

### **SRD960 Universal Positioner** **SRD960-T Position Transmitter**

For Ex d / Explosion Proof applications



The Universal Positioner SRD960 is designed to operate pneumatic valve actuators and is available in the version Ex d / explosionproof (flameproof) or Ex ia / intrinsic safety. It can be operated from control systems (e.g. the Foxboro I/A Series System), controllers, or PC-based configuration- and operation tools such as FDT/DTM. The positioner is available with different communication protocols. This includes versions with analog setpoint (4 to 20 mA) without communication or with superimposed HART signal; or fieldbus communication according to PROFIBUS-PA and FOUNDATION Fieldbus H1 based on IEC 1158-2 MBP acc. to FISCO. The multi-lingual full text graphic LCD in connection with the external 4 push buttons allows a comfortable and easy local configuration and operation as well as the display of valve specific data, and status- and diagnostic messages.

### DEVICE FEATURES

#### Intelligent

- Auto-start with self-calibration
- Self diagnostics, status- and diagnostic messages
- Easy operation with three keys
- Multi-Lingual full text graphical LCD

#### With communication

- HART, FOUNDATION Fieldbus H1, PROFIBUS-PA
- Configuration by means of local keys, hand held terminal (HART), PC with FDT-DTM or I/A Series system

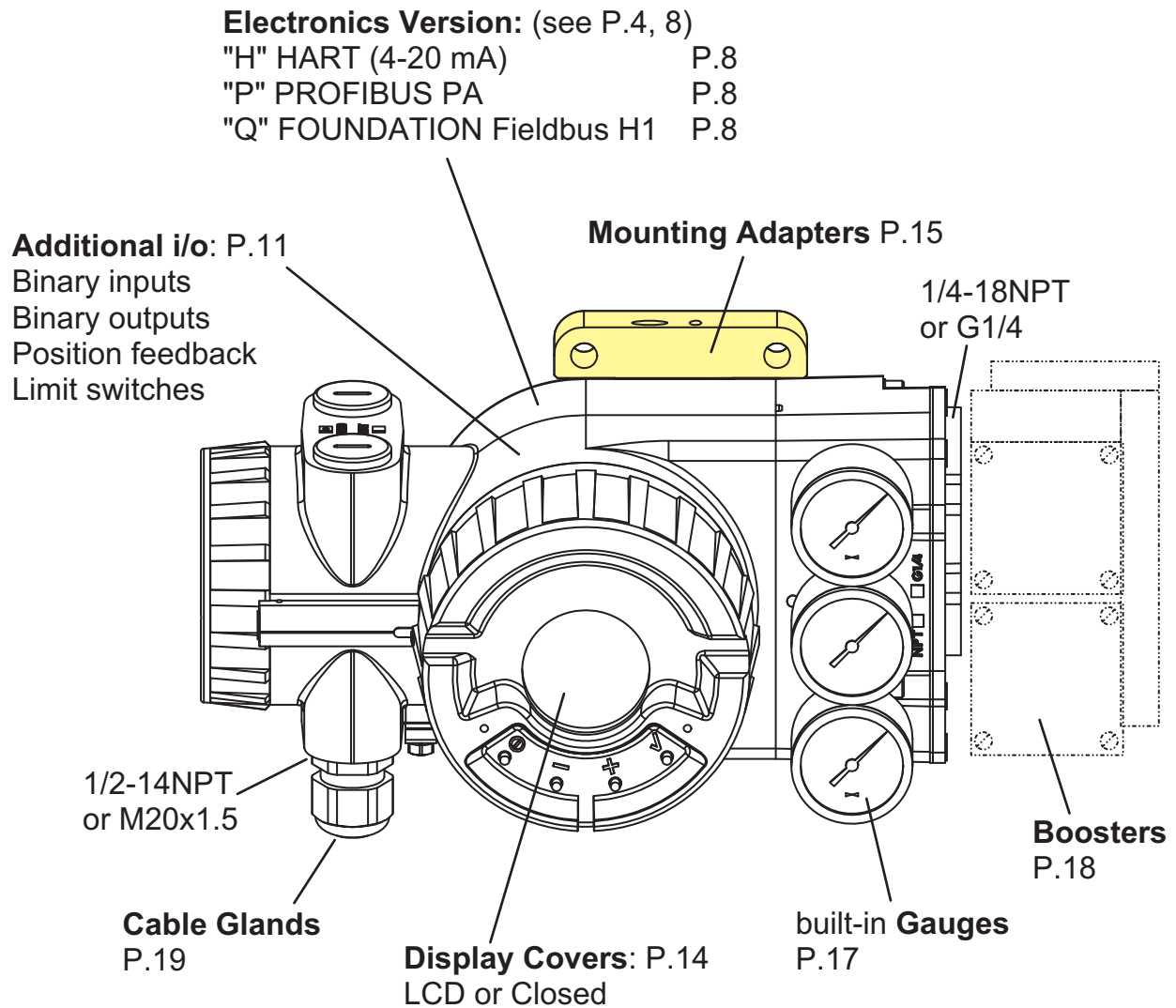
### COMMON FEATURES

- Stroke 8 to 120 mm / 260 mm (0.3 to 14.7 in / 10.2 in)
- Angle range up to 95°
- Supply air pressure up to 6 bar (90 psig), with spool valve up to 7 bar (105 psig)
- Single or double-acting
- Mounting on linear actuators according to NAMUR – IEC 50534-6-1 – VDI/VDE 3847
- Mounting on rotary actuators acc. to VDI/VDE 3845
- Protection class IP 66, NEMA 4X
- Approved for SIL applications
- Explosion protection: Flameproof according to ATEX - Ex d; Explosion proof according to FM

*Equipment should be installed, operated, serviced, and maintained only by qualified personnel.*

*No responsibility is assumed by Schneider Electric for any consequences arising from the use of this material.*

## OVERVIEW of SRD960 Positioner



### Combinations

Device version	Controller	Display	local configuration	remote configuration
"H" HART (4-20 mA)	Digital	LCD	push buttons	via communication
"P" Profibus	Digital	LCD	push buttons	via communication
"Q" F.Fieldbus	Digital	LCD	push buttons	via communication

## FUNCTIONAL SPECIFICATIONS (common data for SRD960 -B or C)

### 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 <sup>5)</sup> ..... 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 <sup>1)</sup> ..... 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 FRS923  
 filter regulator.

### Response characteristic <sup>2) 3)</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 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)

### 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>5)</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.

1) Pressure dew point 10 K under ambient temperature

2) Data measured according to VDI/VDE 2177

3) With stroke 30 mm and lever length 90 mm

4) Spool valve is the type of amplifier used in device SRD960-C

5) Standard diaphragm amplifier  
 Devices SRD960-B and SRD960-Cxxxxxxxx-M are using "standard"  
 diaphragm amplifier

## FUNCTIONAL SPECIFICATIONS (common data for SRD960 -B or C)

### Features

Automatic start-up ..... Autostart functionality  
Automatic detection of mechanical stops, control parameters and of direction of spring force. A dynamic optimization is included in this procedure. This procedure allows a full adaptation on optimization of the positioner to the actuator without any manual adjustments!

### Options

- Built-in independent inductive limit switches
- Pressure Sensors for supply air pressure and output pressure I (y1) and II (y2)
- Additional Inputs / outputs:
  - 2 binary outputs (position alarms)
  - Position feedback 4-20 mA + binary alarm output
  - 2 binary inputs

### Operation and configuration

Local ..... with four keys  
Display ..... Multi-Lingual Graphic LCD  
The positioner in LCD version is available with three different menu languages:  
Two menu languages are standard:  
- English  
- German

Freely definable third language (additional languages on request):

- French	- Portuguese	- Spanish
- Italian	- Swedish	- etc.

The third menu language has to be selected and specified with order.

All additional Menu languages can be downloaded into the positioner by means of the operation- and configuration software VALcare™. Additional language downloads are available on our homepage.

### Position feedback and alarms

Position feedback / valve position .... via communication  
Optional <sup>1)</sup> ..... 4-20 mA position feedback  
Alarms ..... via communication  
Optional <sup>1)</sup> ..... 1 alarm output  
Position alarms ..... via communication  
Hi and Lo alarm  
Hi/Hi and Lo/Lo alarm  
Optional <sup>1)</sup> ..... 2 binary outputs  
Hi and Lo alarm  
Hi/Hi and Lo/Lo alarm

Independent feedback:

Limit switch (inductive) ..... Standard version  
Security version

### Diagnosis

#### – local

- Self diagnostics
- Status- and diagnostic messages

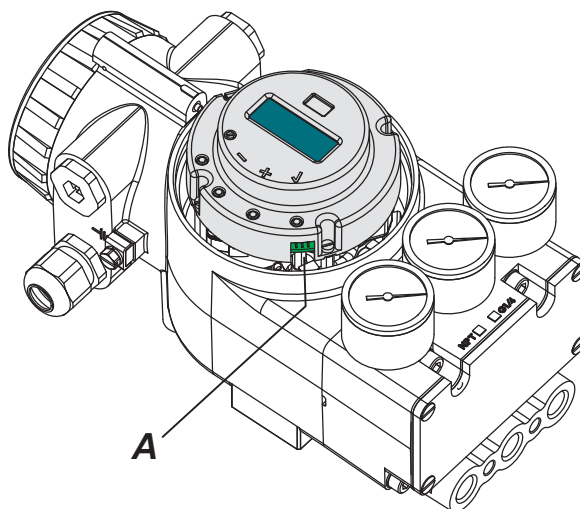
#### – via VALcare™ Valve Diagnostic Software:

- Service Management for planning and scheduling of service intervals
- Histograms for displaying the position- and response history over time
- Partial Stroke Test for the functional inspection of safety related actuators
- Hours in operation, cycle counter and travel sum of the actuator are determined
- Surveillance of loop current
- Shows condition of device:
  - Potentiometer
  - IP Motor
  - Exceeding range of actuator (possible indication for wear of plug or seat)
  - Remaining control deviation (possible indication for jammed actuator, blocked valve stem or plug, not sufficient air capacity /supply air pressure / positioning pressure)
- if equipped with pressure sensors (optional):
  - Monitoring of the stem friction
  - Histograms for displaying the friction-history over time
  - surveillance of air supply and output pressure, each with display of physical value
- Additional diagnostical possibilities in control operation by means of external sensors (optional).  
See also the VALcare Documentation.

