

## SRI990 Analog Positioner

### SRI990-T Electrical Position Transmitter



The analog Positioner **SRI990** with analog input 4 to 20 mA is designed to operate pneumatic valve actuators. It offers an easy adjustment by means of switches and potentiometers. The modular structure of this positioner series enables conversion from an analog to a “intelligent” positioner by easy exchanging the electronics. In version “Electrical Position Transmitter” **SRI990-T** the device includes the option Position Transmitter but no controller and no pneumatic components. The position of actuator is given as 4 - 20 mA output signal. Further versions see next page.

### FEATURES

- Configuration by means of switches and potentiometers
- Load 300  $\Omega$
- Low air consumption
- Stroke 8 to 260 mm (0.3 to 10.2 inch)
- Angle range up to 95 degree
- Supply air pressure up to 6 bar (90 psig), with spool valve up to 7 bar (105 psig)
- Single acting or double acting
- Mechanical travel indicator
- Position transmitter 4 - 20 mA as option
- Attachment to stroke actuators directly or according to IEC 534 part 6 (NAMUR)
- Attachment to rotary actuators according to VDI/VDE 3845
- Protection class IP 66 and NEMA 4X
- Explosion protection: II 2 G Ex ib/ia IIB/IIC T4/T6 according to ATEX or “Intrinsic Safety” according to CU TR

Additional equipments (compatible to SRD991):

- Integrated inductive limit switches, independent of device electronics

Accessories (compatible to SRD991):

- Gauge attachment for supply air and outputs
- Booster relay
- SRI990 can be upgraded to a SRD991 by exchange of the electronic motherboard

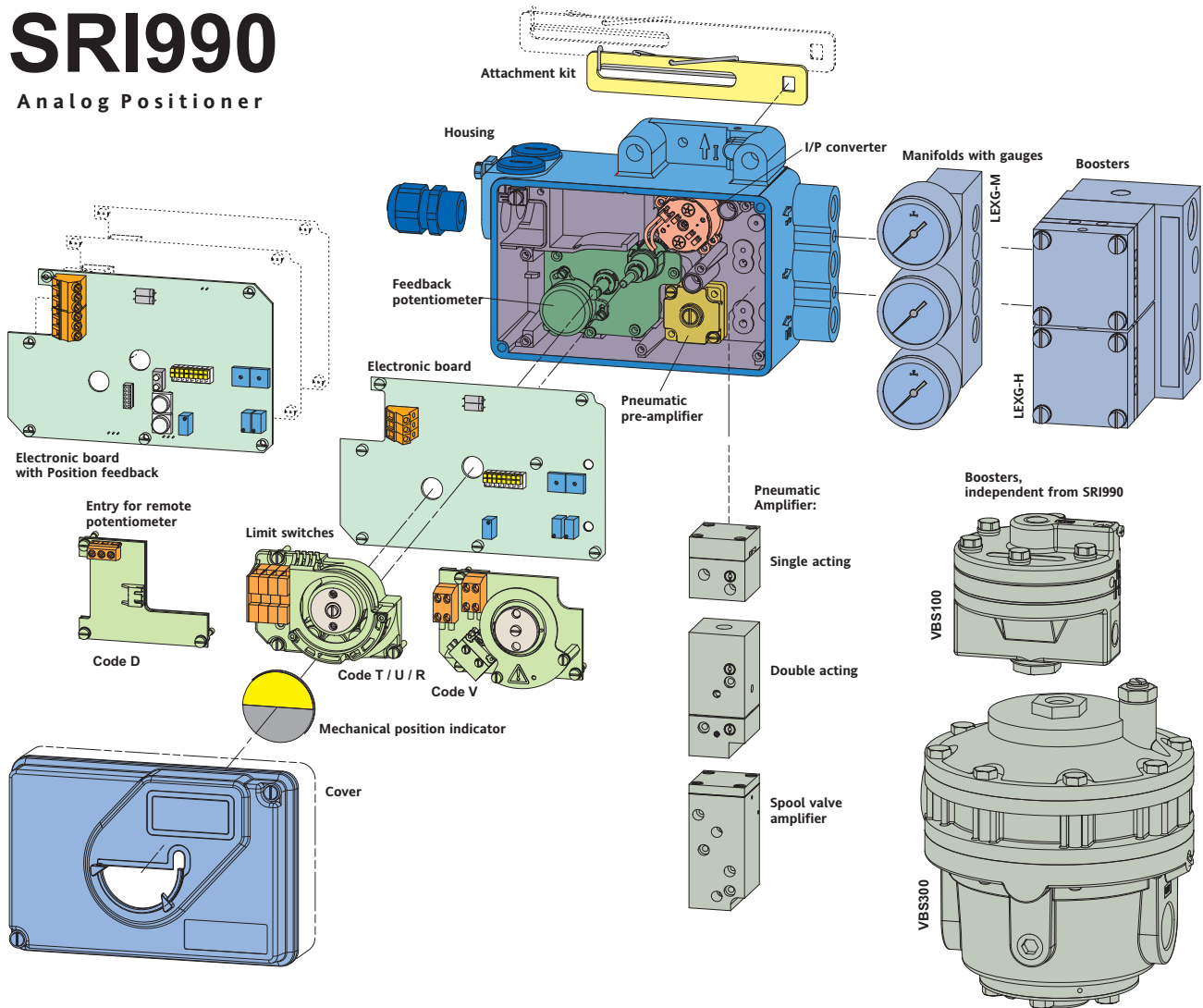
# Foxboro®

by Schneider Electric

Product overview

# SRI990

Analog Positioner



By the modular structure of this product family we can offer the SRI990 in different versions: (see also page 11 for Model Code)

	Model Code: SRI990								
	BorCIMS	BorCIQS	BorCIQx	BorCIMx	TXMT... U...	TXQS...	TXQT... U...	TXMS ****-H	TXMT ****-H U ****-H
Analog Positioner	•	•	•	•					
Position Transmitter 4-20 mA		•	•			•	•		
Limit switches types T/U/R/V			•	•	•		•		•
stand-alone potentiometer for remote mounting application							•		•

**Special Version of SRI990:**

**SRI990 Stainless Steel Housing**

To be order with model code SRI990-Cxxxxxxx-xSZ



For more information see TI EVE0105 INOX

## TECHNICAL DATA FOR ANALOG VALVE POSITIONER SRI990 -B / -C

### Input

Two-wire system	
Reverse polarity protection	.. standard feature
Interlock diode	..... standard feature
Signal range	..... 4 to 20 mA
Characteristic	..... linear to rotation angle <sup>1)</sup>
Operating range	..... 3 to 21.5 mA
Input voltage	..... DC 12 to 36 V <sup>2)</sup> (unloaded)
Load	..... 300 Ω, 6 V at 20 mA

### Configuration

#### with switches:

Rotation	..... clockwise or counter clockw.
Input signal	..... 4 to 20 mA (direct) 20 to 4 mA (inverse)
Split range <sup>1) 3)</sup>	..... 4 to 12 mA, 12 to 20 mA (by means of Dip switch) 20 to 12 mA, 12 to 4 mA

#### with potentiometers:

..... Zero (ZERO)
..... Span (S)
..... Gain (G)
..... Damping (D)

### Travel indication

mechanical (display window), for rotary or stroke actuator transmission ..... 1:2 or 1:6 switchable

### Output

Action	..... single or double acting
Output to actuator	..... 0 to ~ 100 % of supply air

### Pneumatic connection

NAMUR mounting	..... G 1/4 for pipe diameter 6 to 12 mm (0.24 to 0.47 in) for air supply and outputs y1, y2 to the actuator; 1/4 - 18NPT with additional connection manifold
Direct mounting	..... Instead of the output y1 an airconnection on the rear side with O-ring will be used(closed at NAMUR mounting).

