



Type 8693 can be combined with...



Type 2301
Globe control valve



Type 2300
Angle-seat control valve



Type 2103
Control diaphragm valve



Type 8045
Flow sensor



Customised adaption

Digital electropneumatic Process Controller for the integrated mounting on process control valves

- Compact stainless steel design
- Graphic display with backlight
- Easy start-up of process controller and positioner
- Comprehensive range of additional software functions
- Internal control air channel
- Profibus DPV1 or DeviceNet (option)

The compact Process Controller Type 8693 is optimised for integrated mounting on the pneumatic actuators in the process valve series Type 23XX/2103 and is specially designed for the requirements of a hygienic process environment.

The actual value of the process factor is directly supplied to the device as 4-20 mA, PT100 or a frequency signal. The process controller calculates the setpoint for the subordinated positioner through the variance comparison. Due to the analogue feedback all analogue values on the controlling level can be transferred.

The parameterization of process controller and positioner can be carried out automatically. The easy handling and the selection of additional software functions are done either on a big graphic display with backlight and keypad or over a PC interface.

The Positioner registers the valve position without deterioration through a contact-free, analog position sensor. The control of single- or double-acting actuators is done without internal air consumption. Communication interfaces such as Profibus DPV1 or DeviceNet and analogue as well as binary feedback can also be chosen.

1) The supply pressure has to be 0,5 - 1 bar above the minimum required pilot pressure for the valve actuator.

Technical data	
Material	Body PPS, stainless steel Cover PC Sealing EPDM
Power supply	24 VDC +/- 10%
Ripple	10%, no technical direct current!
Setpoint setting	0/4 to 20mA and 0 to 5/10 V
Output resistance	0/4 to 20 mA: 180 Ω 0 to 5/10 V: 19 k Ω
Sensor input	4 to 20 mA (180 Ω input resistance) frequency 0 to 1000 Hz (17 kΩ input resistance) PT100 -20 to +220°C (resolution < 0.1°C)
Control medium	Dust concentration Class 5 (< 40µm particle size) Particle density Class 5 (< 10mg/m³) Pressure condensation point Class 3 (< -20°C) Oil concentration Class 5 (< 25mg/m³)
Ambient temperature	0 to +55°C
Pilot air ports	Push-in connector (external ø 6 mm or 1/4") or threaded ports G1/8
Supply pressure	Low air flow rate 0 to 7 bar ¹⁾ High air flow rate 3 to 7 bar
Air input filter	Exchangeable (mesh aperture~0.1mm)
Actuator system	Low air flow rate: ø Actuator 70 / 90 mm High air flow rate: ø Actuator 130 mm
Position detection module	Contact-free, wear-free
Stroke range valve spindle	3 to 28 mm (3 to 45 mm on request)
Installation	as required, preferably with actuator in upright position
Protection class	IP 65/67 according to EN 60529 (NEMA4x in preparation)
Power consumption	< 5 W
Electrical connection	Multipole connection M12, 8-pins or 4-pins Cable gland 2xM16x1,5 (cable-ø10mm) on terminal screws (1,5 mm²)
Bus communication	Profibus DPV1, DeviceNet
Protection class	3 according to VDE 0580
Type of protection	II 3 G nA II B T4 II 3 D tD A22 T135°
Conformity	CE acc. to EMV2004/108/EG
Approval	CSA (in preparation)

Ordering information for TopControl-Control valve systems

A complete TopControl-Control valve system consists of a TopControl Type 8693 and a process valve Type 23XX/2103. The following information is necessary for the selection of a complete control valve:

- **Item no.** of the process controller TopControl **Type 8693** without process valve, see ordering chart on p. 3
- **Item no.** of the selected process valve **Type 23XX/2103** (see separate datasheets, e.g. 2300, 2301 or 2103)

You order two components and receive a complete assembled and certified valve.

When you click on the orange box "More info." below, you will come to our website for the resp. product where you can download the datasheet.

Example of variations of control valves

**8693 Process Controller
TopControl**



Required process valve, example



More info.

2301
Globe Control
Valve



More info.

2300
Angle-Seat
Control Valve



More info.

