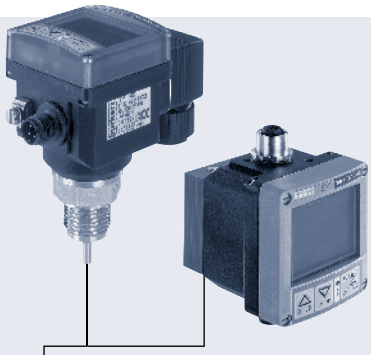
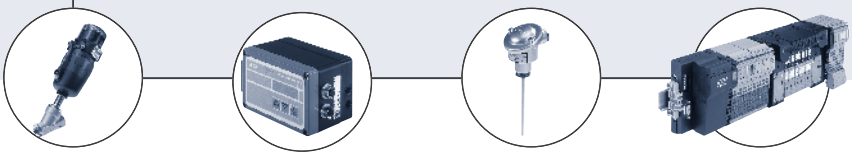
Screw–in Temperature Sensor/Switch with display for ON/OFF Control



- Indication, monitoring, transmission and ON/OFF control in one device
- Extra–large display
- Menu–guided parametrisation
- Complete communication due to external setpoint, process value or AS–Interface

Type 8400 can be combined with…



Type 2000 (8630)
Continuous TopControl

Type 1067
Continuous SideControl

Type ST20
Pt100

Type 8644-P AirLINE
Valve Island with Electronic I/O

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 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 additionnally be transmitted to the PLC (4 - 20 mA). The connection of the 8400 to the process in the piping is made using standard fittings.

Fitting and sensor data	
Measuring range	
Compact version	-40°F up to 257°F (with ambient temperature between 32°F and 104°F) -40°F up to 194°F (with ambient temperature above 104°F)
Wall version	-40°F up to +257°F
Fitting	T-Fitting (with internal thread for mounting Type 8400)
Sensor element	Pt100
Screw-in thread	NPT, G, Rc 1/2"
Materials wetted parts	
Sensor element	Stainless steel
Seal	FKM

Medium data	
Medium temperature	257°F max.
Fluid pressure max.	230 PSI

Electronic module data	
Switching accuracy	±0.5°F (32°F to 176°F) ±1.5°F (outside of 32°F to 176°F)
Repeatability	0.4%
Voltage supply	12-30 VDC
Reversed polarity of DC	Protected
Outputs	
Compact version	
Transistor (programmable)	NPN and PNP, open collector, 5 up to 30 VDC, 700 mA max., protected against short circuits
Relay (programmable)	3A/250 VAC or 3A/30 VDC 3A/48 VAC or 3A/30 VDC[1]
Process value (option)	4-20 mA, galvanic insulation Loop resistance: 1100 Ω at 32 V, 800 Ω at 24 V, 500 Ω at 18 V
Wall version	NPN and PNP, 700mA, 30 VDC max.

Electronic module data (continued)	
Input external setpoint	4-20 mA, galvanic insulation
Compact version	max. input impedance: 250 Ω
AS-interface	Fieldbus
Current consumption	
Compact version	Max. 80 mA (no load)
Wall version	Max. 50 mA (no load)
Response time (10...90%)	7s (for one step increment from 32°F to 212°F)
Materials	
Housing	PC with +20% glass-fibre
Front panel folio	Polyester
Wall-mounted holder	PVC
Electrical connections	
Cable plug	EN 175301-803
Multipin	5 pin M12 / 4 pin M12 / 8 pin M12

General data	
Ambient temperature	-4°F up to 140°F
Relative humidity	≤ 80% non condensated
Voltage supply cable	
Cross-section	0.14 up to 0.5 mm²
Recommended length	Max. 100 m shielded
Max. cable impedance (Wall)	5 Ω
Protection class	IP65 with connectors plugged-in
Standards	
EMC	EN 50081-1, 50082-2
Security	EN 61010-2
Vibration	EN 68-2-6
Shock	EN 68-2-27

[1] Valid for: external setpoint input, Process value output and AS-Interface

DTS 1000082480 EN Version: - Status: RL (released | freigegeben | validé) printed: 30.06.2006

bürkert
Fluid Control Systems

Main features

Display

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

Bargraph

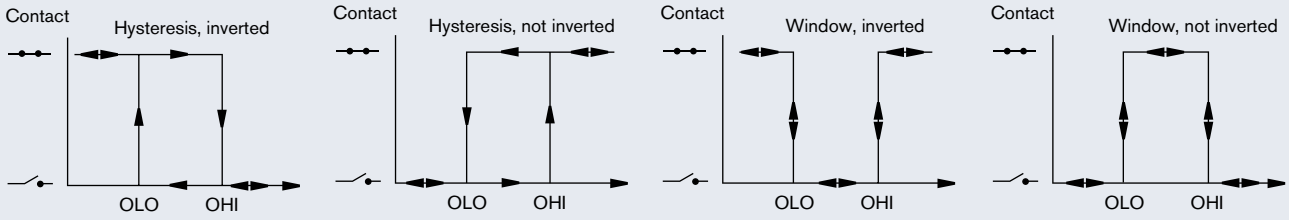
3 keys to go through the menus and program the device

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 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

8400 with external setpoint option

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)

DTS 1000082480 EN Version: - Status: RL (released | freigegeben | validé) printed: 30.06.2006

Design

The 8400 Temperature sensor is proposed in two versions:

A compact version, available in several variants.

