

SRP981 Pneumatic Positioner



The SRP981 Positioner is for operation of pneumatic valve actuators with pneumatic control signals. It is used to reduce the adverse effects of valve friction, for higher thrust and shorter positioning time.

FEATURES

- Independent adjustment of stroke range and zero
- Adjustable amplification and damping
- Split range up to 4-fold possible
- Supply pressure up to 6 bar (90 psig)
- Low vibration effect in all directions
- Mounting according to IEC 534, part 6 (NAMUR)
- Rotation adapter for angles up to 120 °
- Ambient temperature –40 to 80 °C (–40 to 176 °F)
- Travel 8 to 100 mm (0.3 to 4 in)
- Angular range 30 ° to 120 °
- Modular system of additional equipment
 - Electrical limit switches
 - Electrical position transmitter
 - Booster
 - Connection manifold
- Protection class IP54 (IP 65 on request)
- Certificate No. 90/20226(E2) Lloyd's Register of Shipping for use on vessels
- Explosion protection
 - pneumatic basic device:
ATEX II 2 G c IIC T6 constructive design
 - electrical additional built-in equipment:
ATEX II 2 G Ex ib/ia IIB/IIC T4/T6
CU TR explosion protection

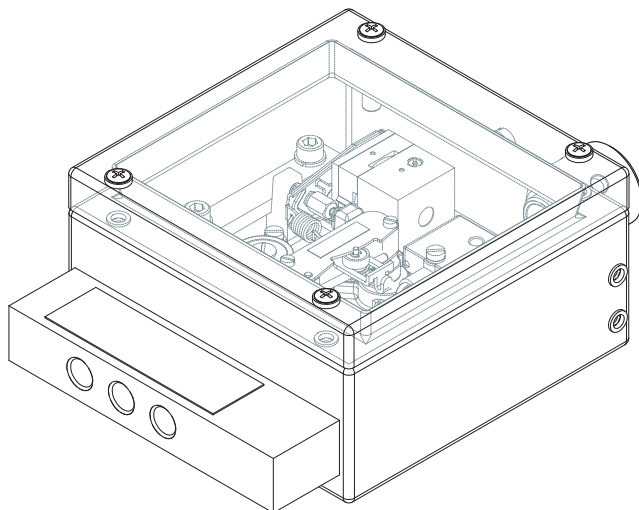
Equipment should be installed, operated, serviced, and maintained only by qualified personnel.

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

SPECIAL VERSION OF SRP981

SRP981 in Stainless Steel housing

Casing	Stainless Steel 1.4404 / 316L, 1.25 mm thick
Ingress Protection	IP65; IP66 under working conditions (supplied by air supply)
Impact resistance	> 7 Joule acc. to EN 50014
Seals	VMQ (Silicone)



For dimensional drawings see page 13.

Version for mounting to linear actuators, single acting can be ordered under special version ECEP EP 0301, together with Mounting kit EBZG.

Other versions for double acting or mounting to rotary actuators on request.

TECHNICAL DATA

Input

Signal range	0.2 to 1 bar (3 to 15 psig) or split range down to Δw 0.2 bar (3 psi)
Stroke range	8 to 100 mm (0.3 to 4 in)
Angular range	
linear	30 ° to 120 °
equal percentage	90 %; from 70 ° linear

Output

Output to actuator	0 to 100 % supply air pressure
--------------------	-----------------------------------

Supply

Supply air pressure	1.4 to 6 bar (20 to 90 psig)
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 FRS02 filter regulator.	

Ambient conditions

Ambient temperature	-40 to 80 °C (-40 to 176 °F)
Relative humidity	up to 100 %
Operating conditions	
as per IEC 654-1	The device can be operated at a class D2 location
Transport and storage	
Temperature	-50 to 80 °C (-58 to 176 °F)
Protection class	IP 54 (IP 65 on request)

Amplification	adjustable
Sensitivity	< 0.1 % F.S.
Non-linearity (terminal based adjustment)	< 1.0 % F.S.
Hysteresis	< 0.3 % F.S.
Supply air dependency.....	< 0.2 % / 0.1 bar (1.5 psi)
Temperature effect.....	< 0.3 % / 10 K

Double acting	
1.4 bar (20 psig)	350 l _n /h (10.6 scfh)
3.0 bar (45 psig)	550 l _n /h (17.7 scfh)
6.0 bar (90 psig)	750 l _n /h (33.5 scfh)

Load effect ²⁾ -3 % for delivery flow
2 350 l_n/h (83 scfh)
+3 % for exhausted flow
1 900 l_n/h (67 scfh)