2103
Control
Diaphragm
Valve

**Complete control valve
with required body and
port connection**



**Valve system
Continuous ELEMENT
Type 8802-GD-J
2301 + 8693**



**Valve system
Continuous ELEMENT
Type 8802-YG-J
2300 + 8693**



**Valve system
Continuous ELEMENT
Type 8802-DF-J
2103 + 8693**

Ordering chart Type 8693 (other versions on request)

Valve function	Communication	Electrical connection	Analogue feedback	Analogue feed-back+ 2 binary outputs	Initiator	Binary input	Pilot air ports	Item no.			
Actuator size ø 70 / 90 mm											
Single-acting	No	Cable gland	No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	176 623			
			4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 141			
			No	No	No	Yes	Threaded ports G1/8	185 201			
	Multipole			No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	176 624		
				4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 144		
				No	Yes	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 145		
				No	No	Yes	Yes	Push-in connector external ø 6 mm or 1/4"	185 140		
				Profibus	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 142
				DeviceNet	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 143
Actuator size ø 130 mm											
Single-acting	No	Cable gland	No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 146			
			4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 149			
			No	No	No	Yes	Threaded ports G1/8	185 147			
	Multipole			No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 148		
				4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 150		
				No	Yes	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 151		
				No	No	Yes	Yes	Push-in connector external ø 6 mm or 1/4"	185 152		
				Profibus	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 153
				DeviceNet	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 154
Actuator size ø 70 / 90 mm											
Double-acting	No	Cable gland	No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 155			
			4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 158			
			No	No	No	Yes	Threaded ports G1/8	185 156			
	Multipole			No	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 157		
				4 - 20 mA	No	No	Yes	Push-in connector external ø 6 mm or 1/4"	185 159		
				No	No	Yes	Yes	Push-in connector external ø 6 mm or 1/4"	185 160		
				Profibus	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 161
				DeviceNet	Multipole	No	No	No	No	Push-in connector external ø 6 mm or 1/4"	185 162

i Further versions on request

 Approvals
CSA

Ordering chart adapter kit (has to be ordered separately)

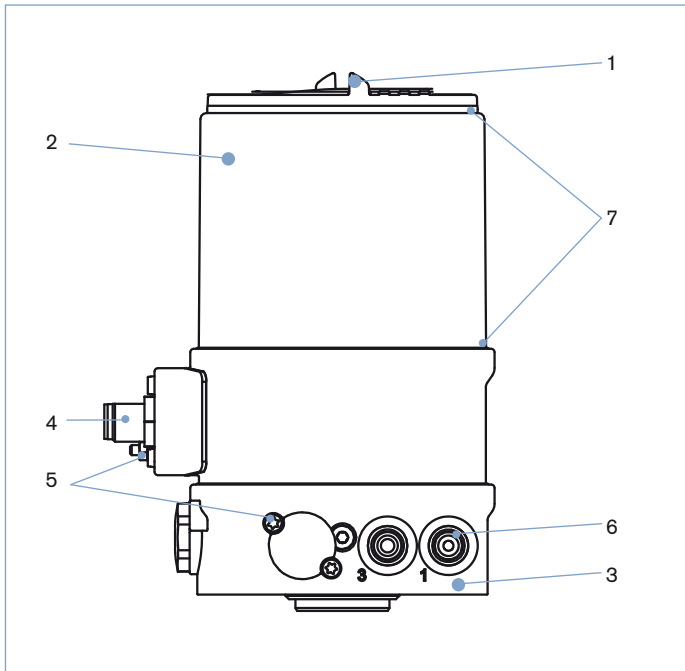
Description	Actuator size	Control function	Item no.
Adapter kit for Type 23xx / 2103	ø 70 / 90 mm	NC / NO / springless (A / B / I)	665 721

Ordering chart accessories

Description	Item no.
M12 socket, 8-pins, 2 m assembled cable	919 061
M12 socket, 4-pins, 5 m assembled cable	918 038
M8 socket, 4-pins, 2 m cable, actual process value	918 718
Silencer G1/8	780 779
Silencer, push-in connector	902 662
M8 plug, 4-pins, initiator	917 131