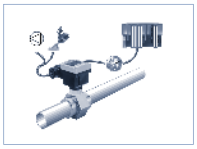
- The 8400 Standard has a Pt100 with a 29.5 mm mounting length.

- 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.

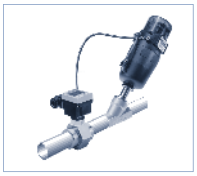
A wall-mounted version:

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

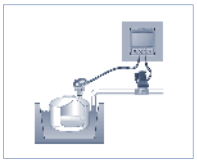
Typical application example



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



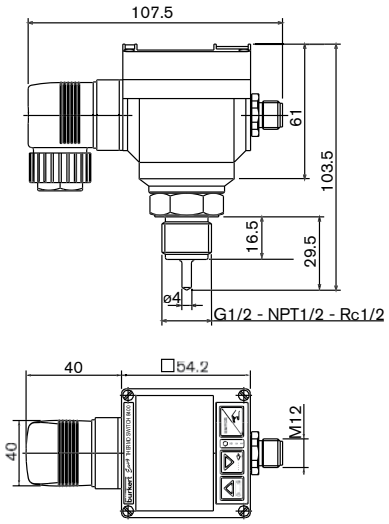
Continuous temperature control in a running process



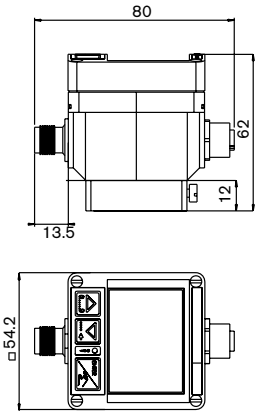
On/Off temperature control of liquid processing in a programmable narrow band (remote control)

Dimensions [mm]

8400 Standard



8400 Wall



DTS 1000082480 EN Version: - Status: RL (released | freigegeben | validé) printed: 30.06.2006

"All–In–One" Temperature Transmitter/Switch for Easy ON/OFF Control

8400 Transmitter/Switch with welded RTD and 1/2" NPT connection ordering chart

Voltage supply	Input Signal	Output Signal	Probe Length	Item No. *
12–30 VDC	---	NPN	1/2"	US08579
12–30 VDC	---	PNP	1/2"	US08578
12–30 VDC	---	NPN and PNP	1/2"	US08577
12–30 VDC	---	Relay	1/2"	US08576
12–30 VDC	4–20 mA [1]	Relay	1/2"	US08575
AS–i Bus	AS–i	AS–i + Relay	1/2"	US08574
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	1/2"	US08573

[1] Ext. set point [2] Process value *Cable and plugs included with part number

8400 Transmitter/Switch with welded RTD and 1/2" NPT connection ordering chart

Voltage supply	Input Signal	Output Signal	Probe Length	Item No. *
12–30 VDC	---	Relay	1"	US08454
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	1"	US08434
12–30 VDC	---	Relay	2"	US08453
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2"	US08433
12–30 VDC	---	Relay	2–1/2"	US08452
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2–1/2"	US08432
12–30 VDC	---	Relay	3"	US08451
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	3"	US08431
12–30 VDC	---	Relay	4"	US08450
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	4"	US08430

[1] Ext. set point [2] Process value *Cable and plugs included with part number

8400 Transmitter/Switch with spring loaded RTD, thermowell and 1/2" NPT connection ordering chart

Voltage supply	Input Signal	Output Signal	Probe Length	Item No. *
12–30 VDC	---	Relay	1"	US08449
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	1"	US08429
12–30 VDC	---	Relay	2"	US08448
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2"	US08428
12–30 VDC	---	Relay	2–1/2"	US08447
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2–1/2"	US08427
12–30 VDC	---	Relay	3"	US08446
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	3"	US08426
12–30 VDC	---	Relay	4"	US08445
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	4"	US08425

[1] Ext. set point [2] Process value *Cable and plugs included with part number

8400 Transmitter/Switch with RTD and 1–1/2" Tri-Clamp® connection ordering chart

Voltage supply	Input Signal	Output Signal	Probe Length	Item No. *
12–30 VDC	---	Relay	1"	US08464
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	1"	US08444
12–30 VDC	---	Relay	2"	US08463
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2"	US08443
12–30 VDC	---	Relay	2–1/2"	US08462
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2–1/2"	US08442
12–30 VDC	---	Relay	3"	US08461
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	3"	US08441
12–30 VDC	---	Relay	4"	US08460
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	4"	US08440

