SRD991 Intelligent Positioner with HART, FoxCom, PROFIBUS-PA, FOUNDATION Fieldbus H1 or Without Communication



The intelligent positioner SRD991 is designed to operate pneumatic valve actuators and can be operated from control systems (e.g. the Foxboro I/A Series System), controllers or PC-based configuration- and operation tools such as the DTMs VALcare™ or Valve Monitor. The positioner is available with different communication protocols. The multi-lingual full text graphical-LCD (optional with infrared interface), in conjunction with the 3 push buttons, allows a comfortable and easy local configuration and operation. For installations in contact with explosive atmospheres, certificates are available.

MAIN FEATURES

Intelligent

- Auto-start with self-calibration
- Self diagnostics, status- and diagnostic messages
- Easy local operation with three key pads
- Multi-Lingual full text graphical LCD, or LEDs
- VALcare™ or Valve Monitor DTM for valve diagnostics and predictive maintenance

with communication

- HART, FOUNDATION Fieldbus H1, PROFIBUS-PA, FoxCom
- Configuration by means of local keys, handheld terminal (HART), PC or I/A Series system or with an infrared interface by means of IrCom

without communication

- Input signal 4 to 20 mA
- Stroke 8 to 260 mm (0.3 to 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 534, Part 6 – VDI/VDE 3847

- Mounting on rotary actuators acc. to VDI/VDE 3845
- Protection class IP 65 (IP 66 on request), NEMA 4X
- Approved for SIL applications
- Explosion protection: Intrinsic Safety according to ATEX and FM/CSA

FOXBORO ECKARDT

FUNCTIONAL SPECIFICATIONS (common data for all versions)

Travel range

Stroke range . . . . . 8…260 mm (0.3 ... 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 ... 6 bar (20 ... 90 psig)
with spool valve 4) . . . . . 1.4 ... 7 bar (20...105psig)
Output to actuator . . . . . 0 to ~100 % of supply air pressure (up to 5.5 bar at 6 bar supply air pressure)
Air supply 1) . . . . . according to ISO 8573-1
Solid particle size and density . . . . class 2
Oil rate . . . . . class 3

Response characteristic 2) 3)

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 Nm^3/h (scfh)

at max. deviation,
SRD single or double acting . . . . . 7.5 Nm^3/h (265 scfh) @ 6 bar (90 psig)
SRD with spool valve amplifier. . . . 18 Nm^3/h (636 scfh) @ 6 bar (90 psig)
SRD with booster code F or G. . . . 21 Nm^3/h (742 scfh) @ 6 bar (90 psig)

Air consumption (steady state) Nl/h (scfh)

SRD single acting . . . . . 150 Nl/h (5.3 scfh) @ 6 bar (90 psig)
SRD double acting . . . . . .400 Nl/h (14.1 scfh) @ 6 bar (90 psig)
SRD with spool valve amplifier . . . .550 Nl/h (19.4 scfh) @ 6 bar (90 psig)

Operation and Configuration

The local LCD enables a fast and easy configuration as well as clear diagnostic.
Local . . . . . with local key pads
Display. . . . . Multi-lingual Graphic LCD and five LEDs

PHYSICAL SPECIFICATIONS (common data for all versions)

Mounting

Onto any valve.
Linear Actuator up to 260mm with standard feedback lever, for bigger stroke please consults us
Rotary Actuator up to 95° rotation and up to 300° with special construction

Materials

Housing and covers . . . . . Aluminum (Alloy No. 230) finished with DD-varnish
All moving parts of feedback system . . . . . 1.4306 / 1.4571 / 1.4104
Attachment kits . . . . . V4A or Aluminum, finished with DD varnish
(depending upon version) . . . . . (Alloy No. 230)
Mounting bracket . . . . . Aluminum (Alloy No. 230)
Pneumatic diaphragms . . . . . PVMQ (Silicone elastomer, suitable for use in the paint industry)

Weight

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

Pneumatic connection

NAMUR mounting . . . . . G 1/4 or 1/4-18NPT with additional connection manifold

Electrical Connection

Line entry. . . . . 1 or 2 cable glands 1/2-14 NPT or M20 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
Wire cross section . . . . . 0.3 to 2.5 mm^2 (AWG 22-14)
Test sockets . . . . . for options and communicator connection

