Control- and feedback head for integrated mounting on Robolux valves Type 2036

- Compact design
- Contactless valve position registration
- Coloured illuminated status display
- Fieldbus AS-Interface (optional)
- With ATEX II cat. 2G approval

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 2036
Robolux multiway diaphragm valve, pneumatically operated

Type description

Feedback Type 8685 and control head Type 8686 are optimized for integrated mounting on pneumatically operated actuators Type 2036 Robolux. The adjustment to the individual actuator size is done through DIP-switches.

As compact units the devices contain the complete automation functionality of both individually operated actuator pistons. Depending on the configuration, electrical and visual position feedback is done by non-contact switches and LEDs, integrated pilot valves control the actuator pistons and AS-interface communication is available. In this way a complete concept for decentralized automation is feasible.

The compact body is especially distinguished by its hygienic design, materials being chemically resistant against cleaning media and a proven IP protection. In addition the Control Head Type 8686 features an integrated compressed air filter to protect the pilot valve function against particles through the compressed air supply.

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Visit product website

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1. General technical data

1.1. Control and feedback head Type 8685 and Type 8686

Product properties	
Dimensions	Further information can be found in chapter "4. Dimensions" on page 7.
Material	
Body	PPS, stainless steel
Seal	EPDM
Cover	PC
Communication	
Fieldbus	AS-Interface
Performance data	
Position sensor	
Stroke range for linear actuator	
Valve spindle	RV50 = 6.0 mm, RV70 = 9.5 mm, RV110 = 13.5 mm
Position feedback	Reed sensors (contactless)
Electrical data	
Operating voltage	
Pilot valve	24 V DC ± 10 % Maximum input voltage [1.)] For Ex i variant: see "1.5. Ex i version Type 8685 and Type 8686" on page 5
Residual ripple	10 %
Power consumption	0.8 W every valve
Limit switches	24 V DC ± 10 % 8.2 V DC (Ex i-NAMUR switch amplifier) Ui < 12 V, Ii < 20 mA, Pi < 60 mW (Ex barrier)
Protection class	III according to VDE 0580
Electrical connection	
Multipole version	M12 (8-pin), M12 (4-pin) with 1 m cable (AS-Interface)
Cable gland version	M16 × 1.5 (cable Ø 6.5 mm), screw terminals (1.0 mm²)
Pneumatic data	
Control medium	**Neutral gases, air, quality class according to ISO 8573 - 1**
Dust content	Class 5 (< 40 µm particle size)
Particle density	Class 5 (< 10 mg/m³)
Pressure dew point	Class 3 (← 20 °C)
Oil content	Class 5 (< 25 mg/m³)
Air supply filter	**Exchangeable**
Mesh size	~0.1 mm
Supply pressure	3...7 bar [2.)]
Pilot air ports	Threaded connection G ⅛
Approvals and conformities	
Further information can be found in chapter "2. Approvals and conformities" on page 5.	
Environment and installation	
Operating conditions	
Ambient temperature	0...+ 55 °C
Degree of protection	IP65/67 according to EN 60529
Installation and mechanical data	
Installation position	As required, preferably with actuator in upright position
Adapter kits	Further information can be found in chapter "Adapter kits" on page 15.

1.) Valve supply:
Maximum input power Pi = 1.1 mW
Maximum input voltage and maximum input current according to the following table

Ui [V]	15	18	20	22	25	28	30	35
Ii [mA]	900	440	309	224	158	120	101	73

Internal capacity and inductance negligible

2.) The existing supply pressure must be 0.5...1 bar above the minimum required pilot pressure of the valve actuator.