[1] Ext. set point [2] Process value *Cable and plugs included with part number

DTS 1000082480 EN Version: - Status: RL (released | freigegeben | validé) printed: 30.06.2006

"All–In–One" Temperature Transmitter/Switch for Easy ON/OFF Control

8400 Transmitter/Switch with welded RTD and 2" Tri-Clamp® connection ordering chart

Voltage supply	Input Signal	Output Signal	Probe Length	Item No. *
12–30 VDC	–––	Relay	1"	US08459
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	1"	US08439
12–30 VDC	–––	Relay	2"	US08458
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2"	US08438
12–30 VDC	–––	Relay	2–1/2"	US08457
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	2–1/2"	US08437
12–30 VDC	–––	Relay	3"	US08456
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	3"	US08436
12–30 VDC	–––	Relay	4"	US08455
12–30 VDC	4–20 mA [1]	4–20 mA [2] + Relay	4"	US08435

[1] Ext. set point [2] Process value *Cable and plugs included with part number

8400 Wall Mount [3] Sensor ordering chart

Voltage supply	Input	Output	Connector	Item No. *
12–30 VDC	3–wire Pt100	Transistor	M12 male 4 pin and M12 female 5 pin	US07553

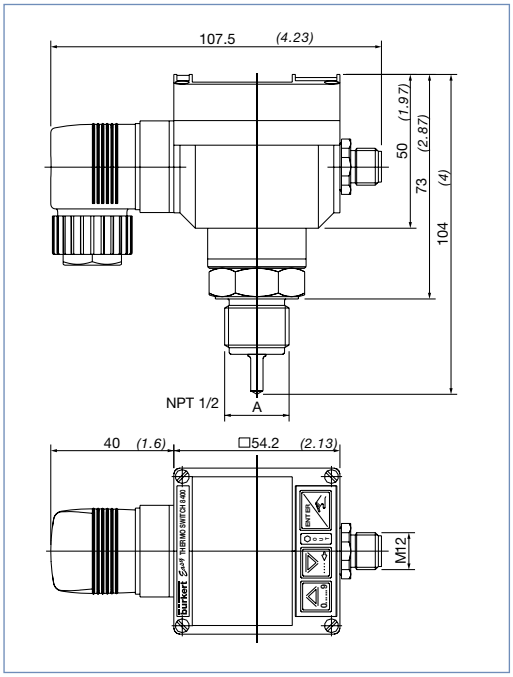
[3] Without Pt100

Accessory for ON/OFF Temperature Control System 8400

M12 female cable connector with plastic threaded locking ring	917 116 D
5 pin M12 female connector molded on cable (2m, shielded)	438 680 F
4 pin M12 male cable connector with plastic threaded locking ring	448 856 D
4 pin M12 male connector molded on cable (2m, shielded)	448 857 E
8 pin M12 female connector molded on cable (2m)	444 800 E
2 pin M12 female coupler module for ribbon cable (AS–interface versions only)	440 653 M
S005 INLINE fittings with adapter plate for 8400	see datasheet Type S005
S001 fitting brass, stainless steel for 8400	see datasheet Type S001

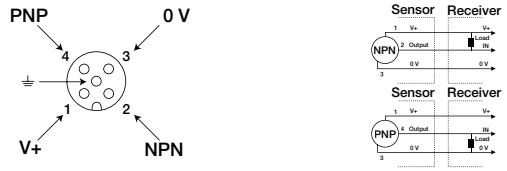
DTS 1000082480 EN Version: - Status: RL (released | freigegeben | validé) printed: 30.06.2006

Dimensions [mm] / *[inch]*

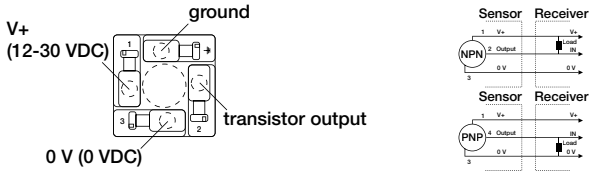


Electrical Connections

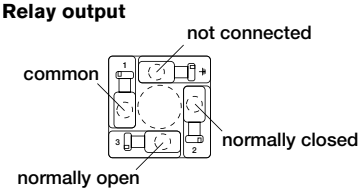
Transistor version NPN/PNP



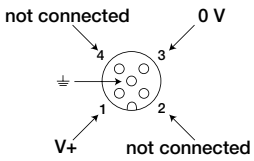
Transistor version NPN or PNP with cable plug 2508



Relay version
Relay output



Power supply



Relay version with external set point and process valve