Supply air Pressure bar (psig)	1.4 (20)	2 (30)	4 (60)	6 (90)
without booster In/h (scfh)	2 700 (95)	3 500 (124)	5 500 (194)	7 500 (265)
with booster code VKXG -FN, -GN In/h (scfh)	18 000 (636)	24 000 (847)	40 000 (1 412)	55 000 (1 942)
with booster code VKXG -HN In/h (scfh)	36 000 (1 271)	48 000 (1 695)	80 000 (2 825)	110 000 (3 884)

Indicating range
Supply, output 0 to 10 bar (0 to 150 psig)
Input. 0 to 1.6 bar (0 to 23 psig)
Error limit class 1.6
Pneumatic connections . . . Female threads Q 1/4-18 NPT
acc. to DIN 45 141

- 1) Data based on following parameters:
stroke 30 mm (1.28 in), range spring FES 628/1, feedback lever effective length 117.5 mm (4.63 in), max. amplification,
supply air pressure 3 bar (45 psig)
- 2) Measured at air supply 1.4 bar (20 psig) and 50 % of signal range

ADDITIONAL EQUIPMENT

(built-in into basic device)

Inductive Limit Switch Code T, U

Two-wire system

Input

Stroke / angle from actuator
via positioner feedback lever

Output

2 inductive proximity sensors
acc. to DIN 19234 or NAMUR
for connection to a switching
amplifier with an intrinsically
safe control circuit ^{1) 2) 3)}

Current consumption

Vane clear > 3 mA

Vane interposed < 1 mA

For control circuit with the following electrical values

Supply voltage DC 8 V, R_i approx. 1 kOhm

Residual ripple < 5 %

Permissible line resistance < 100 Ohm

Response characteristic ⁶⁾

Gain Continuously adjustable from
1:1 to approx. 7:1

Switching differential < 1 %

Switching point repeatability < 0.2 %



Explosion protection ^{7) 8)}

Type of protection II 2 G Ex ib/ia IIB/IIC T4/T6

Certificate of conformity PTB 02 ATEX 2153

For operation in certified intrinsically safe circuits with the
following maximum values:

U_{max} 16 V

I_{max} 25 mA

P_{max} 64 mW

Internal inductance 100 µH

Internal capacitance 30 nF

Ambient temperature

Temperature class T6 . . . -40 to 65 °C (-40 to 149 °F)

T1 to T5 . . . -40 to 80 °C (-40 to 176 °F)

Parts set for later installation

Code T EW 419 510 334

Code U EW 419 510 352

Inductive Limit Switch Code R

Three-wire system

Input Stroke / angle from

actuator via positioner
feedback lever

Output 2 inductive proximity sensors,
three-wire system, LED-
indication, contact, pnp ^{2) 4)}

Supply voltage U_s DC 10 to 30 V

Residual ripple ±10 %, U_s = 30 V

Switching frequency 2 kHz

Constant current 100 mA

Response characteristics ⁶⁾

Gain Continuously adjustable
from 1:1 to approx. 7:1

Switching differential < 1 %

Switching point
repeatability < 0.2 %

Parts set for later installation

Code R EW 419 510 291

Limit Switch Assembly with Micro switches

Code V

Input Stroke / angle from

actuator via positioner
feedback lever

Output 2 micro-switches ^{2) 5)}

Connected load

Alternating current

Switching capacity max. 250 VA

Switching voltage max. 50 V

Switching current with

ohmic resistance max. 5 A

inductive resistance max. 2 A

Bulb, metal filament max. 0.5 A

Direct current

Switching voltage, max.	Ohmic load	Inductive load
30 V	5 A	3 A
50 V	1 A	1 A

Response characteristic ⁶⁾

Gain Continuously adjustable
from 1:1 to approx. 7:1

Switching differential < 2.5 %

Switching point
repeatability < 0.2 %

Parts set for later installation

Code V EW 420 421 017

1) For the standard version code T, one switching amplifier is required
e.g. Pepperl & Fuchs type WE 77/Ex2

For the security version code U, a fail-safe switching amplifier for each
inductive proximity sensor is required
e.g. Pepperl & Fuchs type WE 77/Ex-SH-03

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

3) Operating mode normally closed circuit / normally open circuit selectable at
switch amplifier output

4) Contact closed within the positive range

5) Contact open within the positive range

6) For feedback lever effective length of 117.5 mm (4.63 in),
stroke 30 mm (1.28 in) and maximum gain

7) National installation regulations must be observed

8) For retrofitting in positioner version -B and -C, the product must be tested by a
qualified inspector as a special version in accordance with ElexV

