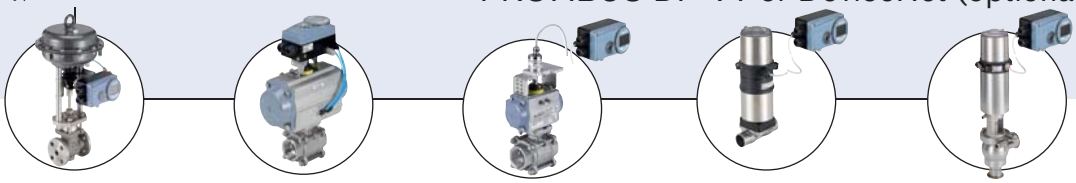
bürkert
FLUID CONTROL SYSTEMS

Digital electropneumatic process controller SideControl

- Compact and robust design
- Easy Start-up using tune function of the positioner and Process controller
- Integrated diagnostic functions for valve monitoring (optional)
- Dynamic positioning system with no air consumption in controlled state
- PROFIBUS DP-V1 or DeviceNet (optional)

Type 8793 can be combined with…



Yoke type actuators | **Rotary actuators** | **Rotary actuators with remote positioner** | **Process control valve with remote positioner** | **Hygienic process control valve with remote positioner**

The robust and compact process controller is designed to standardisation acc. to IEC 60534-6-1 or VDI/VDE 3845 (IEC 60534-6-2) for assembly with linear and rotary actuators. In addition, the remote version can be combined with Bürkert process control valves. The digital electropneumatic SideControl process controller can be operated by the usual current and voltage standard signals and can also be equipped with the fieldbus interface PROFIBUS DP-V1. The actual process value is directly supplied to the device as 4-20 mA, PT100 or as frequency signal. The process controller calculates the position 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 process controller is equipped with additional diagnostic functions to monitor the state of the valve. Through status signals, valve diagnostic messages are transmitted according to NAMUR NE 107 recommendations and recorded as history. With the diagnosis, the operating conditions of the control valve can be monitored. This allows planned maintenance and optimises plant availability.

The easy handling and the selection of additional software functions are done either on a graphic display with backlight and keypad or via PC interface. The user operation is very simple and clear, identical to the Bürkert positioner or process controller TopControl, type 8692/8693.

The pilot valve system can be used equally for single and double acting actuators. It is characterised by a defined safety feature in case of failure of the electrical or power supply and possesses an enormous air capacity range with pressure supply up to 7 bar.

Technical data	
Material: Body Seal	Aluminium plastic-coated EPDM, NBR, FKM
Operating voltages	24 V DC +/- 10%
Residual ripple	max. 10%
Setpoint setting	0/4 to 20 mA and 0 to 5/10 V
Input resistance	0/4 to 20 mA: 180 Ω 0 to 5/10 V: 19 kΩ
Input data for actual value signal Setting 4 - 20 mA Frequency setting Setting Pt 100	 180 Ω Input resistance / Resolution 12 bit 17 kΩ Input resistance, 0 - 1000 Hz / 1‰ o.R.. measuring range, Input signal > 300 mV_{ss} Signal form Sine, rectangle, triangle Measuring range -20 - +220 °C, Resolution < 0.1 °C, M
Analogue feedback	4-20 mA, 0-20 mA 0-10 V, 0-5 V
Binary input	galvanically isolated, 0-5 V = log “0”, 10-30 V = log “1”
Binary Output **Current limit**	2 Outputs (optional), galvanically isolated 100 mA, Output will be synchronised when overloaded
Control medium Dust concentration Particle density Pressure condensation point Oil concentration	neutral gases, air, quality classes acc. to ISO 8573-1 Class 7 (<40 µm particle size) Class 5 (<10 mg/m³) Class 3 (<-20 °C) Class X (<25 mg/m³)
Ambient temperature	-10 to +60 °C (without Ex-Approval) 0 to +60 °C (with ATEX / IECEx-Approval)
Pilot air ports	Threaded port G 1/4
Supply pressure	1.4 to 7 bar [1) 2)]
Air input filter	Exchangeable (aperture size ~0.1 mm)
Pilot valve system Air capacity	Single and double-acting up to 150 l_N/min. 50 l_N/min (with 1.4 bar[2)]) for aeration and ventilation 150 l_N/min (with 6 bar[2)]) for aeration and ventilation (QNn = 100 lN/min (acc. to the definition with decrease in pressure from 7 to 6 bar absolute)

continued on next page

[1)] The supply pressure has to be 0.5-1 bar above the minimum required pilot pressure for the valve actuator
[2)] Pressure specifications: Overpressure with respect to atmospheric pressure

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Technical data, continued

Technical data	
Position detection module	Potentiometer, max. angle 180°
Stroke range valve spindle	Min. 30° on the rotary shaft, independent of lever
Installation	As required, display above or sideways
Type of protection	IP65/IP67 acc. to EN 60529, Type 4X acc. to NEMA 250 standard
Power consumption	< 5 W
Electrical connection	
Multi-pin connection	M12, 8-pin / 4-pin; M8, 4-pin
Cable gland	2x M20x1.5 (cable Ø 6-12 mm) on screw terminals (0.14-1.5 mm²)
Remote Version	1x M12x1.5 (cable Ø 3-6.5 mm)
Bus communication	PROFIBUS DP-V1 or DeviceNet (optional)
Protection class	III acc. to DIN EN 61140
Conformity	EMC directive 2014/30/EU
CSA approval information	
Product category code	Class 3221 82-VALVES - Actuators - Certified to US standards Class 3221 02-VALVES - Actuators
Considered standards	CAN/CSA-C22 2 No. 139 UL 429
CSA trademark	c SP us
Ex-Approval **ATEX**	Ⓔx II 3G Ex ec ic IIC T4 Gc / Ⓔx II 3D Ex tc IIIC T135°C Dc Certificate; BVS 16 ATEX E 118 X
IECEx	Ex ec ic IIC T4 Gc / Ex tc IIIC T135°C Dc Certificate; IECEx BVS 16.0091 X

Technical data - Linear Remote Position Sensor (ELEMENT)	
Electrical connection	
Cable gland	1x M16x1.5 (cable Ø 5-10 mm) on terminal screws (0.14-1.5 mm²)
Connection cable length	10 m
Operating voltage	24 V DC ± 10 %
Power consumption	< 0.3 W
Sensor measurement range	3 to 45 mm (Stroke range valve spindle)
Actual position signal	digital (RS485)
Ambient temperature	-25 to +80 °C
Protection class	III acc. to DIN EN 61140
Type of protection	IP65 and IP67 acc. to EN 60529, Type 4X acc. to NEMA 250 standard
Type of Ignition protection	II 3D Ex tc IIIC T135 °C Dc II 3G Ex nA IIC T4 Gc
Conformity	EMC directive 2014/30/EU
Approvals	cULus Certificate no. 238179

Technical data - rotative Remote Position Sensor (NAMUR)	
Electrical connection	2 m round cable (shielded)
Operating voltage	10 to 30 V DC
Residual ripple	< 0.8 W
Sensor measurement range	0° to 360°
Actual position signal	digital (RS485)
Ambient temperature	-25 to +80 °C
Protection class	III acc. to DIN EN 61140
Type of protection	IP65 acc. to EN 60529
Conformity	EMC directive 2014/30/EU
Approvals	UL (cULus) Certificate no. E226909

Technical data - Position feedback with proximity switches (Accessory)	
Electrical connection	M12, 4-pin
Output function	3-wire, normally open contact, PNP
Operating voltage	10 to 30 V DC
Residual ripple	≤ 10% U_{ss}
DC rated current	≤ 100 mA
Type of protection	IP65 and IP67
Protection class	III acc. to DIN EN 61140
Conformity	EMC directive 2014/30/EU
Approvals	cCSAus

Note: The position feedback has two proximity switches which are independently adjustable via switch lugs.

