

## Control head for decentralized automation of ELEMENT process valves



Type 8691 can be combined with...



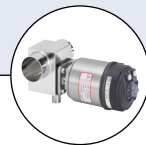
**Type 2100**  
Angle seat valve



**Type 2101**  
Globe valve



**Type 2103**  
Diaphragm valve



**Type 2104**  
T-valve



**Type 2105**  
Bottom valve



**Type 2106**  
Seat valve

- Contact-free inductive valve position registration (Teach function)
- Coloured illuminated status display
- Integrated control air routing
- Fieldbus AS-Interface, DeviceNet, IO-Link or büS (Bürkert System Bus)
- With ATEX II cat. 3G/D / IECEx approval

The control head Type 8691 is designed for decentralized automation of ELEMENT Type 21xx pneumatic process valves. The registration of the valve end position is done through a contact-free analog position sensor, which automatically recognises and saves the valve end position through the Teach function when starting up. The integrated pilot valve controls single or double-acting actuators. As an option a fieldbus interface, AS-Interface, DeviceNet, IO-Link or büS (based on CANopen) can be chosen. The design of the control unit and the actuator enables an internal control air channel without external tubings. Besides the electrical position feedback signal the status of the device is shown directly on the control head itself through coloured powerful LEDs showing a clear visible valve position status, even under dirty or dark environments. The housing is easy to clean and features proven IP protection and chemically resistant materials for use in hygienic processing in food, beverage and pharmaceutical industries. Focused on wash down applications the IP rating is supported by a positive pressure inside the control head. Combined with Bürkert ELEMENT actuators the unique pilot valve system enables a compressed air recycling that avoids actuator chambers contamination from the environment.

Technical data	
<b>Material</b>	Body Cover Sealing
	PPS, stainless steel PC EPDM
<b>Control medium</b>	neutral gases, air, quality classes acc. to ISO 8573-1
Dust concentration	Class 7 (< 40 µm particle size)
Particle density	Class 5 (< 10 mg/m <sup>3</sup> )
Pressure condensation point	Class 3 (< -20 °C)
Oil concentration	Class X (< 25 mg/m <sup>3</sup> )
<b>Supply pressure</b>	3 to 7 bar <sup>1)</sup>
<b>Air input filter</b>	exchangeable
Mesh aperture	~0.1 mm
<b>Pilot air ports</b>	Threaded ports G 1/8, stainless steel
<b>Position feedback</b>	Analogue position sensor (contact-free) with teach function; switchpoint (PNP) (NPN on request)
<b>Stroke range valve spindle</b>	2.5 to 45 mm
<b>Ambient temperature</b>	
with pilot valve	- 10 to +55 °C
without pilot valve	- 20 to +60 °C
<b>Installation</b>	As required, preferably with actuator upright
<b>Protection type</b>	IP65/IP67 acc. to EN 60529, Type 4X acc. to NEMA 250 standard
<b>Protection class</b>	3 acc. to DIN EN 61140
<b>Fieldbus communication</b>	AS-Interface, DeviceNet, IO-Link, büS - Bürkert System Bus (based on CANopen)
<b>Conformity</b>	EMC directive 2014/30/EU
<b>Approvals</b>	
ATEX	⊕ II 3D Ex tc IIIC T135 °C Dc / ⊕ II 3G Ex ec IIC T4 Gc certificate; BVS 14 ATEX E 008 X
IECEx	Ex tc IIIC T135 °C Dc / Ex ec IIC T4 Gc certificate; IECEx BVS 14.0009 X
UL	cULus certificate; E238179
<b>Ignition protection</b>	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc

<sup>1)</sup> The supply pressure has to be 0.5 - 1 bar above the minimum required pilot pressure for the valve actuator.