Electrical Position Transmitter Code W

Input	
Stroke / angle from actuator via positioner feedback lever	
Sensor	
resistive precision conductive plastic element	
Stroke range	
15 to 80 mm (0.6 to 3.15 in)	
< 15 mm (0.6 in) on request	
Angular range	
60 to 120 °	
Output	Two-wire system
Signal range	4-20 mA
Permitted load	$R_{B \max} = (U_S - 12 \text{ V}) / 0.02 \text{ A}$ (U_S = supply voltage)
Power supply	
Supply voltage	DC 12 to 36 V
Permitted ripple	< 10 % p.p.
Supply voltage dependency	< 0.2 %
Response characteristic ¹⁾	
Non-linearity with terminal based setting. . . .	< 1.0 % F.S.
Hysteresis	< 0.5 % F.S.
External resistance dependency	< 0.2 % / $\Delta R_{B \max}$
Temperature effect	< 0.3 % / 10 K

**Explosion protection^{2) 3)}**Type of protection II 2 G Ex ib/ia IIB/IIC T4/T6 |Certificate of conformity PTB 02 ATEX 2153 |For operation in certified intrinsically safe circuits with the
following maximum values: | $U_{\max}$ T4: 30 V T6: 22 V | $I_{\max}$ T4: 130 mA T6: 66 mA | $P_{\max}$ T4: 0.9 W T6: 0.5 W |Internal inductance 9 μ H |Internal capacitance to earth 10 nF or 6 nF differential |Ambient temperature |Temperature class T6 . . . –40 to 40 °C (–40 to 104 °F) |T5 . . . –40 to 55 °C (–40 to 131 °F) |T4 . . . –40 to 80 °C (–40 to 176 °F) |Parts set for later installation |Code W EW 420 661 115 |**Common Data⁴⁾**Ambient conditions |Ambient temperature^{5) 6)} . . . –25 to 80 °C (–13 to 176 °F) |–40 to 80 °C (–40 to 176 °F) |Relative humidity up to 100 % |Operating conditions |as per IEC 654-1 The device can be operated at a class D2 location |Transport and storage |temperature –40 to 80 °C (–40 to 176 °F) |Protection class IP 54 (IP 65 on request) |Electrical connection |Line entry 1 or 2 cable glands M20x1.5 (others with Adapter AD-...) |Cable diameter 6 to 12 mm (0.24 to 0.47 in) |Screw terminals Screw terminals for wires up to 2.5 mm² (AWG 14) |Materials |Base plate Galvanized steel |Control vane Aluminum |Setting mechanism Fiber glass-reinforced polyamide |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 |CE marking |Electromagnetic |compatibility 2004/108/EG |Low voltage regulations . . w/o Ex: 73/23/EWG fulfilled (with Ex: not applicable) |Safety |as per DIN EN 61010-1 |(DIN IEC 61010-1) |(VDE 0411 part 1). safety class III |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) For feedback lever effective length of 117.5 mm (4.63 in) and
stroke 30 mm (1.28 in)

2) National installation regulations must be observed

3) For retrofitting in positioner version -B and -C, the product must be tested
by a qualified inspector as a special version in accordance with ElexV

4) Except manifold with gauges

5) Without explosion protection

6) –40 to 80 °C (–40 to 176 °F) for the fail-safe version of inductive
limit switch code

080715

- (a) Only available with Version -B
- (b) Not available with Gauge Code M or N
- (c) Not available with Built-In Limit Switch / Position Transmitter Code S
- (d) Not with Gauges M