Using a remote positioner the length of the control air pipes influences the dynamics and attainable accuracy of the position control loop. The length of the control air pipes therefore should be as short as possible.

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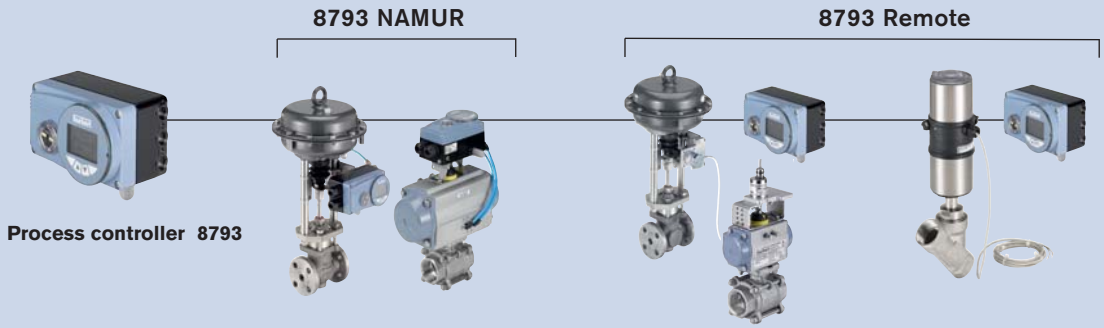
Example for assembly variations of process controller SideControl

Process controller SideControl Type 8793



	Linear actuators IEC 60534-6-1 **Rotary actuators VDI/VDE 3845 (IEC 60534-6-2)** **Type 8805 + Type 8793**	**Linear actuators IEC 60534-6-1** **Rotary actuators VDI/VDE 3845 (IEC 60534-6-2)** Type 8798 Sensor Remote NAMUR + Type 8793 Remote	Control valve system Type 2300 + Type 8798 Remote Position Sensor + Type 8793 Remote

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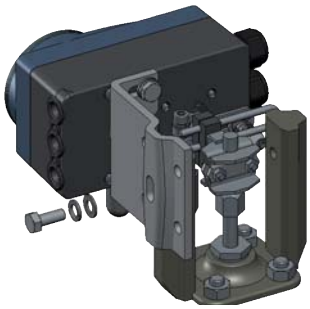
Assembly options

NAMUR Version

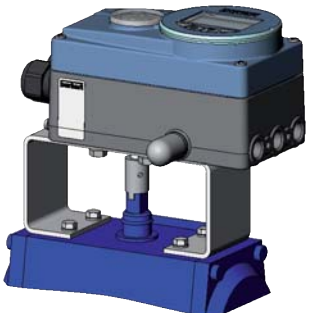
(Positioner with integrated position sensor, assembly acc. to NAMUR/IEC 60534-6-1 and VDI/VDE 3845 (IEC 60534-6-2))

Assembly on linear actuator



Description	Item no.
Adapter kit	787 215

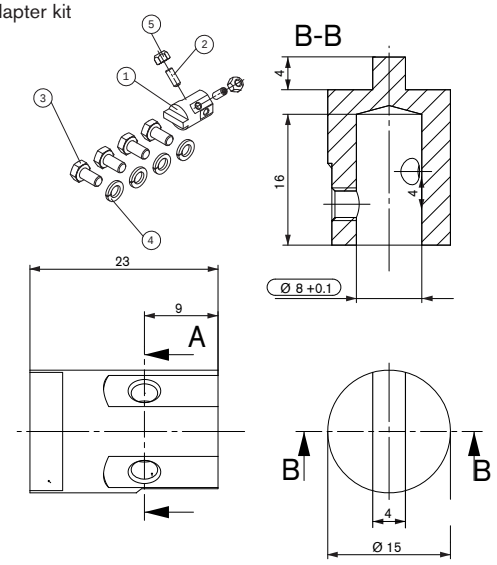
Assembly on rotary actuator



Description	Item no.
Adapter kit	787 338
Assembly bridge	770 294

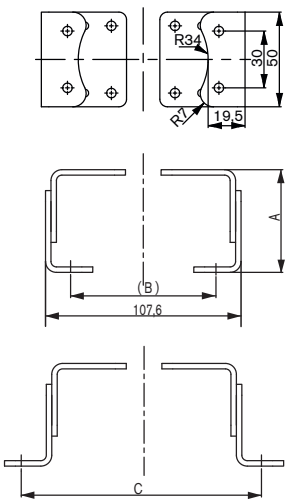
Dimensions [mm]

Adapter kit



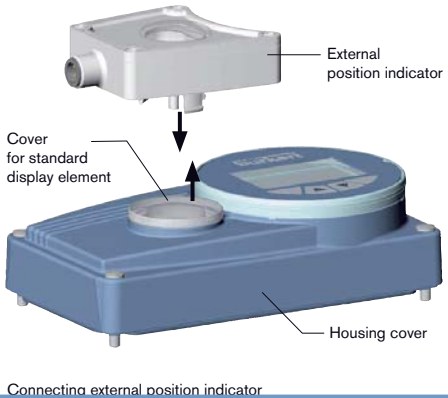
Actuator shaft height	A	B	C
20	46.5	80	-
30	56.5	80	130
50	76.5	-	130

Assembly bridge



Position feedback with proximity switches

(upgrade feature for SideControl NAMUR)



Connecting external position indicator

Description	Item no.
Position feedback	677 218

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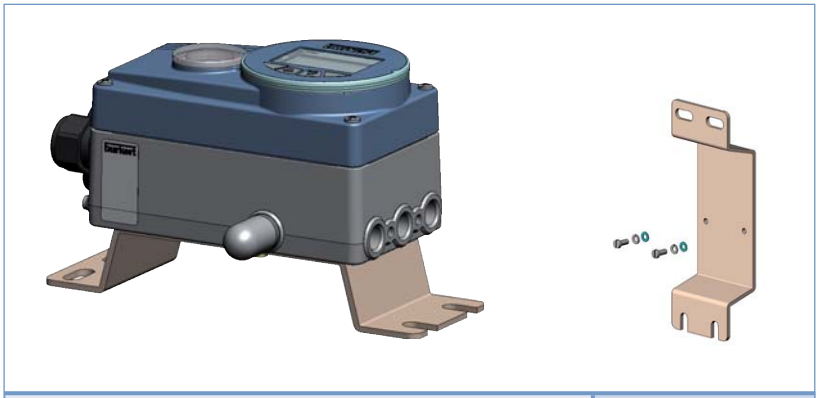
Assembly options *continued*

