

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



**Type 2036**  
Robolux valve

- Compact stainless steel design
- Contactless valve position registration
- Coloured illuminated status display
- Fieldbus AS- Interface (optional)
- Version for ATEX / IECEx

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 the electrical and visual position feedback is done by non-contact switches and high-power LEDs. Integrated pilot valves control the actuator pistons and AS-interface communication is available. Using appropriate barriers both types feature intrinsically safety acc. to ATEX.

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 electrical 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.

Technical data	
<b>Material:</b>	Body Cover Seal
	PPS, stainless steel PC EPDM
<b>Power supply</b>	
Limit switches	24 VDC +/- 10% 8,2V DC (Ex-i-NAMUR switch amplifier)
Pilot valve	24V DC +/- 10% max. voltage see note <sup>2)</sup> on page 2
<b>Pilot valve</b>	Residual ripple 10%; Power consumption 0,8W every valve for Exi- variants: acc datasheet II 2G Ex ia IIC T4 T5 T6 PTB01 ATEX 2048
<b>Control medium</b>	Neutral gases, air DIN ISO 8573-1
Dust content	Class 5 (<40µm particle size)
Particle density	Class 5 (<10mg/m <sup>3</sup> )
Pressure dew point	Class 3 (<-20°C)
Oil concentration	Class 5 (<25mg/m <sup>3</sup> )
<b>Supply pressure</b>	3 to 7 bar <sup>1)</sup>
<b>Air supply filter</b>	Exchangeable
Mesh aperture	~0,1mm
<b>Pilot air ports</b>	Threaded ports G1/8
<b>Position feedback</b>	Reed sensors (no contact)
<b>Stroke range valve spindle</b>	RV50 = 6,0mm, RV70 = 9,5mm, Rv110 = 13,5mm
<b>Ambient temperature</b>	0 to +55 °C
<b>Installation</b>	As required, preferably with actuator in upright position
<b>Protection class</b>	IP 65/67 according to EN 60529
<b>Protection class</b>	3 acc. to VDE 0580
<b>Fieldbus communication</b>	AS- Interface
<b>Conformity</b>	CE acc. to EMV2004/108/EG
<b>Electrical connection</b>	
Multipole	M12 (8-pin), M12 (4-pin) with 1m cable (AS- Interface)
Cable gland	M16x1,5 (cable-Ø6,5mm), screw terminals (1,0 mm <sup>2</sup> )

<sup>1)</sup> The supply pressure must be 0.5 to 1 bar above the minimum required control pressure of the valve actuator.

## Technical Data

### Without fieldbus communication

Technical data	
Power supply	24 VDC
Residual ripple with DC	10%
Voltage tolerance	±10 %
Power consumption	< 2 W
Output	Max. 100mA per output/ short-circuit protected
Electrical connection	
Multipole	M12 (8-pin)
Cable gland	M12x1,5 (cable-Ø6,5mm), screw terminals (1,0 mm <sup>2</sup> / max. port cross-section 0,25mm <sup>2</sup> )

### Type 8685/8686 2G II Ex ia IIC T4 Gb

Technical data	
Ignition protection	IIG Ex ia IIC T4 Gb (BVS 13 ATEX E 039 X) Ex ia IIC T4 Gb (IECEX BVS 13.0047 X)
Operating conditions	Medium temperature of adapted process valve type 2036 T(media) : 0... 130°C (safety requirement value)
Power supply	
Limit switches	Operates with Ex i-NAMUR switch amplifier: 8,2VDC Operates with Ex barrier <sup>1)</sup> : max. input voltage Ui < 12VDC
Pilot valve	Control valve component for Ex valve coils <sup>2)</sup>
Limit switches- Status	Only electrical feedback
Power consumption	Operates with Ex i-NAMUR- switch amplifier: < 1,2mA (terminal position reached) >2,1mA (terminal position not reached) Operates with Ex barrier <sup>1)</sup> : max. input voltage li < 50mA
Electrical connection	Cable gland M12x1,5 (cable- 6,5mm), screw terminals 1,0mm <sup>2</sup> /max. port cross-section: 8685: 0,25mm <sup>2</sup> ; 8686: 0,14mm <sup>2</sup>