MODEL CODES Accessories

Couple lever / cam	EBZG
Standard (a = 72 mm)	-AN
Extended (a = 91 mm)	-BN
Inverse equal percentage cam for rotary actuators	-CN
Spring set	FESG
Range springs (4 pcs)	-FN
Attachment kit	EBZG
For diaphragm actuators with casting yoke acc. NAMUR. (incl. standard Couple Lever) (for SRP981 , SRI983, SMP981, SMI983, SGE985)	-GN
For diaphragm actuators with pillar yoke acc. NAMUR. (incl. standard Couple lever) (for SRP981 , SRI983, SMP981, SMI983, SGE985)	-FN
For rotary actuators, without flange, 3 drill holes 6.5 mm (for SRP981 , SRI983, SRI986, SMP981, SMI983, SGE985) ..	-PN
For rotary actuators, without flange, 4 threads M6 (e.g. for Petras actuators) (for SRP981 , SRI983, SRI986, SMP981, SMI983, SGE985)	-NN
For rotary actuators, with flange (for SRP981 , SRI983, SRI986, SMP981, SMI983, SGE985)	-JN
For rotary actuators acc. to VDI/VDE 3845, with shaft (for SRP981 , SRI983, SRI986, SMP981, SMI983, SGE985) ..	-ZN
For Masoneilan type Camflex II (for SRP981 , SRI983, SRI986, SMP981, SMI983, SGE985)	-RN
For Masoneilan type Sigma F (for SRI986, SRP981 , SRI983)	-SN
For Masoneilan type 37/38, Fisher Elliott type 656, 667 (for SRP981 , SRI983, SGE985, SMI983, SMP981)	-TN
For Gulde type P (for SRP981 , SRI983)	-UN
For Masoneilan type 87/88 (for SRP981 , SRI983, SMP981, SMI983, SGE985)	-EN
For Masoneilan VariPak (for SRP981 , SRI983, SGE985, SMI983, SMP981)	-MN
For IAL actuators (for SRP981 , SRI983, SGE985, SMI983, SMP981)	-VN
Brackets VDI/VDE 3845 (A = 130 mm/5.12 in; B = 50 mm/1.97 in) (SRP981 , SRI983, SRI986, SGE985, SMI983, SMP981)	-C3
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 30 mm/1.18 in) (SRP981 , SRI983, SRI986, SGE985, SMI983, SMP981).	-C2
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 20 mm/0.79 in) (SRP981 , SRI983, SRI986, SGE985, SMI983, SMP981).	-C1
Manifold (Connection 1/4-18NPT)	LEXG
Staggered connections (for SRP981, SRI986)	-BN
Connections same level (for SRP981, SRI986)	-CN
Staggered connections for 1/4"-thread pneum. tube-conn. (e.g. tube-diameter: 8 mm / 0.3 in) (for SRP981, SRI986) ..	-DN
With gauges for supply air, y, for version single acting (for SRP981, SRI986)	-JN
With gauges for supply air, w, for version single acting (for SRP981)	-KN
With gauges for supply air, w, y, for version single acting (for SRP981)	-LN
With gauges for supply air, y1, y2, for version double acting (for SRP981, SRI986)	-MN
With gauges for w, y1, y2, for version double acting (for SRP981)	-NN
Gauge manifold without gauge (for SRP981, SRI986)	-RN
Gauge manifold without gauge, for supply air, y1, y2, for version double acting (for SRP981, SRI986)	-SN
Gauge manifold without gauge, for w, y1, y2, for version double acting (for SRP981) (b)	-TN
Booster (Connection 1/4-18NPT)	VKXG
For version single acting (for SRP981, SRI986)	-FN
For version double acting (for SRP981, SRI986)	-GN
For version single acting with doubled output capacity (for SRP981, SRI986)	-HN

(continued at next page)

MODEL CODES Accessories (continued)**Adapter****AD**

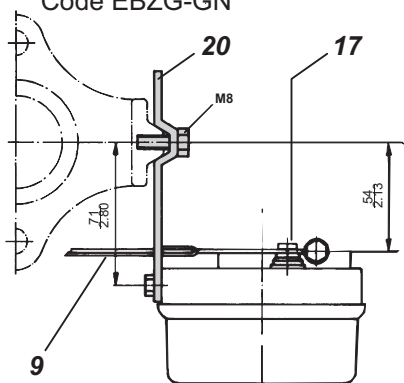
Adapter 1/2" NPT to 3/4" NPT (stainless steel)	-A3
Adapter M20 x 1.5 to G1/2" (internal thread) (stainless steel)	-A8
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (brass with nickel coating)	-A5
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (stainless steel)	-A6
Adapter (plastic) M20 x 1.5 to PG13.5 (internal thread)	-A9

