the process liquid's viscosity. Water, for example, will give a delay of approximately 2 seconds.

When connected directly to a dosing pump, the flow switch will normally receive a train of pulses of liquid. If the frequency of the pulses is greater than one every 2 seconds, the flow switch will provide a steady output state while ever the pulses are maintained by the pump. If, however, the pulse frequency from the pump is less than one pulse every 2 seconds, the flow switch may respond with a series of on and off signals that are directly proportional to the dosing pump's pulse frequency.

AVAILABLE MODELS

MODEL	DESCRIPTION
CR22	PVC body switch with dry contact reed switch and Viton O-ring seals

Each CR22 switch is supplied with tube adaptors to suit three tube sizes: 6 × 4 mm, 8 × 4 mm and 12 × 9 mm. In addition to these tube fittings, the CR22 is supplied with 15 mm N/B pipe spigots.

ELECTRICAL

MODEL	MODULE TYPE	CONTACT CONFIGURATION	SWITCHED POWER MAXIMUM	SWITCHED VOLTAGE MAXIMUM	SWITCHED CURRENT RESISTIVE AC (RMS)	INDUCTIVE LOADS	TYPICAL APPLICATION
CR22	Dry contact reed switch	S.P.S.T. NO or NC	50 W/VA	250 VAC 200 VDC	1.5 A maximum	Not suitable	PLC, telemetry and relay logic circuits

NOTE The CR22 microflow switch uses a dry contact reed switch as the primary switching element. Reed switches are one of the most reliable mechanical devices ever devised. They offer an operating life in excess of 100 million cycles; however, care needs to be taken to ensure they are not electrically overloaded. If applied in questionable applications, suitable protection should be added to the control circuit. Details of reed switch protection circuits are on our Reed Switch Information page (button below).

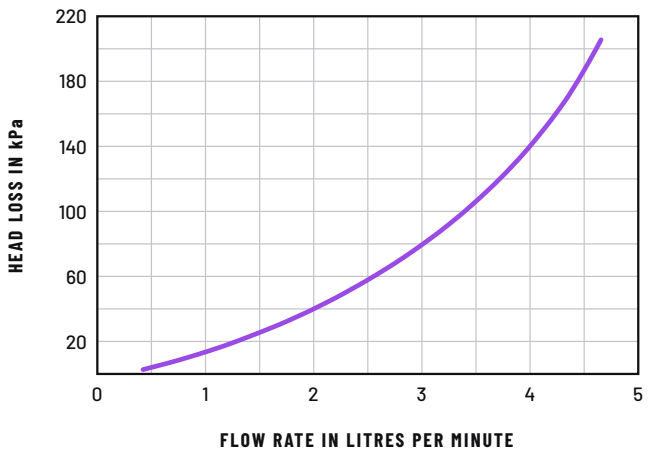
Reed Switch Information ›

OPERATING PARAMETERS

PARAMETER	VALUE
Switching point on a rising flow (water at ambient temperature)	**Less than 500 mL per hour**
Response to loss of flow (water at ambient temperature)	**2 seconds ± 15%**
Maximum recommended operating pressure (static or dynamic) at ambient temperature	**1800 kPa (260 psi)**
Minimum burst pressure at ambient temperature	**9700 kPa (1400 psi)**
Maximum process liquid temperature	**60 °C**
Minimum liquid temperature	**0 °C**
Maximum recommended continuous flow through switch	**4 litres per minute**
Liquid pH range	**1 to 14**
Maximum process liquid S.G.	**1.5**
Minimum process liquid S.G.	**0.8**
Weatherproof rating of electrical module	**IP56**

HEAD LOSS

The graph shows the head loss, or pressure drop, measured between the inlet and outlet of a CR22 microflow switch and expressed as a function of a continuous flow through the switch. The graph shown is for water at ambient temperature. As an example, from the graph, at 2 L/min flow the pressure drop across the CR22 will be 40 kPa.



DIMENSIONS

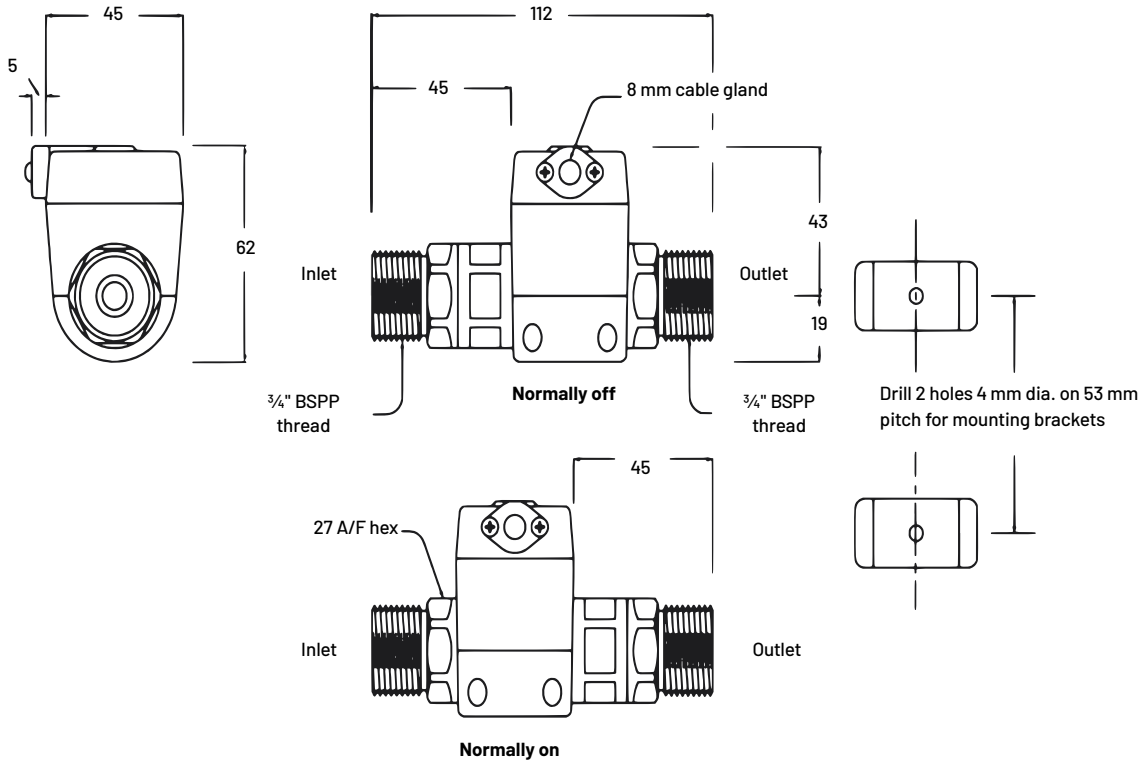


FIG. 1 CR22 dimensions in millimetres

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