### Electrical connection

Line entry	..... 1 or 2 cable glands 1/2-14 NPT or M20 x1.5 (others with Adapter AD-...)
Cable diameter	..... 6 -12 mm (0.24 - 0.47 in)
Screw terminals	..... terminals 11 +, 12 – for input, I– for current measurement optional ..... 4 additional terminals for limit switch signals
Wire cross section	..... 0.3 - 2.5 mm <sup>2</sup> (AWG 22 - 14)
Test sockets Ø 2 mm	..... integrated in terminals, for non- interruptable current measurement

### Weight

Single acting	..... approx. 1.7 kg (3.7 lbs)
Double acting	..... approx. 2.0 kg (4.4 lbs)

### Materials

Housing	..... aluminum (Alloy No. 230) finished with DD varnish
All moving parts of feedback system	..... 1.4306 / 1.4571 / 1.4104
Mounting bracket	..... aluminum (Alloy No. 230)

### Mounting

#### Attachment to stroke actuators

- direct	..... with attachment kit EBZG -D
- direct, FoxPak, FoxTop	... with attachment kit EBZG -E
- for casting yoke acc. to IEC 534-6 (NAMUR)	..... with attachment kit EBZG -H
- for pillar yoke acc. to IEC 534-6 (NAMUR)	..... with attachment kit EBZG -K

#### Attachment to rotary actuators

- acc. to VDI/VDE 3845	..... with attachment kit EBZG -R
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– Further attachment kits see Modelcodes on page 13 –

Mounting orientation ..... see dimensions p.15

### Ambient conditions

#### Operating conditions

acc. to IEC 654-1 ..... the device can be operated at a classe Dx location

Ambient temperature <sup>4)</sup> ..... –40 to 80 °C (–40 to 176 °F)

Relative humidity ..... up to 100 %

#### Transport and storage

Ambient temperature ..... –40 to 80 °C (–40 to 176 °F)

Storage conditions according to IEC 60721-3-1:

1K5; 1B1; 1C2; 1S3; 1M2

#### Protection class

according to IEC 529 ..... IP 66 <sup>5)</sup>

according to NEMA ..... Type 4X <sup>5)</sup>

### Electromagnetic compatibility EMC

Operating conditions ..... industrial environment

#### Immunity according to

- NAMUR recommendation NE21 fulfilled

- EN 61 326 ..... fulfilled

- EN 61 000-6-2 ..... fulfilled

#### Emission according to

- EN 55 011,

Group 1, Class A ..... fulfilled

- EN 61 000-6-2 ..... fulfilled

### Offline diagnosis

Test possibility for pneumatic control

1) The digital positioner SRI990 offers enlarged functionality

2) On request we can specify higher voltage limits

3) At maximum rotation angle range of 30 degrees (± 15 degrees around center position of feedback lever).

Split range is not available for actuators with a swivel range >30 degrees

4) With Built-in Limit Switches Code T only –20°C, with Code R –25 to 70°C

5) Under services as directed

## TECHNICAL DATA FOR POTENTIOMETER UNIT SRI990 - Txxxx - H (for remote mounting)

This unit is made of a casing with inside only a heavy duty potentiometer. This unit has to be connected to a SRI990 mounted separated on a more "safe" environment. Such kind of remote mounting is specially designed for high vibration valves, high environmental temperature, or high magnetic field.

For more information see TI EVE0105 R

### Travel Range

Stroke range . . . . . 8 to 260 mm (0.3 to 10.2 in)  
with standard feedback levers; special levers on request  
Rotation angle range . . . . . up to 95 °  
(without mechanical stop)

### Response Characteristic

please refer you to the technical data of the positioner SRD991 with which is mounted together.

### Weight

Weight. . . . . approx. 1 kg

### Ambient conditions

Ambient temperature . . . . . -40 to 100 °C (-40 to 212 °F)  
IP66

## TECHNICAL DATA FOR POSITIONER FEEDBACK 4 - 20 mA (option) SRI990 - TXQ or SRI990 - B or CxQ

Position feedback can be ordered as an option built-in in the analog valve Positioner SRI990 - B or CxQ or as a separated unit like an independent pure electrical positioner transmitter SRI990 - TxxQ

Stroke/Angle read through a separate potentiometer.  
One analog output, galvanically separated, two-wire system acc. to DIN 19234 for externally supply - supply voltage

### Electrical Position transmitter characteristic

Sensor . . . . . resistiv precision conductive plastic element  
Input . . . . . Stroke / angle from actuator via positioner feedback lever  
Stroke range . . . . . 8 to 260 mm (0.3 to 10.2 in)  
Angular range . . . . . up to 95 °  
Output . . . . . two-wire system  
Signal range . . . . . 4 to 20 mA (3.8 ... 20.5 mA)  
Permitted load . . . . .  $R_{Bmax} = (U_s - 12 V) / 0.02 A$   
( $U_s$  = Supply voltage)

### Power supply

Supply voltage . . . . . DC 12 to 36 V  
max. 48 V with "no Ex"  
Supply voltage dependency . . . . . < 0.2 %  
Response characteristic <sup>1)</sup>  
Hysteresis . . . . . < 0.5 % F.S.  
External resistance  
Dependency . . . . . < 0.2 % /  $R_{Bmax}$   
Temperature effect . . . . . < 0.3 % / 10 K

**Weight** . . . . . approx 1.1 kg for  
SRI990-TXQ

### Configuration and status

Local . . . . . 2 Push buttons and 2 LED's  
Status . . . . . 2 LED's

## Additional Documentation for other products

### Specifications device

<a href="#">PSS EVE0101</a>	SRP981	Pneumatic Positioner
<a href="#">PSS EVE0102</a>	SRI986	Electro-Pneumatic Positioner
<a href="#">PSS EVE0103</a>	SRI983	Electro-Pneumatic Positioner- explosion proof or Ex d version
<a href="#">PSS EVE0105</a>	SRD991	Intelligent Positioner
<a href="#">PSS EVE0107</a>	SRI990	Analog Positioner
<a href="#">PSS EVE0109</a>	SRD960	Universal Positioner

## FUNCTIONAL SPECIFICATIONS (common data for all versions)

### Travel range

Stroke range . . . . . 8 to 260 mm (0.3 to 10.2 in)  
with standard feedback levers; special levers on request  
Rotation angle range . . . . . up to 95 °  
(without mechanical stop)

### Supply

Supply air pressure . . . . . 1.4 to 6 bar (20 to 90 psig)  
with spool valve <sup>4)</sup> . . . . . 1.4 to 7 bar (20 to 105 psig)  
Output to actuator . . . . . 0 to ~100 % of supply air  
pressure (up to 5.5 bar at  
6 bar supply air pressure)

Air supply . . . . . according to ISO 8573-1

Solid particle size and density class 2

Oil rate . . . . . class 3

Pressure dew point 10 K under ambient temperature

For air supply, we recommend the FOXBORO ECKARDT  
FRS923 filter regulator.

### Response characteristic <sup>1) 2)</sup>

Sensitivity . . . . . < 0.1 % of travel span

Non-linearity (terminal

based adjustment) . . . . . < 0.4 % of travel span

Hysteresis . . . . . < 0.3 % of travel span

Supply air dependence. . . . . < 0.1 % / 1 bar (15 psi)

Temperature effect. . . . . < 0.3 % / 10 K

Mechanical vibration

10 to 60 Hz up to 0.14 mm,

60 to 500 Hz up to 2 g . . . . . < 0.25 % of travel span

### Air output I<sub>N</sub>/h (scfh)

at max. deviation, single and double acting:

Supply air pressure bar (psig)	1.4 (20)	3 (45)	6 (90)
without booster <sup>3)</sup>	2 700 (95)	5 000 (177)	7 500 (265)
with Spool Valve <sup>4)</sup>	6 000 (211)	12 000 (423)	18 000 (636)
with booster code F, G			21 000 (742)
with booster code H			42 000 (1 484)

Note: The use of boosters in connection with Spool valve is not recommended.

### Air consumption (steady state) I<sub>N</sub>/h (scfh)

Supply air pressure bar (psig)	1.4 (20)	3 (45)	6 (90)
single acting	80 (2.8)	130 (4.6)	220 (7.8)
double acting	130 (4.6)	230 (8.1)	430 (15.2)
Spool Valve	100 (3.5)	240 (8.5)	500 (17.7)

## SAFETY REQUIREMENTS

### CE label

Electromagnetic compatibility . . . 2004/108/EG

Low voltage regulations . . . . not applicable

### Safety

Safety . . . . . safety class III

as per DIN EN 61010-1 (DIN IEC 61010-1) (VDE 0411 part 1)  
overvoltage category . . . . . 1

internal fuses . . . . . none

external fuses . . . . . Limitation of power supplies

for fire protection has to be observed due to EN 61010-1  
9.3. ff.

1) Data measured according to VDI/VDE 2177

2) With stroke 30 mm and lever length 90 mm

3) Standard diaphragm amplifier

4) Spool valve is the type of amplifier used in device SRI990-Cxxxx-S

## Electrical classification <sup>1) 2)</sup>

See Certificate of Conformity EX EVE0107A

### Type of protection ATEX "intrinsically safe"

Analog positioner (Basic device)

Type AI 636 . . . . . II 2 G EEx ib/ia IIB/IIC T4/T6

Certificate of Conformity . . . . . PTB 02 ATEX 2206

For use in hazardous areas in circuits certified as intrinsically safe with the following maximum values:

Input circuit

$U_i$  . . . . . 30 V

$I_i$  . . . . . 130 mA

$P_i$  . . . . . 0.9 W

Internal inductance  $L_i$  . . . . . 25  $\mu$ H

Internal capacitance  $C_i$  . . . . . 18.9 nF diff. / 22.7 nF to earth

T6 Ambient temperature . . . -40 to 40 °C (-40 to 104 °F)

T4 Ambient temperature . . . -40 to 80 °C (-40 to 176 °F)

The control circuit is safely electrically isolated from ground and all other circuits.

### Additional equipment "Inductive limit switch"

For use in hazardous areas in circuits certified as intrinsically safe with the following maximum values:

$U_{max}$  . . . . . 16 V

$I_{max}$  . . . . . 25 mA

$P_{max}$  . . . . . 64 mW

Internal inductance . . . . . 100  $\mu$ H

Internal capacitance . . . . . 30 nF

T6 Ambient temperature . . . -40 to 40 °C (-40 to 104 °F)

T4 Ambient temperature . . . -40 to 80 °C (-40 to 176 °F)

Permissible temperature class and ambient temperature dependent on the basic device.

