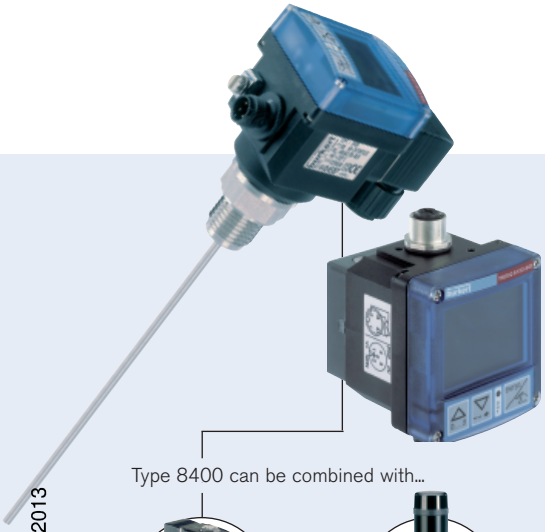
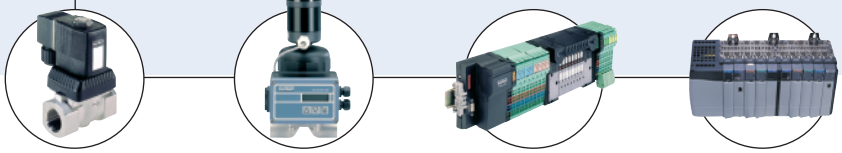
burkert
FLUID CONTROL SYSTEMS

Screw-in Temperature Sensor/Switch with display for On/Off Control



- Indication, monitoring, transmitting and On/Off control in one device
- Extra-large display
- Menu-guided parametrisation
- Complete communication due to external setpoint, process value

Type 8400 can be combined with...



Type 6213
Solenoid valve

Type 2731 (1067)
Continuous SideControl

Type 8644-P AirLINE
Valve island with electronic I/O

PLC

This intelligent sensor/switch with an extra-large display is specifically designed to switch a valve and to establish a monitoring system or an ON/OFF control loop.
Compact and wall versions are available. The wall-mounted version must be inserted into a holder previously mounted on a wall, and it must be associated with a remote temperature sensor.
The switching points can be programmed with the 3 key pads or optionally, with input 4 - 20 mA, from an external PLC over a 4 - 20 mA loop.
As an option, the process value can additionally be transmitted to the PLC (4 - 20 mA).
The connection of the 8400 to the process in the piping is made using standard fittings.

General data	
Materials	
Housing	PC, +20% glass fibre
Front panel folio / Screws	Polyester / Stainless steel
Cable plug, Multipin	PA
Wall-mounted holder	PVC
Materials wetted parts	
Sensor element	Stainless steel
Seal	FKM
Sensor element	Pt100
Screw-in thread	G, NPT, Rc 1/2"
Electrical connections	Cable plug: EN 175301-803 Multipin: swivel M12, 5-pin or M12, 4-pin or 8-pin
Voltage supply cable	max. 100 m, shielded, 0.14 up to 0.5 mm^2 max. 5 Ω max. cable impedance (Wall-mounted version)

Complete device data (pipe + electronic module)	
Pipe diameter	Any pipe with sensor connection 1/2"
Measuring range	
Compact version	-40 up to +125°C *(-40 to 257°F)* (with ambient temperature between 0 and +40°C *(-32 and 104°F)*)
Wall-mounted version	-40 up to +90°C *(-40 to 194°F)* (with ambient temperature above +40°C*(104°F)*) -40 up to +125°C *(-40 to 257°F)*
Medium temperature	+125°C max. *(257°F)*
Fluid pressure max.	PN16
Switching accuracy	±0.5°C *(0.9°F)*(0 up to +80°C *(32 to 176°F)*) ±1.5°C *(2.7°F)*(outside of 0 up to +80°C *(32 to 176°F)*)
Repeatability	≤ ±0.4%

