

# Control valve with TOP Control Continuous

GB



**bürkert**  
Fluid Control Systems

## GENERAL INFORMATION

Described in these instructions by way of example, is the commissioning of a single-acting control valve without field bus communication.

You will find the detailed description of the device in the operating instructions for the TOP Control Continuous Type 8630 also in the operating instructions for the process valves on the supplied CD.

## Safety instructions



- Comply with the generally recognised rules of practice for the application planning and operation of the device!
- Installation and maintenance work is only to be carried out by suitably trained tradesmen using appropriate tools and equipment!
- Comply with the applicable accident prevention and safety regulations for electrical equipment during operation and maintenance work on the device!
- Always switch off the voltage supply prior to any interventions to the system!
- Remember that pipelines and valves in systems which are under pressure must not be opened!
- Take appropriate steps to rule out inadvertent actuation or unacceptable maltreatment!
- Guarantee a defined and controlled system restart following an interruption to the electrical or pneumatic supply!

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## GENERAL INFORMATION

### Safety instructions



**ATTENTION EXERCISE CAUTION WHEN  
HANDLING!  
ELECTROSTATICALLY ENDANGERED  
COMPONENTS / ASSEMBLIES**

The device contains electronic components which react sensitively to an electrostatic discharge (ESD). Contact with electrostatically charged persons or objects will damage these components. In the worst case they are immediately destroyed or will fail after commissioning.

Comply with the requirements according to EN 100 015 – 1 in order to minimise or eliminate the possibility of damage through an abrupt electrostatic discharge. Take care also not to touch electronic components when the supply voltage is applied.

### Use for the intended purpose



Comply with the directions in these instructions, also the operating conditions and permissible data according to Datasheet Type 8630, to ensure that the device functions correctly and remains serviceable throughout its life. In the event of non-compliance with these instructions, also of impermissible interventions to the device, we waive all liability and the guarantee for the device and all accessory parts is cancelled! The device is intended exclusively for use as a positioning and process control system. Any different use or use going beyond this is considered **improper use**. Bürkert is not liable for damage resulting from such use. The risk is carried solely by the user.

## TECHNICAL DATA

### Technical data / possible extensions

#### Operating conditions

Ambient temperature	0 ... +50°C
Degree of protection	IP 65 according to EN 60529

#### Electrical data

Voltage supply	24 V DC $\pm$ 10 %
Safety class	3 according to VDE 0580

#### Pneumatic data

Control medium	Quality classes to DIN ISO 8573-1
- Dust content	max. particle size 40 $\mu$ m max. particle density 10 mg/m <sup>3</sup>
- Water content	max. pressure dew point -20°C
- Oil content	max. 25mg/m <sup>3</sup>
Temperature range of compressed air	-10 ... +50°C
Pressure range	3 ... 7 bar
Fluctuation of supply pressure	max. $\pm$ 10 % during operation

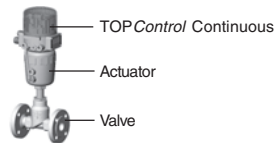
### Possible extensions

- Analogue position check-back signal
- Inductive proximity switch
- Binary input / output
- Bus communication
- Software additional functions

We reserve the right to make technical changes without notice.

## CONSTRUCTION AND FUNCTIONS

### Overview



According to the operating conditions, different process valves from the Bürkert programme can be combined with the TOPControl Continuous. Suitable alternatives are slanted and straight seat control valves, diaphragm or ball valves.

### Functions

#### Position controller

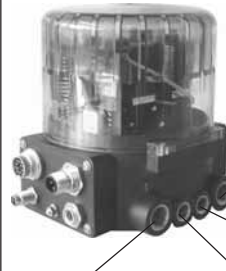
The position of the drive (stroke) is controlled corresponding to the position set-point. The position set-point can be predetermined by an external standard signal.

#### Process controller (option)

The TOPControl Continuous is combined in a control loop. The stroke of the valve is calculated from the process set-point and the process actual value via the control parameters (PID controller). The process set-point can be predetermined by an external signal.

## FLUID CONNECTION

### Control air connection



The fixing screw (connection between TopControl and process valve) may only be tightened with a maximum torque of 1.2 Nm.

Connector 2.1: (mounted ex-works)

- a) Action power-off closed (NC):  
Actuator: Bottom connector  
b) Action power-off open (NO):  
Actuator: Top connector

### Installing the valve

- Installation attitude optional; preferably as above.
- Take note of the flow direction; generally applicable for control valves: Free-stream under seat!
- Make sure pipelines are free of all dirt and contamination!
- Make sure the pipelines are aligned before connecting the valve housing.
- In the case of welded housings, be sure to remove the drive before welding in the housing.