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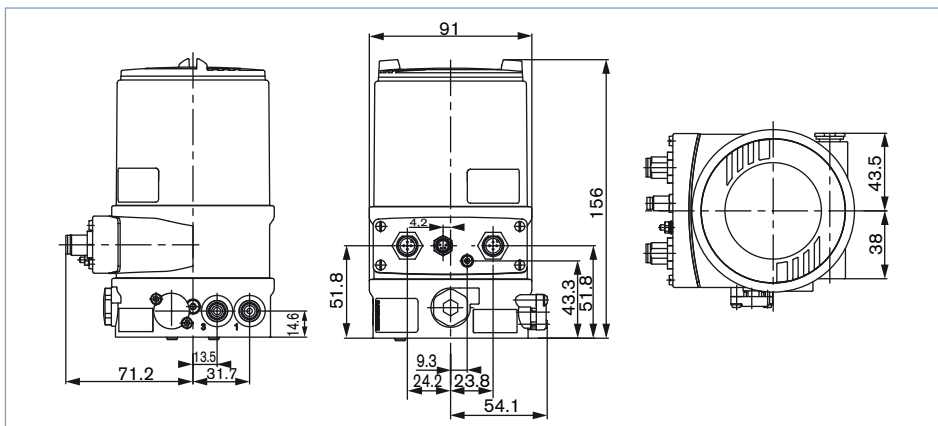
Materials



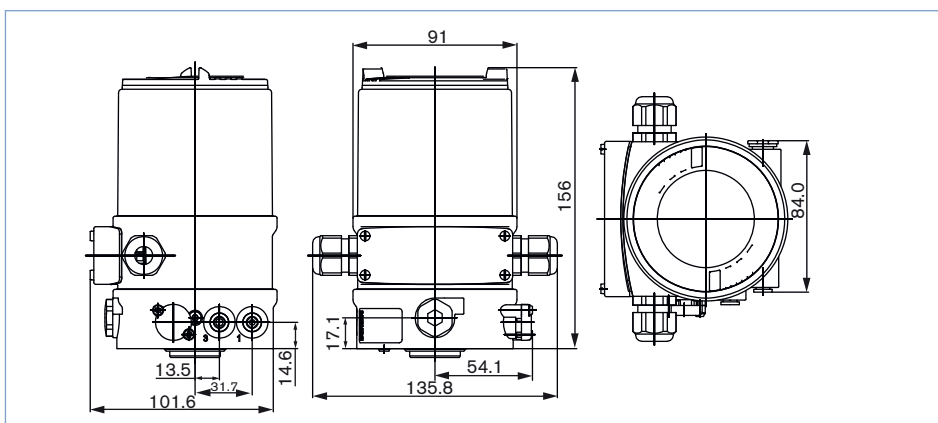
1 Cover	PC
2 Body casing	Stainless steel
3 Basic body	PPS
4 Plug M12	Stainless steel
5 Screws	Stainless steel
6 Push-in connector	POM/stainless steel
Threaded ports G1/8	Stainless steel
7 Sealing	EPDM

Dimensions [mm]

Version connection Multipole



Version connection cable glands



Connection options

Connection Multipole

Circular connector M12 - 8-pins (setpoint)

Pin	Configuration
8	Setpoint + (0/4 - 20 mA / 0 - 5/10 V)
7	Setpoint GND

Circular connector M8 - 4-pins (actual process value)*

Pin	Configuration
6	Analogue feedback +
5	Analogue feedback GND
4	Binary output 1
3	Binary output 2
2	Binary output GND
1	Binary input +

* with the option analogue feedback or binary output

Circular connector M12 - 4-pins (supply)

Pin	Configuration
1	Operating voltages + 24 VDC
3	Operating voltage GND

Circular connector M8 - 4-pins (actual process value)