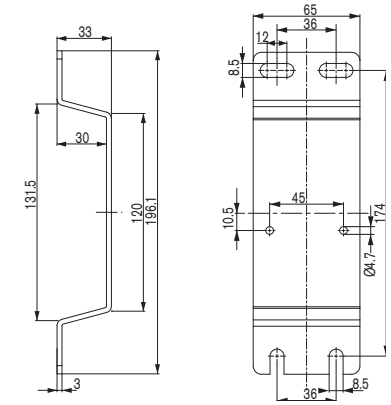
Remote Version
(Displaced positioner with external remote position sensor)

Assembly with accessory brackets

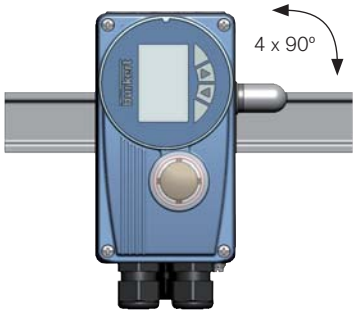


Description	Item no.
Assembly bracket for wall mounting	675 715

Dimensions [mm]



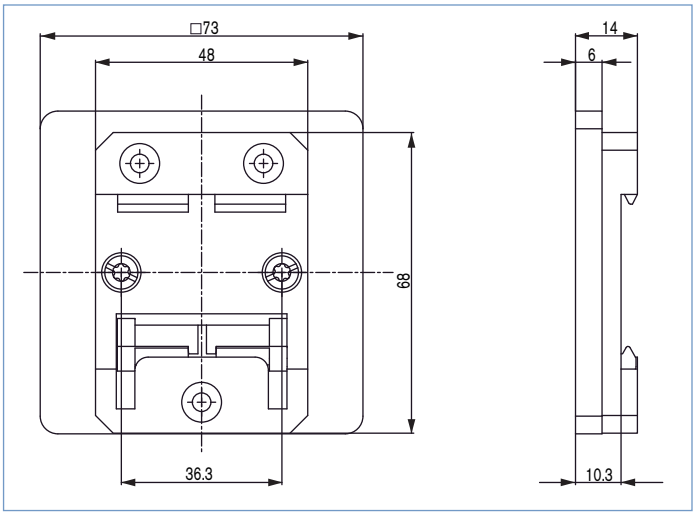
Assembly on DIN-Rail



The adapter can be turned every 90° on the DIN-Rail

Description	Item no.
DIN rail assembly kit	675 702

Dimensions [mm]



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Assembly options *continued*

Remote Version
(Remote position sensor for displaced positioner)

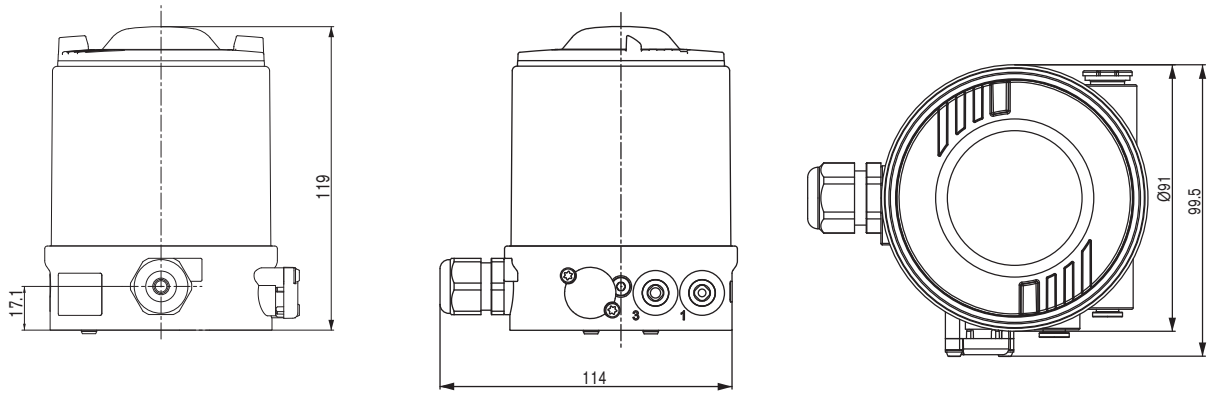
Type 8798

Description	Item no.	
	Standard	ATEX II 3 GD
Remote Position Sensor Control valves ELEMENT Types 23xx	212 360	226 860

Description	Item no.
Remote Position Sensor NAMUR	211 536

Dimensions

For mounting on Control valves ELEMENT Types 23xx



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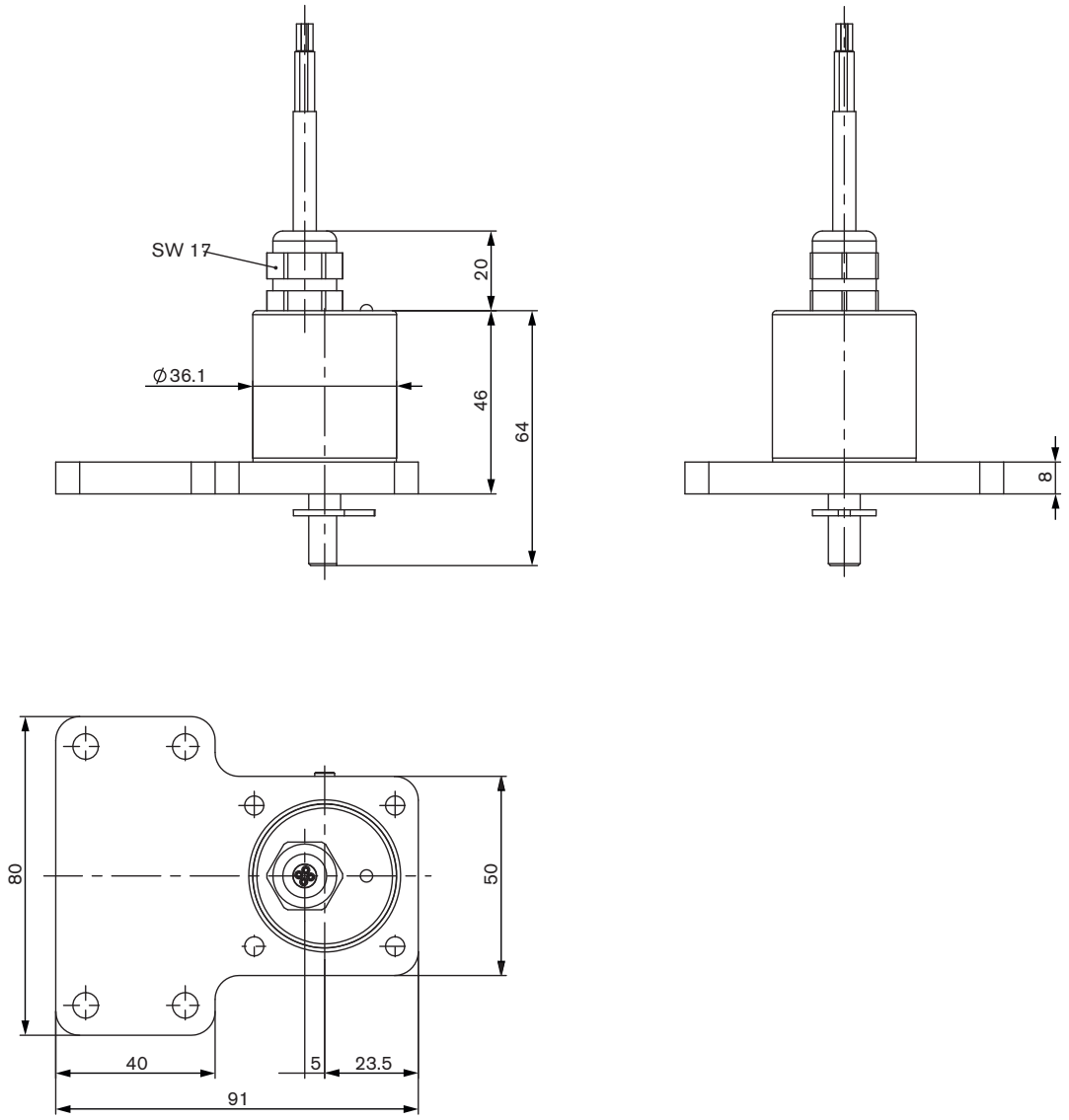
Dimensions