Ambient conditions

Operating conditions . . . . . acc. to IEC 654-1
The device can be operated at a class Dx location
Ambient temperature
Operation 1) . . . . . –40 ... 80 °C (–40 ... 176 °F)
Transport and storage . . . . . –40 ... 80 °C (–40 ... 176 °F)
Storage conditions acc. to IEC60721-3-1: 1K5; 1B1; 1C2; 1S3; 1M2
Indicators
LCD (visible) 2) . . . . . –25 ... 70 °C (–13 ... 176 °F)
LEDs . . . . . –40 ... 80 °C (–40 ... 176 °F)
Relative humidity . . . . . up to 100 %
Protection class 3)
acc. to IEC529. . . . . IP 65; IP 66 on request
acc. to NEMA. . . . . Type 4X

Electromagnetic compatibility EMC

Operating conditions . . . . . industrial environment
Immunity according to
EN61326 . . . . . fulfilled
IEC 61326 . . . . . fulfilled
EN61000-6-2 . . . . . fulfilled
Emission according to EN 61326 Class A and Class B. . . . . fulfilled
EN61000-6-4 . . . . . fulfilled
EN 55011 Group 1, Class A and Class B. . . . . fulfilled
NAMUR recommendation EMVNE21. . . . . fulfilled

SAFETY REQUIREMENTS

CE label

Electromagnetic compatibility 4) . . . 89/336/EWG
Low-voltage regulation. . . . . 73/23/EWGnot applicable

Safety

According to EN 61010-1 (or IEC1010-1) . . . . . 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 (bzw. IEC 1010-1).

1) Details see Certificates of Conformity. With Option -T only –20 °C
2) Below –20 °C the LCD reacts only slowly; above +70°C the background becomes dark
3) Under service as directed
4) With PROFIBUS or FOUNDATION Fieldbus only, if shield of wiring is grounded on both sides

Electrical classification 4) 5)

see Certificates of Conformity EX EVE0105 A

Type of protection “Intrinsically Safe”

Type AI 638. . . . . II 2GEEx ia IIB/IIC, II 2 G EEx ib IIB/IIC

FM Type of protection

IS / I, II, III / 1/ ABCDEFG / T4 Ta = 80°C- Entity; Type 4X; DOKZ 534 396 058
NI / I / 2/ ABCD; S / II,III / FG / T4 Ta = 80°C; Type 4X; IS / I,II,III / 1 / ABCDFG / T4 Ta = 55°C; Entity; Type 4X; DOKZ 534 396 049
NI / I / 2 / ABCD; S / II,III / 2 / FG / T4 Ta = 80°C, T6 Ta =55°C; Type 4X

CSA Type of protection “Intrinsic Safety / Non-Incendive”

Class I. Groups A, B, C and D: Class II. Groups E, F and G:
Class III:
Ex ia IIC T4/T6 IP65:
HART / 4 - 20mA / FOXCOM/Profibus/Fieldbus -abbcdefg-j Positioner: 12-36 Vdc. 4-20 mA or 48 Vdc, Intrinsically Safe when installed as per submittor’s drawings DOKZ 534 396 067 or DOKZ 534 396 076 : Temp. Code T4 at max amb. 80°C or T6 at max. amb. 55°C
Class I. Div 2. Groups A. B. C and D: Class II. Div 2. Group F and G: Class III. Div 2: IP65 End

COMMUNICATION VERSION

SRD991 without communication - SRD991-xDxxxx

Signal Input . . . . . Two wire system
Signal range . . . . . 4 to 20 mA

SRD991 with HART communication - SRD991-xHxxxx

Signal Input . . . . . Two wire system
Signal range . . . . . 4 to 20 mA

SRD991 with FoxCom communication - SRD991-xFxxxx

FoxCom is a digital communication protocol of Foxboro.
Input . . . . . Two-wire system, digital
Supply voltage. . . . . DC8 to 36 V
Supply current . . . . . ~ 9 mA at 24 V

SRD991 with communication PROFIBUS-PA - SRD991-xPxxxx

Operating current. . . . . 10.5 mA ± 0.5 mA (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
Data transfer . . . . . according to PROFIBUS- PA profile class B based on EN 50170 and DIN 19245 part 4