### Additional equipment "Position Transmitter"

For use in hazardous areas in circuits certified as intrinsically safe with the following maximum values:

$U_i = 30$  V,  $I_i = 130$  mA,  $P_i = 0.9$  W

Internal inductance  $L_i$  . . . . . 25  $\mu$ H

Internal capacitance  $C_i$  . . . . . 17.2 nF diff. / 21 nF to earth

The control circuit is safely electrically isolated from ground and all other circuits.

## Explosion protection Zone 2

It is recommended to use the positioner with explosion protection "intrinsically safe" acc. to EN 50020 and EN 50014 (consider temperature class). In the EU these positioner may be operated in Zone 2 with non-intrinsically safe circuits if the operating values do not exceed the maximum reference values. The non intrinsic safe circuits has additionally fulfill the requirements of EN61010-1 (IEC 1010-1), protection grade III, overvoltage category I (transient voltage lower than 40 %).

## Explosion protection Zone 20

Certificate of Conformity . . . . . IBExU08 ATEX 1148  
EX II 1D Ex iaD 20 T 100°C -40 °C <  $T_a$  < +80 °C

Electrical Data

Supply circuit in type of protection Intrinsic safety Ex ia or Ex ib

$U_i$  . . . . . 40 V DC

$I_i$  . . . . . 150 mA

$P_i$  . . . . . 1000 mW

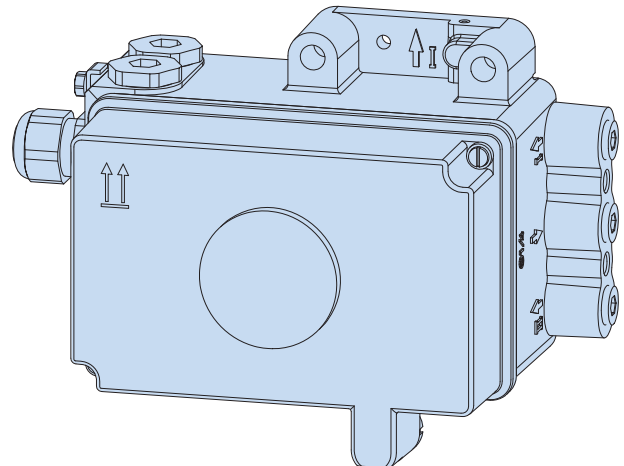
effective inner capacity  $C_i$  . . . . . 6 nF

effective inner inductivity  $L_i$  . . . . . 5  $\mu$ H

The supply connections have an inner capacity of max. 11 nF opposite the ground.

The positioner type SRI990 fulfils the requirements of explosion protection for the Equipment Group II and Category 1D in type of protection Intrinsic safety for dust with a maximum surface temperature of 100 °C.

With Electrical Classification ATEX + Zone 20 Dust, Codes ED4 and EDA, the Travel indicator is not visible.



## Type of protection CU TR "Intrinsically Safe"

Marking EAC

For more details please refer to CU TR certificate for SRI990.

1) With appropriate order only

2) National requirements must be observed

## Built-in Limit Switches

Stroke / angle derived from positioner feedback

Inductive proximity sensors,

- standard version (SJ2-N) . . . . Code T (only to –20°C)
- security version (SJ2-SN) . . . Code U
- 3-wire (SI2-K08-AP7/ PNP) . . Code R (no Ex, –25 to 70 °C)
- Micro switches . . . . . Code V (no Ex)

(Details see next page)

## Entry for remote potentiometer

(for remote mounting main unit)

– Code D

This remote application is used in applications where high temperatures or vibration are present and can result in negative influences to the control. It can also be used in places not easy to reach, to ensure an easier handling of the unit, or for cylinders with large strokes.

The Positioner unit (Remote unit) is mounted far away from the valve or cylinder in a safe environment.

The Potentiometer unit is mounted on the valve or cylinder. This potentiometer unit can be made of a derivative version of the SRI990 positioner (only potentiometer in the housing) or of an external potentiometer like a linear potentiometer for application onto cylinders, for example.

This option is to be used with a potentiometer unit 3 wires system with ca. 5 kOhm resistance.

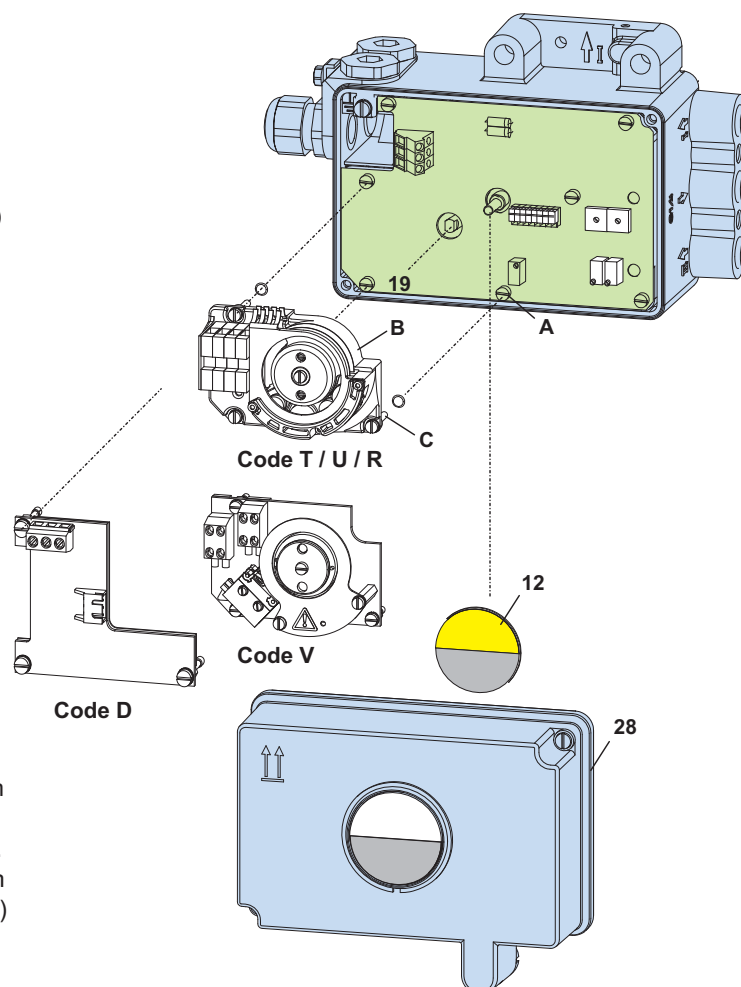
If the following requirements are observed, the set-up is insensitive to electrical disturbances caused by high electromagnetic fields, EMC and HF-radiation.

Cable Length max. . . . . 10 m (32 ft)

Cable Specification (not supplied by Foxboro Eckardt):

- 3-wire twisted pair, shielded
- Shield needs to be connected on both ends to the internal ground
- Shield endings need to be kept very short when connecting to the ground
- A HF cable gland is not required

For more information about remote mounting please consult TI EVE0105 R.



## Parts Kits for additional installation of auxiliary functions

Model code	Supply	Parts Kit
Code T: Limit signal switch, normal version	external	EW 426 164 012
Code U: Limit signal switch, security version	external	EW 426 164 021
Code R: Limit signal switch, 3-wire	external	EW 426 164 057
Code V: Limit signal switch, micro switches	external	EW 426 164 066
Code D: Entry for remote potentiometer	internal	EW 426 164 093



**Inductive Limit Switch (Code T, U)**

Output . . . . . 2 inductive proximity sensors  
acc. to DIN 19 234 or NAMUR for connection to  
switching amplifier <sup>1)</sup>

Current consumption  
vane clear . . . . . > 2.2 mA  
vane interposed . . . . . < 1 mA

for control circuit with the following electrical values:  
supply voltage . . . . . DC 8 V, R<sub>i</sub> approx. 1 kOhm  
supply voltage range. . . . . DC 5 to 25 V (with "no Ex")  
residual ripple. . . . . < 10 % p.p.  
permissible  
line resistance . . . . . < 100 Ohms

Response characteristic <sup>2) 3)</sup>  
switching differential . . . . . < 1 %  
switching point repeatability . . . . . < 0.2 %

Terminals for GW1 . . . . . 41+, 42-  
GW2 . . . . . 51+, 52-

Electrical Classification ATEX  
of versions "T" and "U":

Types of protection and temperature classes as basic device,  
see page 7.

Additions for this option, Type AI 638 K, in EC- Certificate of  
Conformity PTB 00 ATEX 2128:

Types of protection and temperature classes as basic device.  
For use in hazardous areas in circuits certified as intrinsic-  
ally safe with the following maximum values:

U<sub>i</sub>= 16 V, I<sub>i</sub>= 25 mA, P<sub>i</sub>= 64 mW

Internal capacitance and inductance: C<sub>i</sub>= 30 nF, L<sub>i</sub>= 100 μH  
The electric circuits of "Built-in Limit Switch" are galvanically  
separated from all other circuits and from earth.