## Technical data, continued

<b>Electrical connection</b>	
Multipole	M12, 8-pins, M12 4-pins (AS-Interface, IO-Link) M12 5-pins (DeviceNet, bÜS)
Cable gland	M16×1.5 (clamping area 5...10 mm) with screw terminals for cable cross-sections 0.14...1.5 mm <sup>2</sup>

### Without fieldbus communication

<b>Technical data</b>	
<b>Power supply</b>	24 V DC ± 10 % UL: NEC Class 2
<b>Residual ripple with DC</b>	10 %
<b>Power consumption</b>	<2 W
<b>Electrical connection</b>	
Multipole	M12, 8-pins
Cable gland	M16×1.5 (clamping area 5...10 mm) with screw terminals for cable cross-sections 0.14...1.5 mm <sup>2</sup>

### With fieldbus communication; AS-Interface

<b>Technical data</b>	
<b>Profile</b>	S-B.A.E (A/B slave, max. 62 slaves / master) Certificate No. 77601 acc. to specification V3.0 Master class: M3, M4 S-B.F.F (Standard slave, max. 31 slaves / master) Master class: M0, M1, M2, M3, M4
<b>Power supply</b> through bus line separated from bus signal	26.5 to 31.6 V DC, UL: NEC Class 2 according to specification on request
<b>Power consumption</b>	
<b>Units without external power supply</b>	
Max. power consumption	120 mA
Power consumption in normal operation (after current reduction; Valve + 1 end position achieved)	90 mA
<b>Units with external power supply</b>	
External power supply	24 V ± 10 %
The power supply unit must contain one secured disconnection acc. to IEC 364-4-41 (PELV or SELV)	
Max. power consumption	55 mA (after power reduction ≤ 30 mA)
Max. power consumption from ASI	55 mA
<b>Output</b>	
Contact rating	≤ 1 W over AS-Interface
Watch-dog function	integrated
<b>Input</b>	
Sensor operating voltage	24 V ± 10 % (over AS-Interface)
Ampacity	≤ 50 mA short circuit proof
Switching level high	≥ 10 V
Input current high	limited to 6.5 mA
Input current low	≤ 1.5 mA
<b>Electrical connection</b>	M12 4-pins
<b>Programming data</b>	see operating instructions

## Technical data, continued

### With fieldbus communication; DeviceNet

Technical data	
<b>Profile</b>	Group 2 Only Slave Device; MAC-ID and transfer rate adjustable through DIP switch
<b>Power supply</b>	11 to 25 V DC UL: NEC Class 2
<b>Power consumption</b>	≤ 80 mA
<b>Output</b>	
Inrush current	≤ 50 mA
Hold current	≤ 30 mA
<b>Input</b>	
"0"	0 to 1.5 V
"1"	≥ 8 V
<b>Electrical connection</b>	M12-Micro Style - flange connector 5-pins (configuration according DeviceNet specification)

### With fieldbus communication; IO-Link

Technical data IO-Link	
<b>IO-Link Specification</b>	V1.1.2
<b>SIO-Mode</b>	yes, optionally 2xDO (endpositions), or 1xDI+1xDO (valve switch + an end position)
<b>VendorID</b>	0x78
<b>DeviceID</b>	0x0021F301
<b>Transmission rate</b>	230.4 kbit/s
<b>Frame type in operate</b>	TYPE_2_V
<b>Min. cycle time</b>	1 ms
<b>Data storage</b>	yes
<b>Max. cable length</b>	20 m
<b>Port class</b>	A
<b>Electrical connection</b>	M12 × 1, 4 pin
<b>Operating voltage</b>	18 to 30 V DC (acc. to specification)
<b>Power supply</b>	via IO-Link
<b>Max. power consumption</b>	135 mA @ 18 V
<b>Power consumption in normal operation</b> (after current reduction; Valve + 1 end position achieved)	110 mA @ 18 V