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1.2. Without fieldbus communication: 24 V DC

Electrical data	
Operating voltage	24 V DC
Residual ripple	10 %
Power consumption	< 2 W
Voltage tolerance	± 10 %
Output	Max. 100 mA per output, short-circuit protected
Electrical connection	
Multipole	M12 (8-pin)
Cable gland	M12 × 1.5 (cable Ø 6.5 mm), screw terminals (1.0 mm² / maximum port cross-section 0.25 mm²)

1.3. With fieldbus communication: AS-Interface Type 8685

Product properties	
Profile	S- 0.A.E (AB slave, max. 62 slaves/master)
Electrical data	
Operating voltage	**29.5...31.6 V DC**
Via bus cable	According to specification
Separated from bus signal	On request
Maximum current consumption (2 terminal position reached)	35 mA
Electrical connection	M12, 4-pin with 1 m cable on flat cable clip
Programming data	See **operating manual Type 8685** ▶

1.4. With fieldbus communication: AS-Interface Type 8686

Product properties	
Profile	S- 7.A.E (AB slave, max. 62 slaves/master)
Electrical data	
Operating voltage	**29.5...31.6 V DC**
Via bus cable	According to specification
Separated from bus signal	On request
Maximum current consumption (2 valves activated and 2 position feedback active)	120 mA
Outputs	
Contact rating	≤ 2 × 0.8 W (above AS-Interface)
Watchdog function	Integrated
Inputs	
Sensor operating voltage	24 V ± 10 % (above AS-Interface)
Current carrying capacity	≤ 50 mA short circuit protected
Switching level High	≥ 10 V
Input current High	≤ 1.5 mA
Input current Low	≤ 0.1 mA
Electrical connection	M12, 4-pin with 1 m cable on flat cable clip
Programming data	See **operating manual Type 8686** ▶

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1.5. Ex i version Type 8685 and Type 8686

Electrical data	
Operating voltage	
Limit switches	Operates with Ex i-NAMUR switch amplifier: 8.2 V DC Operates with Ex barrier [1.]: Max. input voltage Ui < 12 V DC
Pilot valve	Control valve component for Ex valve coils [2.]
Limit switches status	Only electrical feedback
Current consumption	Operates with Ex-i-NAMUR switch amplifier: < 1.2 mA (terminal position reached) > 2.1 mA (terminal position not reached) Operates with Ex barrier [1.]: Maximum input current Ii < 50 mA
Electrical connection	Cable gland M12 × 1.5 (cable Ø 6.5 mm, screw terminals 1.0 mm²/max. port cross-section: 8685: 0.25 mm², 8686: 0.14 mm²
Approvals and conformities	
Explosion protection	
Ignition protection class	BVS 13 ATEX E 039 X IIG Ex ia IIC T4 Gb IECEx BVS 13.0047 X Ex ia IIC T4 Gb
Further information can be found in chapter "2. Approvals and conformities" on page 5.	
Environment and installation	
Operating conditions	Medium temperature of adapted process valve Type 2036 T (Medium): 0...130 °C (safety requirement value)

1.) Electrical feed-in through intrinsically safe electric circuit of ignition protection Ex ia IIC. Each circuit (end position) has the following safety related max data:
Maximum input voltage Ui = 12 V DC / Maximum input current Ii = 50 mA
Maximum input power Pi = 60 mW
Internal capacity and inductance negligible

2.) Valve supply:
Maximum input power Pi = 1.1 mW
Maximum input voltage and maximum input current according to the following table

Ui [V]	15	18	20	22	25	28	30	35
Ii [mA]	900	440	309	224	158	120	101	73

Internal capacity and inductance negligible

2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available versions can be supplied with the below mentioned approvals or conformities.

