

# FINE CONTROLS (UK) LTD



Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product range representing leading technologies & brands:

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**Temperature:** Temperature Probes & Thermowells, Temperature transmitters, Temperature Regulators & Temperature Displays

**Level:** Level Transmitters & Switches

**Pressure:** Pressure Gauges & Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

**Precision Pneumatics:** Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

**Valves:** Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

**Services:** Repair, Calibration, Panel Build, System Design & Commissioning

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## Positive displacement flow sensor / switch

- Indication, monitoring, transmitting and On/Off control in one device
- Programmable outputs (transistor or relay)
- Automatic-calibration: Teach-In
- Communication - external setpoints and process value (4-20 mA)

Type 8072 can be combined with...



**Type 2702 (8630)**

Control valve with TopControl



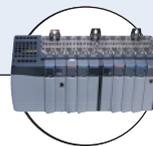
**Type 1067**

Continuous SideControl



**Type 8644-P AirLINE**

Valve island with electronic I/O



**PLC**

This positive displacement flow sensor / switch with display is designed for use in slightly viscous fluid like glue, honey or oil and specially to switch a valve and to establish a monitoring system or an On/Off control loop. The switching points can be programmed with the 3-key keypad under the display or optionally from an external source over a 4-20 mA loop. The 8072 is proposed with On/Off output, or with external setpoints and/or process value outputs.

General data	
<b>Compatibility</b>	With fittings S070 (see corresp. data sheet)
<b>Materials</b>	PC, +20% glass fibre Polyester / Stainless steel PA
Housing, cover	PC, +20% glass fibre
Front panel folio / Screws	Polyester / Stainless steel
Cable plug, gland	PA
<b>Materials wetted parts</b>	
Fitting	Aluminium, stainless steel (316F/1.4401)
Rotor	PPS, Aluminium, stainless steel (316F/1.4401)
Shaft / Seal	Stainless steel / FKM (EPDM or PTFE on request)
<b>Display</b>	8-digit LCD
<b>Electrical connections</b>	Cable plug acc. to EN 175301-803 Multipin: swivel M12, 5-pin or M12, 8-pin
<b>Voltage supply cable</b>	0.5 mm <sup>2</sup> max. cross section; max. 100 m length, shielded
Complete device data (fitting + electronic module)	
<b>Pipe diameter</b>	DN 15 to 100
<b>Measuring range</b>	2 to 1200 l/min (0.26 to 320 gpm) for viscosity > 5 cps 3 to 616 l/min (0.78 to 320 gpm) for viscosity < 5 cps
<b>Medium temperature</b>	
Aluminium body	0 up to 80°C (32 to 176°F)
Stainless steel body	0 up to 100°C (32 to 212°F)
<b>Fluid pressure max.</b>	
DN15	55 bar (798.05 PSI) (threaded process connection)
DN25	55 bar (798.05 PSI) (or flanges rules where fitted)
DN40, DN50 / DN80 / DN100	18 bar (261.18PSI) / 12 bar (174.12 PSI) / 10 bar (145.1 PSI)
<b>Viscosity</b>	1000 cps max. (higher on request)
<b>Accuracy<sup>1)</sup></b>	≤ ± 1% of Reading
<b>Programming mode</b>	Threshold, window or hysteresis
<b>Repeatability<sup>1)</sup></b>	≤ 0.03% of Reading

1) Under reference conditions i.e. measuring fluid = water, ambient and water temperature = 20°C, applying the minimum inlet and outlet pipe straights, matched inside pipe dimensions.

Electrical data	
<b>Power supply</b>	12-30 V DC, filtered and regulated
<b>Current consumption</b>	≤ 80 mA (without load)
<b>Input</b> External setpoint	4-20 mA, galvanic insulation max. input impedance: 250 Ω
<b>Outputs</b> Transistor (programmable)	NPN and PNP, open collector, 5-30 V DC, max. 700 mA, 0 to 300 Hz protect against short circuit.
Relay (programmable) (compact version)	3A/250 V AC or 3A/30 V DC. 3A/48 V AC or 3A/30 V DC <sup>2)</sup> .
Process value (option) (compact version)	4-20 mA, galvanic insulation Loop resistance: 1000 Ω at 30 V DC, 800 Ω at 24 V DC, 500 Ω at 18 V DC
<b>Reversed polarity of DC</b>	Protected
Environment	
<b>Ambient temperature</b>	0 up to + 60°C (32 to 140°F) (operating and storage)
<b>Relative humidity</b>	≤ 80%, without condensation
Standards, directives and approvals	
<b>Protection class</b>	IP65
<b>Standard and directives</b> 	
EMC	EN 61000-6-2 (2005), EN 61000-6-3 (2001)
Pressure	Complying with article 3 of §3 from 97/23/CE directive.* (without CE mark)
Vibration	EN 60068-2-6
Shock	EN 60068-2-27

2) Valid for: external setpoint input, process value output

\* For the 97/23/CE pressure directive, the device can only be used under following conditions (depend on max. pressure, pipe diameter and fluid).