**Inductive Limit Switch, three-wire system**

– Code R

Input . . . . . Stroke / angle from actuator  
via positioner feedback lever

Output . . . . . 2 inductive proximity sensors,  
three-wire system,  
LED indication,  
contact, pnp <sup>2) 4)</sup>

Supply voltage U<sub>s</sub> . . . . . DC 10 to 30 V  
Residual ripple. . . . . ± 10 %, U<sub>s</sub> = 30 V

Switching frequency . . . . . 2 kHz  
Constant current . . . . . 100 mA

Response characteristic <sup>6)</sup>  
Gain . . . . . continuously adjustable  
from 1:1 to approx. 7:1

Switching differential . . . . . < 1 %  
Switching point  
repeatability. . . . . < 0.2 %

Terminals for GW1 . . . . . 42  
GW2 . . . . . 52  
Supply. . . . . 41+, 43-

1) Operating mode min. (= low) / max. (= high)  
selectable by adjustment of switch vanes

2) Data measured according to VDI/VDE 2177

3) With stroke 30 mm and lever length 90 mm

**Mechanical Switches (Micro Switches) Code V**

(only without Ex protection)

Stroke / angle derived from positioner feedback lever

Output . . . . . 2 mechanical switches (Micro  
switches) <sup>5) 6)</sup>

Manufacturer . . . . . Saia-Burgess

Type . . . . . V4NS-C4-AC1-UL  
(UL- and CSA-approved)

Parts set for subsequent mounting:

Code V . . . . . EW 426 164 066

**Absolute limit values AC**

of mechanical switches built into positioner:

U<sub>max</sub>. . . . . 130 V AC <sup>7)</sup>

I<sub>max</sub> . . . . . 0.5 A (resistive Load) <sup>7)</sup>

I<sub>max</sub> . . . . . 0.03 A (inductive Load) <sup>8)</sup>

**Absolute limit values DC**

of mechanical switches built into positioner: <sup>9)</sup>

U<sub>max</sub>. . . . . 30 V DC

I<sub>max</sub> . . . . . 1 A

Switching Differential: . . . . . < 2.5 %

Terminals for SW1 . . . . . 41, 42  
SW2 . . . . . 51, 52

The circuit of the mechanical switches have to be protected  
by a suitable fuse. The diameter of the protective conductor  
needs to be at least 1.5 mm<sup>2</sup> / AWG 16.

5) Operating mode min. (=low) / max. (=high) selectable by adjusting the  
respective vane

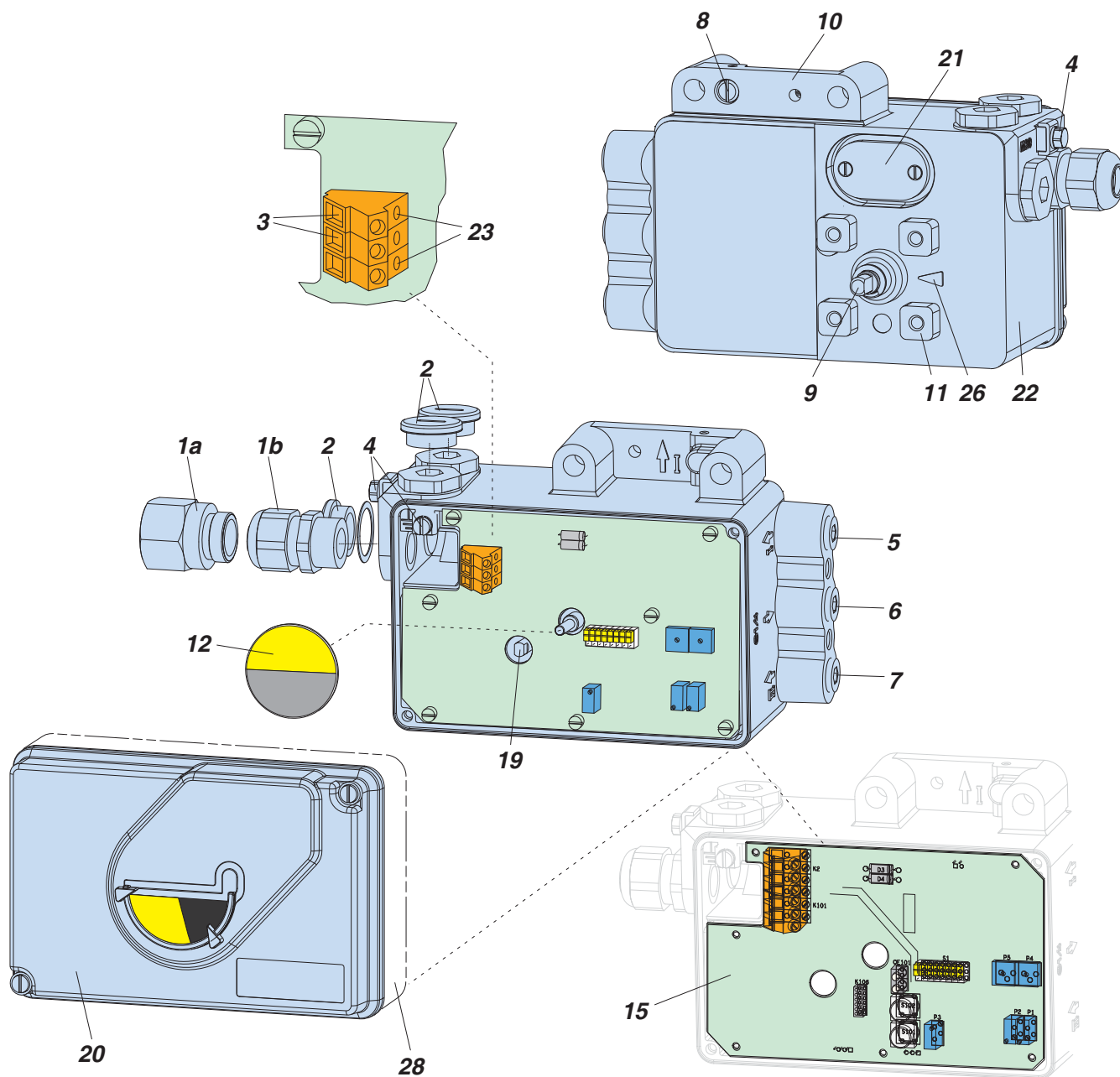
6) Operating mode normally open / normally closed selectable by vane  
adjustment

7) Approval according to UL (UL 1054) and CSA (CSA 22.2 No. 55) at  
6,000 operations and T = 65 °C / 149 °F

8) Based on EN 61058-1, at 10,000 operations and T = 85 °C / 185 °F

9) General rating at 50,000 operations and T = 85 °C / 185 °F

## FUNCTIONAL DESIGNATIONS



- 1a** Adapter, eg. 1/2"-14NPT
- 1b** Cable gland
- 2** Plug, interchangeable with Pos. **1**
- 3** Screw terminals (11 + / 12 -) for input (w), (l-) for current measurement (see also Item **23**)
- 4** Ground connection
- 5** Female thread G 1/4 for output I (y / y1)
- 6** Female thread G 1/4 for air supply (s)
- 7** Female thread G 1/4 for output II (y2)
- 8** Direct attachment hole for output I (y1)
- 9** Feedback shaft
- 10** Connection manifold for attachment to stroke actuators