2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

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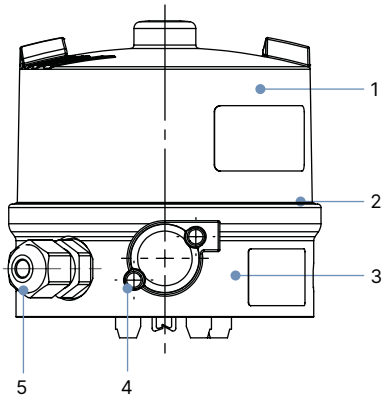
3. Materials

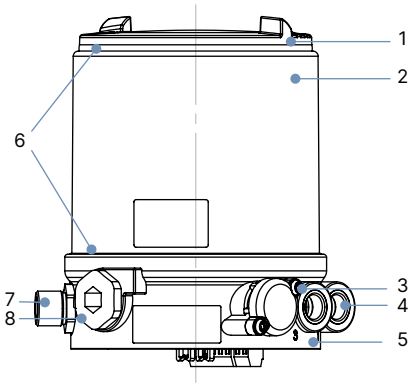
3.1. Material specifications

Type 8685



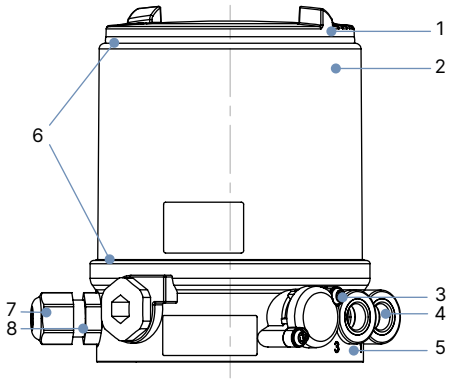
No.	Element	Material
1	Cover	PC
2	Seal	EPDM
3	Basic housing	PPS
4	Screws	Stainless steel
5	Cable gland	PA

Type 8686



No.	Element	Material
1	Cover	PC
2	Outer casing	EPDM
3	Screws	Stainless steel
4	Threaded ports G ⅛	Stainless steel
5	Basic housing	PPS
6	Seal	EPDM
7	Plug connector M12	Nickel-plated brass
8	Dummy plug	PA

Type 8686 Ex i (NAMUR)



No.	Element	Material
1	Cover	PC
2	Outer casing	EPDM
3	Screws	Stainless steel
4	Threaded ports G ⅛	Stainless steel
5	Basic housing	PPS
6	Seal	EPDM
7	Cable connection	PA
8	Dummy plug	PA