Cable gland**BUSG**

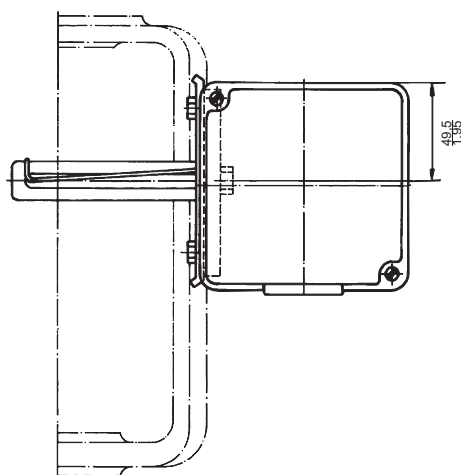
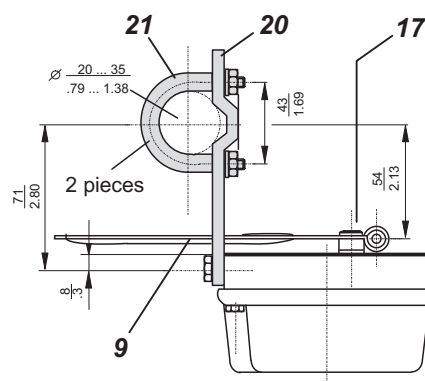
M20 x 1.5 plastics, color blue	-K7
M20 x 1.5 plastics, color white	-K9
M20 x 1.5 stainless steel	-S6
M20 x 1.5 plastics, color gray	-K6
M20 x 1.5 stainless steel Ex d	-S7
M20 x 1.5 brass Zinc plated Ex d	-S8
1/2-14 NPT cable gland 6 to 12 mm, Stainless steel, Ex d	-N1
1/2-14 NPT cable gland 6 to 12 mm, Steel Zinc plated, Ex d	-N2
1/2-14 NPT, brass Zinc plated, Ex d	-N3
M20 x 1.5 plug, plastic	-V3
M20 x 1.5 plug, Stainless steel, Ex d	-V4
1/2-14 NPT plug, Stainless Steel, Ex d	-V5
M20 x 1.5 plug, brass Zinc plated, Ex d	-V6
1/2-14 NPT plug, brass Zinc plated, Ex d	-V7

ATTACHMENT KIT FOR DIAPHRAGM ACTUATORS

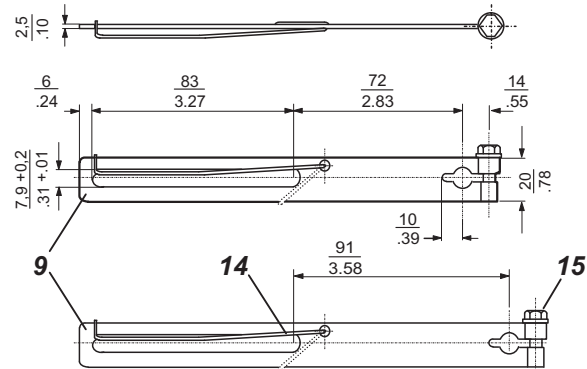
Attachment to casting yoke
according to IEC 534-6 (NAMUR)
Code EBZG-GN



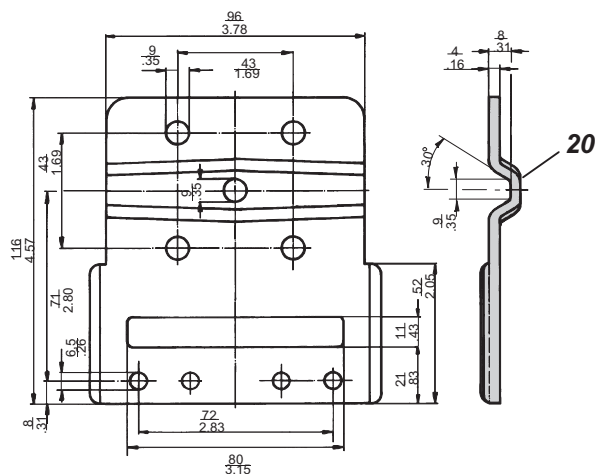
Attachment to pillar yoke
according to IEC 534-6 (NAMUR)
Code EBZG-FN



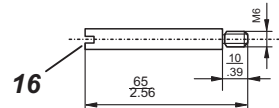
Feedback lever
Code EBZG-AN, -FN, -GN
Code EBZG-BN (extended version)



Mounting bracket
according to IEC 534-6 (NAMUR)
for Code EBZG-GN, FN



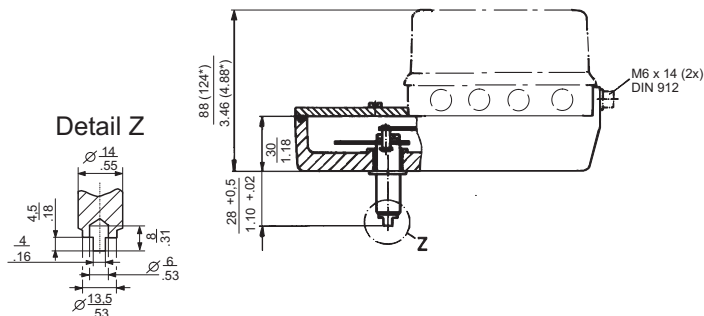
Carrier bolt
for attachment to valve stem



