

## 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<br>Cover<br>Seal                                                                                                             |
|                                   | PPS, stainless steel<br>PC<br>EPDM                                                                                                |
| <b>Power supply</b>               |                                                                                                                                   |
| Limit switches                    | 24 VDC +/- 10%<br>8,2V DC (Ex-i-NAMUR switch amplifier)                                                                           |
| Pilot valve                       | 24V DC +/- 10%<br>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)<br>Ex ia IIC T4 Gb (IECEX BVS 13.0047 X)                                                                                                                       |
| Operating conditions   | Medium temperature of adapted process valve type 2036<br>T(media) : 0... 130°C (safety requirement value)                                                                                                |
| Power supply           |                                                                                                                                                                                                          |
| Limit switches         | Operates with Ex i-NAMUR switch amplifier: 8,2VDC<br>Operates with Ex barrier <sup>1)</sup> :<br>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:<br>< 1,2mA (terminal position reached)<br>>2,1mA (terminal position not reached)<br>Operates with Ex barrier <sup>1)</sup> :<br>max. input voltage li < 50mA |
| Electrical connection  | Cable gland M12x1,5 (cable- 6,5mm),<br>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<br>(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<br>Max. power consumption (2 valves<br>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)

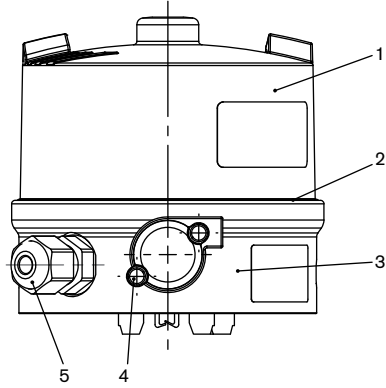
| Description               | Actuator size     | Item no. |
|---------------------------|-------------------|----------|
| Adapter set for Type 8685 | RV50, RV70, RV110 | 684 267  |
| Adapter set for Type 8686 | RV50, RV70, RV110 | 684 268  |

## 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  |

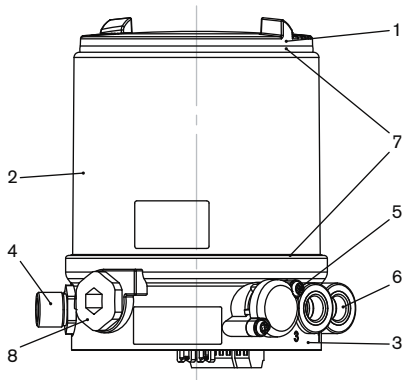
Materials - Type 8686

Type 8685



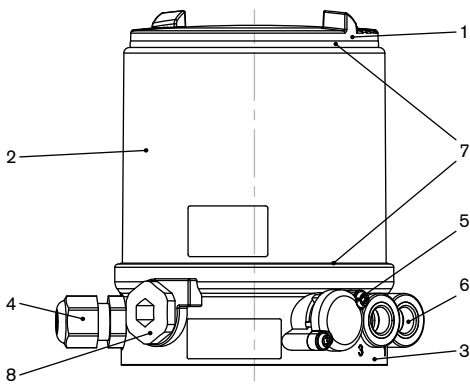
- 1 Cover PC
- 2 Seal EPDM
- 3 Basic body PPS
- 4 Screws St. st.
- 5 Cable gland PA