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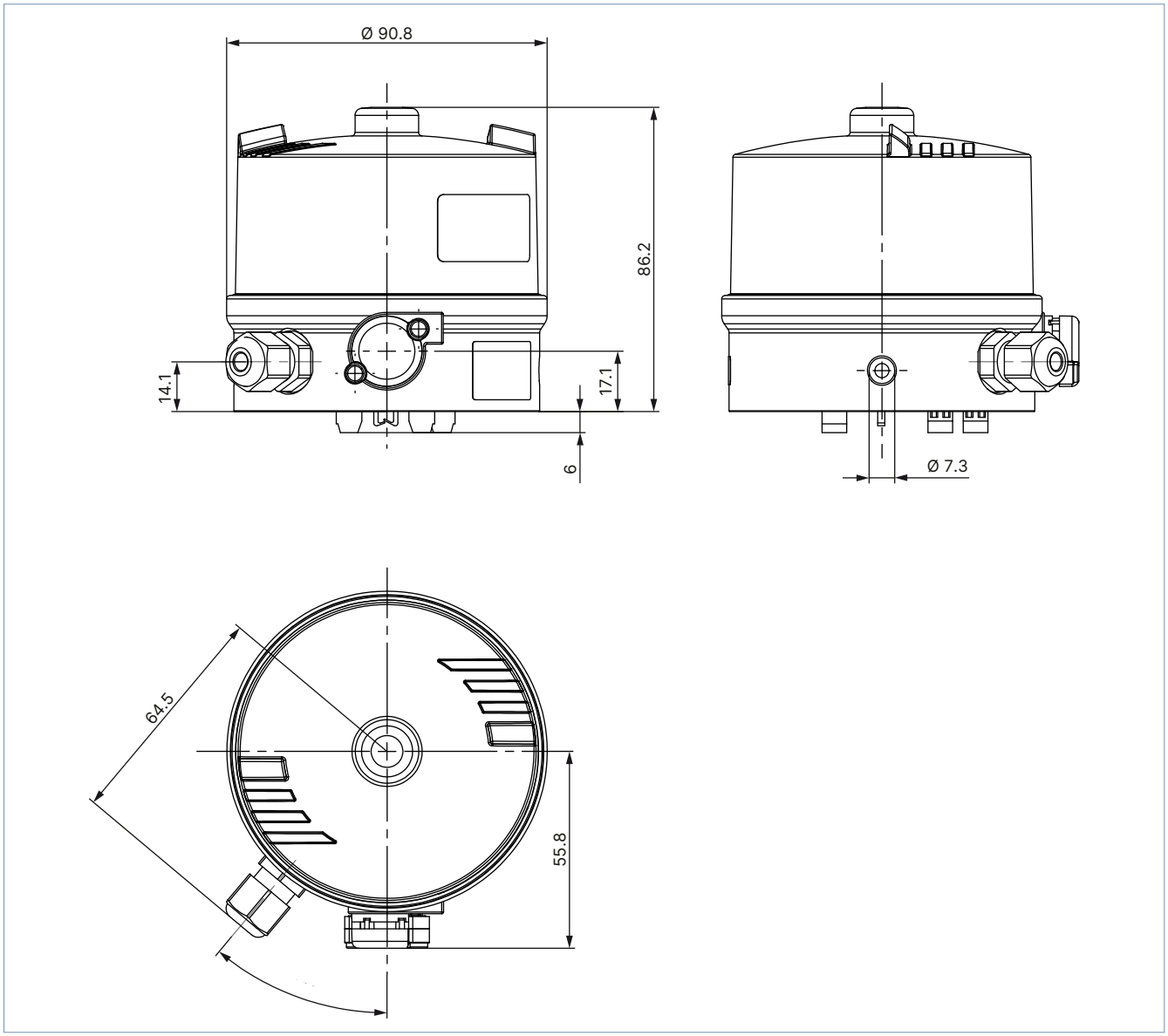
4. Dimensions