Mounting on control valves according to NAMUR (IEC 60534-6-1 / VDI/VDE 3845 (IEC 60534-6-2))



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Ordering Chart (further version on request)

Process controller with SideControl, Type 8793

Assembly variations	Control function	Pilot valve system/ Air capacity	Communication	Electrical connection	Analogue feedback	2 Binary outputs	Binary input	Diagnostic functions*	ATEX II 3GD / IECEx	Item no.
NAMUR IEC 60534-6-1 VDI/VDE 3845 (IEC 60534-6-2)	single and double acting	universal	no	Cable gland	no	no	yes			206 593
					no	yes	yes	yes		206 595
					yes	yes	yes	yes		206 594
					yes	yes	yes	yes	yes	310 312
					no	yes	yes	yes	yes	310 313
				Multipole	no	no	yes			206 596
					no	yes	yes	yes		206 599
					yes	yes	yes	yes		206 598
			PROFIBUS DP-V1		via Bus	no	yes			206 600
					via Bus	yes	yes	yes		206 601
			DeviceNet		no	no	yes			239 097
					no	yes	yes	yes		239 098

Assembly variations	ELEMENT Actuator size	Control function	Pilot valve system/ Air capacity	Communication	Electrical connection	Analogue feedback	2 Binary outputs	Binary input	Diagnostic functions*	ATEX II 3GD / IECEx	Item no.
Remote	Ø 70/90 mm	single acting	low	no	Cable gland	no	no	yes			226 828
						no	yes	yes	yes		224 873
						yes	yes	yes	yes		224 872
	Ø 130 mm	single and double acting	universal			no	no	yes			206 607
						no	yes	yes	yes		206 609
						yes	yes	yes	yes		206 608
						yes	yes	yes	yes	yes	310 314

Assembly variations	Electrical connection	Item No.	
Remote Position Sensor		**Standard**	**ATEX II 3 GD/ IECEx**
ELEMENT Type 23xx	Cable gland - 10 m round cable	212 360	226 860
NAMUR (rotative)	Cable gland - 2 m round cable (max. extension 10 m)	211 536	–

*see additional software functions parametrisable diagnostic functions on page 15

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Ordering chart for accessories

Description	Item no.
Accessories for SideControl BASIC NAMUR	
Assembly bridge VDI/VDE 3845 (IEC 60534-6-2), stainless steel	770 294
Adapter kit VDI/VDE 3845 (IEC 60534-6-2) stainless steel	787 338
Adapter kit linear actuators IEC 60534-6-1 stainless steel	787 215
Position feedback with proximity switches (optional upgrade feature) [3)]	677 218

Accessories for SideControl BASIC Remote	
Bracket for wall mounting, stainless steel	675 715
DIN rail assembly kit Aluminium/stainless steel	675 702
Adapter kit - remote sensor, ELEMENT Type 23xx control valves Actuator size Ø 70/90/130 mm	679 917
Sensor Puck (replacement part)	682 240

Standard Accessories	
USB Interface for serial communication	227 093
M12 socket 8-pin with 5 m cable for power supply and input/output signals	919 267
M8 plug 4-pin for binary outputs, with solder joints	917 131
M8 socket 4-pin with 5 m cable for process actual value from sensor	264 602
Silencer G 1/4" (spare part)	780 780

* Related Communication software can be downloaded from www.buerkert.com (8793)

3) External end position feedback for upgrading SideControl NAMUR

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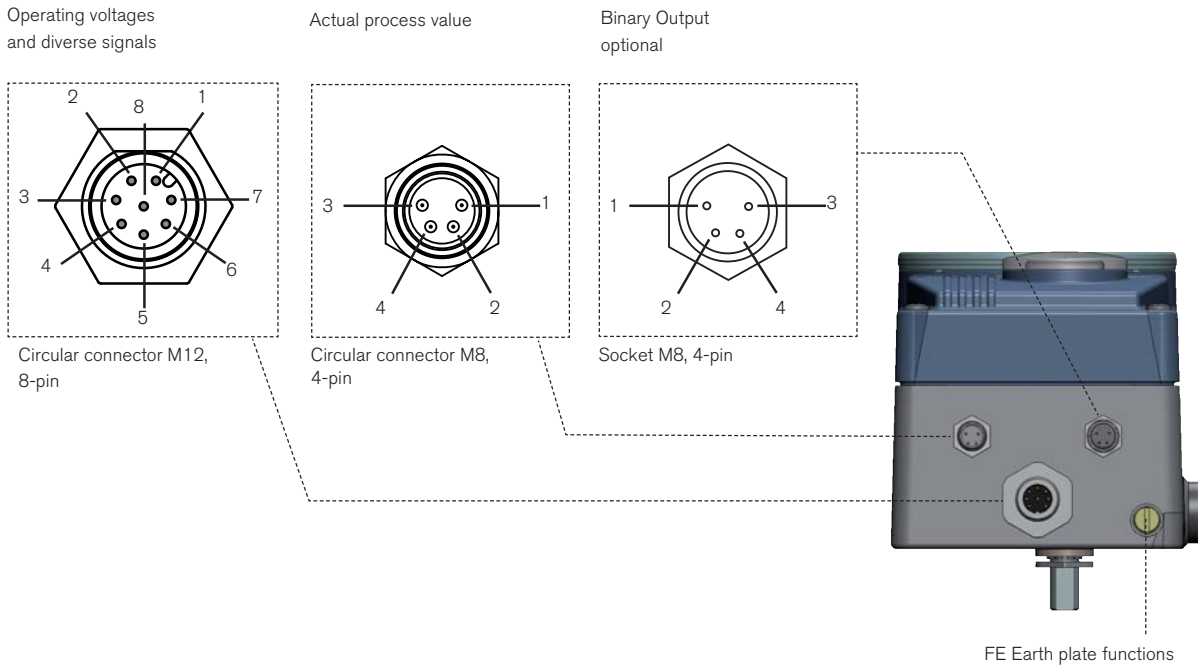
Connection options