## ELECTRICAL CONNECTION

### Connections

#### 2 possibilities

- Multipole connection
- Heavy-gauge threaded union

#### Signal values

- Supply voltage: 24 V DC
- Set-point (process/position controller): 0 ... 20 mA; 4 ... 20 mA  
0 ... 5 V; 0 ... 10 V
- Actual value (process controller only): 4 ... 20 mA;  
frequency; PT100

#### \* Process actual value (option process controller)

Only the possibility of signal value 4...20 mA is represented in these instructions.

For connecting other kinds of signal: see *Operating instructions for TOP Control Continuous*.

## ELECTRICAL CONNECTION

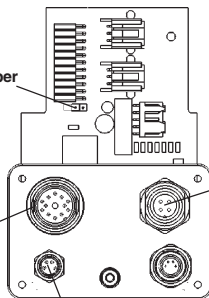
### Multipole connection

#### Connector plug M16 (Set-point)

Pin A  
Ground (-)  
Pin B  
0 ... 20 mA  
4 ... 20 mA  
0 ... 5 V  
0 ... 10 V



Jumper



#### Connector plug M12 (Supply)

Pin 1  
+ 24 V  
Pin 3  
Ground (-)



#### Connector plug M8 (Process actual value)\*

4 ... 20 mA internally supplied  
(jumper in place)

PIN 1 24 V input transmitter  
PIN 2 output transmitter  
PIN 3 GND  
PIN 4 jumper to GND

4 ... 20 mA externally supplied  
(jumper not in place)

PIN 1 not assigned  
PIN 2 process actual +  
PIN 3 not assigned  
PIN 4 process actual -

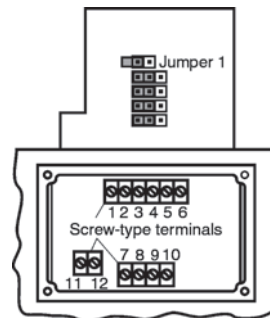


## ELECTRICAL CONNECTION

### Heavy-gauge threaded union

#### Terminal

- |   |                     |                             |
|---|---------------------|-----------------------------|
| 1 | Set-point +         | 0/4 ... 20 mA; 0 ... 5/10 V |
| 2 | Set-point -         | GND                         |
| 5 | Operating voltage + | 24 V DC                     |
| 6 | Operating voltage - | GND                         |



#### Process actual value \*

4 ... 20 mA internally supplied  
(jumper 1 in place)

#### Terminal

- |    |                        |
|----|------------------------|
| 7  | 24 V input transmitter |
| 8  | Output transmitter     |
| 9  | Jumper to GND          |
| 10 | GND                    |

4 ... 20 mA externally supplied  
(jumper 1 not in place)

#### Terminal

- |    |                  |
|----|------------------|
| 7  | not assigned     |
| 8  | Process actual + |
| 9  | Process actual - |
| 10 | not assigned     |

## BRANCHES

### Contact addresses / Kontaktadressen

#### Germany / Deutschland / Allemagne

Bürkert Fluid Control System

Sales Centre

Chr.-Bürkert-Str. 13-17

D-74653 Ingelfingen

Tel. + 49 (0) 7940 - 10 91 111

Fax + 49 (0) 7940 - 10 91 448

E-mail: [info@de.buerkert.com](mailto:info@de.buerkert.com)

#### International

Contact addresses can be found on the internet at:

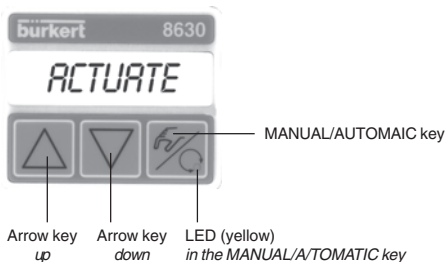
Die Kontaktadressen finden Sie im Internet unter:

Les adresses se trouvent sur internet sous :

[www.burkert.com/Bürkert/Company/Locations](http://www.burkert.com/Bürkert/Company/Locations)

## OPERATING

### Display and keyboard



#### Arrow key up

- Scrolling within a level
- Changing parameters

#### Arrow key down

- Scrolling within a level
- Changing parameters

#### MANUAL/AUTOMATIC key

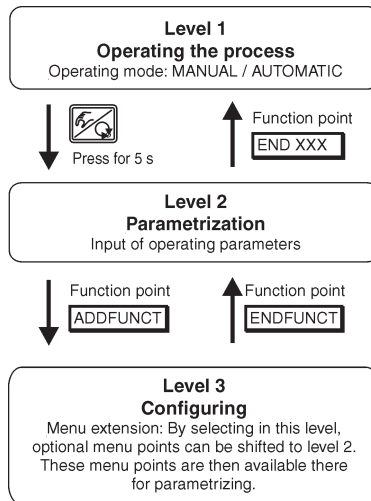
- Level 1: Changing over between manual and automatic mode
- Level 2: Confirming a parameter (*RETURN*)
- Level 3: Selecting a menu point (see also *Menu structure*)

#### LED (yellow)

- Indication of operating mode
- AUTOMATIC LED flashes
- MANUAL LED off



## SETTINGS ON COMMISSIONING

### Menu structure



## SETTINGS ON COMMISSIONING

### Indications in AUTOMATIC mode (level 1)

Display / Indication		
Position controller	 	Process controller
POS: Actual position valve		PV: Process actual value
CMD: Set position valve		SP: Process set-point
INP: Input signal for set position		POS: Actual position of valve
Temp: Device internal temperature		CMD: Set position of valve
		Temp: Device internal temperature

Inverted comma moves from left to right.