4.1. Type 8685

Note:
Dimensions in mm



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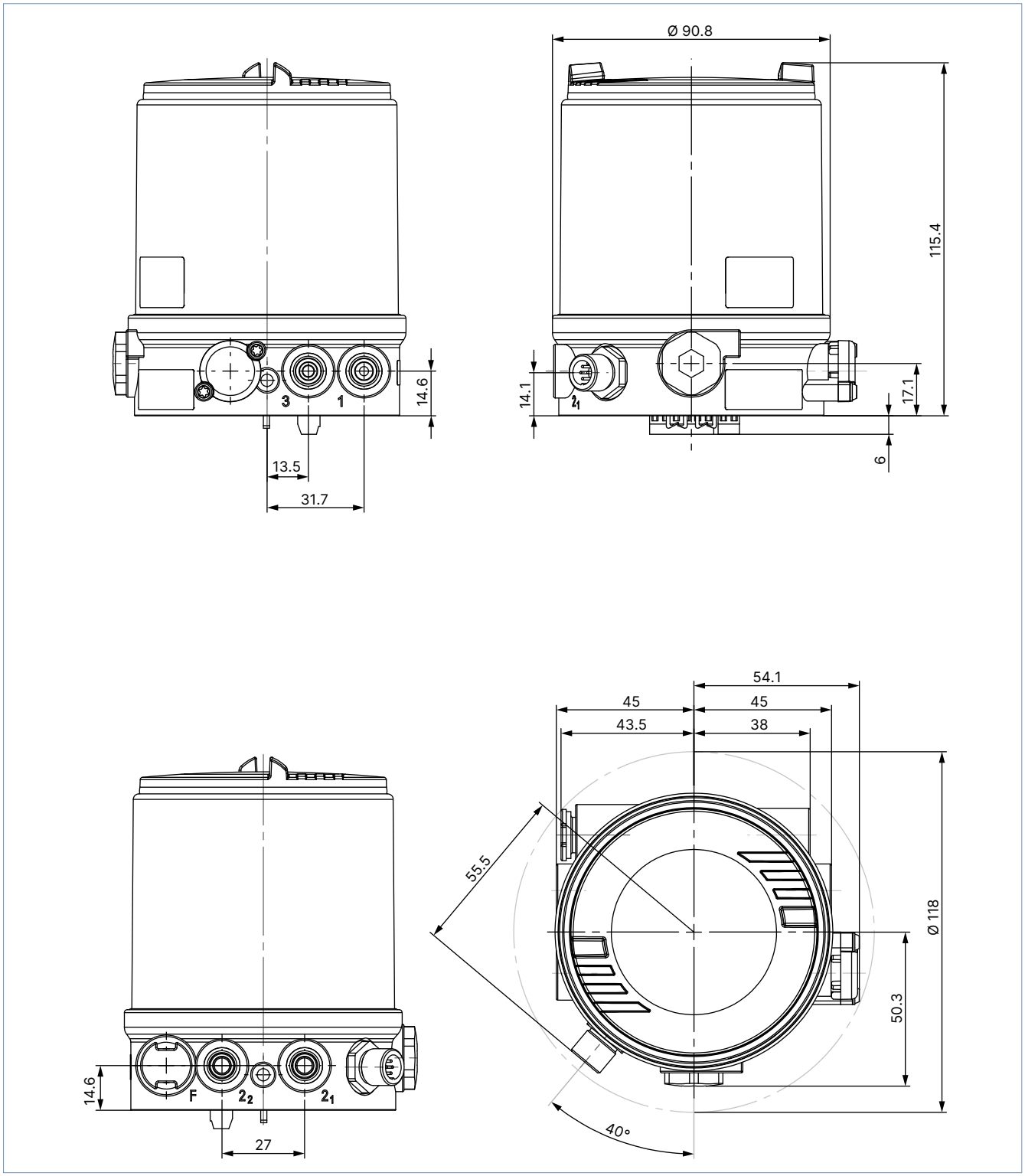
4.2. Type 8686