Multi-pin connection



Circular connector M12 - 8-pin (Setpoint)

Pin	Configuration	External Circuitry / signal level	
1	Setpoint + (0/4-20 mA or 0-5/10 V)	1	+ (0/4-20 mA or 0-5/10 V) Completely galvanically separated
2	Setpoint GND	2	GND
3	GND	3	24 V DC ± 10% max. residual ripple 10%
4	+ 24 V	4	
5	Binary input +	5	+ 0-5 V (log. 0) 10-30 V (log. 1)
6	Binary input GND	6	GND

Optional analogue feedback

8	Analogue feedback +	8	+ (0/4-20 mA or 0-5/10 V) Completely galvanically separated
7	Analogue feedback GND	7	GND

Socket M8, 4-pin (only with optional Binary Output)

Pin	Configuration	External Circuitry / signal level	
1	Binary output 1	1	24 V / 0 V, NC / NO relative to operating voltage GND (terminal GND)
2	Binary output 2	2	24 V / 0 V, NC / NO relative to operating voltage GND (terminal GND)
3	Binary Output GND	3	GND

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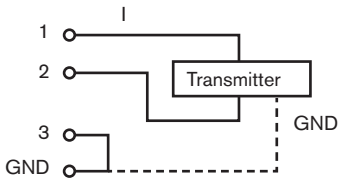
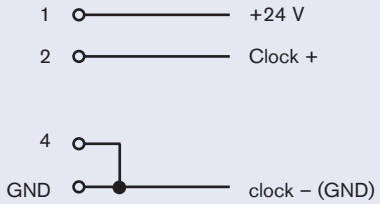
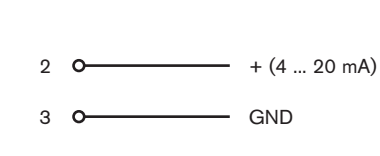
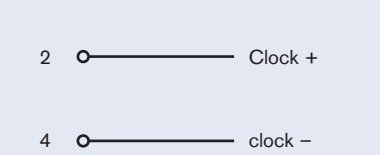
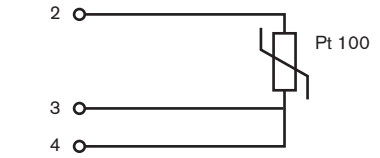
Connection options

Multi-pin connection, *continued*

Plug assignments of the process actual value input (M8 circular plug)

Input type*	Terminal		Configuration	External Circuitry
4 ... 20 mA - internally supplied	Actual process value	1	+24 V transmitter input	
		2	Output from transmitter	
		3	Bridge after GND (GND from 3-conductor transmitter)	
		4	Not used	
	GND		GND	
Frequency - internally supplied	Actual process value	1	+24 V sensor supply	
		2	Clock input +	
		3	Not used	
		4	Clock input –	
	GND		GND	
4 ... 20 mA	Actual process value	1	Not used	
		2	Process actual +	
		3	Process actual –	
		4	Not used	
Frequency - externally supplied	Actual process value	1	Not used	
		2	Clock input +	
		3	Not used	
		4	Clock input –	
Pt 100 (see note below)	Actual process value	1	Not used	
		2	Process actual 1 (power supply)	
		3	Process actual 3 (GND)	
		4	Process actual 2 (compensation)	

*adjustable through Software

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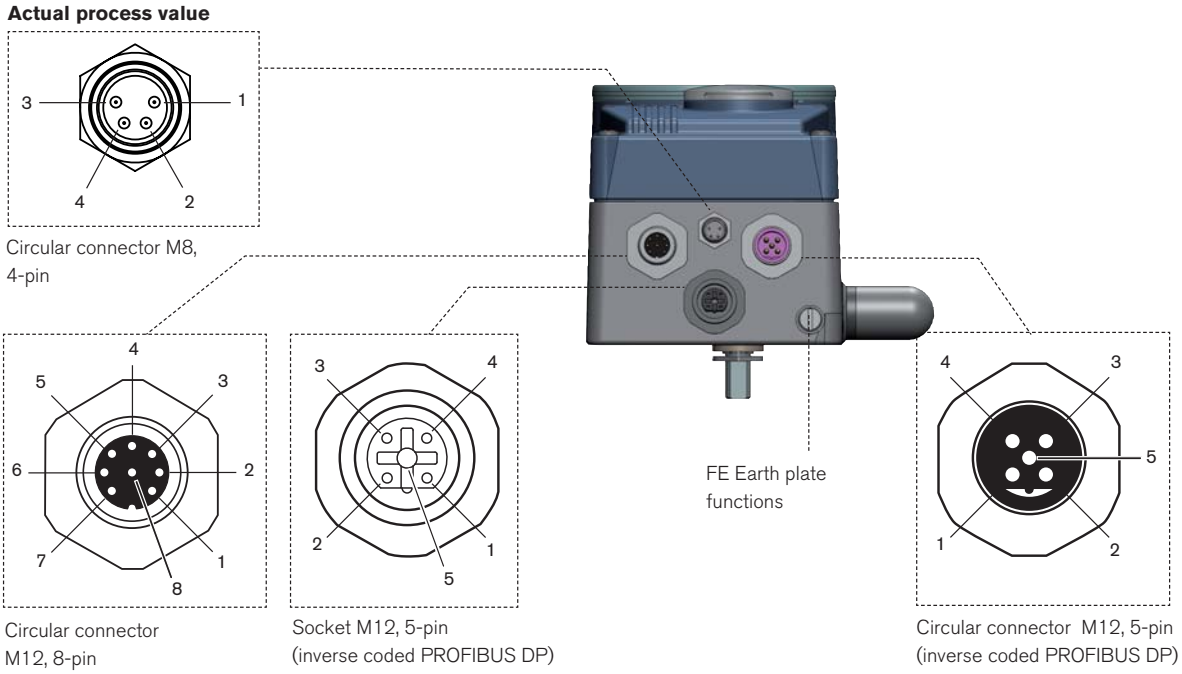
Connection options, continued