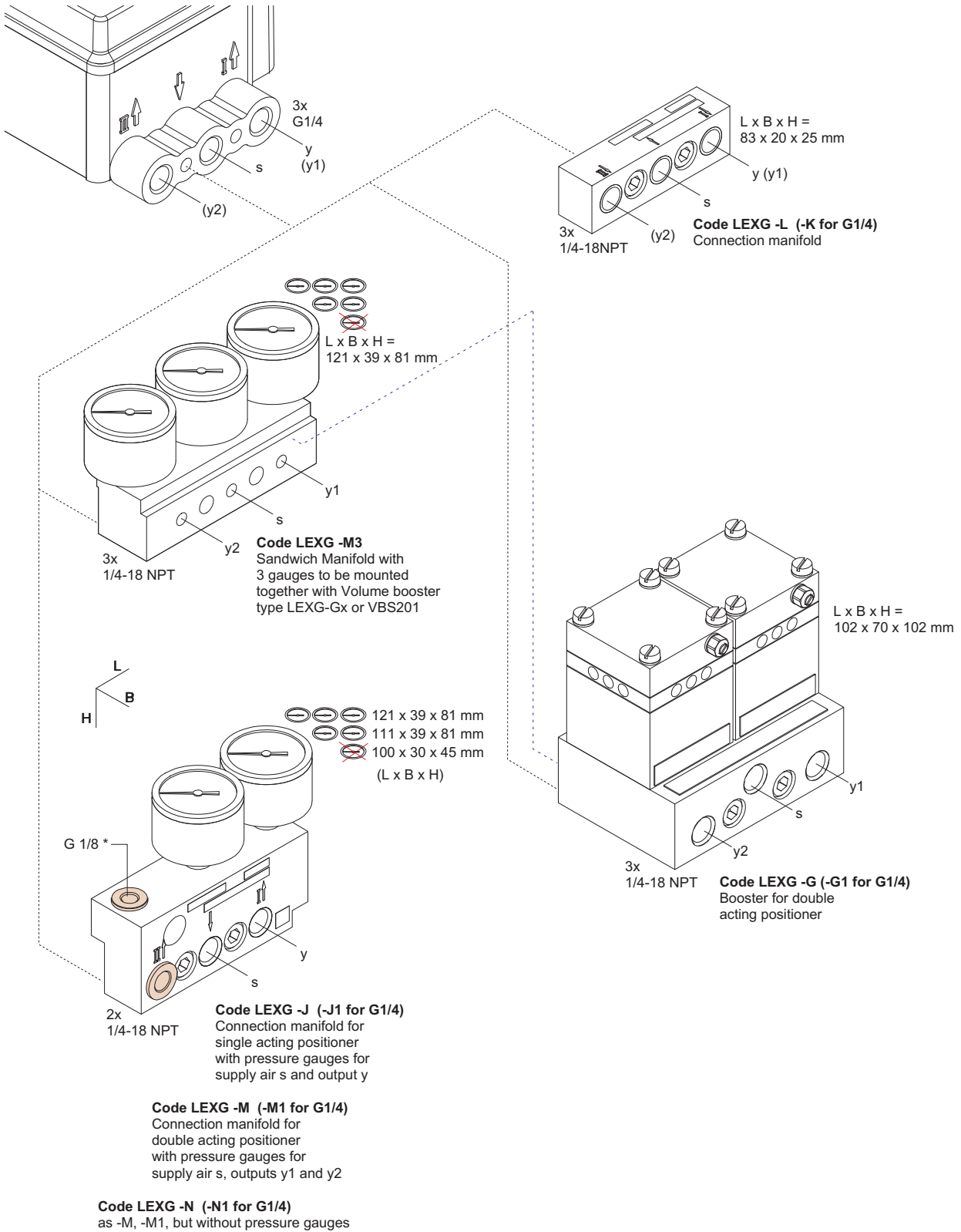
- 11** Connection base for attachment to rotary actuators
- 12** Travel indicator
- 15** Main board, version "with Position Feedback"
- 19** Fixing shaft for limit switch
- 20** Cover with window to **12**
- 21** Air vent, dust and water protected
- 22** Data label
- 23** Tip jacks for current measurement,  $\varnothing$  2 mm (integrated in terminals)
- 26** Arrow is perpendicular to shaft **9** at angle 0 degree
- 28** High cover with built-in limit switches

**MODEL CODES SRI990**

Analog Positioner		SRI990							010413
<b>Version</b>									
Single Acting . . . . .		-B							
Double Acting . . . . .		-C							
Position Transmitter (w/o pneumatic components) . . . . .		-T							
<b>Input</b>									
Signal Range 4 - 20 mA . . . . . (h)								I	
Not applicable (w/o Input Signal or Pneumatics) . . . . . (f)								X	
<b>Additional Inputs/Outputs</b>									
Without Additional Inputs / Outputs . . . . . (q)								M	
Position Feedback 4 - 20 mA . . . . .								Q	
<b>Built-In Limit Switch</b>									
Without Built-In Limit Switch . . . . .								S	
Inductive Limit Switch - Intrinsic Safe (Standard Version SJ2-N) . . . . .								T	
Inductive Limit Switch - Intrinsic Safe (Security Version SJ2-SN) . . . . .								U	
Inductive Limit Switch (Three Wire Version) . . . . . (g)								R	
Mechanical Switches (Micro Switches) / UL- and CSA-approved . . . . . (g)								V	
Potentiometer Input (for Remote Mounting - main unit) . . . . . (z)								D	
<b>Cable Entry</b>									
1/2"-14 NPT (with Adapter(s) M20x1,5 to 1/2"-14 NPT) . . . . .								6	
M20 x 1.5 With One Plastic Cable Gland . . . . .								7	
<b>Electrical Classification</b>									
Without Ex . . . . .									ZZZ
II 2 G Ex ia IIC T6 Gb according to ATEX . . . . .									EAA
II 3 G/D Ex ic T6 Gc/Dc according to ATEX . . . . .									2CA
II 2 G Ex ia IIC T6 Gb + II 1D Ex iaD 20 T 100°C Da according to ATEX . . . . .									EDA
CU TR Approved For Intrinsic Safety . . . . .									EAC
<b>Options</b>									
Pneumatic connection 1/4 - 18 NPT made of an additional manifold . . . . . (p)									-Y
Pneumatic connection G 1/4 . . . . . (p)									-R
without Pneumatic connection . . . . . (p)(f)									-U
Positioner free of copper and its alloys . . . . . (i)									-C
Pneumatic Amplifier in the version "Spool Valve" . . . . . (e)									-S
Approved for SIL2 / SIL3 application . . . . . (l)									-Q
Version of Positioner according to VDI/VDE 3847 . . . . .									-N
Feedback-Unit for Remote Mounting - Version of Position Transmitter only with a potentiometer . . . . . (f)(k)									-H
Version of Position Transmitter with additional cable connections for solenoid-valve-connection . . . . . (f)									-D
Certificate EN 10204-2.1 - Certificate of compliance with the order . . . . .									-1
Stainless Steel Housing . . . . . (n)									-Z
Stainless Steel Housing without SST gauges . . . . . (n)									-Z1
Stainless Steel Housing . . . . . (n)									-ZK
Stainless Steel Housing without SST gauges . . . . . (n)									-ZK1
Top Mounting version of SRI990 with built-in linear potentiometer . . . . .									-W
Tag No. Labeling Stamped With Weather Resistant Color . . . . .									-G
Tag No. Labeling Stainless Steel Label Fixed With Wire . . . . .									-L

- (a) Only with (Version -B OR -C) AND (Input -I) AND (Additional Input/Output - M) AND (Built-In Limit Switch -S) AND (Electrical Classification -ZZZ) (b) On request (d) Not released (e) Only with Version -C
- (f) Only with Version -T (g) Not available with Electrical Classification EAA, GAA
- (h) Not available with Version -T (i) Available with (Version: B) OR with (Version: C) AND (Optional Features: S)
- (j) Not with (Optional Features -U OR -N OR -H OR -D OR -Z OR -Z1)
- (k) Not available with Additional Inputs/Outputs Q (l) Only available for Version single-acting -B
- (n) Available WITH (Version: C) AND (Built-in Limit Switch: S) AND (Electrical Classification: ZZZ, EAA, GAA) AND (Optional Features: S) OR WITH (Version: T) AND (Built-in Limit Switch: S) AND (Electrical Classification: ZZZ, EAA, GAA) OR WITH (Version: B) A
- (p) One of the option -Y or -R is mandatory to be select
- (q) WITH (Version: B, C) OR WITH (Version: T) AND (Input: X) AND (Optional Features: H) OR WITH (Version: T) AND (Input: X) AND (Built-in Limit Switch: T, U, R, V)
- (z) Only available with Electrical Classification ZZZ or 2CA

## Accessories, for all basic devices



\* Unused threads for pressure gauges are closed by means of lock screw Part No. 425 024 013.

1) Note: Booster manifold or Gauge manifold - not both.