Note:
Dimensions in mm



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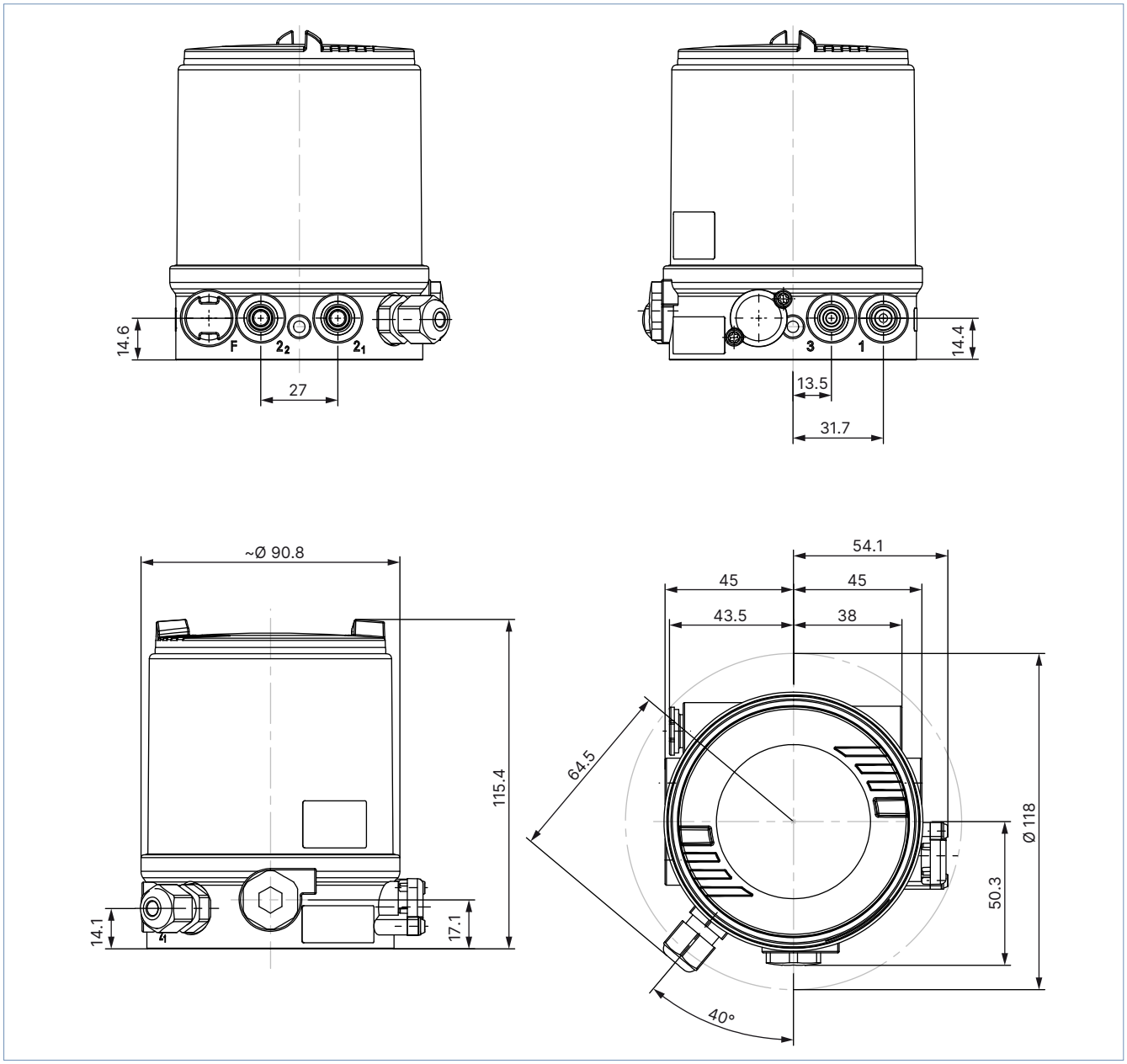
4.3. Type 8686 Ex i (NAMUR)

Note:
Dimensions in mm



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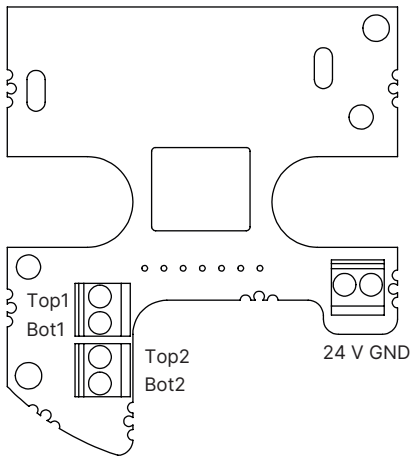
5. Device/Process connections

5.1. Electrical connections

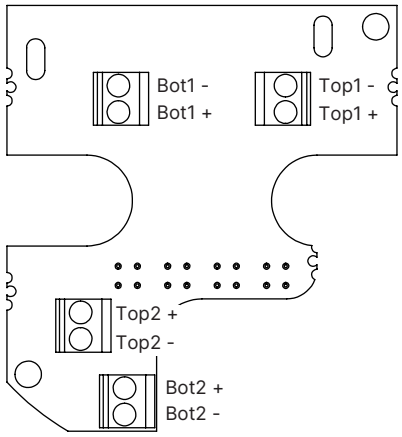
Without fieldbus communication 24 V DC: Type 8685