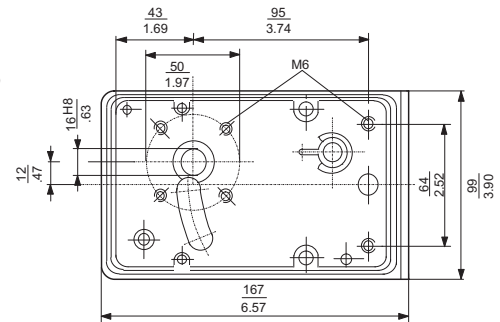
mm
in

ATTACHMENT KIT FOR ROTARY ACTUATORS

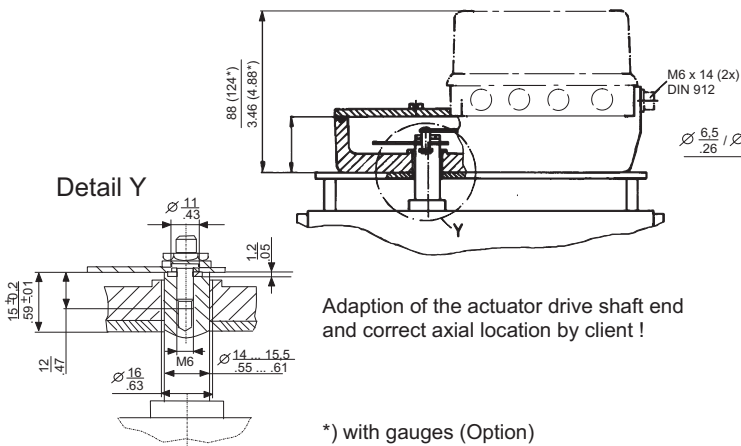
With shaft
(according to VDI/VDE 3845)
Code EBZG-ZN



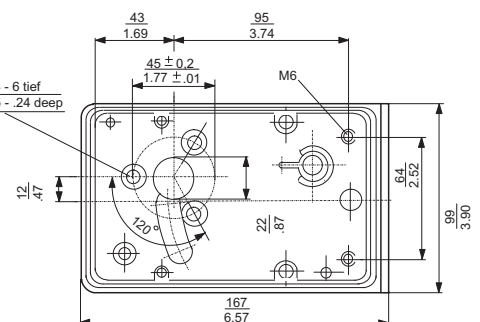
Housing dimensions
Attachment kit with shaft
resp. without flange
Code EBZG-NN



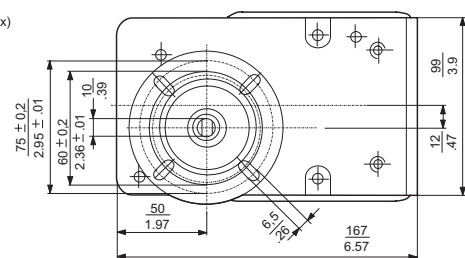
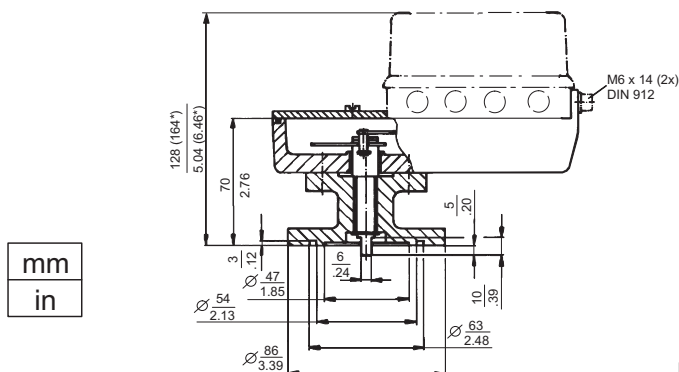
Without flange
Code EBZG-NN, -PN