PROFIBUS DP connection



Operating voltages - Circular connector M12, 8-pin

Pin	Configuration	External Circuitry / signal level
1	Not used	
2	Not used	
3	GND	3 — 24 V DC ± 10 %
4	+24 V	4 — max. residual ripple 10 %
5	Binary input +	
6	Binary input –	
7	Binary output 1 (oriented at Pin 3)	
8	Binary output 2 (oriented at Pin 3)	

Bus-Connection - socket/Circular connector M12, 5-pin

Pin	Configuration	External Circuitry / signal level
1	VP+5	Load resistance supply
2	RxD/TxD-N	Receive and send information -N, A Circuitry
3	DGND	Information transfer potential (measured to 5 V)
4	RxD/TxD-P	Receive and send information -N, A Circuitry
5	Shield	Shield / protective earth

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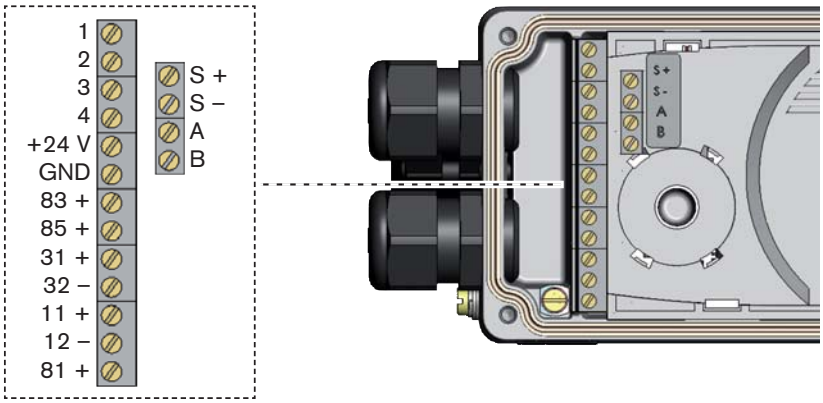
Connection options, continued

Cable gland connection



Terminal	Configuration	External Circuitry / signal level
11 +	Setpoint +	11 + ——— + (0/4 ... 20 mA or 0 ... 5 / 10 V) Complete galvanic separation
12 –	Setpoint GND	12 – ——— GND
81 +	Binary input +	81 + ——— + 0 ... 5 V (log. 0) / 10 ... 30 V (log. 1) Obtained at GND operating voltages (GND clamps)
+24 V	Operating voltages +	+24 V ——— 24 V DC ± 10 % Max. residual ripple 10 %
GND	Operating voltages GND	GND ———

Optional analogue feedback / Binary output

Terminal	Configuration	External Circuitry / signal level
83 +	Binary output 1	83 + ——— 24 V / 0 V, NC / NO obtained at GND operating voltages (GND clamps)
85 +	Binary output 2	85 + ——— 24 V / 0 V, NC / NO obtained at GND operating voltages (GND clamps)
31 +	Analogue feedback +	31 + ———► + (0/4-20 mA or 0-5/10 V) completely galvanically isolated,
32 –	Analogue feedback GND	32 – ———► GND

Optional remote version in connection with remote positioner sensor Type 8798

Terminal		Configuration	External Circuitry / signal level
Remote Sensor	A	Serial interface, A cable	A ——— A line
	B	Serial interface, B cable	B ——— B line
	S +	Supply sensor +	S + ——— +
	S -	Supply sensor -	S - ——— -

Remote Sensor Type 8798

For version without remote version: terminals A, B, +, - not connected

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Connection options, continued

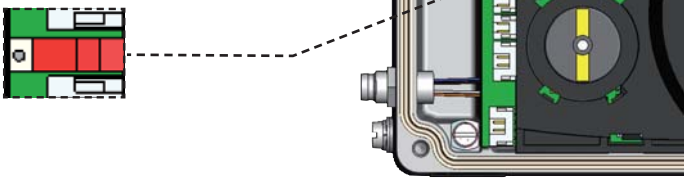
Cable gland connection

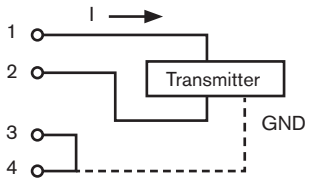
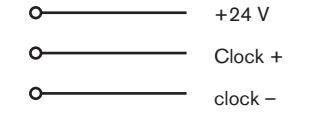
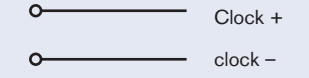
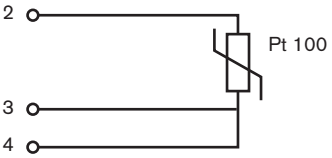
Symbols for switch position

Switch on right

Switch on left

Location of the DIP switch



Input type*	Pin	Configuration	DIP switch	External Circuitry
4 ... 20 mA - internally supplied	1 2 3 4	+24 V Transmitter supply Output from transmitter GND Bridge after GND (GND from 3-conductor transmitter)	 Switch on left	
4 ... 20 mA - externally supplied	1 2 3 4	Not used Process actual + Not used Process actual –	 Switch on right	
Frequency - internally supplied	1 2 3 4	+24 V sensor supply Clock input + Clock input – (GND) Not used	 Switch on left	
Frequency - externally supplied	1 2 3 4	Not used Clock input + Clock input – Not used	 Switch on right	
Pt 100 (see note below)	1 2 3 4	Not used Process actual 1 (power supply) Process actual 3 (GND) Process actual 2 (compensation)	 Switch on right	

*adjustable through Software

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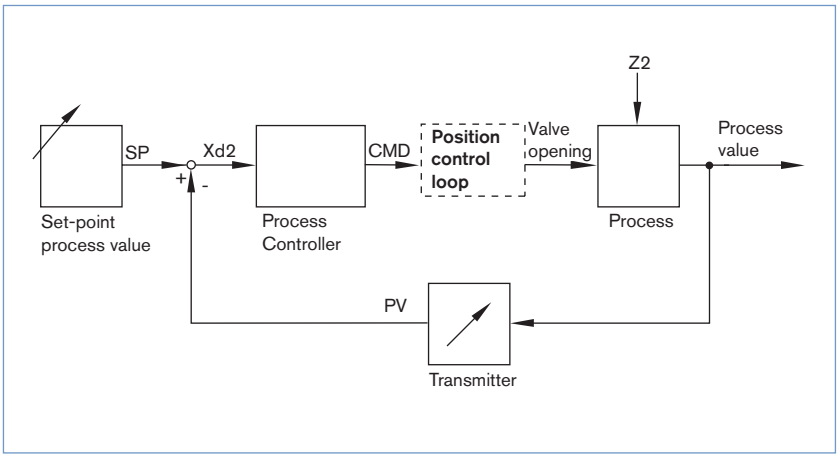
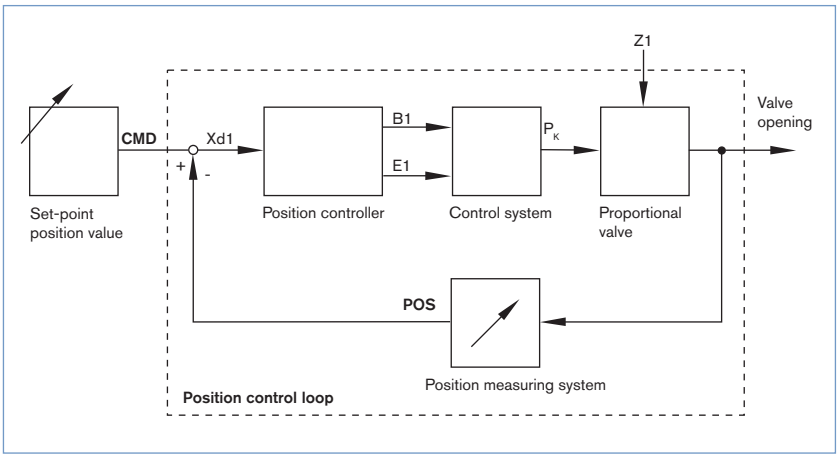
Signal flow plan