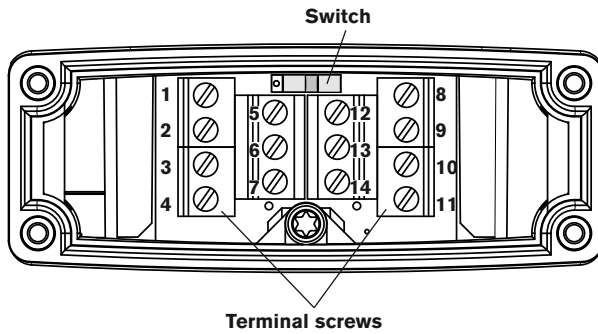
Input type*	Pin	Configuration	Switch
4-20 mA - internally supplied	1	+24 V transmitter supply	Switch on left
	2	Output from transmitter	
	3	GND	
	4	Bridge after GND	
4-20 mA - externally supplied	1	not assigned	Switch on right
	2	Actual value +	
	3	not assigned	
	4	Actual value -	
Frequency - internally supplied	1	+24 V sensor supply	Switch on left
	2	Clock input +	
	3	Clock input - (GND)	
	4	not assigned	
Frequency - externally supplied	1	not assigned	Switch on right
	2	Clock input +	
	3	Clock input -	
	4	not assigned	
Pt 100 (see notes to the right)	1	not assigned	Switch on right
	2	Process actual 1 (current feed)	
	3	Process actual 2 (GND)	
	4	Process actual 3 (compensation)	

* with the option analogue feedback or binary output

IMPORTANT!
For reasons of wire compensation connect the Pt 100 sensor via 3 wires. Always bridge Pin 3 and Pin 4 on the sensor.

Connection options, continued

Connection cable glands



Clamp	Configuration
11	Setpoint + (0/4 - 20 mA / 0 - 5/10 V)
10	Setpoint GND
14	Operating voltages + 24 VDC
13	Operating voltage GND
12	Binary input +
13	Binary input GND
9*	Analogue position feedback +
8*	Analogue position feedback GND
5*	Binary output 1
6*	Binary output GND
7*	Binary output 2

Actual process value

Input type*	Pin	Configuration	Switch
4-20 mA - internally supplied	1	+24 V transmitter supply	 Switch on left
	2	Output from transmitter	
	3	Bridge after GND	
	4	GND	
4-20 mA - externally supplied	1	not assigned	 Switch on right
	2	Process actual +	
	3	Process actual -	
	4	not assigned	
Frequency - internally supplied	1	+24 V sensor supply	 Switch on left
	2	Clock input +	
	3	not assigned	
	4	Clock input - (GND)	
Frequency - externally supplied	1	not assigned	 Switch on right
	2	Clock input +	
	3	not assigned	
	4	Clock input -	
Pt 100 (see note to the right)	1	not assigned	 Switch on right
	2	Process actual 1 (current feed)	
	3	Process actual 2 (compensation)	
	4	Process actual 3 (GND)	

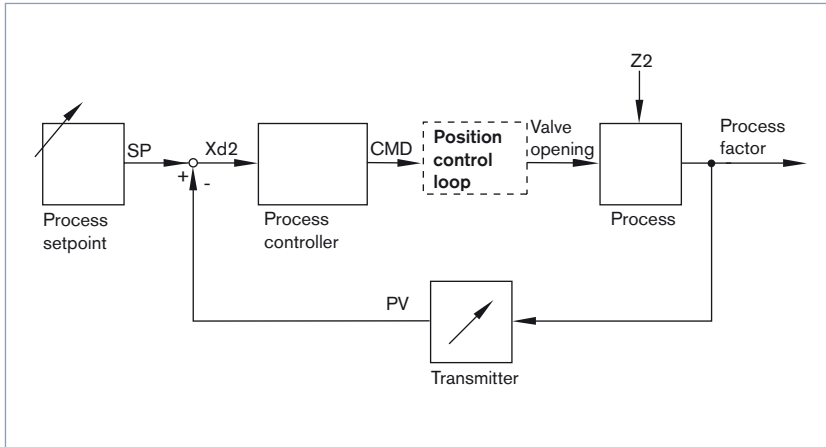
IMPORTANT!

For reasons of wire compensation connect the Pt 100 sensor via 3 wires. Always bridge Pin 3 and Pin 4 on the sensor.