<sup>1)</sup> Electrical feed-in through intrinsically safe electric circuit of type of protection Ex ia IIC    <sup>2)</sup> Feed-in valves  
 Each circuit (end position) has the following safety related max data:    Max. input power Pi = 1,1mW  
 Max. input voltage Ui = 12VDC / max. input circuit li = 50mA    Max input voltage and max. input circuit acc. following table:  
 Max. input power Pi = 60mW    Ui [V]    15    18    20    22    25    28    30    35  
 Internal capacity und inductance negligible    li[mA]    900    440    309    224    158    120    101    73  
 Internal capacity und inductance negligible

### With fieldbus communication; AS- Interface Type 8685

Technical data	
Profile	S-O.A.E (A/B slave, max 62 slaves/master)
Power supply	29,5 to 31,6 VDC
via bus lines	Acc. to specification
separated from bus signal	On request
Max. power consumption (2 terminal position reached)	35 mA
Electrical connection	M12 4-pin with 1m cable on flat cable clip
Programming data	See operating manual

### With fieldbus communication; AS- Interface Type 8686

Technical data	
Profile	S-O.A.E (A/B slave, max 62 slaves/master)
Power supply	29,5 to 31,6 VDC
via bus lines	Acc. to specification
separated from bus signal	On request
Max. power consumption Max. power consumption (2 valves activated and 2 feedback active)	≤ 120 mA
outputs	
Contact rating	≤ 2x0,8W (above AS- Interface)
Wach-dog function	Integrated
Inputs	
Sensor operating voltage	24 V ±10% (above AS- Interface)
Acceptable current load	≤ 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-poilg with 1m cable on flat cable clip
Programming data	See operating instruction

**Ordering information for TopControl-valve-systems**

A complete process valve system Type 8806 consists of a Control Head Type 8686 or feedback Type 8685, a Control Valve Type 2036 Robolux and a Adapter set.

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

- Item no. of the desired positioner control head type 8686 or feedback type 8685
- Item no. of the desired control valve eype 2036 Robolux

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

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 for process valve systems**

Feedback head type 8685



Feedback head type 8685 Ex



Control head Type 8686 Ex

Control head Type Type 8686

**Desired process valve, example**



2036 Robolux

**More info.**

**Complete process valve system**



**Process valve system with feedback  
On/Off Robolux  
type 8806-DI-S  
2036+8685**



**Process valve system with control head  
On/Off Robolux  
type 8806-DI-T  
2036+8686**

## Ordering chart (further versions on request)

Type	Communication	Electrical connection	Pneumatic function	Position feedback	Pilot air ports	Item no.
8685	without	Cable connection	without	2 switching points	Threaded ports G1/8	231 306
	AS- Interface A/B	cable glands with 1m cable on flat cable clip	without	2 switching points	Threaded ports G1/8	231 307
	Exi (Namur)	Cable connection	without	2 switching points	Threaded ports G1/8	242 249
8686	without	M12 (8-pin)	2x single-acting DN3,0	2 switching points	Threaded ports G1/8	231 292
	AS- Interface A/B	cable glands with 1m cable on flat cable clip	2x single-acting DN3,0	2 switching points	Threaded ports G1/8	231 293
	Exi (Namur)	Cable connection	2x single-acting DN3,0	2 switching points	Threaded ports G1/8	242 250

### **i** Further versions on request

- Type 8686 ASI- variants with external power supply
- Type 8686 24 VDC- variants with Cable gland

## Ordering chart for accessories (to be ordered separately)

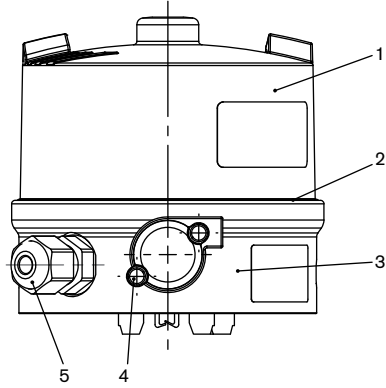
Description	Actuator size	Item no.
Adapter set for Type 8685	RV50, RV70, RV110	684 267
Adapter set for Type 8686	RV50, RV70, RV110	684 268