### Service plug

All basic devices are equipped with a service plug **A** at the front side. There via RS232 interface a PC with VALcare (DTM) can be connected via modem EDC82 (galv. separated, not Ex).

Information about EDC82 modem see TI EVE0102 Y.



1) By means of additional inputs/outputs (Option Board)

**Manual settings:**

Actuator mode .....	linear or rotary actuator
Linear valve .....	left or right mounted
Rotary actuator .....	opening clockwise or counter-clockwise
Characteristic of setpoint .....	linear, equal percentage, invers- equal percentage or custom (22 points)
Valve function .....	opens or closes with increasing setpoint
Split range .....	free upper and lower values
Travel limits .....	free upper and lower values
Cutoffs .....	free upper and lower values
Stroke range .....	configurable
Temperature unit .....	configurable (°C or °F)
Autostart .....	- Endpoints - Standard Autostart - Enhanced Autostart <sup>1)</sup> - Smooth response <sup>1)</sup> - Fast response <sup>1)</sup>
Control parameters .....	Determined during Autostart.
Working range .....	freely adjustable (for indication on LCD)
Manual adjustment of .....	P-gain, I-time, T63-time and dead band
Manual operation .....	Manual input of setpoint to drive the valve in steps with 12.5 % or 1 % <sup>1)</sup>
Pneumatic test .....	Function to test the pneumatic output
Workshop .....	input and angle calibration
LCD language .....	dependent on version
LCD orientation .....	dependent on version
PROFIBUS-PA .....	Bus address
FOUNDATION Fieldbus .....	Simulation Switch from Link Master to Basic Field Device

**Software supported configurations:**

- By means of Hand Held Terminal (HART)
- PC by means of VALcare Software
- I/A Series System, Foxboro Evo and other DCSs

**Failure handling**

Safety position at

- Air supply failure ..... pressure y1 = zero
- Electric power failure ..... pressure y1 = zero
- Failure of electronics ..... pressure y1 = zero
- Failure of communication is recognized by configurable watch dog with response delay of 0.1 s to 24 h

Behavior ..... configurable as  
pressure y1 = zero or  
stop at last value or  
a configured value

Diagnostic report ..... via communication and local LCD

- historical status ..... is set if alarm was activated at any time (also just short alarms)

Reset ..... by acknowledging

1) from HW-Rev. 3.4 / Firmware Rev. 16

## PHYSICAL SPECIFICATIONS (common data for SRD960 -B or C or T)

### Mounting (see page 17 for details)

Attachment preparation by means of mounting adapter

#### Option N for

- NAMUR according to IEC 534, Part 6
- Direct to IFC-/Flowserve actuators such as FoxPak and FoxTop

- Rotary actuators according to VDI/VDE 3845

#### Option R for

- Rotary actuators according to VDI/VDE 3845

#### Option T for

- Integrated mounting with air connection on back  
- for details refer to page 21, Attachment prep.

#### Option D for

- NAMUR according to VDI/VDE 3847
- Rotary actuators according to VDI/VDE 3845

#### Option F for

- NAMUR according to IEC 534, Part 6
- Rotary actuators according to VDI/VDE 3845

Attachment to stroke actuators

- direct to FlowPak / FlowTop with attachment kit EBZG -E1
- for casting yoke acc. to  
IEC 534-6 (NAMUR) . . . . . with attachment kit EBZG -H

Stroke range with feedback lever:

- standard (EBZG-A ) 8 to 70 mm / 0.31 to 2.76 in
  - extended (EBZG-B ) 60 to 120 mm / 2.36 to 4.72 in
  - extended (EBZG-A1) 110 to 260 mm / 4.33 to 10.24 in
- Larger stroke ranges can be realized with special levers.

- for pillar yoke acc. to

IEC 534-6 (NAMUR).....with attachment kit EBZG -K

Stroke range with feedback lever

- standard.....8 to 70 mm / 0.31 to 2.76 in
- extended.....60 to 120 mm / 2.36 to 4.72 in

Attachment to rotary actuators

acc. to VDI/VDE 3845 .... with attachment kit EBZG -R

- Further attachment kits see ModelCodes page19 -

### Materials

Housing and covers.....Aluminum (Alloy No. 230)  
finished with 2 component  
DD varnish

All moving parts of

feedback system (V4A) ..... 1.4306 / 1.4571 / 1.4104

Mounting bracket.....Aluminum (Alloy No. 230)

Pneumatic diaphragm ..... Silicone (suitable for use in  
lacquer industry according to Lab-Test)

### Weight

Single acting ..... approx. 2.7 kg (5.9 lbs)

Double acting ..... approx. 3 kg (6.6 lbs)

### Pneumatic connection

NAMUR mounting ..... 3 x female threads

1/4-18 NPT or G1/4 for pipe diameter 6 to 12 mm (0.24 to  
0.47 in) for air supply and outputs y1, y2 to the actuator

Direct mounting ..... Instead of the output y1  
an air connection on the backside with O-ring will be  
used (closed at NAMUR mounting).

### Electrical connection

Line entry ..... 1 or 2 cable glands 1/2-14 NPT  
or M 20 x1.5 (others with Adapter AD-...)

Cable diameter..... 6 to 12 mm (0.24 to 0.47 in)

Screw terminals..... 2 terminals for input,

4 terminals for additional inputs / outputs;

Tightening torque ..... min. 0.5 Nm, max. 0.6 Nm

Wire cross section..... solid wire 0.5 to 6 mm<sup>2</sup>

stranded wire 0.5 to 4 mm<sup>2</sup>

crimped wire ..... 0.5 to 2.5 mm<sup>2</sup> (AWG 21-14)

Test sockets ..... integrated in terminals, for  
options and communicator  
connection



## PHYSICAL SPECIFICATIONS (common data for SRD960 -B or C or T)

### Ambient conditions

Operating conditions.....acc. to IEC 654-1  
 The device can be operated at a class Dx location  
 Ambient temperature for  
 Operation <sup>1)</sup> .....-40 to 80 °C (-40 to 176 °F)  
 Transport and storage.....-40 to 80 °C (-40 to 176 °F)  
 Storage conditions acc.  
 to IEC 60721-3-1 ..... 1K5; 1B1; 1C2; 1S3; 1M2  
 Display  
 LCD (visible) <sup>2)</sup> .....-25 to 80 °C (-13 to 176 °F)  
 Relative humidity .....up to 100 %  
 Protection class  
 acc. to IEC 529 .....IP 66 <sup>3)</sup>  
 acc. to NEMA.....Type 4X

### Electromagnetic compatibility EMC

Operating conditions.....industrial environment  
 Immunity according to  
 - EN 61 326-1 ..... fulfilled  
 Emission according to  
 - EN 55 011,  
 Group 1, Class B ..... fulfilled  
 NAMUR  
 recommendation NE21 ....fulfilled

Electromagnetic  
 compatibility <sup>4)</sup> ..... 2004/108/EG  
 Low-voltage regulation ..... not applicable

### Safety

According to EN 61010-1  
 (or IEC 1010-1) ..... safety class III  
 ..... Overvoltage Category I  
 Internal fuses ..... only with PROFIBUS or  
 FOUNDATION Fieldbus,  
 but not replaceable  
 External fuses ..... limitation of power supplies  
 for fire protection must be observed acc. To  
 EN 61010-1, appendix F (or IEC 1010-1).

Compliance with the essential health and safety  
 requirements has been assured by compliance with  
 EN 50014:1997 + A1 + A2 EN 50018:2000

1) Details see Certificates of Conformity. With built-in "Inductive  
 Limit Switch" Code T only -20 °C

2) Below -20 °C reaction time for value changes is reduced

3) Under service as directed

4) With PROFIBUS or FOUNDATION Fieldbus only, if shield of wiring  
 is grounded on both ends

5) With appropriate order only

6) National requirements must be observed

### Electrical Classification<sup>5) 6)</sup>

See certificate of conformity EX EVE0109 A (de)(en)

#### Type of protection ATEX “Ex d – Flameproof”

II 2 G EEx d IIC Temperature class T4...T6

(Design AD 639)

EC-Type-Examination Certificate PTB 02 ATEX 1084 X

Permissible ambient temperature range:

Temperature class T4.....-30 °C to 80 °C  
(-22 °F to 176 °F)

Temperature class T4.....(on request)  
-40 °C to 80 °C  
(-40 °F to 176 °F)

Temperature class T6.....-30 °C to 75 °C  
(-22 °F to 167 °F)

Temperature class T6.....(on request)  
-40 °C to 75 °C  
(-40 °F to 167 °F)

For connections in explosion protected hazardous areas according to directive 94/9/EG appendix II, with the following maximum values:

Input circuit:

Maximum electrical power..... P max = 2.5 W

Electrical connections ..... U max = up to 60 V

Self-heating of device surface ..... 1.3 K/W

#### Type of protection FM “explosion proof”

Class I, Division 1, Groups B, C, D

hazardous locations, indoor and outdoor, NEMA 4X

#### Type of protection CSA “explosion proof”

Ex d II (H<sub>2</sub>) T4/T6 Gb

Class I, Division 1, Groups B, C and D

Class II, Division 1, Groups E, F and G

hazardous locations, indoor and outdoor, NEMA 4X



## SRD960 with HART communication SRD960-xHxxxx

### Signal Input

Two wire system  
Reverse polarity protection . standard feature  
Signal range ..... 4-20 mA Operating range  
..... 3.6 to 21.5 mA  
Voltage range of unloaded  
input signal ..... DC 12 to 36 V  
Load ..... 420 Ohms, 8.4 V at 20 mA  
Communication signal ..... HART, 1200 Baud, FSK  
(Frequency Shift Key)  
modulated on 4-20 mA  
0.5 Vpp at 1kOhm load  
Input impedance Zi ..... Z = 320 Ohms  
for ac voltage 0.5 to 10 kHz with < 3 dB non-linearity  
Cable capacity and inductance see HART standard  
specifications (e.g. C < 100 nF).  
Impedance of other devices at the input (parallel or serial)  
must be within HART spec.  
Applications without communication require not to exceed  
input capacitance parallel to the input not higher than 100 µF.