### Changing to configuration mode (Level 2)

Keep  key pressed for 5 seconds.

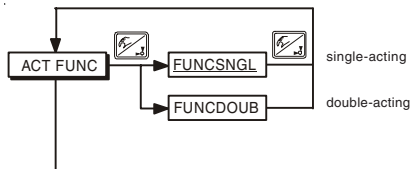
## SETTINGS ON COMMISSIONING

### Setting the type of action of the servo drive

Select the function *ACT FUNC* with the  key.

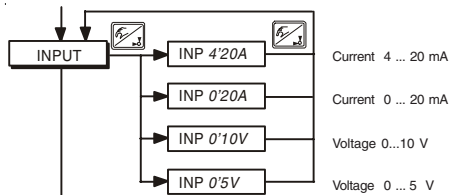
Select *FUNCSNGL* for a drive with spring return. Select *FUNCDOUB* for a double-acting drive.

The type of action is shown on the rating plate.



### Input of the type of signal for external set-point preselection

Set the function *INPUT* with the  key.

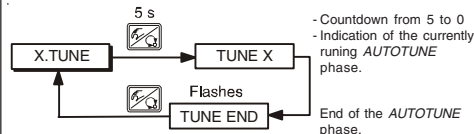


## SETTINGS ON COMMISSIONING


### Starting the AUTOTUNE function

You start *AUTOTUNE*, the program for the automatic parametrizing of the TOPControl Continuous by calling the function *X.TUNE*.



Select the function *X.TUNE* with the  key.



*X.ERR X* - Indication on the occurrence of an error

 No parametrizing of the process controller takes place through the *AUTOTUNE* function.

### Activating the process control (option) - Level 3

Select *ADDFUNC* with the  key, confirm the selection with the  key and access the 3<sup>rd</sup> level.

Select *P.CONTRL* with the  key, confirm the selection with the  key and obtain the function *\*P.CONTRL..*

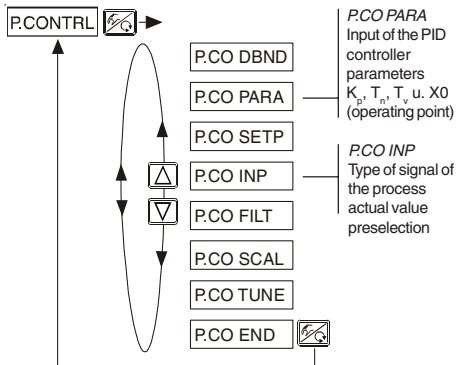
Select *END* with the  key, confirm the selection with the  key.



## SETTINGS ON COMMISSIONING


### Setting up the process control (option) - Level 2

The function *P.CONTROL* has been shifted to the 2<sup>nd</sup> level and can be parametrized there as follows:

Select *P.CONTROL* with the  key.



**COUNT:** Each individual place:  
increment,   
decrement, 

Confirm total value, also each individual place: 

### Exiting the CONFIGURATION MODE


Select the function *END* with the  key.

Confirm the selection with the  key.







Changeover to the operating mode takes place.

## SETTINGS ON COMMISSIONING

### MANUAL or AUTOMATIC mode

In the 1<sup>st</sup> level you can change over between the MANUAL and the AUTOMATIC mode by pressing the .

Operating mode	Yellow LED	Display
AUTOMATIC	flashes	Inverted comma moves from left to right (for further indications see <i>Indications in AUTOMATC-mode</i> )
MANUAL	off	The last indication set in AUMTOMATIC mode is displayed.



Functions		
	MANUAL mode	AUTOMATIC mode
	Opening the valve	The valve regulates according to the set-point preselection.
	Closing the valve	
 	Hold the up key pressed and simultaneously press the down key: Opening in rapid speed	
 	Hold the down key pressed and simultaneously press the up key: Closing in rapid speed	


## SETTINGS ON COMMISSIONING

### Changing the internal set-point (process controller only)

In AUTOMATIC mode:

Press the  key or  key for 3 seconds.

Set the process set-point with the  key or  key.

Confirm the entry with the  key and return to the operating mode.



These and all other software functions are described in detail in the operating instructions for the TOPControl Continuous Type 8630 (on the supplied CD).