## Ordering chart Accessories

Description	Item no.
M12 socket, 8-pin, 5m assembled cable	919 267
M12 socket, 8-pin, 2m assembled cable	919 061
ASI-flat cable clip with VA-socket M12 (replacement part)	799 646
Silencer G1/8 threaded ports	780 779
Pilot tool for cover mounting	674 077

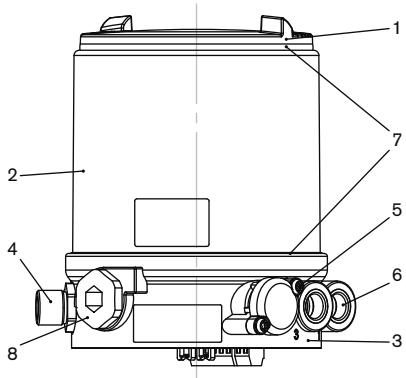
## Materials - Type 8686

Type 8685



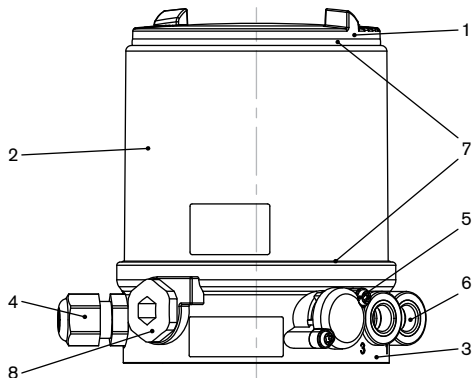
1	<b>Cover</b>	PC
2	<b>Seal</b>	EPDM
3	<b>Basic body</b>	PPS
4	<b>Screws</b>	St. st.
5	<b>Cable gland</b>	PA