Start-up time (init phase) ..... approx. 2 s

Interruption time without power down:  
- with LCD ..... 85 ms<sup>1)</sup>

### Configuration

Local / Display ..... see page 4  
Software ..... VALcare™ (FDT-Software)  
Hardware ..... Modem MOD991 for PC, IBM  
compatible  
Hand Terminal ..... HART Hand held terminal  
I/A Series System ..... on request  
Other control systems ..... AMS, Siemens SIMATIC PDM  
(ProcessDeviceManager)

## SRD960 with communication PROFIBUS-PA ..... SRD960-xPxxxx

Data transfer ..... acc. to PROFIBUS- PA profile  
class B based on EN 50170 and DIN 19245 part 4  
GSD file ..... the actual file can be down-  
loaded from our homepage

### Configuration

Local / Display ..... see page 4  
Software ..... VALcare™ (FDT-Software)  
Hardware ..... PC- or PCMCIA-interfaces  
from Softing  
I/A Series System ..... with FBM223  
Other control systems ..... All Profibus-PA- compatible,  
e.g. Siemens SIMATIC PDM  
(ProcessDevice Manager)

## SRD960 with communication FOUNDATION Fieldbus H1 SRD960-xQxxxx

Data transfer ..... FF Specification Rev. 1.4,  
Link-Master (LAS)

Two revisions of Firmware can be selected for the  
FOUNDATION Fieldbus devices in the model code of  
the positioner. The selection of the Firmware revision  
is depending of the DCS compatibility, the DD Files  
already installed in the DCS and the installed base on  
your site.

Double check interoperability of following  
characteristics with your DCS before ordering!

When selected **Firmware FF16** in the model code :

Certified according to .... ITK 4.6  
Function Blocks ..... PID, AO, 2xDI, 1xDO  
Transducer, Resource

When selected **Firmware FF18** in the model code :

Certified according to .... ITK 6.0.1  
Function Blocks ..... PID, AO, 4xDI, 1xDO, IS, OS,  
AI, MAI, Transducer, Resource

Additional functionality Flat Addressing

DD files ..... the actual file can be down-  
loaded from our homepage

### Configuration

Local / Display ..... see page 4  
Software ..... VALcare™ (FDT-Software)  
or National Instruments NI-FBUS configurator  
Hardware ..... FBUS-interfaces (AT-FBUS  
and PCMCIA- FBUS)  
I/A Series System ..... with FBM220 / 221  
Other control systems ... All Fieldbus FOUNDATION  
H1-compatible. Fisher Rosemount Delta-V, Honeywell,  
Yokogawa, ABB

## For both fieldbus versions

Input signal ..... digital  
Supply voltage ..... DC 9 to 32 V<sup>2)</sup>  
max. Supply voltage ..... DC 36 V  
Operating current ..... 10.5 mA ± 0.5 (base current)  
Current amplitude ..... ± 8 mA  
Fault current ..... base current + 0 mA  
(base current + 4 mA by means of independent  
FDE-safety circuit) according to IEC 1158-2  
Start-up time (init phase) approx. 2 s

Operating values

Bus connection ..... Fieldbus interface based  
on IEC 1158-2 according to FISCO-Model  
(see Electrical certifications)

Power supply ..... Power supply is achieved  
dependant on the application by means of fieldbus  
power supply units or segment coupler

1) Worst case conditions 4-20 mA, with position feedback option, i/p-output  
with max. current

2) Data of "Intrinsically Safe" version

## Special SRD960 versions for particular use

These devices contain only the functions described below and are constructed without controller and without pneumatic parts in a shortened housing.

### SRD960 -TXQ:

#### Stand alone Position Transmitter unit

The actual value of the actuator is converted to a 4-20 mA signal.

<b>Input</b> .....	Stroke / Rotary angle by means of conductive plastic precision potentiometer
<b>Output</b> .....	Two wire system
Signal range .....	4 to 20 mA / 20 to 4 mA or free configuration 3.8 to 20.5 mA
Permitted load .....	$R_{bmax} = (U_s - 12 \text{ V}) / 0.02 \text{ A } [\Omega]$ ( $U_s$ = supply voltage)

#### Power supply

Reverse polarity protection	standard feature
Supply voltage .....	$U_s = \text{DC } 12 \text{ to } 36 \text{ V}$
Permitted ripple .....	< 10 % p.p.
Supply voltage dependency .....	negligible

#### Response characteristic

Non-linearity (terminal based adjustment) .....	< 1% F.S.
Hysteresis .....	< 0.5% F.S.
Load dependency .....	negligible
Temperature effect .....	< 0.1 % / 10 K
Weight .....	approx. 2.3 kg

#### Configuration and status

Local configuration .....	2 push buttons and 2 LEDs
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### SRD960 -TXT, -TXU, -TXR, -TXV: Limit Switch

Contains a limit switch pair that monitors the actual value of the actuator. When exceeding the adjustable value, a signal is generated. Inductive limit switch or microswitch.

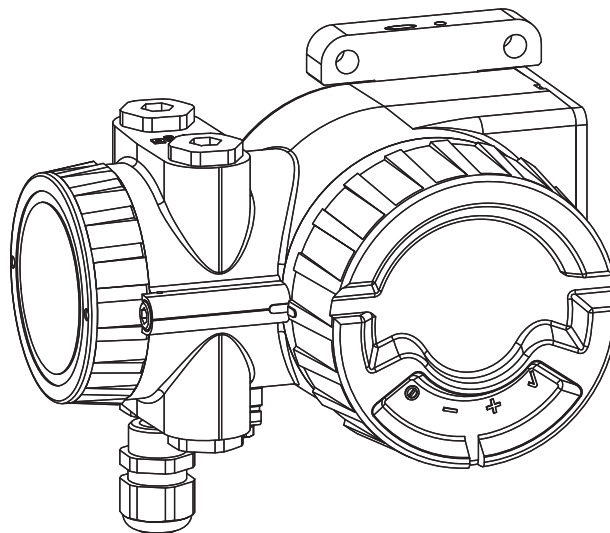
#### Inductive Limit Switch

- Standard version (SJ2-N) ..... SRD960-TXT
- Security version (SJ2-SN) ..... SRD960-TXU
- in three wire technology (SI 2-K08-AP7) SRD960-TXR

#### Mechanical Limit Switches

- Micro Switches ..... SRD960-TXV

Details see page 13.



### SRD960-TXNSSX -H:

#### Potentiometer unit for remote mounting application

Contains a potentiometer, which is the value of the actuator, forwarded the value on to the actual positioner mounted in a protected place.

Can be used for applications where vibrations or extreme temperatures may disturb or damage the positioner.

#### 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 to the technical data of the positioner SRD960 with which is mounted together.

Weight .....	approx 2.3 kg
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#### Ambient conditions

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

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

**OPTION for all SRD960 -B or C****Pressure sensors** [item 3]

Three built-in pressure sensors, Code "Option –B",  
for supply air, output y1 and y2 to actuator,  
necessary for Premium Diagnostic

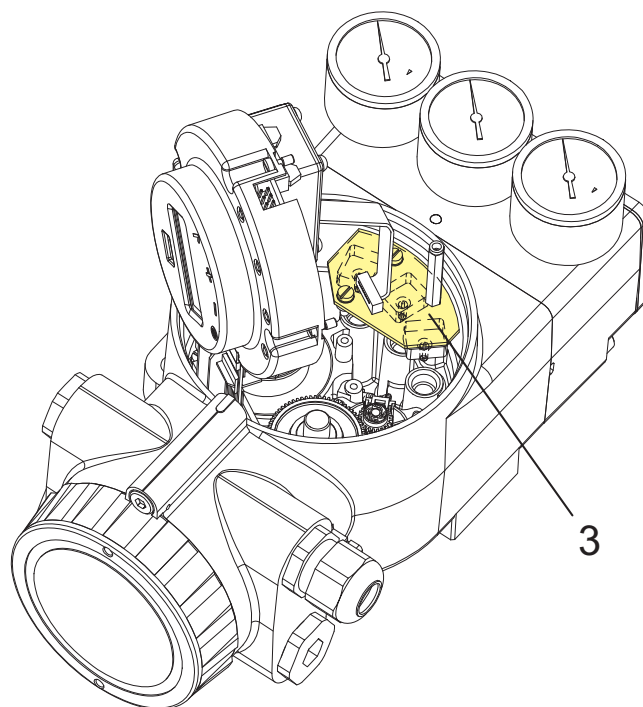
Measuring range .....0 to 8 bar (0 to 120 psig)

Accuracy .....0.5 %

Temperature influence .....0.5 % / 10 K (–40 to 80 °C)

Parts set for subsequent mounting:

Option B (3x pressure sensors).....EW 426 247 311



Option –B "Built-in pressure sensors"

### Additional Inputs / Outputs, built into any SRD960 -B or C

Order in Model Code: SRD960-□□ **P**

**Two binary outputs** (limit signals) [item 1]

Stroke / angle derivated from positioner feedback,  
configurable  
galvanically separated 2 limit signals, two-wire system,  
according to DIN 19234, for external supply  
supply voltage..... DC 8 to 48 V

Logic:

limit value not exceeded .....	< 1 mA
limit value exceeded.....	> 2.2 mA (typ. 6 mA)
device fault .....	< 50 $\mu$ A

configurable as switch output:

limit value not exceeded ..... < 50  $\mu$ A  
 limit value exceeded..... > 20 mA / 20 V  
 > 40 mA / 10 V  
 power derated)

Reference: AB1 for upper, AB2 for lower limit

Terminals for AB1 ..... 81+, 82–

AB2 ..... 83+, 84–

Explosion protection thereto see page 7.