**Note:** Download IODD-file from the website [www.buerkert.com](http://www.buerkert.com)

## Technical data, continued

## Function overview of control head Type 8691

Function	Version					
	24 V	IO-Link	AS-Interface Standard-Slave	AS-Interface A/B-Slave	büS/CANopen	Device-Net
<b>Basic functions</b>						
Teach function position sensor	x	x	x	x	x	x
Manual override pilot valve (mechanical)	x	x	x	x	x	x
Manual override pilot valve (electrical)		x			x	
Position feedback valve OPEN/CLOSED	x	x	x	x	x	x
Feedback signal current valve position (intermediate position)		x				
Optical position feedback/status display high-performance LEDs	x	x	x	x	x	x
Inversion of LED colours (colour of optical feedback)	x	x	x	x	x	x
Selection of LED display mode		x			x	
Diagnostic LEDs		x	x	x	x	x
Selection or deactivation of the optical display		x			x	
Date storage function		x				
Locating function		x			x	
büS communication interface (Burkert System Bus)					x	
büS service interface (PC-Tool Bürkert COMMUNICATOR)		x			x	x
<b>Diagnosis</b>						
Process valve switching cycles counter with definable limit value		x			x	
Pilot valve switching cycles counter		x			x	
Operating hours counter with definable limit value		x			x	
Process valve counter for opening/closing timeout		x			x	
Travel accumulator with definable limit value		x			x	
Active diagnostic messages (feedback when limit values are exceeded)		x			x	
Diagnosis reset command (to reset counter values)		x			x	
Error feedback signal position sensor		x	x	x	x	
Self-monitoring control head with automatic error message		x			x	
Feedback Teach error	x	x	x	x	x	x
Feedback overtemperature		x			x	
Feedback communication error		x	x	x	x	x
Feedback for opening/closing timeout		x			x	
Tolerance for switching time overrun		x			x	
Error detection if the setpoint position is not reached (end positions not reached)		x			x	
Tolerance band of end position detection		x				
Detection of undervoltage and overvoltage of the power supply		x			x	
Log function for error cases					x	
<b>Parameterization</b>						
Enable/disable safety position in case of setpoint or bus error		x			x	
Selecting and setting the SIO mode		x				
Selection of digital outputs (end positions) PNP, NPN	x	x				
Selection of digital outputs (end positions) PNP, NPN, PP		x				
Deactivation of local operation (Lock function)		x			x	
Reset function (reset to factory setting)		x			x	

**Ordering information for decentralized automation of On/Off ELEMENT valve systems**

A decentralized, automated valve system consists of **control head Type 8691** and a process valve ELEMENT Type 21xx.

The following information is necessary for the selection of a complete system:

- **Article no.** of the desired control head **Type 8691** (see ordering chart on p. 6)
- **Article no.** of the selected process valve **Type 21xx** (see separate datasheets, Type 2100, 2101, 2103)

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

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 for decentralized automation of On/Off ELEMENT valve systems**

Control head Type 8691

Pneumatic process valves



More info.

Angle seat valve  
Type 2100



More info.

Globe valve  
Type 2101



More info.

Diaphragm valve  
Type 2103



More info.

Third party  
hygienic  
process  
valve  
actuators

Valve system  
On/Off ELEMENT



Valve system  
Type 8801-YE-H  
2100+8691



Valve system  
Type 8801-GC-H  
2101+8691



Valve system  
Type 8801-DF-H  
2103+8691



Customised attachment to  
third party actuators\*

\*please see datasheet Type KK01  
adapter kits for hygienic process  
valves or contact your sales office  
for related drawings or individual  
engineering support