Type of fluid	Conditions
Fluid group 1, §1.3.a	Forbidden
Fluid group 2, §1.3.a	DN ≤ 32, or DN > 32 and PN*DN ≤ 1000
Fluid group 1, §1.3.b	Ok (PN*DN ≤ 2000)
Fluid group 2, §1.3.b	Ok DN ≤ 200

## Operation and display

The device can be calibrated by means of the K-factor, or via the Teach-In function.  
Customized adjustments, such as engineering units, output, filter, bargraph are carried out on site.

### ▶ Indication in operating mode / Display

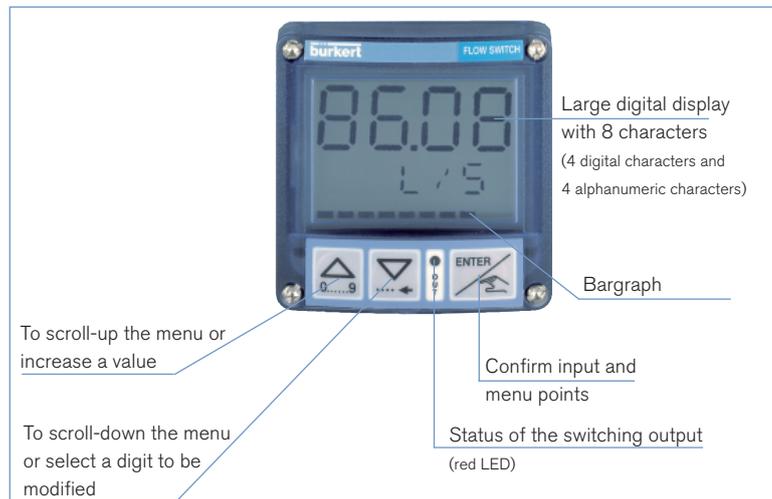
- measured flow
- high threshold value
- low threshold value

### ▶ Parameter definition

- engineering units (International measuring units)
- K-factor / Teach-In function
- selection of switching mode (window, hysteresis)  
(see main features)
- selection of threshold value (see main features)
- delay
- filter
- 10-segment bargraph (select min. and max. value)

### ▶ Test

- switching threshold test with flow simulation  
(dry-run test operation)



## Main features

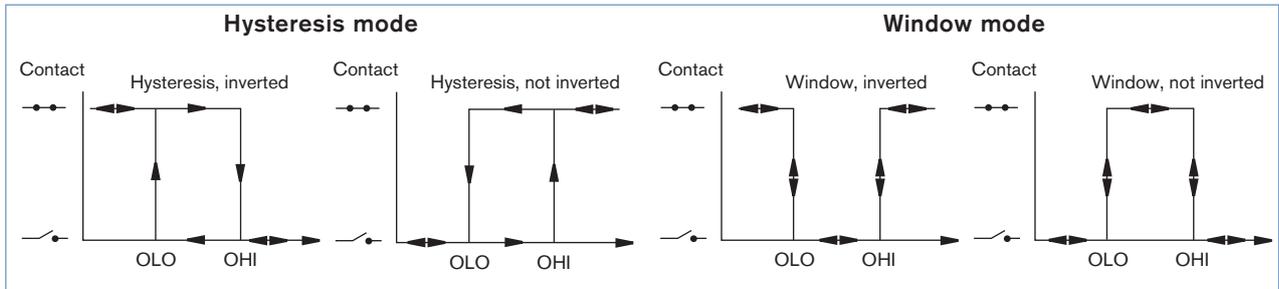
### 8072 with external setpoint option.

The switching points are automatically adjusted by the 4-20 mA input signal originating from a PLC.

- Power supplied by the PLC
- On/Off relay output

### 8072 with standard On/Off output

- 2 switching modes for the output, either hysteresis or window, inverted or not



- Programmable delay before switching
- Possible outputs depending on the version: relay, transistor NPN, transistor PNP, frequency

### 8072 with process value option.

This version delivers an electric signal whose value is the image of the measured quantity.

- On/Off relay output
- 4-20 mA output
- external setpoint (4-20 mA input)

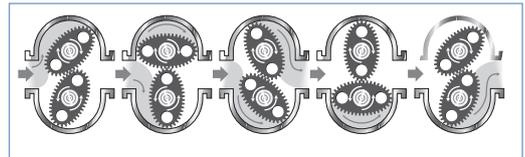
## Design and principle of operation



The 8072 flow sensor / switch is built up with an SE32 electronic module associated to a fitting S070 with integrated measurement oval rotor. The output signal is provided via cable plug according to EN 175301-803 and/or a M12 multipin connector.

When liquid flows through the pipe, the rotor turns. This rotation produces a measuring signal in the transducer. The frequency is proportional to the flow of the fluid.

A conversion coefficient (K factor, available in the instruction manual of the fitting), specific to each pipe (size and material) enables the conversion of this frequency into flow rate. This connection is made by means of a Quarter-Turn.



## Installation

The fitting can handle particle sizes up to 250  $\mu\text{m}$ . To prevent damage from dirt or foreign matter, we strongly recommend the installation of a 250  $\mu\text{m}$  strainer as close as possible to the inlet side of the meter.

The pipe must be filled with liquid and free from air bubbles. Avoid air purge of the system.

Ensure the fitting is installed so that the rotor shafts are always in a horizontal position. Flow direction is marked by an arrow on the body.