Parts set for subsequent mounting:

Code P.....EW 426 346 021

Order in Model Code: SRD960-□□ Q

**Position feedback 4-20 mA** [item 1]

Stroke / angle derivated from positioner feedback,  
1 output analog, galvanically separated, two-wire system  
according to DIN 19234, for external supply

supply voltage ..... DC 8 to 48 V

signal range..... 3.8 to 21.5 mA

0 % and 100 % configurable

device fault ..... < 1 mA

Terminals for AI1 ..... 31+, 32–

1 Binary output alarm, galvanically separated, two-wire system, according to DIN 19234, for external supply

supply voltage ..... DC 8 to 48 V

Logic ..... no alarm < 1 mA

alarm > 2.2 mA

device fault < 50  $\mu$ A

Terminals for AB1 ..... 81+, 82–

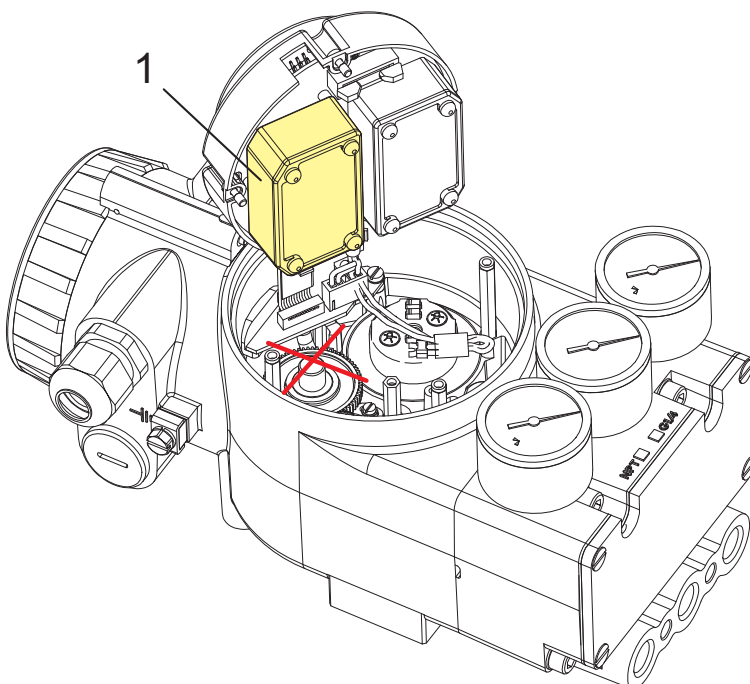
The binary output for Alarm will be activated in the following cases:

- Remaining control deviation
  - Circuit to I/P module is disturbed
  - Circuit to potentiometer is disturbed
  - Calibration error:
    - no angle calibration
    - no current calibration
  - Autostart failed
- (Pre-settings can be configured via communication)

Explosion protection thereto see page 7.

Parts set for subsequent mounting:

Code Q ..... EW 426 346 039



## ADDITIONAL EQUIPMENT (continued)

### Additional Inputs / Outputs, built into any SRD960 -B or C

Order in Model Code: SRD960– □□ B

#### Two Binary Contact Inputs [item 1]

Two independent binary inputs, supplied by the basic device, for connection of sensors. A connected switch is loaded with 3 V, 150 µA.

Both binary inputs can be used for diagnostics or also configurable for the control functions.

Switch 1	Switch 2	Actuator control function
close	close	normal operation
open	close	go to stop at 0 %
close	open	go to stop at 100 %
open	open	hold last position

Terminals for EB1 ..... 13+, 14–

EB2 ..... 15+, 16–

Requirements for connected switches:

Capacitance in parallel ..... < 100 nF

Resistance for ON ..... < 2 kOhms

for OFF ..... > 10 kOhms

Hysteresis ..... 2 to 5 kOhms

For application with ..... - mechanical switches  
 - opto coupler outputs  
 - open collector / drain  
 outputs of transistor  
 circuits

For further informationen about the contact inputs please consult TI EVE0105 B.

Explosion protection thereto see page 7.

Parts set for subsequent mounting:

Code B ..... EW 426 346 012

Order in Model Code: SRD960–□□ E

#### Two Binary Signal Inputs/Outputs [item 1]

Two Binary Inputs/Outputs are configured by the device as Input or as output, as well as the kind of Signals as on/off or as to NAMUR signal in accordance (DIN 19234).

##### Configured as NAMUR:

Input/Output

Logic 0 ..... > 0.35 mA, < 1 mA

Logic 1 ..... > 2.2 mA < 6 mA

Input current Limited to ..... < 6 mA

##### On/Off Signal

Output:

Logic 0 ..... < 50 µA

Logic 1 ..... > 40 mA / 10 V

Input:

Logic 0 ..... < 4 mA

Logic 1 ..... > 6 mA

Signal Voltage Range ..... 6 to 36 V

Terminals for Ch1 ..... 81+, 82–

Ch2 ..... 83+, 84–

Part set for subsequent mounting:

Code E ..... EW 426 247 417

## ADDITIONAL EQUIPMENT (continued)

### Additional Inputs/Outputs built into any SRD960 -B or C

Order in Model Code: SRD960-□□ T, U, R, V

#### Built-in Limit Switch: [item 2]

##### Inductive Limit Switch

standard version (SJ2-N) . . . . . Code T

security version (SJ2-SN) . . . . . Code U

- in three wire technology

(SI 2-K08-AP7). . . . . Code R

Stroke / angle derived from positioner feedback,  
two-wire system

Output . . . . . 2 inductive proximity sensors acc. to DIN 19 234 or NAMUR for connection to switching amplifier with intrinsically safe control circuit <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 (only with ZZZ)

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 Code T . . . . . GW1 . 41+, 42-  
GW2 . 53+, 54-

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

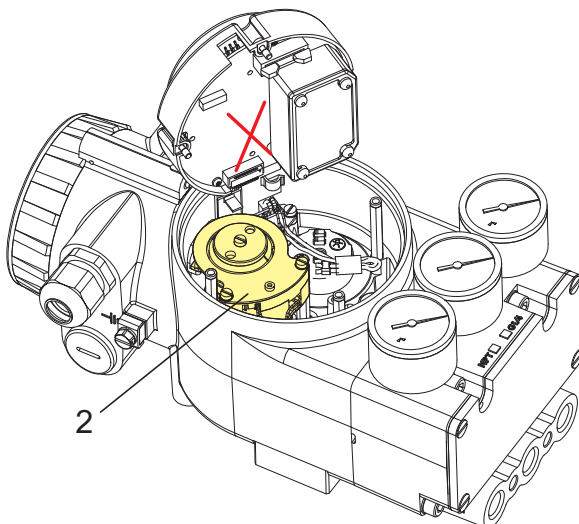
Explosion protection thereto see page 7.

Part sets for subsequent mounting:

Code T . . . . . EW 426 346 057

Code U . . . . . EW 426 346 066

Code R . . . . . EW 426 346 075



#### Built-in Limit Switch: [item 2]

##### Mechanical switches

Micro Switches . . . . . Code V

Stroke / angle derived from positioner feedback lever

Output . . . . . 2 mechanical switches (Micro switches) <sup>1) 4)</sup>

Manufacturer . . . . . Saia-Burgess

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

##### Absolute limit values AC

of mechanical switches built into positioner:

U<sub>max</sub> . . . . . 42 V AC <sup>5)</sup>

I<sub>max</sub> . . . . . 0.5 A (resistive load) <sup>5)</sup>

I<sub>max</sub> . . . . . 0.03 A (inductive load) <sup>6)</sup>

##### Absolute limit values DC

of mechanical switches built into positioner: <sup>7)</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 has 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.

Parts set for subsequent mounting

Code V . . . . . EW 426 346 084

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

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

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

6) Based on EN 61058-1, at 10,000 operations and T = 85 °C

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



## LOCAL DISPLAY

Order in Model Code: SRD960-□□□□□□□□□□

- Cover with LCD and 4 external push buttons

The positioner in version with LCD is available with three different menu languages:

Standard menu languages:

- English
- German

Freely definable third language (additional languages on request):

- French
- Portuguese
- Spanish
- Italian
- Swedish, ...
- see ModelCode

The third menu language has to be selected and specified with order.

The pre-set menu language is English. This menu language can easily be set to another pre-configured menu language by means of the local push buttons.

All "freely definable" third Menu languages can be downloaded into the positioner by means of the operation- and configuration software VALcare™. This way also the pre-configured third language can be modified. The additional language downloads are available on our homepage.

Despite some special functions all configurable parameters are accessible by means of the local push buttons.

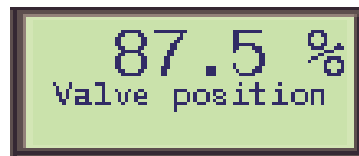
### Displayed data in operation:

- valve position
- stem position
- input current
- setpoint digital
- setpoint stem
- supply pressure
- output pressure 1
- output pressure 2
- temperature
- valve cycles
- travel sum
- Hours of operation
- Tag number
- Tag name
- Firmware version

### Configuration Main Menus:

- 1: attachment
- 2: autostart
- 3: valve function
- 4: characteristics
- 5: limits / alarms
- 6: parameters
- 7: pneumatic output
- 8: manual setting of valve position
- 9: calibration / workshop
- 10: Bus Address/Simulation (Profibus PA / F.Fieldbus)

For configuration details see Master Instructions (MI) or Quick Guide (QG).