## Ordering chart for control head Type 8691 (other versions on request)

### Control head for decentralized automation of ELEMENT On/Off process valves Type 21xx

Communication	Electrical connection	Control function pilot valve system	Pilot air ports threaded ports	Article no.	
				Standard	ATEX II Cat. 3G/D, IECEx
AS-Interface Slave profile: S-B.A.E (A/B slave, max. 62 slaves)	M12 multipole connector	single-acting	G 1/8	227254	264988
		double-acting	G 1/8	227240	264975
	M12 multipole connector / Flat cable clip / 80 cm cable	single-acting	G 1/8	227258	264990
		double-acting	G 1/8	227244	264977
DeviceNet	M12 multipole connector	single-acting	G 1/8	227255	264989
		double-acting	G 1/8	227241	264976
IO-Link	M12 multipole connector	single-acting	G 1/8	307371	321927
		double-acting	G 1/8	307368	321925
		without	G 1/8	307377	321933
bùS - Bürkert System Bus	M12 multipole connector	single-acting	G 1/8	307375	321931
		double-acting	G 1/8	307373	321929
		without	G 1/8	307379	321935
Without fieldbus communication	M12 multipole connector	single-acting	G 1/8	227262	264992
		double-acting	G 1/8	227248	264979
		without	G 1/8	246211	264972
	Cable gland	single-acting	G 1/8	227260	264991
		double-acting	G 1/8	227246	264978
		without	G 1/8	264943	264971

**Note:** Standard versions are UL approved (UL approval IO-Link and bùS - Bürkert System Bus in preparation)

#### Further versions on request










**Additional**  
bùS/CANopen

### Ordering chart adapter kit (has to be ordered separately)

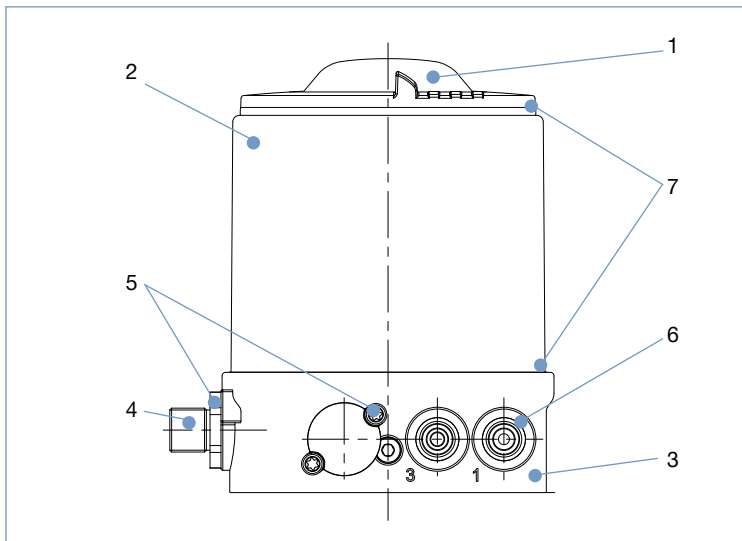
Description	Actuator size	Control function	Article no.
Adapter kit ELEMENT Type 21xx	Ø 70 / 90 / 130 mm	universal	679917

For installation kits to 3rd party process valves please see datasheet [Type KK01](#) adapter kits for hygienic process valves or contact your sales office for related drawings or individual engineering support

## Ordering chart accessories

Description	Article no.
M12 socket 8 pin with 5 m cable for power supply and input/output signals	919267 
ASI flat cable clip with stainless steel socket M12 (spare part)	799646 
USB bÜS-Interface Set (bÜS Stick + connecting cable with M12 connector + connecting cable M12 to micro USB for bÜS service interface) for connecting to the PC tool Bürkert Communicator	772551 
bÜS cable extension M12, length 1 m	772404 
bÜS cable extension M12, length 3 m	772405 
bÜS cable extension M12, length 5 m	772406 
bÜS cable extension M12, length 10 m	772407 
Silencer G 1/8	780779 
Sensor puck (spare part)	682240 
Bürkert Communicator Software	<a href="http://www.burkert.com/en/type/8920">http://www.burkert.com/en/type/8920</a>