SRD991 with communication FOUNDATION Fieldbus H1

SRD991-xQxxxx

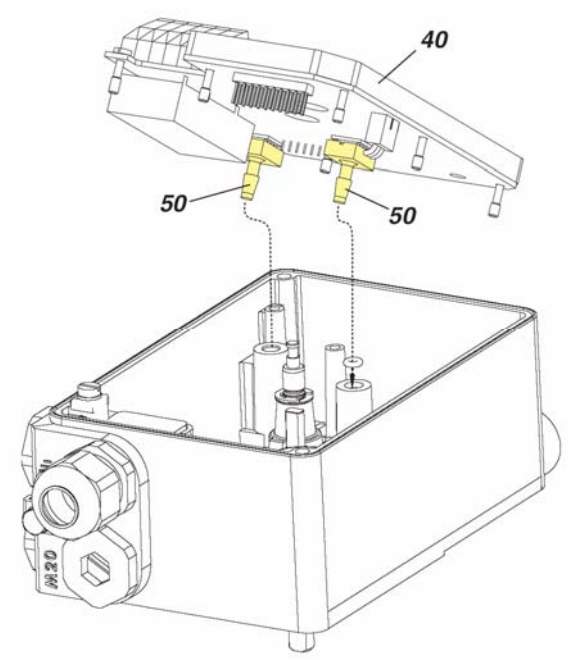
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Current amplitude . . . . . ± 8 mA
Fault current. . . . . base current + 0mA
(base current + 4 mA by means of independent FDE-safety circuit) according to IEC 1158-2
Data transfer . . . . . FF Specification Rev. 1.4,
Link-Master (LAS)
Certified according to . . . . . ITK 4.6
Function Blocks . . . . . PID, AO, 2xDI, 1xDO, Transducer, Resource

4) With appropriate order only
5) National requirements must be observed

ADDITIONAL EQUIPMENT (built into any basic device)

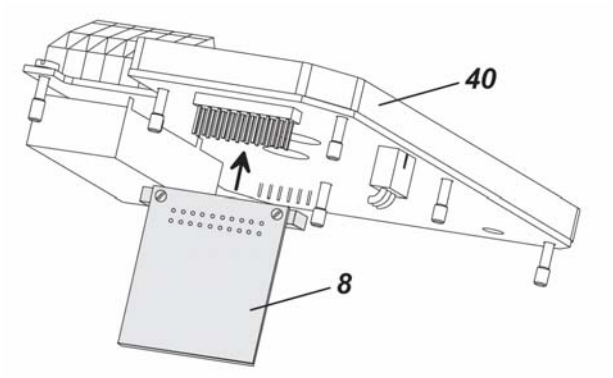
Built-in Pressure sensors *50*, Code Option –B

For supply air and output y1 to actuator
Measuring range . . . . . 0 to 8 bar (0 to 120 psig)
Accuracy . . . . . 0.5 %
Temperature influence . . . . . 0.5 %/ 10k (–40 to 80°C)



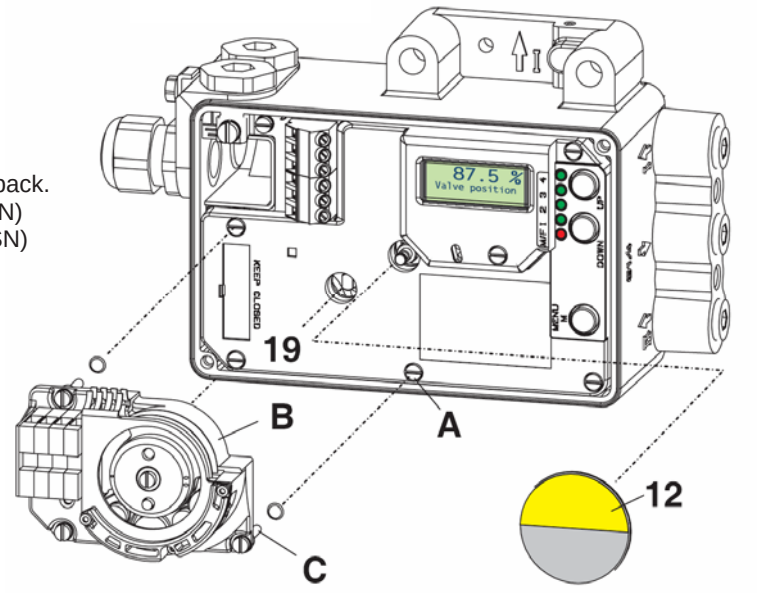
Additional Inputs / Outputs:

One module “Additional inputs / outputs” ***8*** can be plugged onto main electronics ***40*** :
• Position feedback and Alarm or
• 2 Binary outputs or
• 2 Binary inputs or