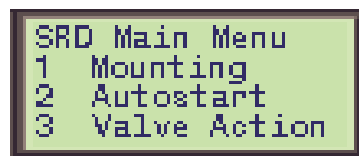


Value

What is displayed



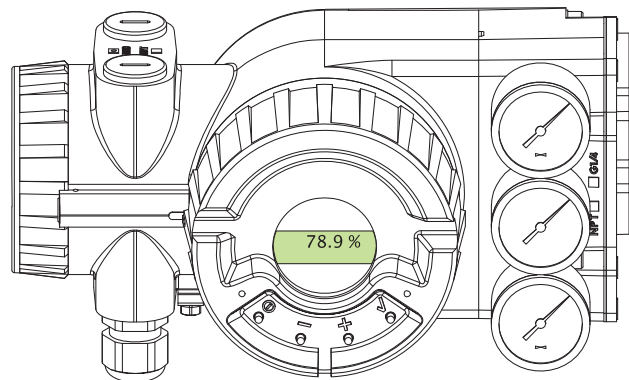
Status and diagnostic message



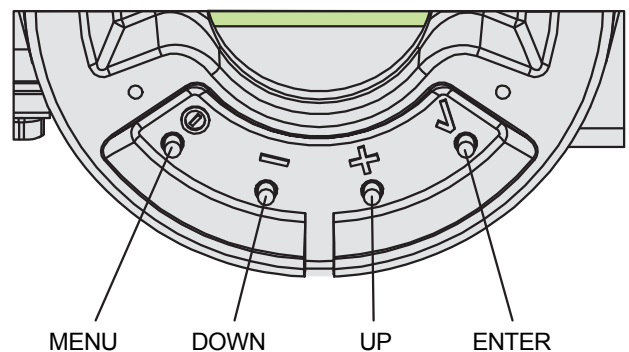
Configuration Menus

LCD orientation can be changed by means of local push buttons under Menu 9.9

### LCD Cover



### Local Push buttons



## ATTACHMENT PREPARATION

Order in Model Code: SRD960-□□□□□□□□☒□□  
The Universal Positioner needs a linking piece for attachment to the different brands of actuators.

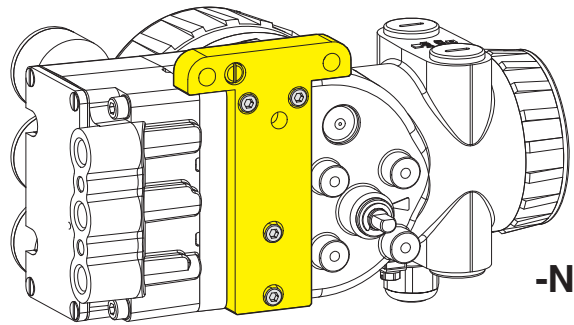
The standard Mounting Adapter is marked with Option N.

### Mounting Adapter

Preparation for attachment to:

- NAMUR, according to IEC 534-6
- Direct mounting to FoxPak and FoxTop actuators, with y1-d air supply (no external tubing for y)
- Rotary actuators acc. to VDI/VDE 3845

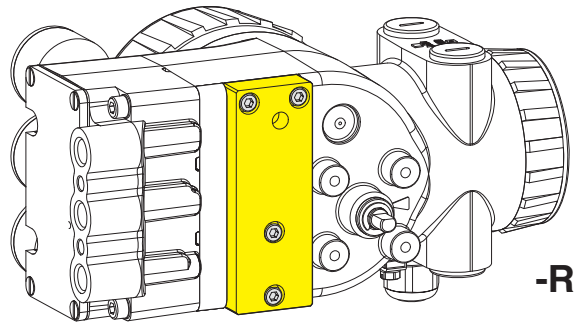
**Order Option N.**



Preparation for attachment to:

- Rotary actuators acc. to VDI/VDE 3845

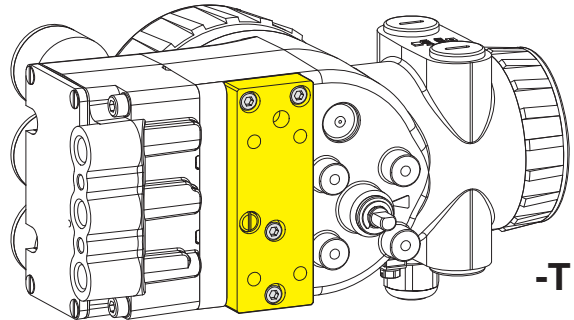
**Order Option R.**



Preparation for attachment to:

- Integrated mounting with air connections on rear
- Rotary actuators acc. to VDI/VDE 3845

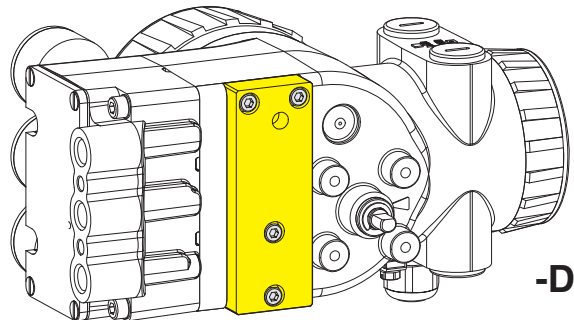
**Order Option T.**



Preparation for attachment to:

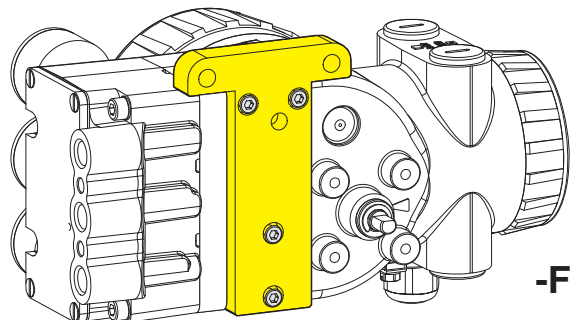
- NAMUR, according to VDI/VDE 3847
- Rotary actuators acc. to VDI/VDE 3845

**Order Option D.**

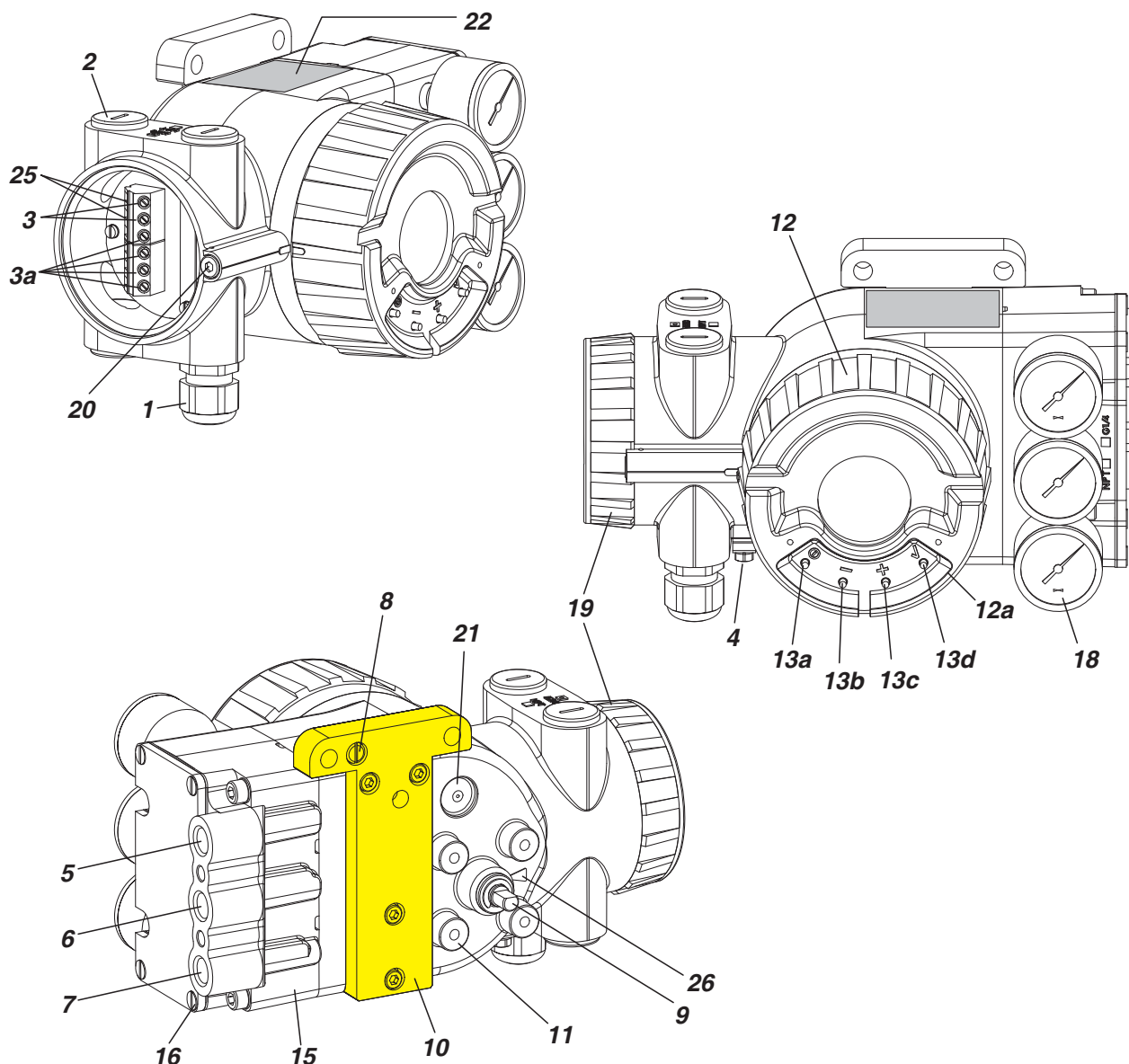


As Option N, but no y1-d air supply (with external tubing for y)