Process control loop



Position control loop



Additional software options of the process controller SideControl Type 8793 (extract)

- Automatic start of the control system
- Automatic parameterisation of the process control loop
- Automatic or manual characteristics curves selection
- Setting of the seal and the maximum stroke threshold respectively
- Parameterisation of the positioner
- Manual parameterisation of 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 analogue or 2 binary outputs
- Signal fault detection
- Safety position
- Code protection
- Contrast inversion of the display
- Parametisable diagnostic functions* / Binary output (option)
  - Operating-hours counter
  - Path accumulator
  - Position monitoring
  - Process actual value monitoring
  - Graphical display of the dwell time density and movement range
  - Monitoring of the mechanical end positions in the armature

* You will find more diagnostic functions with a detailed description in the operating manual for Type 8792/93

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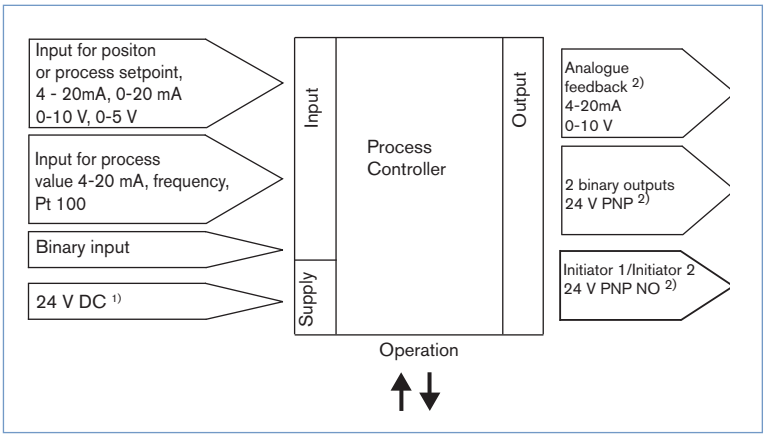
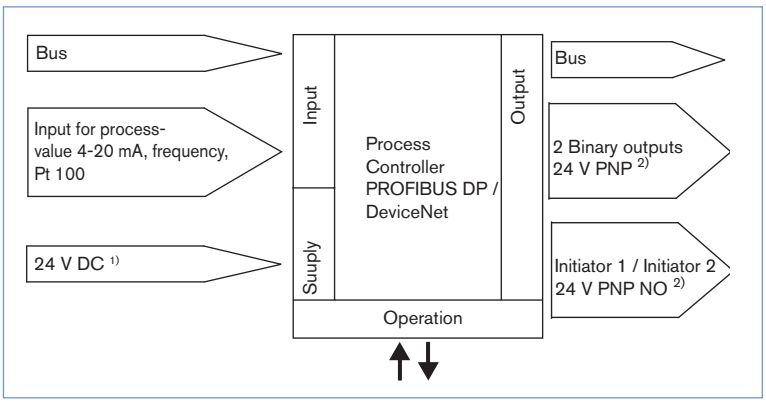
Schematic diagram of SideControl, Type 8793

Without fieldbus interface



With PROFIBUS DP / DeviceNet



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

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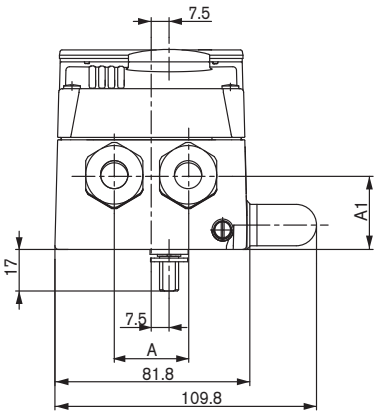
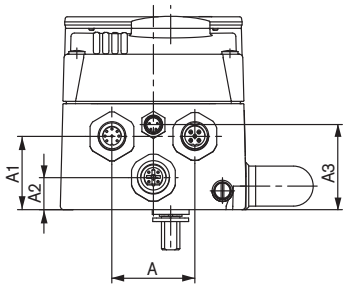
Dimensions [mm]

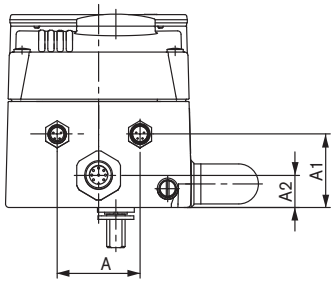
NAMUR version
Cable gland (standard)



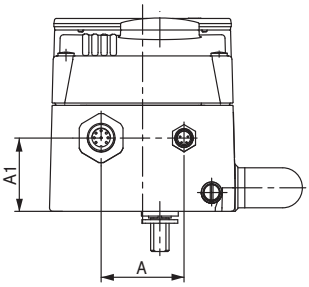
NAMUR version
PROFIBUS DP Multipole



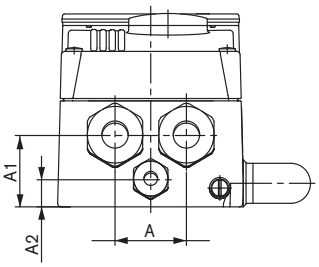
NAMUR version
Multipole with Binary outputs

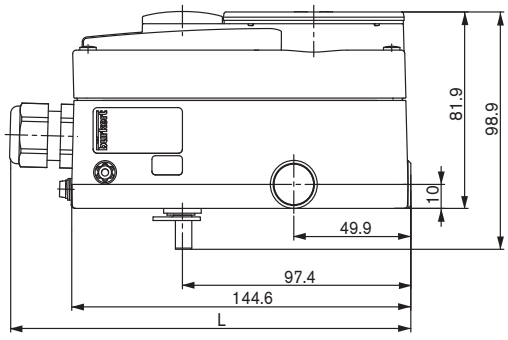


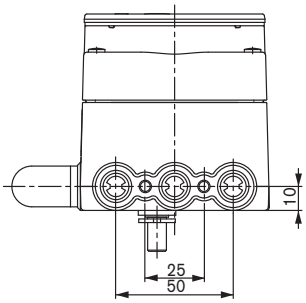
NAMUR version
Multipole

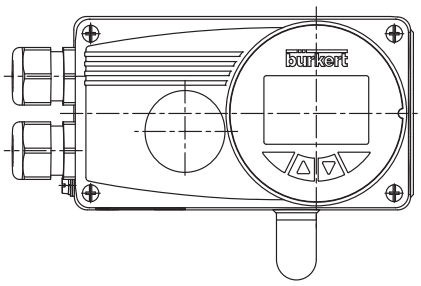


Remote version
cable gland









Description	L	A	A1	A2	A3
Standard	171,1	31	30	–	–
PROFIBUS DP	157,8	36	31	13,5	36,1
Multi-pin binary output	157,6	36	31	13,5	–
Multi-pin	157,6	36	31	–	–
Remote	171,1	31	30	11,5	–