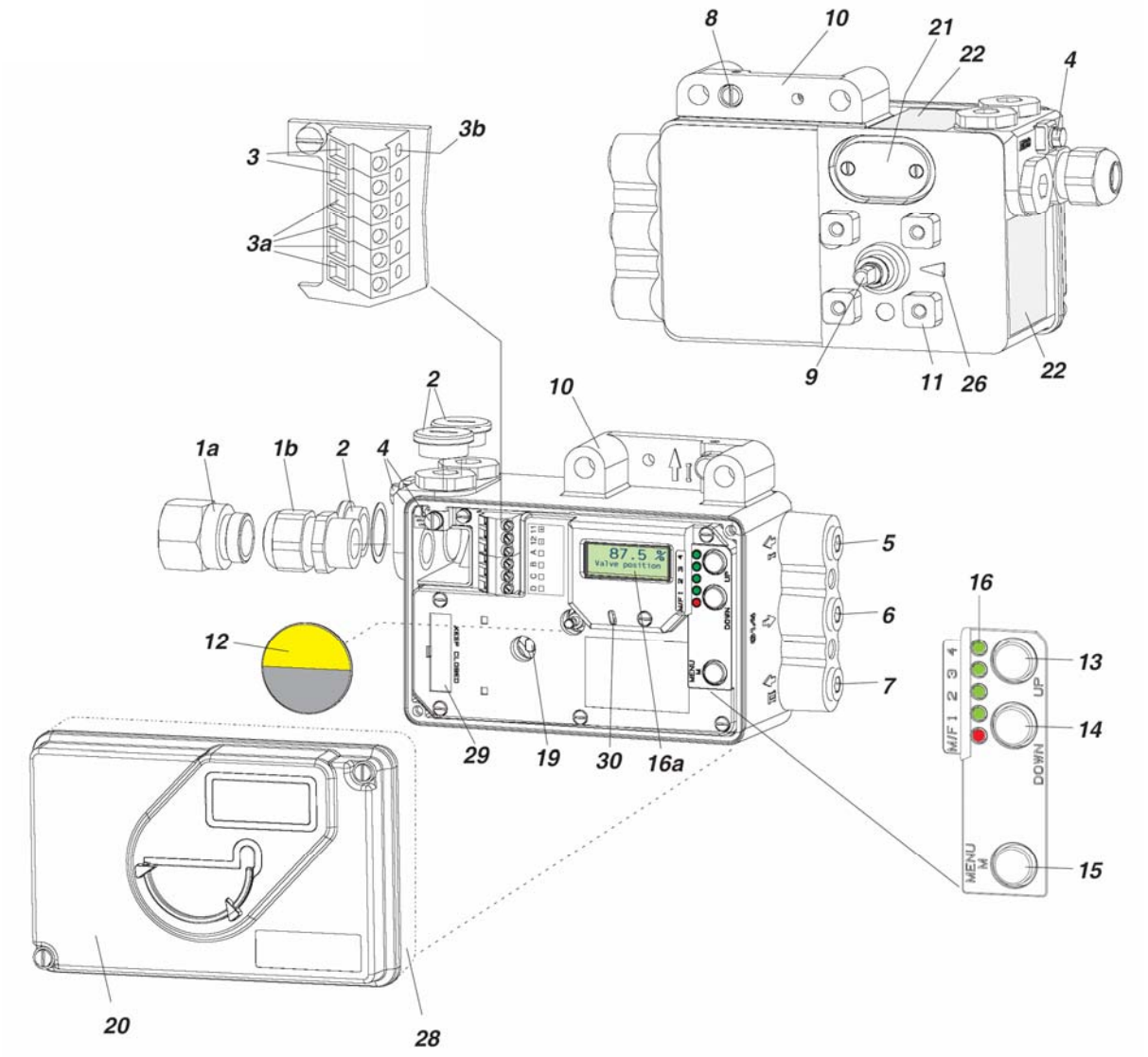


Built-in Limit Switch

Built-in Limit signal switch ***B***
Stroke / angle derived from positioner feedback.
– inductive NAMUR standard version (SJ2-N)
– inductive NAMUR security version (SJ2-SN)
– inductive 3-wire (SI2-K08-AP7/ PNP)
– Micro switches
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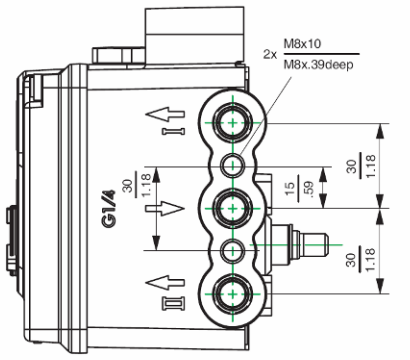
FUNCTIONAL DESIGNATIONS