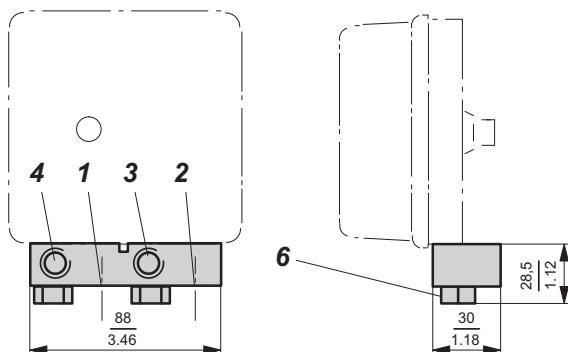
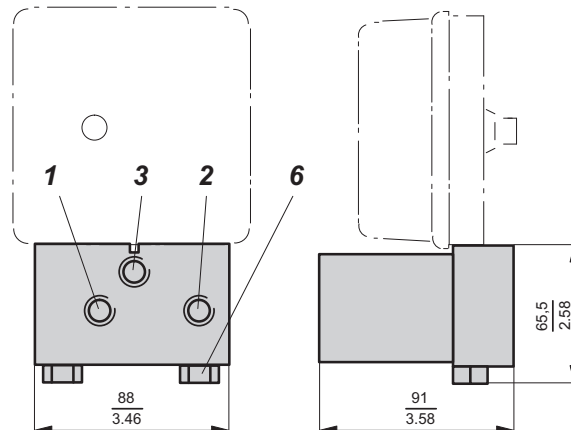
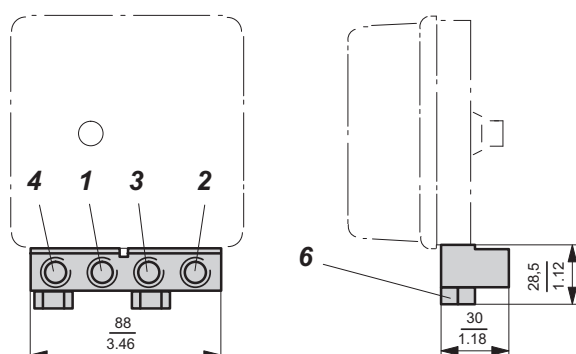
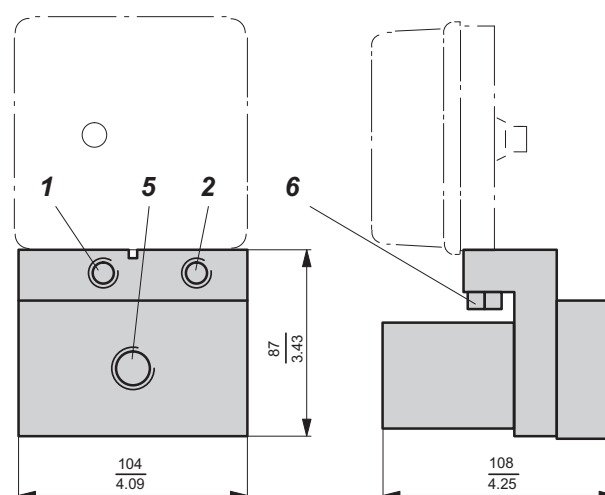
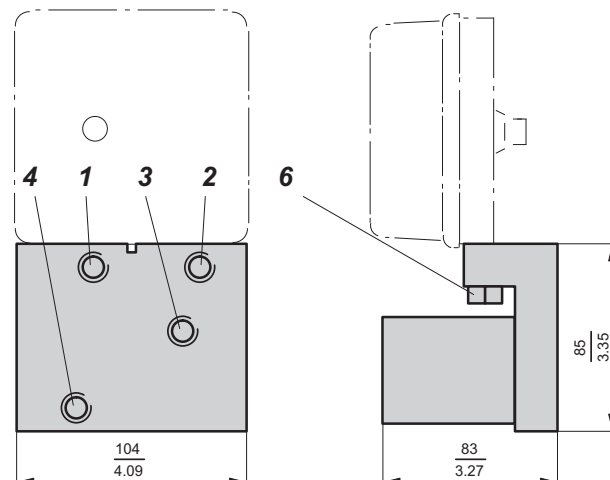
Housing dimensions
Attachment kit without flange
Code EBZG-PN



With flange
Code EBZG-JN



Rotation angle max 120°; torque requirement 14 Nm

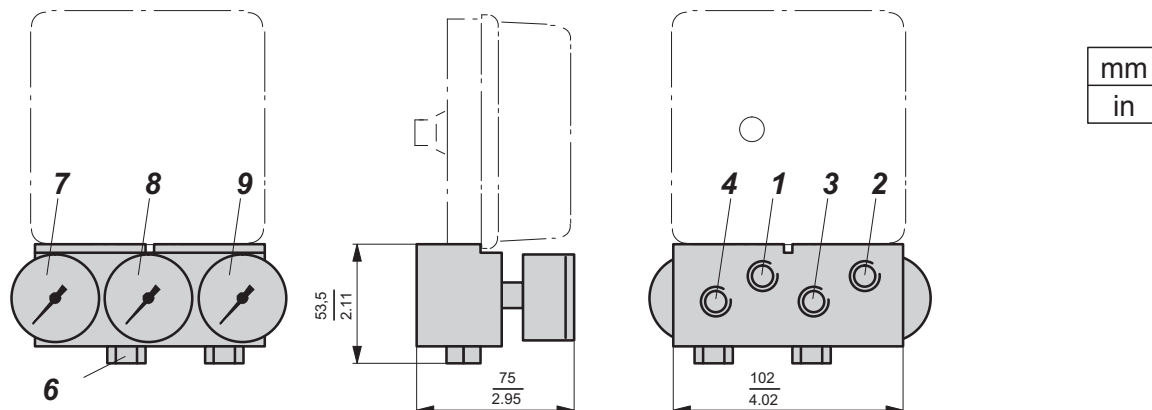
DIMENSIONS Additional equipment**Connection manifold, staggered connections
Code LEXG-BN****Booster single acting
Code VKXG-FN****Connection manifold, connections same level
Code LEXG-CN****Booster single acting with doubled output capacity
Code VKXG-HN****Booster double acting
Code VKXG-GN**