**Order Option F.**



## FUNCTIONAL DESIGNATIONS



- 1 Cable gland <sup>1)</sup>
- 2 Plug, interchangeable with Pos. 1 <sup>1)</sup>
- 3 Connection <sup>2)</sup> (11 / 12 –) for input (w) or terminals (11 / 12) for bus connection IEC 1158-2
- 3a Connection <sup>2)</sup> for additional inputs / outputs
- 4 Ground connection
- 5 Female thread G 1/4 or 1/4-18 NPT <sup>3)</sup> for output I (y1)
- 6 Female thread G 1/4 or 1/4-18 NPT <sup>3)</sup> for air supply (s)
- 7 Female thread G 1/4 or 1/4-18 NPT <sup>3)</sup> for output II (y2)
- 8 Direct attachment hole for output I (y1)
- 9 Feedback shaft
- 10 Connection manifold for attachment to stroke actuators (see page 17 for details)
- 11 Connection base for attachment to rotary actuators
- 12 Cover with window and push buttons
- 12a Push button protection cover (option -X)

- 13a Key **⬇** MENU
- 13b Key **–** DOWN
- 13c Key **+** UP
- 13d Key **✓** ENTER / STORE
- 15 Pneumatic unit with amplifier and connection
- 16 4 screws for connection of pneumatic unit
- 18 Built-in pressure gauges for air-supply, output Y1 and output Y2
- 19 Cover for electronic connection compartment
- 20 Protection screw for electronic connection-and electronic compartment
- 21 Air vent, dust and water protected (IP65 and NEMA 4X)
- 22 Data label
- 25 Tip jacks, 2 mm dia.
- 26 Arrow is perpendicular to shaft 9 at angle 0 degree

1) See cable glands BUSG on page 19  
The device is supplied with dust protection covers

2) Screw terminals or WAGO Cage clamps

3) Type of thread marked on housing

## Model Codes SRD960

<b>Universal Positioner</b>	<b>SRD960</b>
<b>Version</b>	
Single Acting.....	-B
Double Acting .....	-C
Position Transmitter (w/o pneumatic components) .....	-T
Local Control Panel (LCP960) for PST Monitoring .....	-L
<b>Input/Communication</b>	
HART (4 - 20 mA).....	(g) (p) ..... H
Profibus PA based on IEC 1158-2 (MBP)	
according to FISCO (Fieldbus) .....	(g)(p) ..... P
FOUNDATION Fieldbus H1 based on IEC 1158-2 (MBP)	
according to FISCO (Fieldbus) .....	(g)(p) ..... Q
not applicable .....	(f) ..... X
<b>Additional Inputs/Outputs</b>	
Without Additional Inputs / Outputs .....	(n)(p) ..... N
Binary Input - integrated .....	(g)(p) ..... B
Binary Output - integrated .....	(g)(p) ..... P
Binary Inputs/Outputs (mandatory for ESD application) .....	E
Analog Position Feedback (4-20 mA).....	Q
- integrated and connected as Option Board .....	(g)(p)
- stand alone feedback unit .....	(f)(p)
Potentiometer Input (for Remote Mounting - main unit)....	(g)(p) ..... D
Limit Switches (standard version SJ2-N) .....	(p) ..... T
Limit Switches (security version SJ2-SN).....	(p) ..... U
Limit Switch (three-wire version) .....	(p) ..... R
Mechanical Switches (Micro Switches) .....	(p) ..... V
<b>Display / Indication</b>	
LEDs (cover without window and without external pushbuttons). ...	(p) ..... S
Grafical LCD (cover with window and with external pushbuttons)....	(g) ..... D
<b>Gauges</b>	
Without Gauges.....	S
Built-In Gauges with scale in bar/psi .....	(g)(p) ..... M
Built-In Stainless Steel Gauges with scale in bar/psi .....	(g)(p) ..... Z
<b>Pneumatical Connection</b>	
1/4 - 18 NPT .....	(g)(p) ..... N
G 1/4 .....	(g)(p) ..... G
not applicable .....	(f) ..... X
<b>Electrical Connection</b>	
1/2 - 14 NPT (w/o cable glands or plugs for certified SRD960) .....	6
M20 x 1.5 (w/o cable glands or plugs for certified SRD960).....	7
<b>Electrical Certification / Explosion protection</b>	
Flameproof II 2 G EEx d IIB/IIC T4/T5/T6 according to ATEX (w/o cable glands or plugs).....	EDZ
Explosion-proof according to FM (w/o cable glands or plugs) .....	(g)(p) ..... FDZ
Explosion-proof according to CSA (w/o cable glands or plugs) .....	(g)(p) ..... DZ
GOST Approved for Explosion-proof .....	GDZ
Without Ex (with cable glands and plugs) .....	ZZZ
<b>Mounting Preparation on Positioner</b>	
NAMUR acc. to IEC 534-6 / Direct Mounting to Flowserve actuators FlowPak and FlowTop / / Rotary Actuators according to VDI/VDE 3845 .....	(p) ..... N
Rotary Actuators according to VDI/VDE 3845 .....	(p) ..... R
Integrated attachment with air channels on back/Rotary Actuators according to VDI/VDE 3845 .....	(g)(p) ..... T
Direct mounting acc. to NAMUR VDI/VDE 3847/Rotary Actuators according to VDI/VDE 3845 .....	(a)(g)(p) ..... D
NAMUR acc. to IEC 534-6 / Rotary Actuators according to VDI/VDE 3845 .....	F
<b>Language</b>	
LCD Language in English / German / .....	(e)(g) ..... A
LCD Language in English / German / Spanish .....	(e)(g)(p) ..... B
LCD Language in English / German / Portuguese .....	(e)(g)(p) ..... C
LCD Language in English / German / Polish .....	(e)(g)(p) ..... D
LCD Language in English / German / Czech .....	(e)(g)(p) ..... E
LCD Language in English / German / Italian .....	(e)(g)(p) ..... F
LCD Language in English / German / Turkish .....	(e)(g)(p) ..... G
LCD Language in English / German / Swedish .....	(e)(g)(p) ..... H
LCD Language in English / German / Finnish .....	(e)(g)(p) ..... J
LCD Language in English / German / Chinese .....	(a)(e)(g)(p) ..... K
LCD Language in English / German / Russian .....	(e)(g)(p) ..... L
LCD Language in English / German / Hungarian .....	(e)(g)(p) ..... M
LCD Language in English / German / Serbian .....	(e)(g)(p) ..... N