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Electrical data	
Power supply	12-30 V DC , filtered and regulated
Outputs	
Compact version	
Transistor (programmable)	NPN and PNP, open collector, 5 up to 30 V DC, 700 mA max., protected against short circuits
Relay (programmable)	3A/250 V AC or 3A/30 V DC 3A/48 V AC or 3A/30 V DC[1)]
Process value (option)	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
Wall-mounted version	NPN and PNP, 700 mA, 30 VDC max.
Input external setpoint	
Compact version	4-20 mA, galvanic insulation, max. input impedance: 250 Ω
Current consumption	
Compact version	Max. 80 mA (no load)
Wall-mounted version	Max. 50 mA (no load)
Response time (10...90%)	7 s (for one step increment from 0 up to 100°C *(32 to 212°F)*)
Reversed polarity of DC	Protected

Environment	
Ambient temperature	-20 up to 60°C *(4 to 140°F)*
Relative humidity	≤ 80%, without condensation

Standards, directives and approvals	
Protection class	IP65 with connector plug-in
Standards and directives	
EMC	EN 50081-1, 50082-2
Security	EN 61010-2
Pressure	Complying with article 3 of §3 from 97/23/CE directive.*
Vibration	EN 60068-2-6
Shock	EN 60068-2-27

1) Valid for: external setpoint input and 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	DN25 only
Fluid group 2, §1.3.a	DN ≤ 50
Fluid group 1, §1.3.b	DN ≤ 50
Fluid group 2, §1.3.b	DN ≤ 50

Main features

Display

Large digital display with 8 characters (4 digital and 4 alphanumeric characters)

Bargraph (always activated)

3 keys to go through the menus and program the device

Software main features

- International measuring units
- 10-segment bargraph
- Temperature adjusting for a better accuracy
- Simulation mode to test the programming of the switching points, in dry conditions

8400 with external setpoint

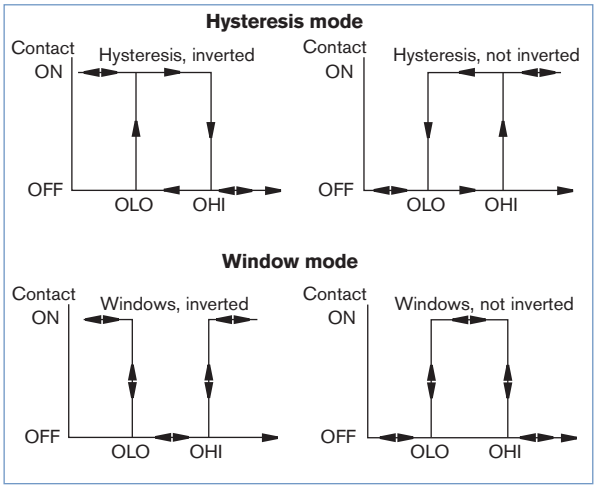
- The switching points are automatically adjusted by the 4-20 mA input signal originating from a PLC.
- On/Off relay output

8400 with process value option

- This version delivers a 4-20 mA electric signal whose value is the image of the measured temperature
- On/Off relay output
- 4-20 mA output
- External setpoint (4-20 mA input)

8400 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 or transistor PNP

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Design

The 8400 Temperature sensor is proposed in two versions:

A compact version, available in several variants.

- The 8400 Standard has a Pt100 with a 29.5 mm mounting length.

- The 8400 Extended has a Pt100 with a 100 or 200 mm mounting length. The adaptation of the 8400 will be done through the external thread or also with a compression fitting (no part of delivery).
This allows variable mounting in bigger pipe diameters or tanks.

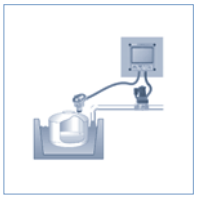
wall-mounted version:

- The 8400 Wall has to be inserted into a holder previously mounted on a wall. It must be associated to a remote temperature sensor.