**MODEL CODES Attachment kits**

<b>ACCESSORIES FOR POSITIONER (SRD991, SRI990, SRD960)</b>		042007
<b>Attachment Kit</b>		<b>EBZG</b>
For diaphragm actuators with casting yoke acc. NAMUR (incl. standard Couple lever)		-H
For diaphragm actuators with pillar yoke acc. NAMUR (incl. standard Couple lever)		-K
For directly mounting (incl. standard Couple lever)		-D
For mounting to rotary actuators acc. VDI/VDE 3845 (without bracket)		-R
For FoxTop / FoxPak (g)		-E
Brackets VDI/VDE 3845 (A = 130 mm/5.12 in; B = 50 mm/1.97 in)		-C3
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 30 mm/1.18 in)		-C2
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 20 mm/0.79 in)		-C1
For Badger Meter - Research Control Series 754 and 755 Size 1/2 inch		-B1
For Fisher 657, 667 (linear) size 30 and 40		-F1
1051, 1052, 1061 size 40		-F2
657, 667 size 30 and 60		-F3
657, 667 size 70 and 100		-F4
1051, 1052, 1061 size 33		-F5
1051, 1052, 1061 size 60		-F6
For Foxboro P-Series / such as -H with installed height 80 mm/3.15 in		-H1
NAMUR-Attachment kit for centered mounting position on the casting yoke		-H2
For mounting on ADAR control valve		-H3
micro flow control valve (k)		-H4
Such as -K with installed height 80 mm/3.15 in		-K1
For Kinetrol (Actuator Size 05)		-K2
(Actuator Size 07)		-K3
(Actuator Size 09)		-K4
For Metso / Neles Rotary actuators Type AB6 and Type BJ & BC size 8 and 10, B1C11		-L1
Type BJ and BC size 12 and 16, B1C17		-L2
For ARI-Armaturen - Direct Mounting to actuator type DR		-P1
For ARCA - Direct Mounting to actuator type BR 812		-P2
For Samson Type 3277 with 1/4 - 18 NPT		-S1
Type 3277 with G 1/4		-S2
Type 3277 with 1/4 - 18 NPT and gauges for supply- and output-pressure (g)		-S5
Type 3277 with G 1/4 and gauges for supply- and output-pressure (g)		-S6
Micro flow Type 3277-5 (k)		-S8
Tuffin / XOMOX Type MX60 (h)		-T1
Type MX200 (h)		-T2
Type MX450 / Typ MX750 / Typ MX1250 (h)		-T3
Type MX3000 (h)		-T4
For Hagan actuators (left of pneumatic cylinder)		-X2
(right of pneumatic cylinder)		-X1
For AMRI rotary actuator (requires minor modification of actuator. Please consult ECKARDT production before ordering!)		-X3
For Siemens actuators V-Series		-S3
For Sereg Maxflo, Revca, Reglob new type		-S4
Maxflo "old type"		-S7
CNX (Flowserve)		-S9
For Masoneilan Type Camflex II		-M
47/48 (Sigma-F)		-M1
Type 37/38 size 15 and 18 (complete kit)		-M2
Type 87/88 all size		-M4
Varipac		-M5
37/38 size 9, 11, 13		-M6
Severn Glocon Type Domotor size small(h)		-M7
For Valtek Linear Actuator all Sizes - Stroke up to 4 inch / 102 mm		-V1
For VETEC Type R150		-V2

\*) We recommend to contact our field service dept. before selection of these mounting kits.  
Further Attachment kits on request. See also Attachment-kits.pdf [here](#).

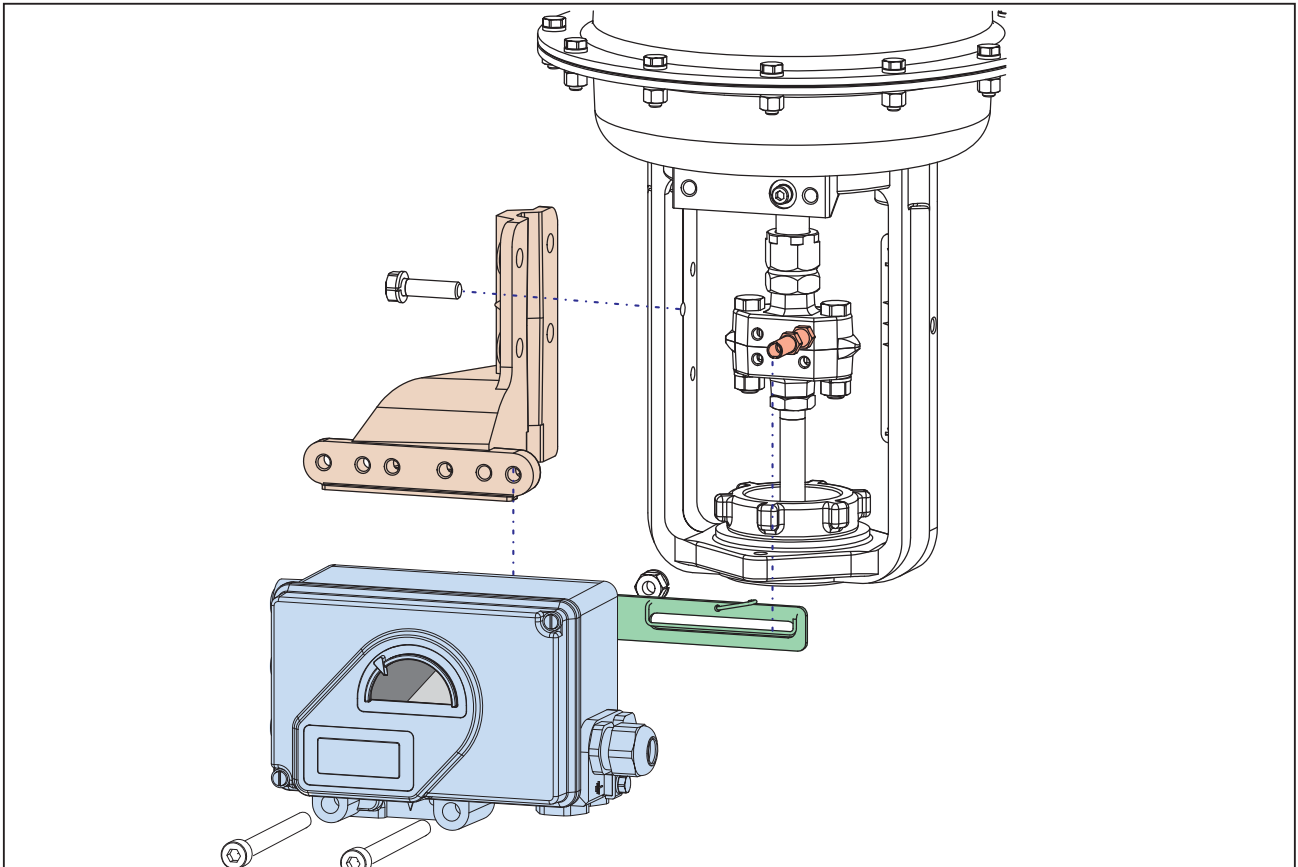
**Model Codes Accessories**

**Accessories for intelligent Positioners**

	<b>BUSG</b>
<b>Cable Gland</b>	
M20 x 1.5 stainless steel . . . . .	-S6
M20 x 1.5 plastic, color gray . . . . .	-K6
M20 x 1.5 plastic, color blue . . . . .	-K7
M20 x 1.5 plastic, color white . . . . .	-K9
M20 x 1.5 HF-cable gland for Fieldbus . . . . .	-P4
M20 x 1.5 Plug-connector for Fieldbus (ss / threaded connection 7/8 - UN) . . . . .	-F2
M20 x 1.5 Plug-connector for Fieldbus (ss / threaded connection M12) . . . . .	-P3
M20 x 1.5 stainless steel EEx d . . . . .	-S7
M20 x 1.5 brass zink plated EEx d . . . . .	-S8
1/2-14 NPT cable gland 6...12 mm, Stainless steel, EEx d . . . . .	-N1
1/2-14 NPT cable gland 6...12 mm, Steel zink plated, EEx d . . . . .	-N2
1/2-14 NPT, brass zink plated, EEx d . . . . .	-N3
M20 x 1.5 Plug, plastic . . . . .	-V3
M20 x 1.5 Plug, EEx d / explosionproof certified, stainless steel . . . . .	-V4
1/2-14 NPT Plug, EEx d / explosionproof certified, stainless steel . . . . .	-V5
M20 x 1.5 Plug, brass zink plated, EEx d . . . . .	-V6
1/2-14 NPT Plug, brass zink plated, EEx d . . . . .	-V7
<b>Adapter</b>	<b>AD</b>
Adapter 1/2" NPT to 3/4" NPT (stainless steel) . . . . .	-A3
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (Brass nickel plated) . . . . .	-A5
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (stainless steel) . . . . .	-A6
Adapter M20 x 1.5 to G1/2" (internal thread) (stainless steel) . . . . .	-A8
Adapter (plastic) M20 x 1.5 to PG13.5 (internal thread) . . . . .	-A9
<b>Manifold (for SRD960, SRD991 and SRI990)</b>	<b>LEXG</b>
With Connection G 1/4 . . . . .	-K
<b>Gauge Manifold (for SRD960, SRD991 and SRI990 with 1/4 - 18 NPT connection)</b>	
Without gauges . . . . .	-N
With gauges for Version single acting . . . . .	-J
With gauges for Version double acting . . . . .	-M
<b>with G1/4 connection)</b>	
Without gauges . . . . .	-N1
With gauges for Version single acting . . . . .	-J1
With gauges for Version double acting . . . . .	-M1
<b>Booster Relay</b>	
Booster Cv1 - Alu Housing - Remote mount . . . . .	VBS100
Booster Cv1 - SST Housing - Remote mount . . . . .	VBS110
Booster Cv3 - Alu Housing - Remote mount . . . . .	VBS300
Booster Cv3 - SST Housing - Remote mount . . . . .	VBS310
Booster Relay with connection 1/4-18 NPT . . . . .	LEXG-G
Booster Relay with connection G 1/4 . . . . .	LEXG-G1