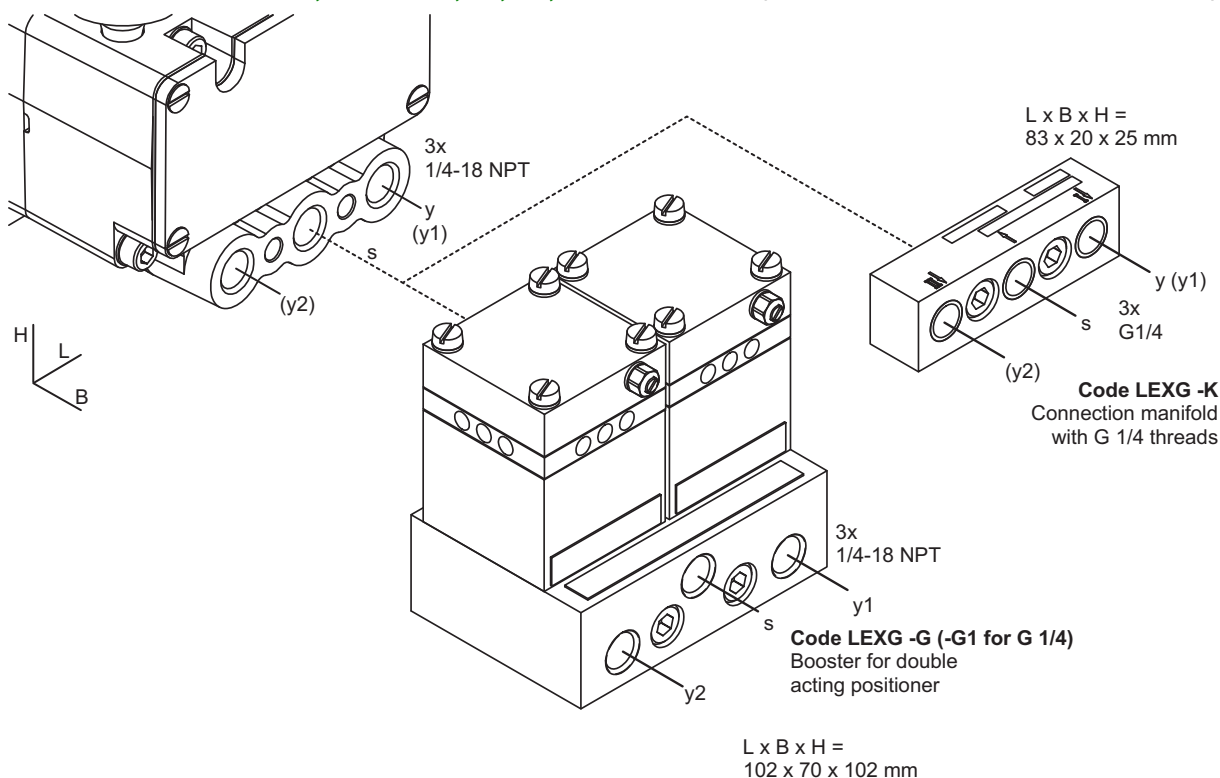
**Model Codes SRD960 (continued)**

LCD Language in English / German / Dutch .....	(e)(g)(p)	O
LCD Language in English / German / Romanian .....	(e)(g)(p)	P
LCD Language in English / German / Lithuanian .....	(e)(g)(p)	Q
Without .....	(h)(p)	S
<b>Options</b>		
Diaphragm Amplifier for double acting positioner .....	(j)(p)(g)	-M
Premium Diagnostics Features (made with built-in pressures sensors) (HART);		
Build in pressure sensors (analog, FF, Profibus) .....	(d)(g)(p)	-B
Cover for protection of local push buttons .....	(g)(k)	-X
Approved for SIL2 / SIL3 application .....	(i)(p)(g)	-Q
Custom Configuration .....	(g)(p)	-T
Application down to -40°C .....	(l)	-F
Certificate EN 10204-2.1 - Certificate of compliance with the order .....		-1
Cage Clamp Connection (WAGO) instead of Screw terminals .....	(p)	-W
Feedback-Unit for Remote Mounting - Version of Position Transmitter only with a potentiometer (m)(p)(q) .....		-H
Version for ESD Valve with PST functionalities .....	(b)(p)(g)	-E
FOUNDATION Fieldbus H1 firmware revision 16 .....		-FF16
FOUNDATION Fieldbus H1 firmware revision 18 .....		-FF18
<b>Tag No. Labeling</b>		
Stamped with Weather Resistant Color .....		-G
Stainless Steel Label Fixed with Wire .....		-L
<p>(a) Not released</p> <p>(b) ONLY WITH (additional Inputs/Outputs E) AND (Optional Feature -B)</p> <p>(d) Not available with Input / Communication D</p> <p>(e) Only with Display / Indication D</p> <p>(f) NOT WITH Version -B, Version C</p> <p>(g) Not available with Version -T</p> <p>(h) Not available with Display / Indication D</p> <p>(i) Only available for Version single-acting -B in connection with Input/Communication D and H</p> <p>(j) ONLY WITH (Version: C)</p> <p>(k) Not in connection with Display / Indication S</p> <p>(l) ONLY with Electrical Classification xDx</p> <p>(m) Only available with Version T, Input/communication X, Additional inputs outputs N, Display S, Gauges S, Pneumatical connection X, Electrical classification xDx or ZZZ, Mounting preparation F, Language S</p> <p>(n) WITH (Version: B, C) OR WITH (Version: T) AND (Input: X) AND (Optional Features: H)</p> <p>(p) NOT WITH Version -L</p>		

**ACCESSORIES, FOR ALL DEVICES****Booster relays, Code LEXG -F, -G, -H****Connection manifold, LEXG -K, -L, -D, -D1**

Lateral attachment to positioner

Air output .....see table on page 3



The use of boosters together with a spool valve amplifier is not recommended.

So avoid to select LEXG-G with SRD960-C. In case of need select LEXG-G with SRD960-Cxxxxxxxxxx-M



## Model Codes Accessories

### Parts for Intelligent Positioner

<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 FlowTop / FlowPak .....		-E1
Further Attachment kits on request. See also our Internet site.		

<b>Couple lever</b>		
standard (stroke max. 80 mm) .....		-A
extended (stroke max. 120 mm) .....		-B
extended (stroke max. 260 mm) .....		-A1

<b>Manifold (for SRD960, SRD991 and SRI990)</b>		<b>LEXG</b>
With Connection G 1/4 .....		-K

<b>Booster Relay (for SRD960, SRD991 and SRI990, with connection 1/4 - 18 NPT)</b>		
for Version single acting .....		-F
for Version double .....		-G
for Version single acting with doubled output capacity .....		-H
<b>with connection G1/4 - 18</b>		
for Version single acting .....		-F1
for Version double acting .....		-G1
for Version single acting with doubled output capacity .....		-H1

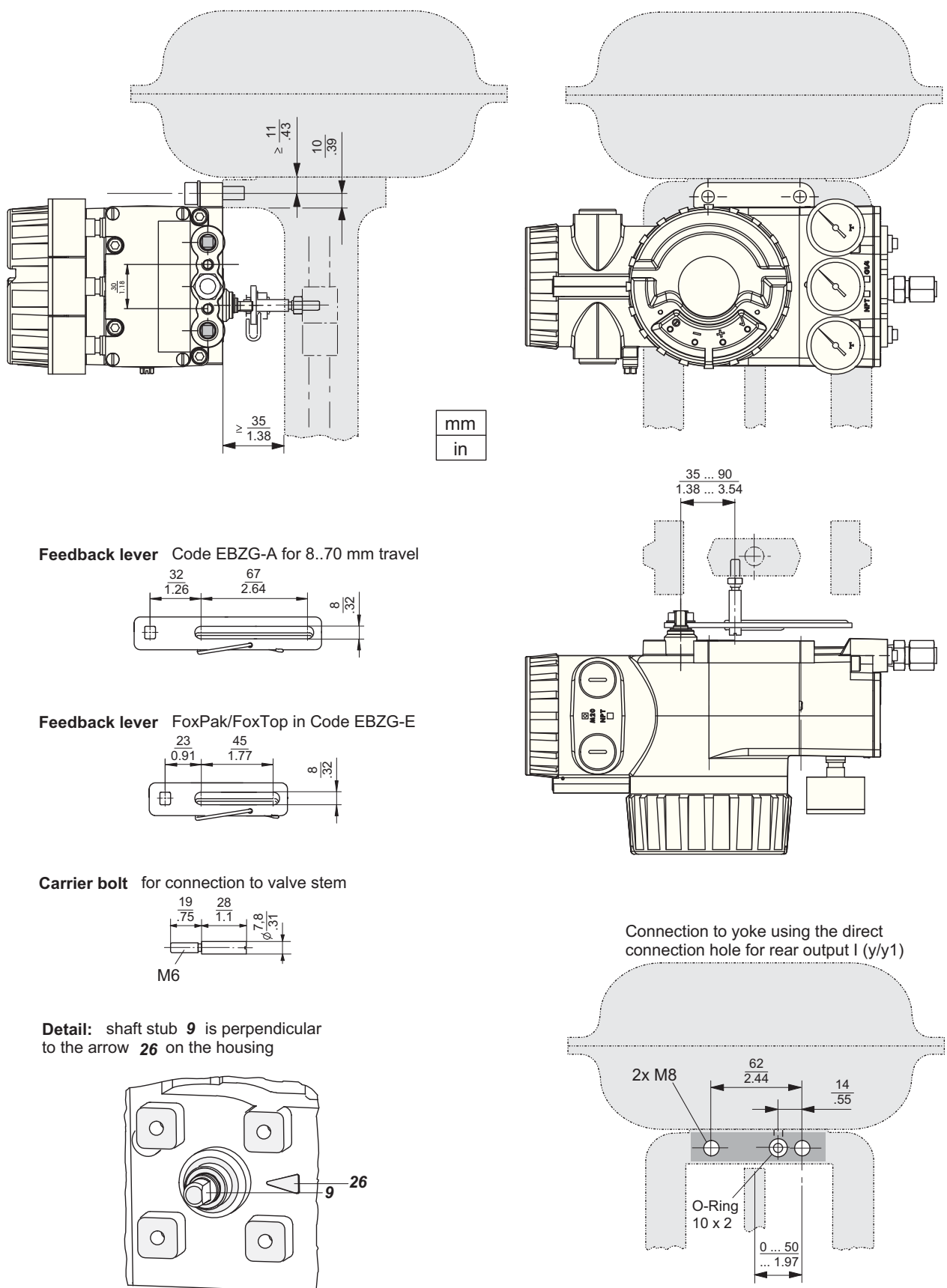
<b>Booster Relay (mounted independent from positioner, for SRD960, SRD991 und SRI990, with connection G1/4)</b>		
for Version single acting .....		-X1
for Version double acting .....		-Y1
for Version single acting with doubled output capacity .....		-Z1

<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 PG13.5 (internal thread) (stainless steel) .....		-A7
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>Cable Gland</b>		<b>BUSG</b>
M20 x 1.5 stainless steel .....		-S6
M20 x 1.5 plastics, color gray .....		-K6
M20 x 1.5 plastics, color blue .....		-K7
M20 x 1.5 plastics, 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 Profibus PA (ss / threaded connection M12) .....		-P3
M20 x 1.5 stainless steel, Ex d .....		-S7
M20 x 1.5 Brass Zink plated, Ex d .....		-S8
1/2-14 NPT cable gland 6 to 12 mm, Stainless steel, Ex d .....		-N1
1/2-14 NPT cable gland 6 to 12 mm, Steel Zink plated, Ex d .....		-N2
1/2-14 NPT, Brass Zink plated, Ex d .....		-N3
M20 x 1.5 Plug, plastic .....		-V3
M20 x 1.5 Plug, Ex d / explosionproof certified, stainless steel .....		-V4
1/2-14 NPT Plug, Ex d / explosionproof certified, stainless steel .....		-V5
M20 x 1.5 Plug, Brass Zink plated, Ex d .....		-V6
1/2-14 NPT Plug, Brass Zink plated, Ex d .....		-V7

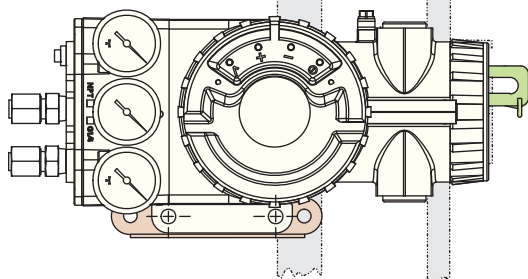


## DIMENSIONS – Direct attachment to stroke actuators

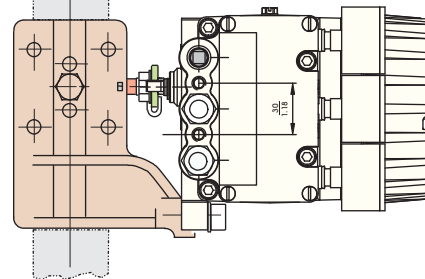


## Attachment to stroke actuators acc. to IEC 534-6 (NAMUR)

LCD orientation can be changed by means of local push buttons under Menu 9.9.2 to „flipped“, to ensure a correct orientation of the display.