Type 8686



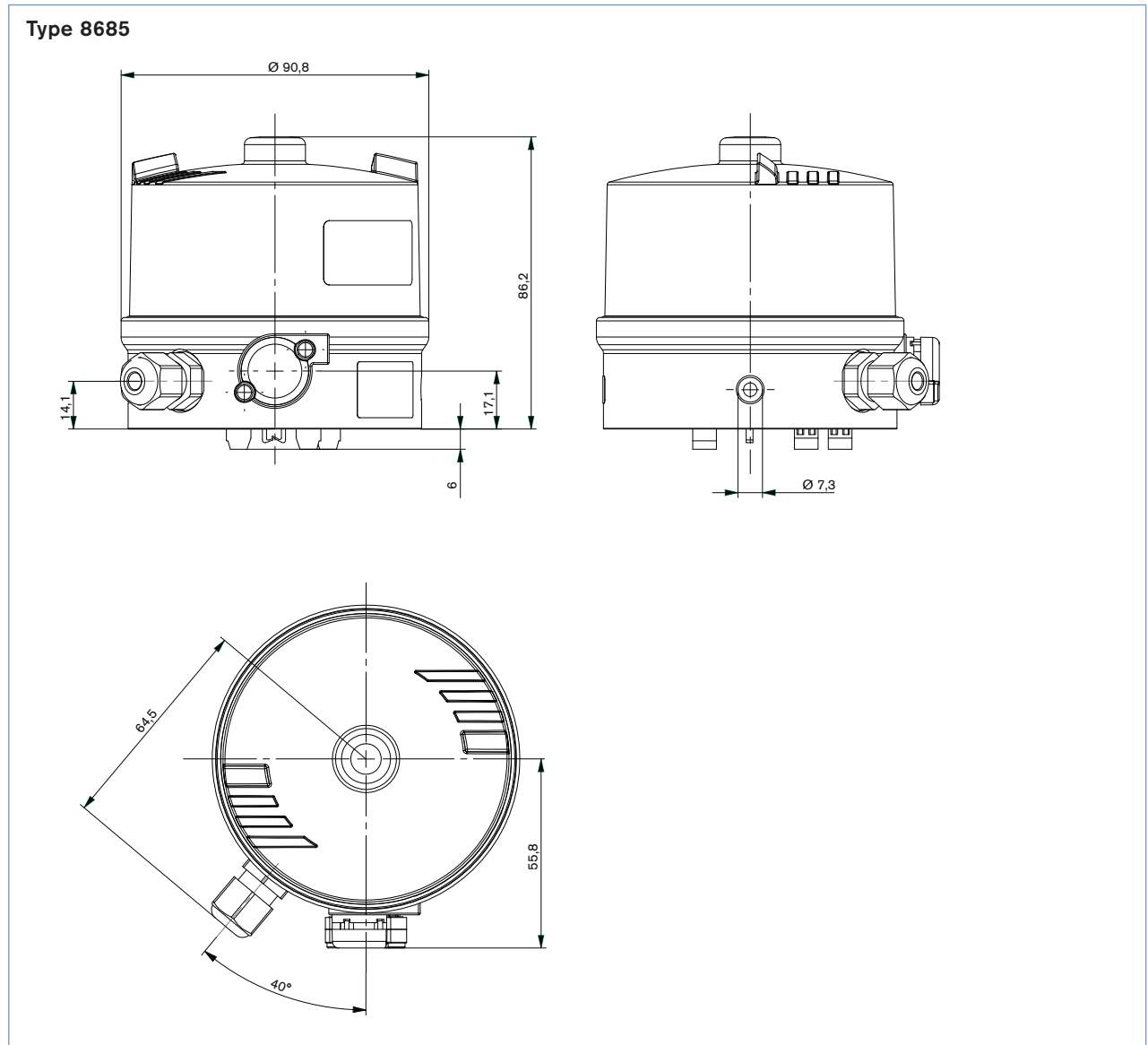
1	<b>Cover</b>	PC
2	<b>Cladding</b>	EPDM
3	<b>Basic body</b>	PPS
4	<b>Plug connector M12</b>	MS nickel-plated
5	<b>Screws</b>	VA
6	<b>Threaded ports G1/8</b>	VA
7	<b>Seal</b>	EPDM
8	<b>Blanking-off plug</b>	PA

Type 8686 Exi (Namur)



1	<b>Cover</b>	PC
2	<b>Cladding</b>	EPDM
3	<b>Basic body</b>	PPS
4	<b>Cable connection</b>	PA
5	<b>Screws</b>	VA
6	<b>Threaded ports G1/8</b>	VA
7	<b>Seal</b>	EPDM
8	<b>Blanking-off plug</b>	PA

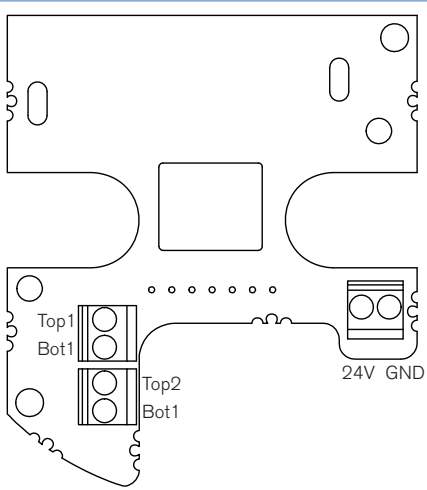
## Dimensions [mm]





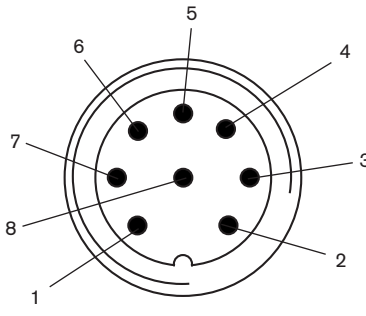
Connection options

Without field bus communication  
Cable gland - Type 8685



Description on circuit board	Description
24 V	Operating voltages + (24VDC)
GND	Operating voltages - (GND)
Top1	End positions above- Top actuator1
Bot1	End positions below- Bot actuator1
Top2	End positions above- Top actuator2
Bot1	End positions below- Bot actuator2