* with the option analogue feedback or binary output

Signal flow diagram

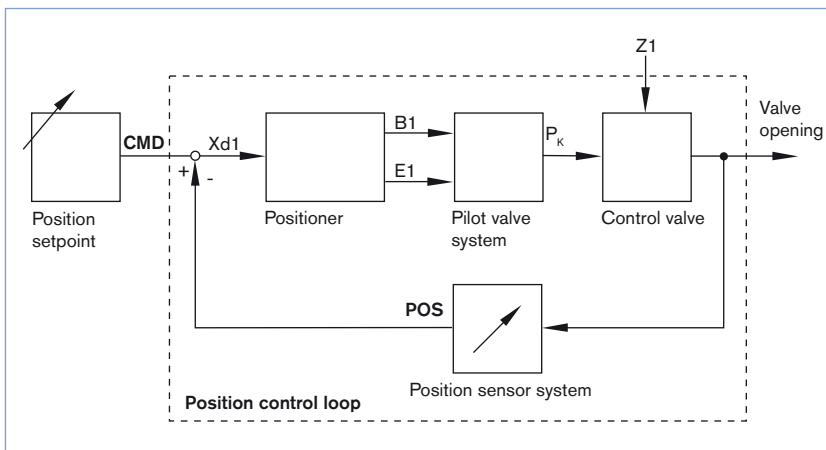
Process control circuit



Additional software functions of the TopControl Type 8693

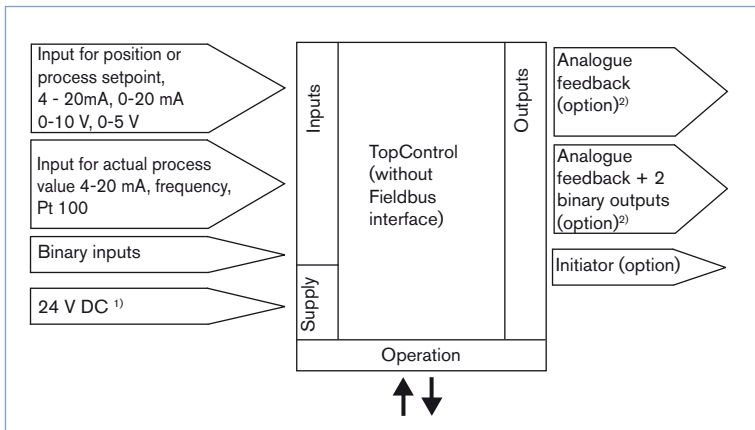
- Automatic start of the control valve systems
- Automatic parameterization of the process control circuit
- Automatic or manual characteristic curves selection
- Setting of the seal and the maximum stroke threshold respectively
- Parameterization of the Positioner
- Manual parameterization of the process controller
- Limitation of the stroke range
- Limitation of the manipulating speed
- Setting of the moving direction
- Configuration of the binary input
- Signal range splitting on several controllers
- Configuration of an analogue or double binary outputs
- Signal fault detection
- Safety position
- Code protection
- Contrast inversion of the display
- Language selection
- Diagnostic functions

Position control loop



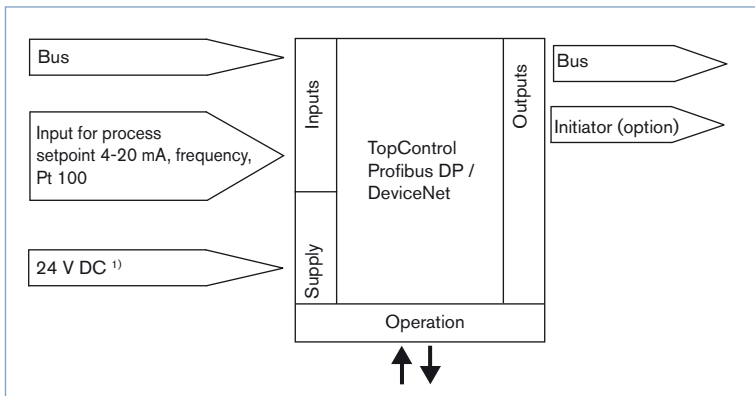
Schematic diagram of the Type 8693

Without fieldbus interface



- 1) The operating voltage is supplied with a 3-wire unit independent from the setpoint signal.
- 2) Alternative options

With Profibus DP / DeviceNet



- 1) The operating voltage is supplied with a 3-wire unit independent from the setpoint signal.

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