Cable gland



Description on circuit board	Description
24 V	Operating voltage + (24 V DC)
GND	Operating voltage – (GND)
Top 1	End positions above, Top actuator 1
Bot 1	End positions below, Bot actuator 1
Top 2	End positions above, Top actuator 2
Bot 2	End positions below, Bot actuator 2

Ex i (NAMUR): cable gland



Description on circuit board	Description
Top 1 +	End positions above + actuator 1
Top 1 –	End positions above – actuator 1
Bot 1 +	End positions below + actuator 1
Bot 1 –	End positions below – actuator 1
Top 2 +	End positions above + actuator 2
Top 2 –	End positions above – actuator 2
Bot 2 +	End positions below + actuator 2
Bot 2 –	End positions below – actuator 2

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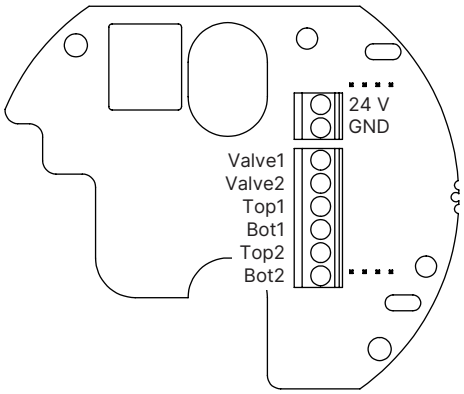
Without fieldbus communication 24 V DC: Type 8686

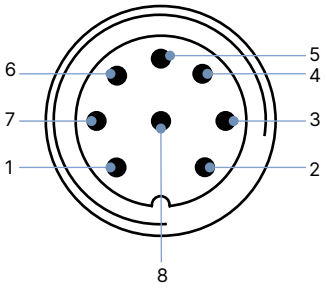
Cable gland



Description on circuit board	Description
Bot 2	End positions below, Bot actuator 2
Top 2	End positions above, Top actuator 2
Bot 1	End positions below, Bot actuator 1
Top 1	End positions above, Top actuator 1
Valve 2	Valve control Y2 + (actuator 2 operated)
Valve 1	Valve control Y1 + (actuator 1 operated)
GND	Operating voltage –
24 V DC	Operating voltage +

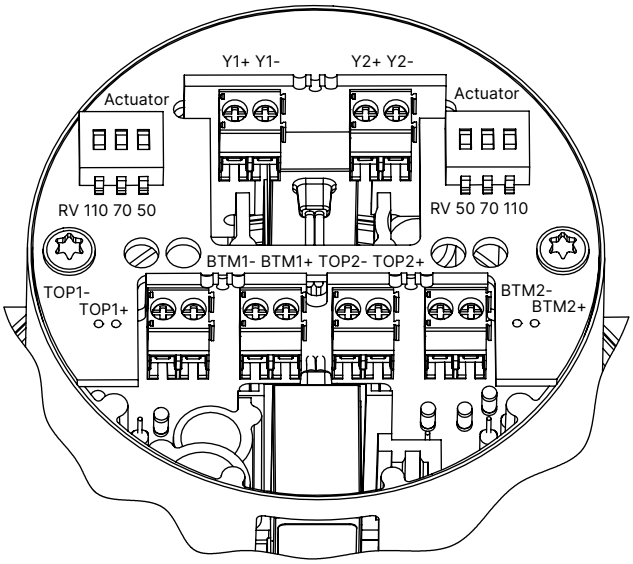
Multipole connection M12, 8-pin

Note:
Use only straight cable sockets.