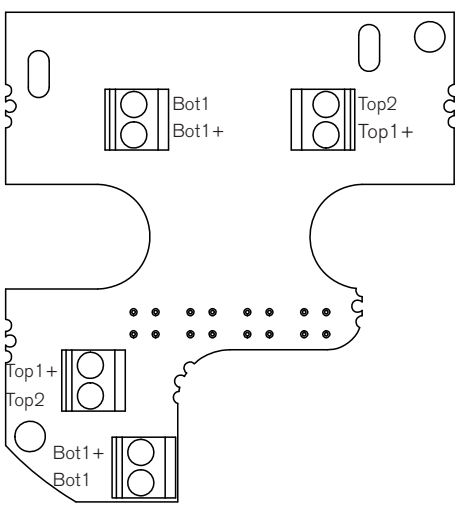
24 V DC  
Multipole connection M12, 8-pin - Type 8686



Pin	Description	Configuration
1	Limit Switch 3	End positions below- Bot actuator2
2	Limit Switch 4	End positions above- Top actuator2
3	Limit Switch 1	End positions below- Bot actuator1
4	Limit Switch 2	End positions above- Top actuator1
5	Valve 2	Valve control Y2+
6	Valve1	Valve control Y1+
7	GND	Power supply
8	24V DC	Operating voltages +

**Note:** Use only straight cable sockets

Exi (Namur)  
Cable gland - Type 8685

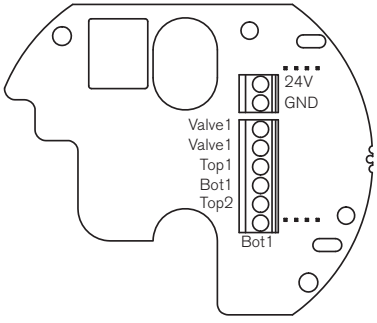


Description on circuit board	Description
Top1+	End positions above- actuator1
Top2	End positions above- actuator1
Bot1+	End positions below+ actuator1
Bot1	End positions below- actuator1
Top1+	End positions above+ actuator2
Top2	End positions above- actuator2
Bot1+	End positions below+ actuator2
Bot1	End positions below- actuator2



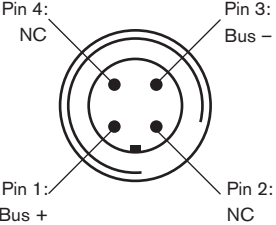

**Connection options**

**24V DC Cable gland - Type 8686**



Description on circuit board	Configuration
Bot1	End positions below- Bot actuator2
Top2	End positions above- Top actuator2
Bot1	End positions below- Bot actuator1
Top1	End positions above- Top actuator1
Valve2	Valve control Y2+ (actuator 2 operated)
Valve1	Valve control Y1+ (actuator 1 operated)
GND	Power supply
24 VDC	Operating voltages +

**AS-Interface - Type 8685 and 8686**

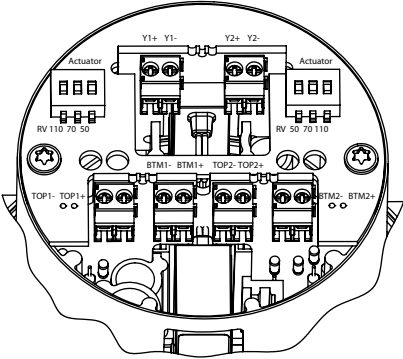



**Control head Type 8686**



**Feedback head Type 8685**

**Exi (Namur) - Type 8686**



Description on circuit board	Description
TOP1+	End positions above- actuator1
TOP1-	End positions above- actuator1
BTM1+	End positions below+ actuator1
BTM1-	End positions below- actuator1
TOP2+	End positions above+ actuator2
TOP2-	End positions above- actuator2
BTM2+	End positions below+ actuator2
BTM2-	End positions below- actuator2
Y1+	supply line valve1
Y1-	return circuit valve1
Y2+	supply line valve2
Y2-	return circuit valve2

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In case of special application conditions, please consult for advice

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