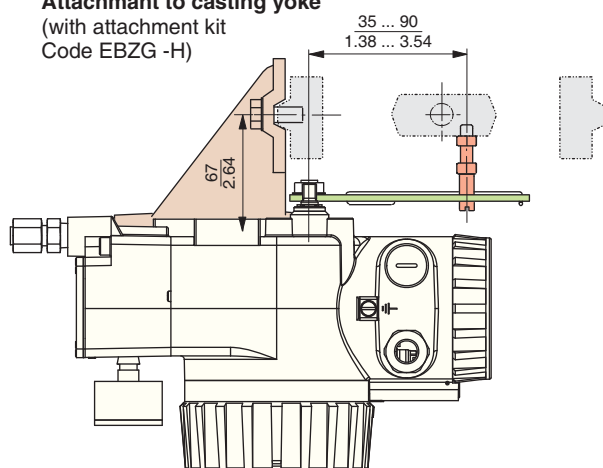


mm  
in

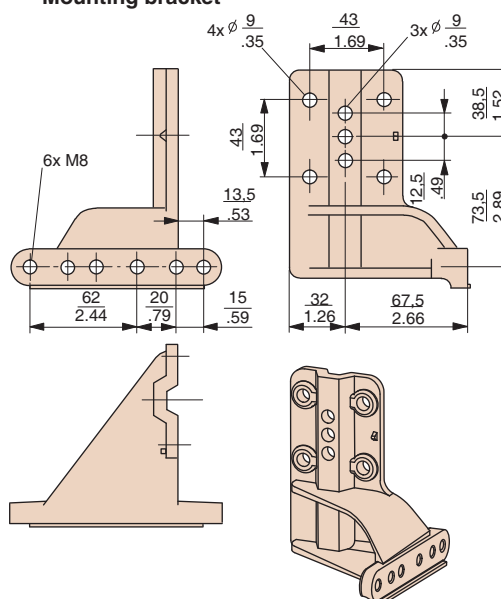


### Attachment to casting yoke

(with attachment kit  
Code EBZG -H)

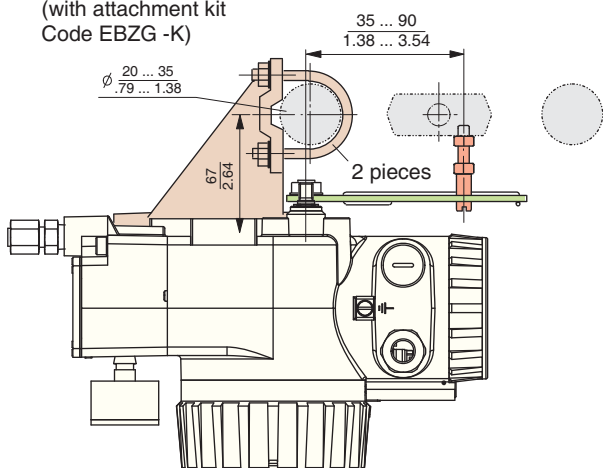


### Mounting bracket

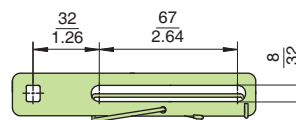


### Attachment to pillar yoke

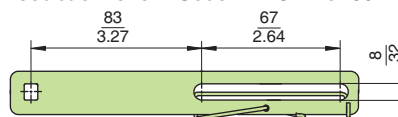
(with attachment kit  
Code EBZG -K)



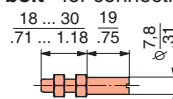
### Feedback lever Code EBZG-A for 8..70 mm travel



### Feedback lever Code EBZG-B for 60..120 mm travel



### Carrier bolt for connection to valve stem



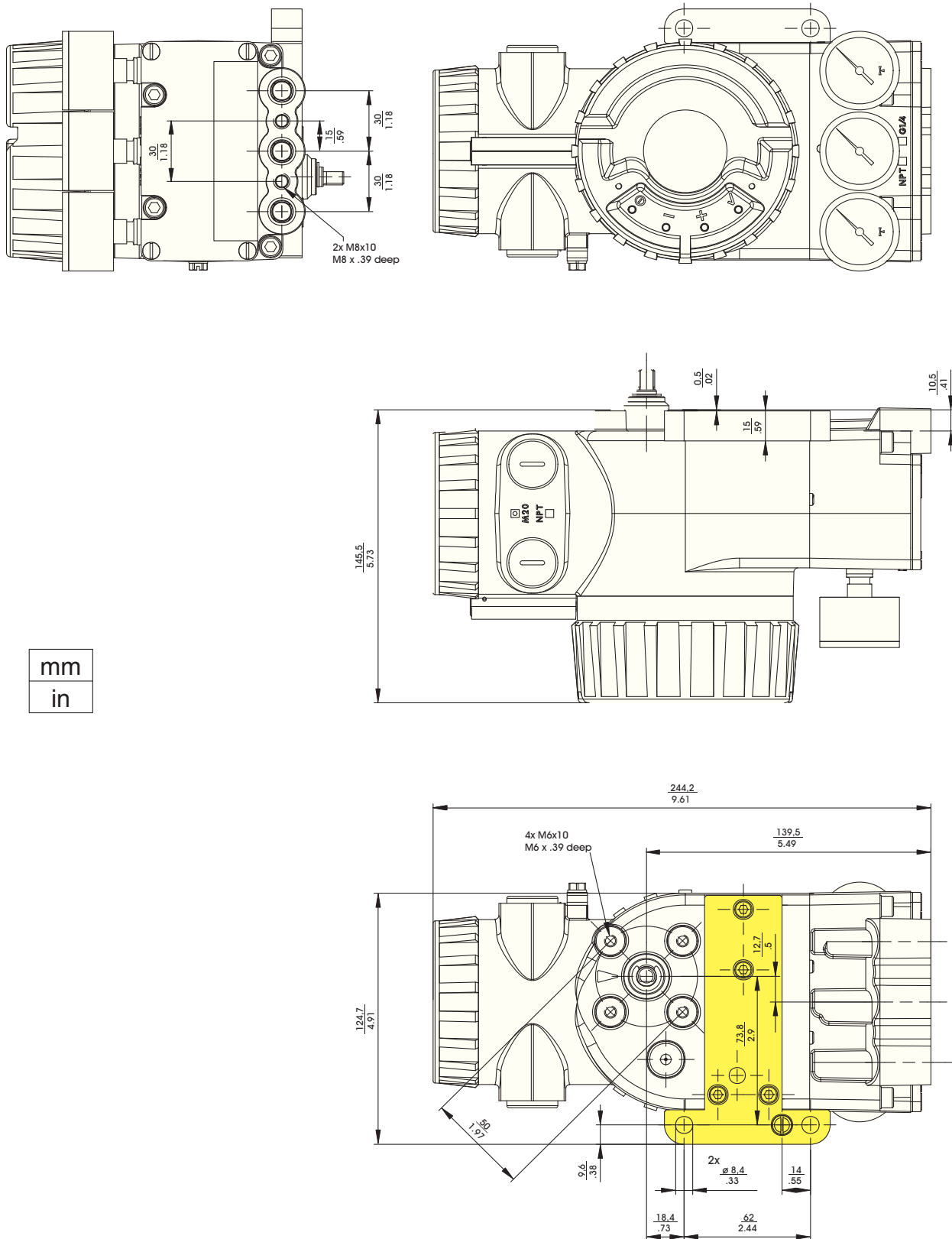
Attachment diagram of bracket

The drawing shows a bracket assembly with the following views and dimensions:

- Top View:** Shows the bracket's footprint. Dimensions include a central hole diameter of  $\phi 6.5$  with a tolerance of  $+.26$ , a distance of  $4x$  from the center to the corners, and a total width of  $50$  with a tolerance of  $+.197$ . A distance of  $18$  with a tolerance of  $+.71$  is also indicated.
- Front View:** Shows the bracket's profile. Dimensions include a total height of  $24$  with a tolerance of  $+.95$ , and a mounting hole diameter of  $\phi 6.5$  with a tolerance of  $+.26$ .
- Side View:** Shows the bracket's side profile. Dimensions include a total width of  $14$  with a tolerance of  $+.55$ , a central hole diameter of  $\phi 8$  with a tolerance of  $+.31$ , and a distance of  $10$  with a tolerance of  $+.39$  from the center to the side edge. A distance of  $4.2$  with a tolerance of  $+.01$  and a tolerance of  $+.17$  are also shown.
- Detail View:** Shows a close-up of the mounting hole. Dimensions include a hole diameter of  $\phi 6.5$  with a tolerance of  $+.26$ , a distance of  $4.5$  with a tolerance of  $+.02$ , and a tolerance of  $+.16$ .
- Section View:** Shows the bracket's internal structure. Dimensions include a total height of  $17$  with a tolerance of  $+.67$ , a distance of  $13.5$  with a tolerance of  $+.53$ , and a distance of  $1.7$  with a tolerance of  $+.67$ .
- Top View of Mounting Hole:** Shows the mounting hole with a diameter of  $\phi 6.5$  and a tolerance of  $+.26$ .
- Side View of Mounting Hole:** Shows the mounting hole with a diameter of  $\phi 6.5$  and a tolerance of  $+.26$ .

Delivery of bracket by manufacturer of actuator  
or see EBZG -C1, -C2 or -C3

## DIMENSIONS



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DOKT 533 495 117  
FD-PSS-PO-01-EN

0618



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