Typical application example

Monitoring of min./max. levels of temperature in a running process (compact INLINE control)

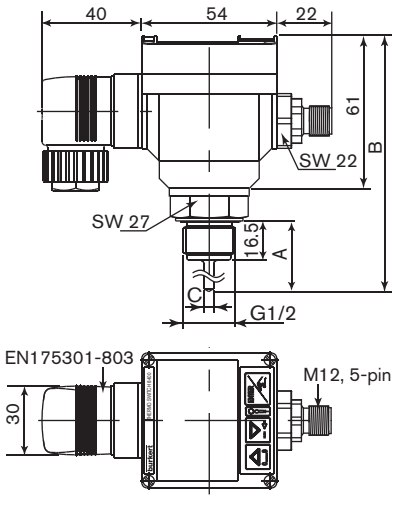
Continuous temperature control in a running process



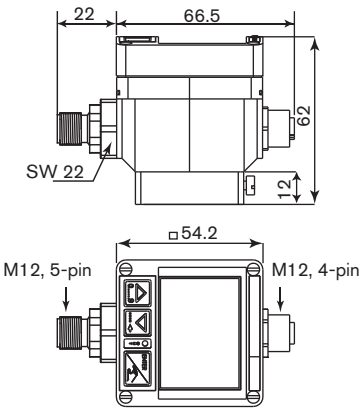
On/Off temperature control of liquid processing in a programmable narrow band (remote control)

Dimensions

8400 standard or 8400 Extended



8400 Wall-mounted



Version	A	B	C
Standard	29.5	103.5	Ø 4
Extended	100	174	Ø 6
	200	274	Ø 6

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Ordering chart for Type 8400 (other versions on request)

Sensor version	Sensor element	Voltage supply	Screw-in thread	Input	Output	Connector	Item no.
Standard, compact	29.5 mm - ø 4 mm	12-30 V DC	G1/2"	-	NPN and PNP	5-pin swivel M12 plug	436 501
					Relay	5-pin swivel M12 plug and cable plug EN 175301-803*	436 503
				4-20 mA[1)]	4-20 mA[2)] + Relay	8-pin M12 plug and cable plug EN 175301-803*	444 696
			NPT1/2"	-	NPN and PNP	5-pin swivel M12 plug	436 507
					Relay	5-pin swivel M12 plug and cable plug EN 175301-803*	436 509
				4-20 mA[1)]	4-20 mA[2)] + Relay	8-pin M12 plug and cable plug EN 175301-803*	444 698
			Rc 1/2"	-	NPN and PNP	5-pin swivel M12 plug	436 504
					Relay	5-pin swivel M12 plug and cable plug EN 175301-803*	436 506
				4-20 mA[1)]	4-20 mA[2)] + Relay	8-pin M12 plug and cable plug EN 175301-803*	444 697
Extended, compact	100 mm - ø 6 mm	12-30 V DC	G1/2"	-	Relay	5-pin swivel M12 plug and cable plug EN 175301-803*	550 053
					4-20 mA[2)] + Relay	8-pin M12 plug and cable plug EN 175301-803*	550 055
	200 mm - ø 6 mm	12-30 V DC	G1/2"	-	Relay	5-pin swivel M12 plug and cable plug EN 175301-803*	550 054
					4-20 mA[2)] + Relay	8-pin M12 plug and cable plug EN 175301-803*	550 056
Wall-mounted	-	12-30 V DC	-	3-wired Pt100	NPN and PNP	5-pin swivel M12 male and 4-pin M12 female	448 862

1) Ext. Setpoint 2) Process value *) EN 175301-803 Europe /Asia (G / Rc) : M16 x 1.5mm cable plug
USA/ CDN (NPT): NPT 1/2 cable plug

The adaptation of the 8400 will be done through the external thread or also with a compression fitting (no part of delivery). This allows variable mounting in bigger pipe diameters or tanks.

Ordering chart for accessories (to be ordered separately)

Description	Item no.
5-pin M12 female cable connector with plastic threaded locking ring	917 116
5-pin M12 female connector moulded on cable (2 m, shielded)	438 680
4-pin M12 male cable connector with plastic threaded locking ring	448 856
4-pin M12 male connector moulded on cable (2 m, shielded)	448 857
8-pin M12 female cable connector with plastic threaded locking ring	444 799
8-pin M12 female connector moulded on cable (2 m, shielded)	444 800
Cable plug EN 175301-803 with cable gland (Type 2508)	438 811
Cable plug EN 175301-803 with NPT1/2" reduction without cable gland (Type 2509)	162 673

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