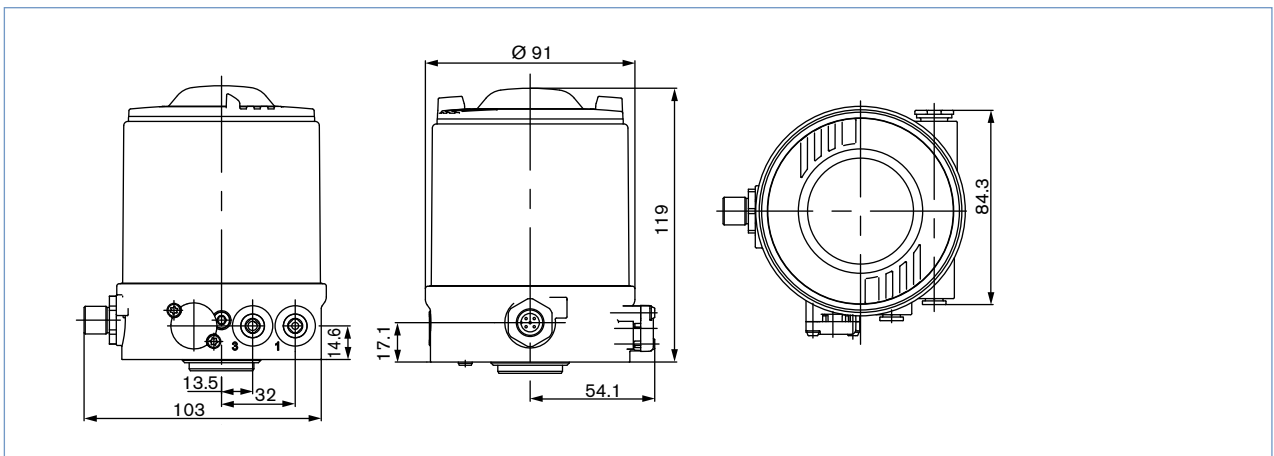
## Materials



<b>1 Cover</b>	PC
<b>2 Housing</b>	Stainless steel
<b>3 BASIC body</b>	PPS
<b>4 Plug M12</b>	Stainless steel
<b>5 Screws</b>	Stainless steel
<b>6 Push-in connector</b>	POM/Stainless steel
<b>Threaded ports G 1/8</b>	Stainless steel
<b>7 Sealing</b>	EPDM

## Dimensions [mm]

### Mounting on process valve ELEMENT Type 21xx





Mounting on 3rd party hygienic process valves

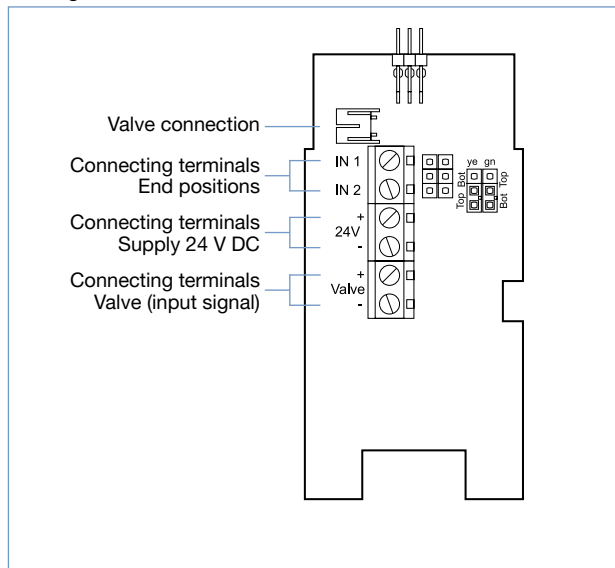


DTS 1000110599 EN Version: U Status: RL (released | freigegeben | validé) printed: 07.09.2018