Pin	Description	Assignment
1	Limit switches 3	End positions below, Bot actuator 2
2	Limit switches 4	End positions above, Top actuator 2
3	Limit switches 1	End positions below, Bot actuator 1
4	Limit switches 2	End positions above, Top actuator 1
5	Valve 2	Valve control Y2 +
6	Valve 1	Valve control Y1 +
7	GND	Operating voltage –
8	24 V DC	Operating voltage +

Ex i (NAMUR): cable gland



Description on circuit board	Description
TOP 1 +	End positions above + actuator 1
TOP 1 –	End positions above – actuator 1
BTM 1 +	End positions below + actuator 1
BTM 1 –	End positions below – actuator 1
TOP 2 +	End positions above + actuator 2
TOP 2 –	End positions above – actuator 2
BTM 2 +	End positions below + actuator 2
BTM 2 –	End positions below – actuator 2
Y1 +	Supply line valve1
Y1 –	Return circuit valve1
Y2 +	Supply line valve2
Y2 –	Return circuit valve2

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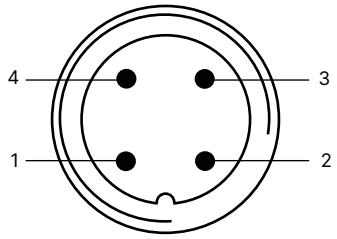
AS-Interface connection: Type 8685 and Type 8686

Circular plug M12, 4-pin



Pin	Description	Control head Type 8686	Feedback head Type 8685
1	Bus +		
2	NC		
3	Bus –		
4	NC		

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6. Product installation

6.1. Combination options with pneumatic process valves ELEMENT

Note:
A complete **process valve system Type 8806** consists of **control head Type 8686** or **position feedback Type 8685**, a **control valve Type 2036 Robolux** and an **adapter set**.

The following information is required to select a complete system:

- **Article no.** of the desired **positioner control head Type 8686** or **feedback Type 8685**
- **Article no.** of the desired **control valve Type 2036 Robolux**

You order two components and receive a completely assembled and tested valve.

Examples of control valve systems

Feedback head		Control head		Desired process valve
Type 8685 ▶	**Type 8685 Ex** ▶	**Type 8686** ▶	**Type 8686 Ex** ▶	**Type 2036** ▶ Robolux

Complete process valve system	
Process valve system with position feedback On/Off Robolux Type 8806-DI-S ▶ Type 2036 + Type 8685	**Process valve system with position feedback On/Off Robolux Type 8806-DI-T** ▶ Type 2036 + Type 8686

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7. Ordering information

7.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

7.2. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements?
Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

7.3. Ordering chart

Type	Communication	Electrical connection	Pneumatic function	Position feedback	Pilot air ports	Article no.
8685	Without	Cable gland	Without	2 switching points	Threaded connection G ⅛	231306
	AS-Interface A/B	Cable gland with 1 m cable on flat cable clip	Without	2 switching points	Threaded connection G ⅛	231307
	Ex i (NAMUR)	Cable gland	Without	2 switching points	Threaded connection G ⅛	242249
8686	Without	M12 (8-pin)	2x single-acting DN 3.0	2 switching points	Threaded connection G ⅛	231292
	AS-Interface A/B	Cable gland with 1 m cable on flat cable clip	2x single-acting DN 3.0	2 switching points	Threaded connection G ⅛	231293
	Ex i (NAMUR)	Cable gland	2x single-acting DN 3.0	2 switching points	Threaded connection G ⅛	242250

Further versions on request

Additional

- Type 8686 ASI - variants with external power supply
- Type 8686 24 V DC - variants with cable gland

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7.4. Ordering chart accessories

Standard accessories

Note:
Must be ordered separately.

Description	Article no.
M12 circular socket with cable, 8-pin, cable length: 5 m, for input and output signals	919267
M12 circular socket with cable, 8-pin, cable length: 2 m, for input and output signals	919061
AS-Interface flat cable clamp, M12 outlet, stainless steel outlet	799646
Silencer G ⅛	780779
Pilot tool for cover mounting	674077

Adapter kits

Note:
Must be ordered separately.

Description	Actuator size	Article no.
Adapter set for Type 8685	RV50, RV70, RV110	684267
Adapter set for Type 8686	RV50, RV70, RV110	684268

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