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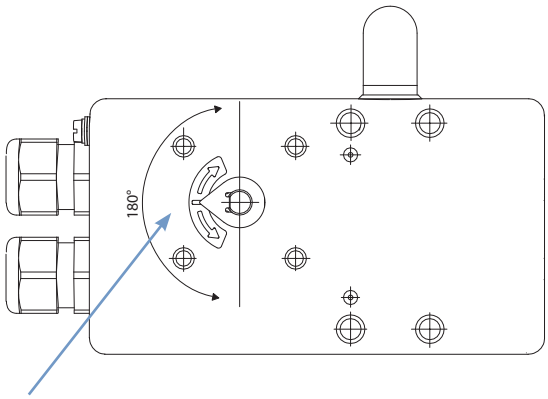
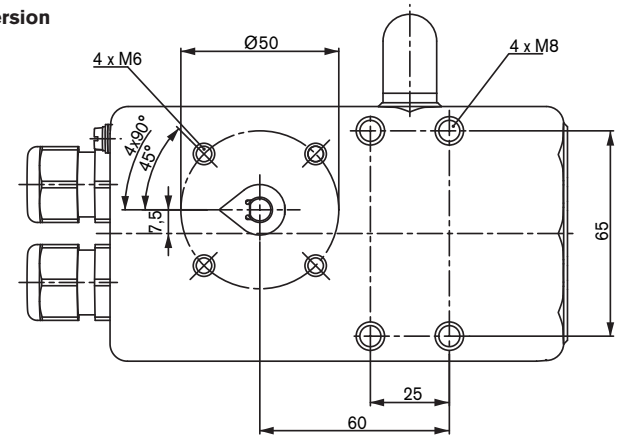
Dimensions [mm]



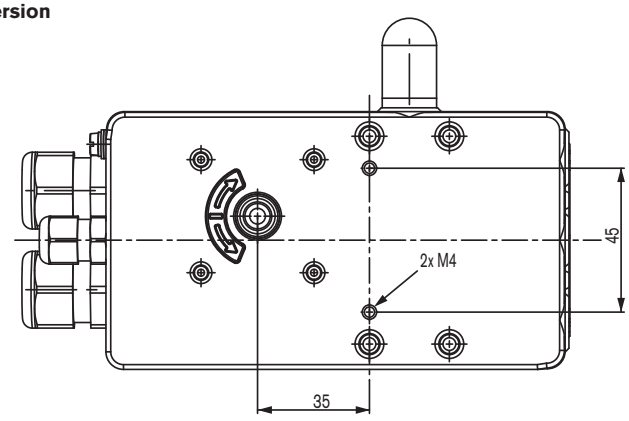
The rotation angle of the sensor must be within a range of 180°

With the valve open approx. 50%, the sensor indicator should be in this position.

NAMUR Version



Remote Version



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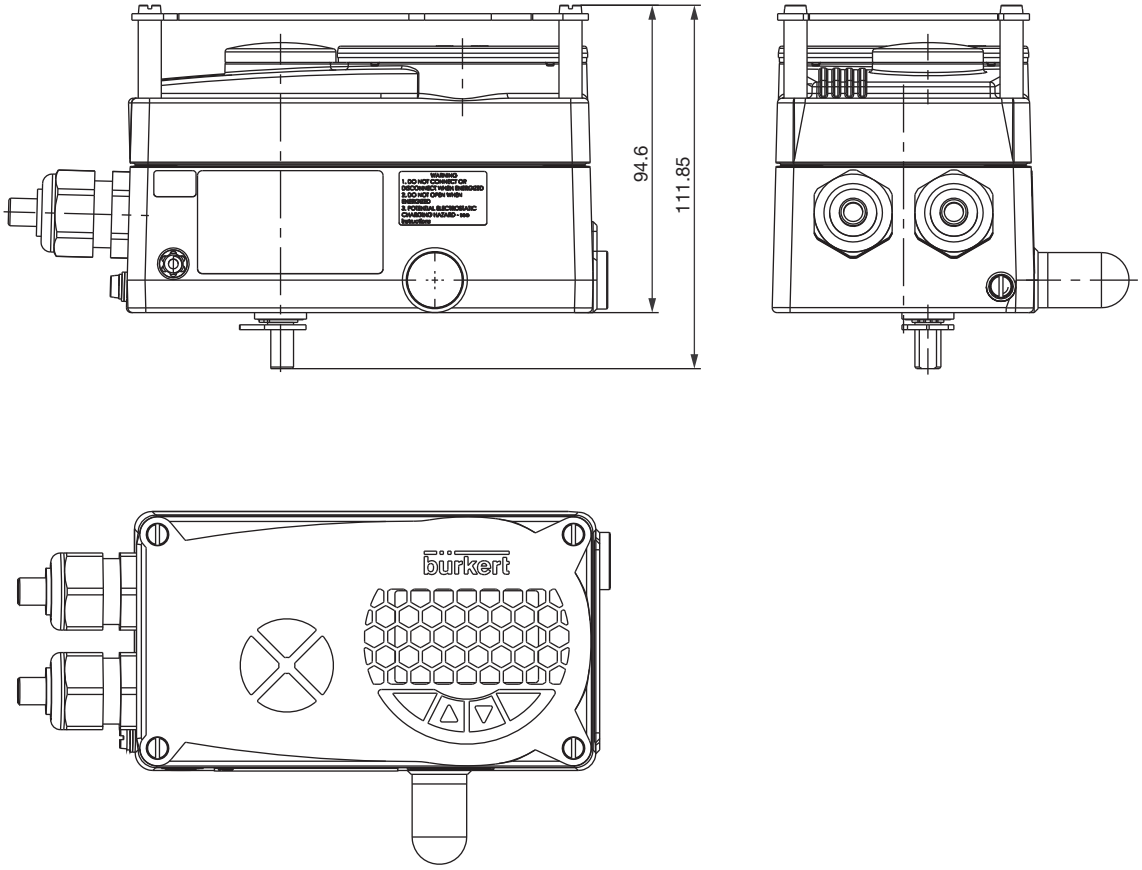
Dimensions [mm], continued

ATEX / IECEx version



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