Type 8686



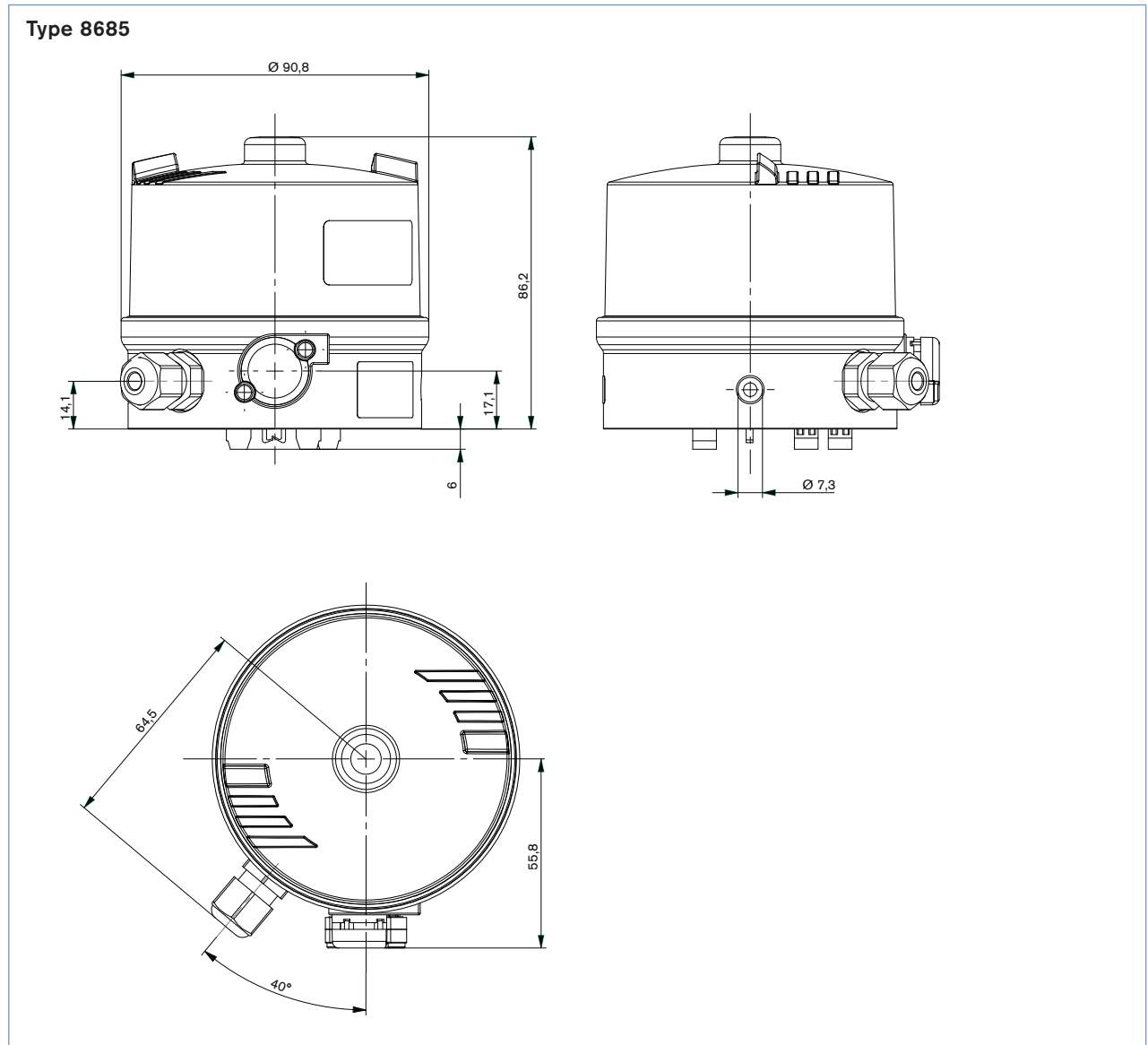
- 1 Cover PC
- 2 Cladding EPDM
- 3 Basic body PPS
- 4 Plug connector M12 MS nickel-plated
- 5 Screws VA
- 6 Threaded ports G1/8 VA
- 7 Seal EPDM
- 8 Blanking-off plug PA

Type 8686 Exi (Namur)