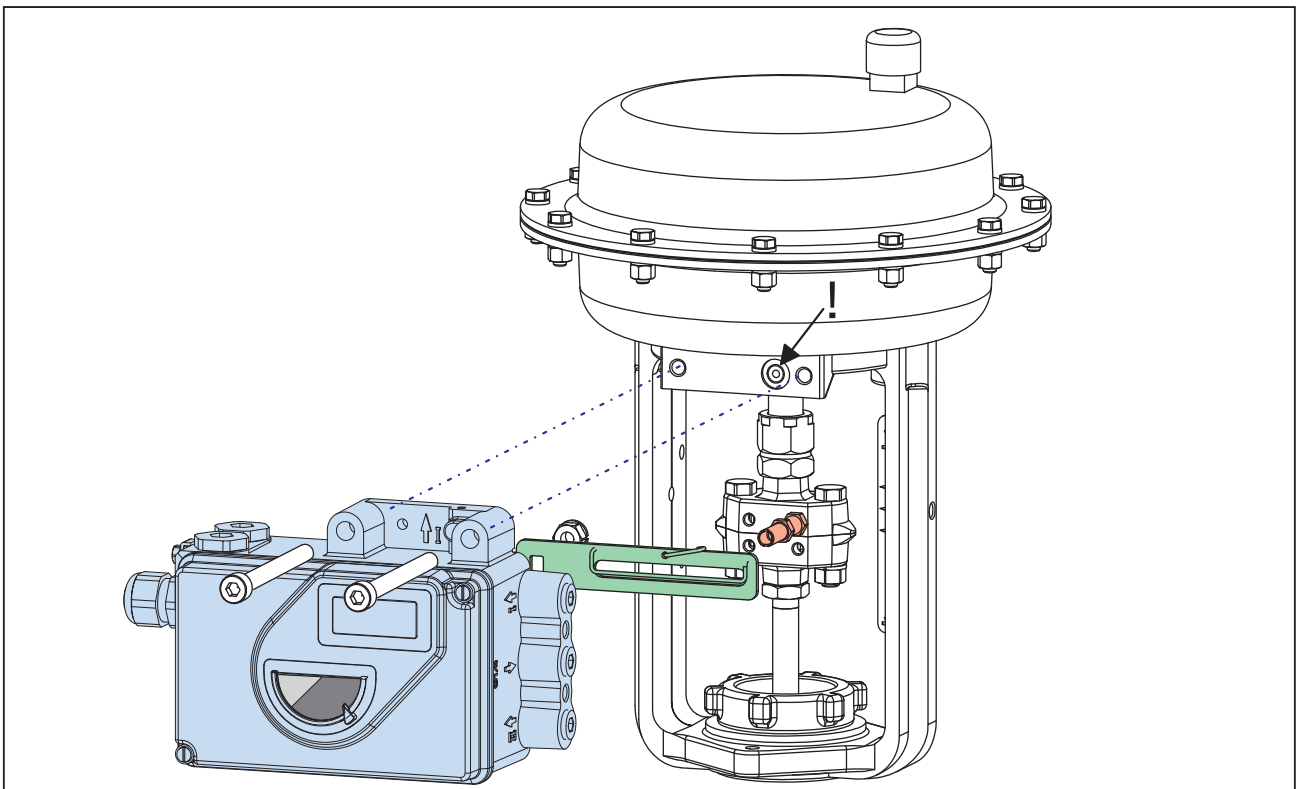
### MOUNTING TO LINEAR ACTUATORS

Attachment to stroke actuators acc. to IEC 534-6 (NAMUR), left hand



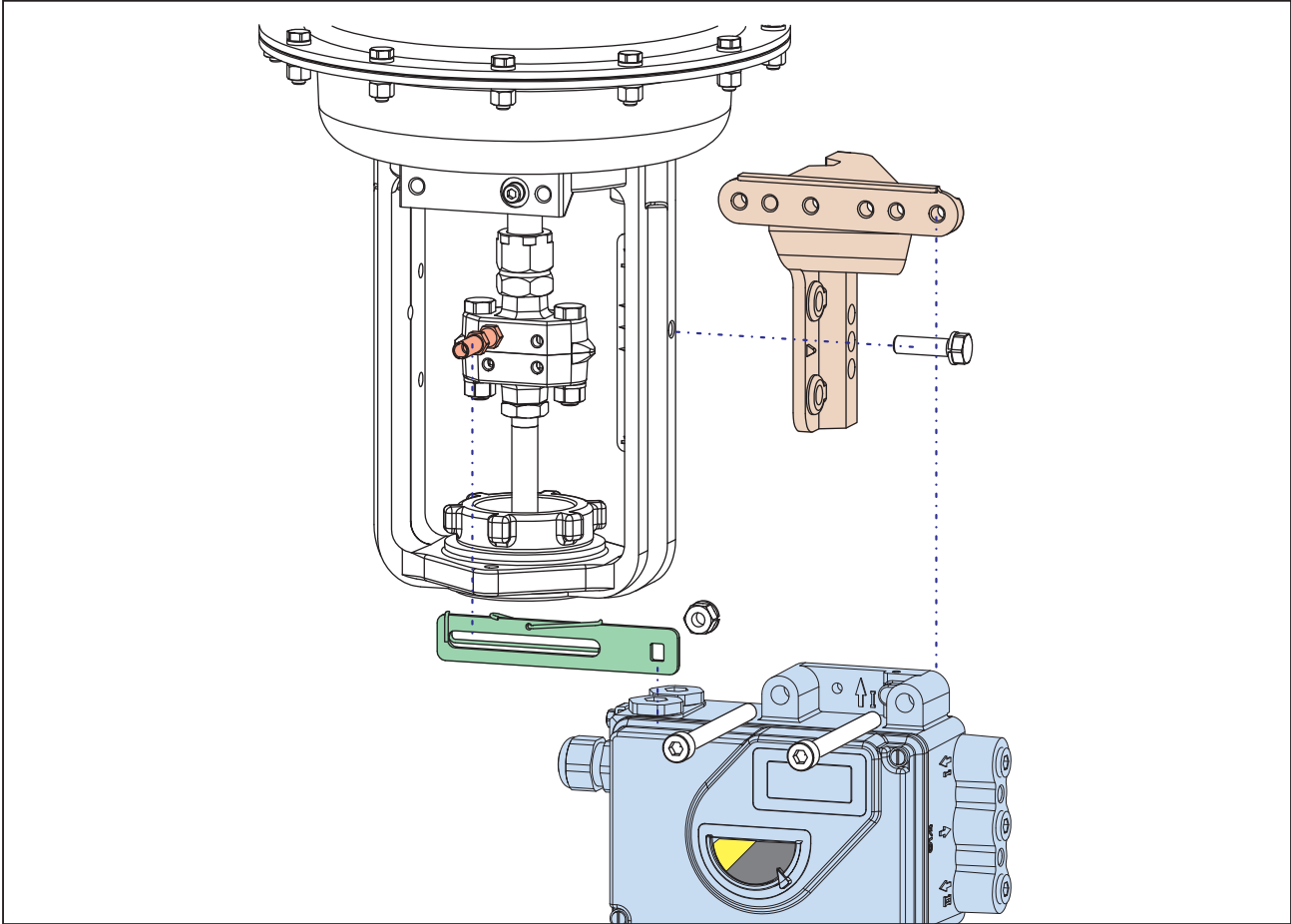
### MOUNTING TO LINEAR ACTUATORS

Direct attachment to stroke actuators

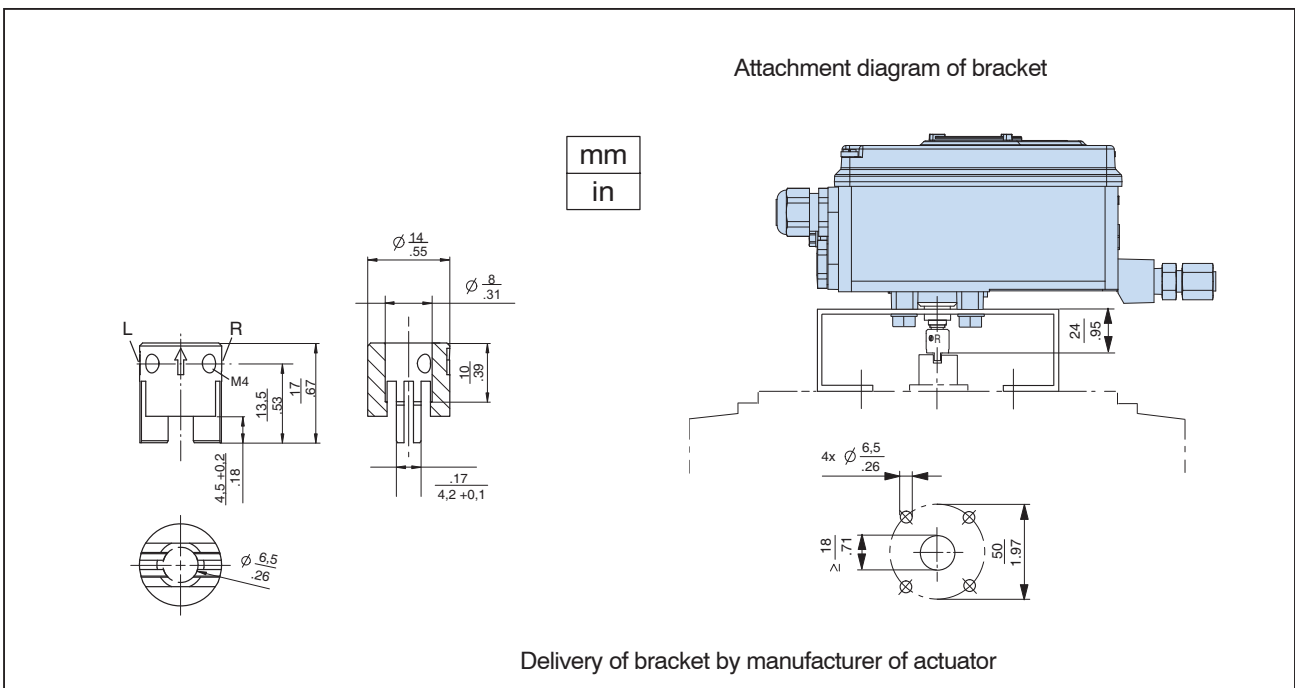


## MOUNTING TO LINEAR ACTUATORS

Attachment to stroke actuators acc. to IEC 534-6 (NAMUR), right hand