Connection options

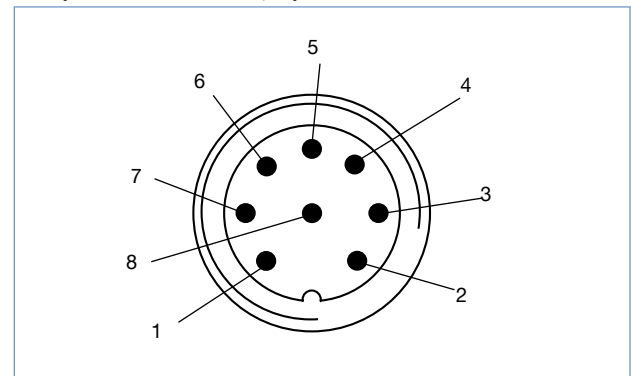
Without fieldbus communication

Cable gland



24 V DC

Multipole connection M12, 8-pins



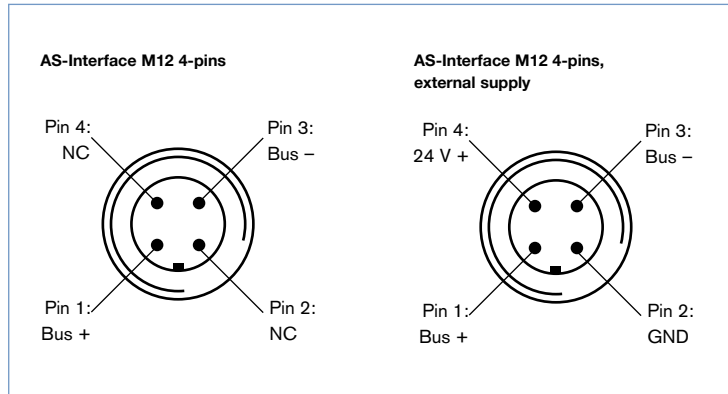
Pin	Description	Configuration
1	Limit switch 1	I <sub>N</sub> 1 / TOP
2	Limit switch 2	I <sub>N</sub> 2 / BOTTOM
3	Power supply	GND
4	Operating voltage +	24 V DC
5	Valve control +	Valve +
6	Valve control -	Valve -
7	n.a.	not assigned
8	n.a.	not assigned

Connection options, continued

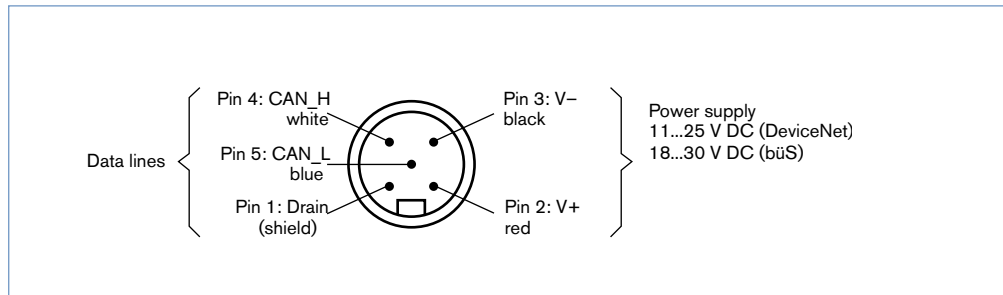
With fieldbus communication AS-Interface

Version with Multipole fitting connector

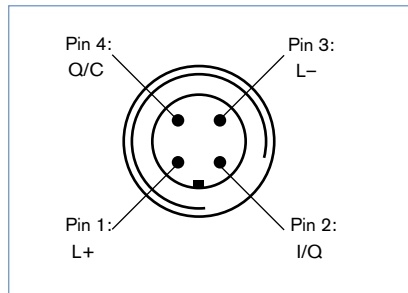
Version with flat cable clip



With fieldbus communication DeviceNet, bÜS - Bürkert System Bus



With fieldbus communication IO-Link



Pin	Description	Assignment	
		IO-Link Mode	SIO-Mode
1	L+	24 V DC	
2	I/Q	not assigned	DI or DO
3	L-	0 V (GND)	
4	Q/C	IO-Link	DI or DO

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In case of special application conditions, please consult for advice.

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1809/16\_EU-en\_00895081

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