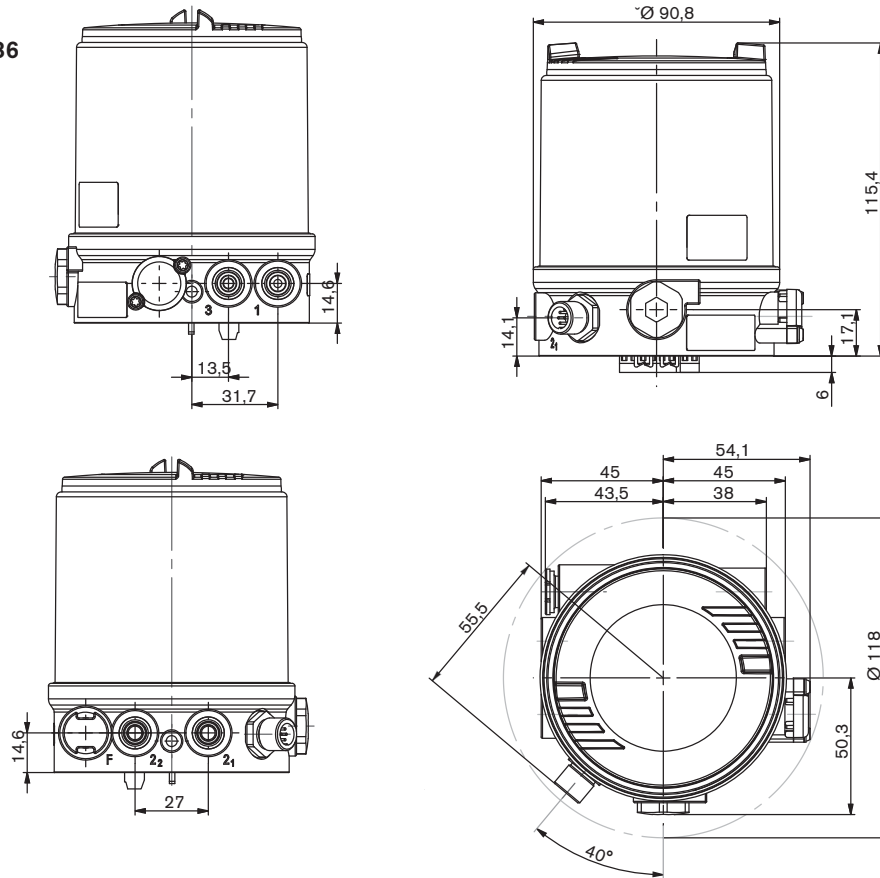
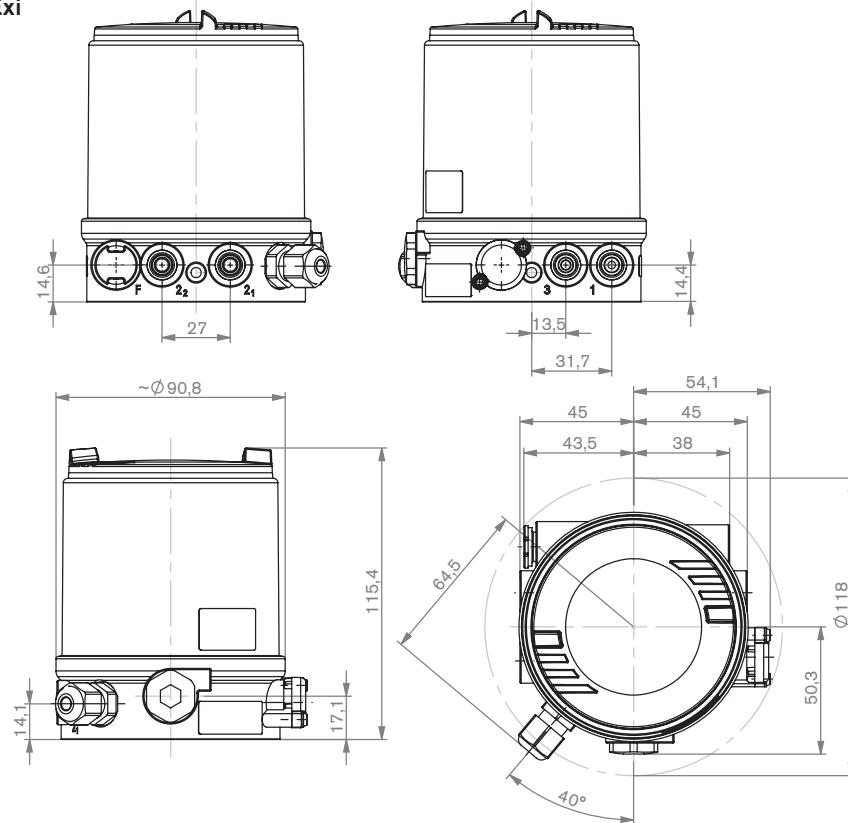
- 1 Cover PC
- 2 Cladding EPDM
- 3 Basic body PPS
- 4 Cable connection PA
- 5 Screws VA
- 6 Threaded ports G1/8 VA
- 7 Seal EPDM
- 8 Blanking-off plug PA

## Dimensions [mm]



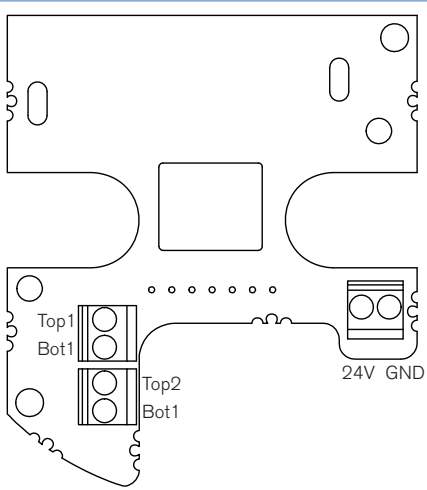
## Dimensions [mm]

Type 8686

Type 8686 Exi  
(Namur)

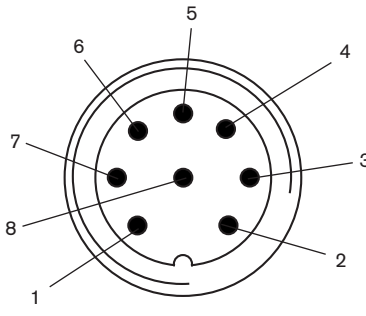
Connection options

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 |

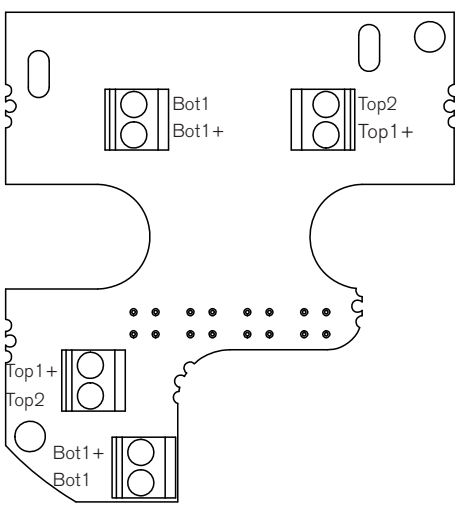
24 V DC  
Multipole connection M12, 8-pin - Type 8686



| 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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