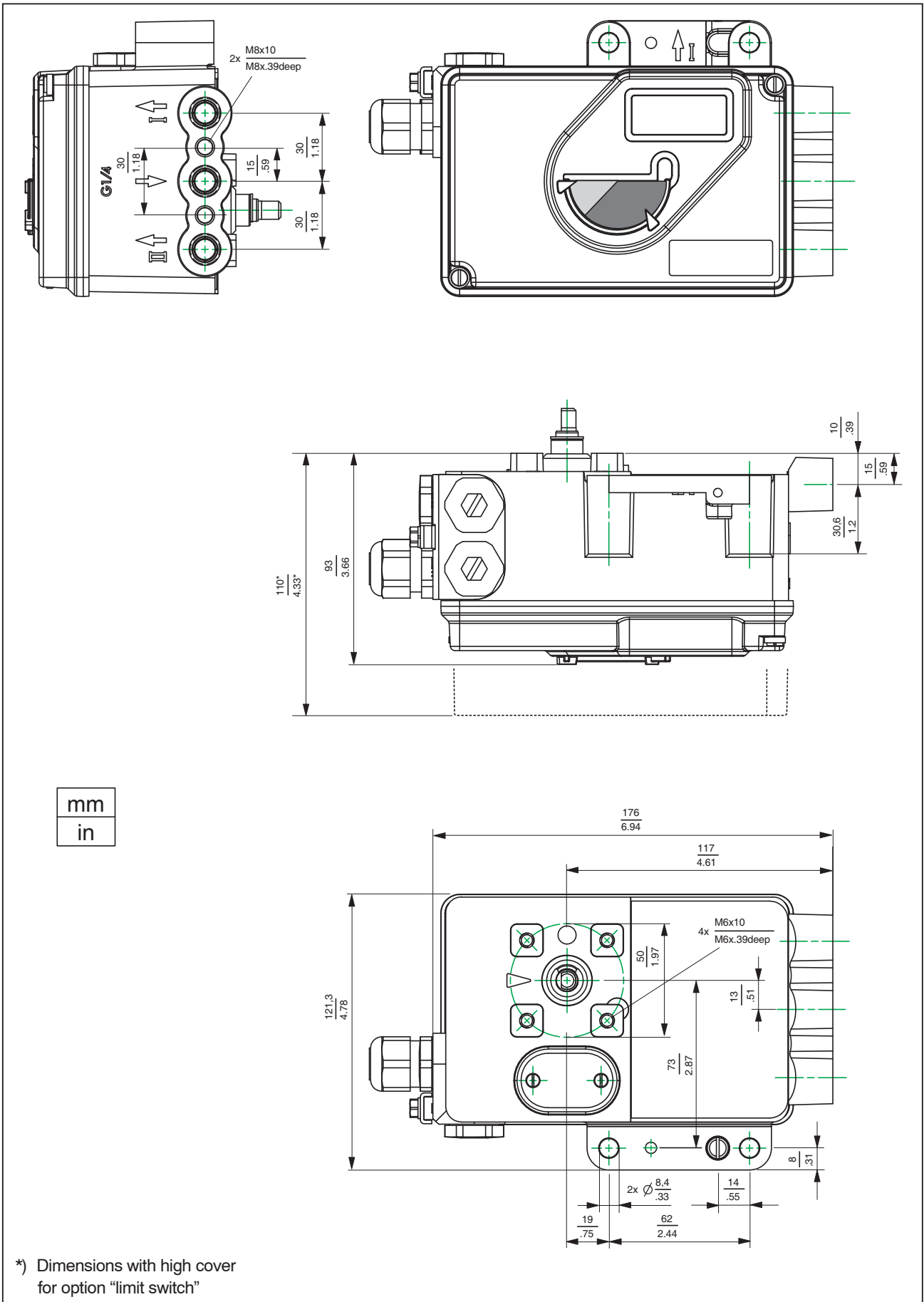


## DIMENSIONS – Attachment to rotary actuators acc. to VDI/VDE 3845



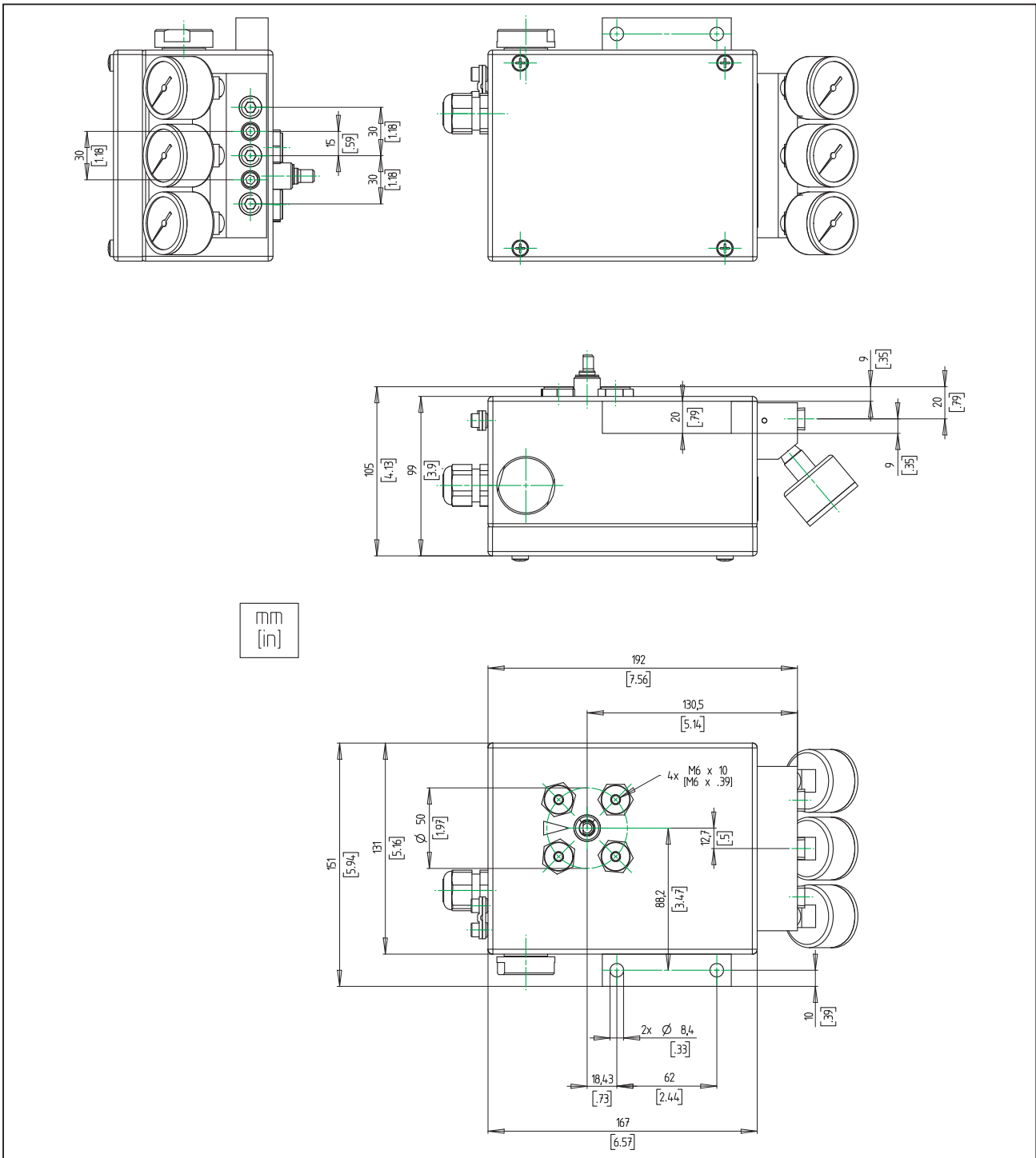


**DIMENSIONAL DRAWINGS**



\*) Dimensions with high cover for option "limit switch"

## DIMENSIONAL DRAWINGS Version with Stainless Steel Housing



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