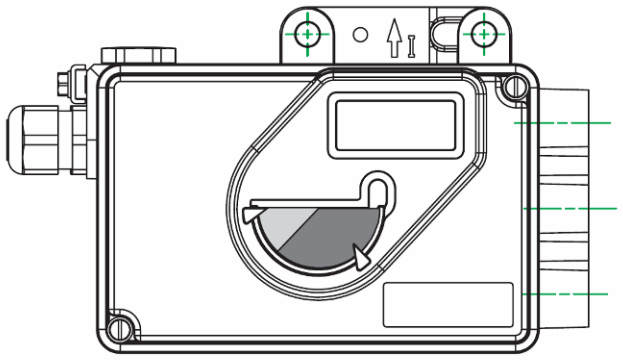


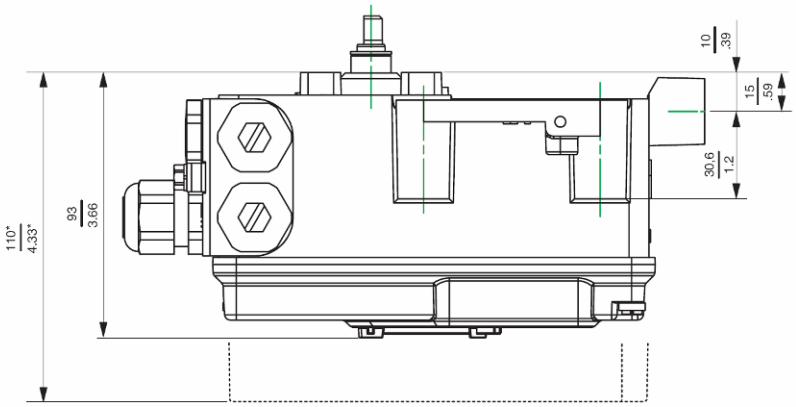
1a Adapter, eg. 1/2”-14 NPT
1b Cable gland
2 Plug, interchangeable with Pos.***1***
3 Screw terminals 1) (11 / 12) for input (w) or for bus connection IEC 1158-2
3a Screw terminals 1) for additional inputs / outputs
3b Test sockets Ø 2 mm, integrated in terminal block
4 Ground connection
5 Female thread G 1/4 for output I (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 (not with VDI/VDE 3847 version)
11 Connection base for attachment to rotary actuators
12 Travel indicator
13 Key **UP**
14 Key **DOWN**
15 Key **M** (Menu)
16 Status display (1 red LED, 4 green LEDs)
16a LCD with true text in 3 different languages
19 Fixing shaft for limit switch
20 Cover with window to ***12***
21 Air vent, dust and water protected
22 Data label
26 Arrow is perpendicular to shaft ***9*** at angle 0 degree
28 High cover with built-in limit switch
29 Plug for service connector
30 IrCom interface

1) Alternatively WAGO terminals instead of screw terminals

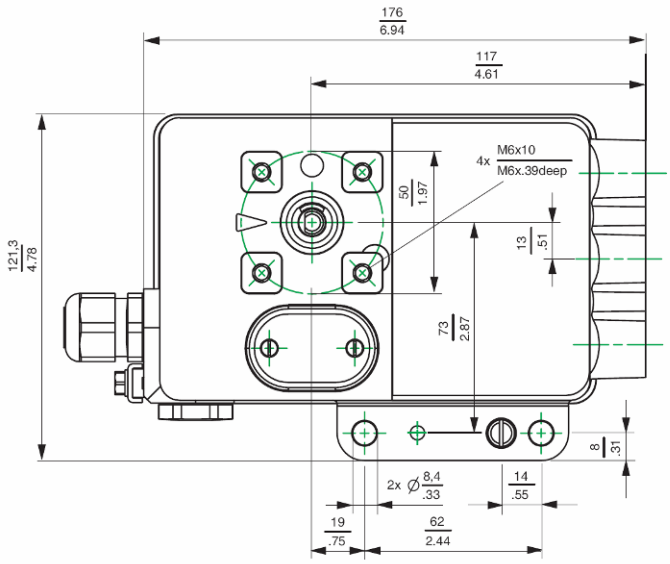
DIMENSION







mm
in



*) Dimensions with high cover for optional “limit switch”

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