mm
in

- 1 Female thread 1/4-18 NPT for supply air
- 2 Female thread 1/4-18 NPT for input (w)
- 3 Female thread 1/4-18 NPT for output I (y1)
- 4 Female thread 1/4-18 NPT for output II (y2)
- 5 Female thread 1/2-14 NPT for output I (y1)
- 6 Fixing screws 17 mm A/F

DIMENSIONS Additional equipment

Connection manifold with gauges Code LEXG-JN, -KN, -LN, -MN, -NN
Connection manifold for gauges Code LEXG-RN, -TN, -SN



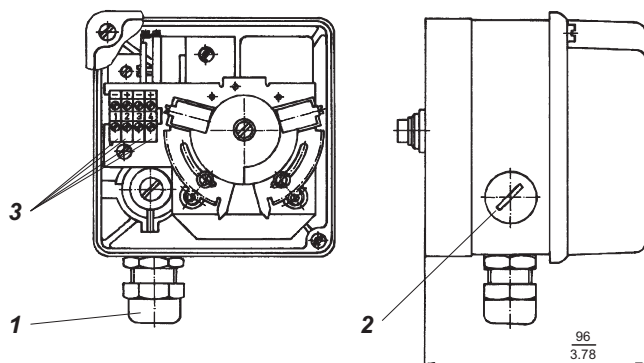
Manifold Code LEXG	7 Gauge for	8 Gauge for	9 Gauge for	Version Action
-JN (-RN*)	without	output (y)	supply air	single
-KN (-RN*)	input (w)	without	supply air	single
-LN (-RN*)	input (w)	output (y)	supply air	single
-MN (-SN*)	supply air	output I (y1)	output II (y2)	double
-NN (-TN*)	input (w)	output I (y1)	output II (y2)	double

- 1 Female thread 1/4-18 NPT for supply air
- 2 Female thread 1/4-18 NPT for input (w)
- 3 Female thread 1/4-18 NPT for output I (y1)
- 4 Female thread 1/4-18 NPT for output II (y2)
(only on manifold Code M, N)

6 Fixing screws 17 mm A/F

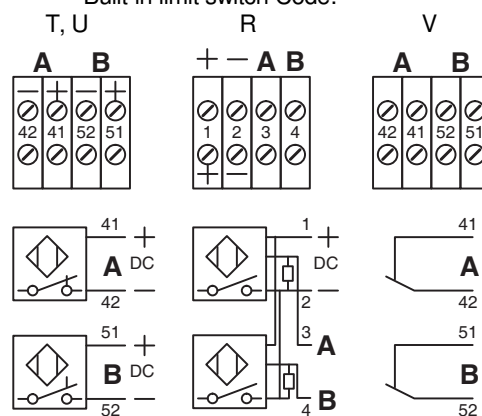
*) Connection manifold for gauges, without gauges
(for customer's gauges)

Built-in limit switch Code R, T, U, V

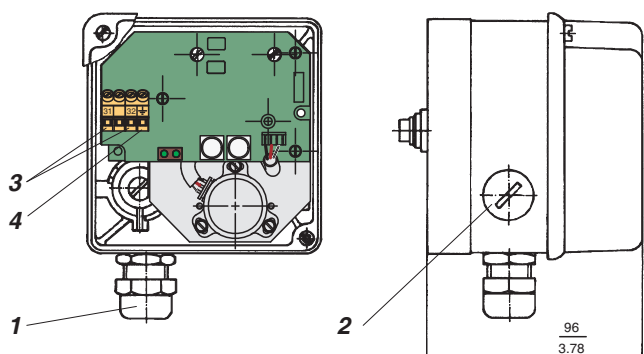


- 1 Cable gland
- 2 Dummy plug, can be replaced with 1
- 3 Connection terminals

Built-in limit switch Code:

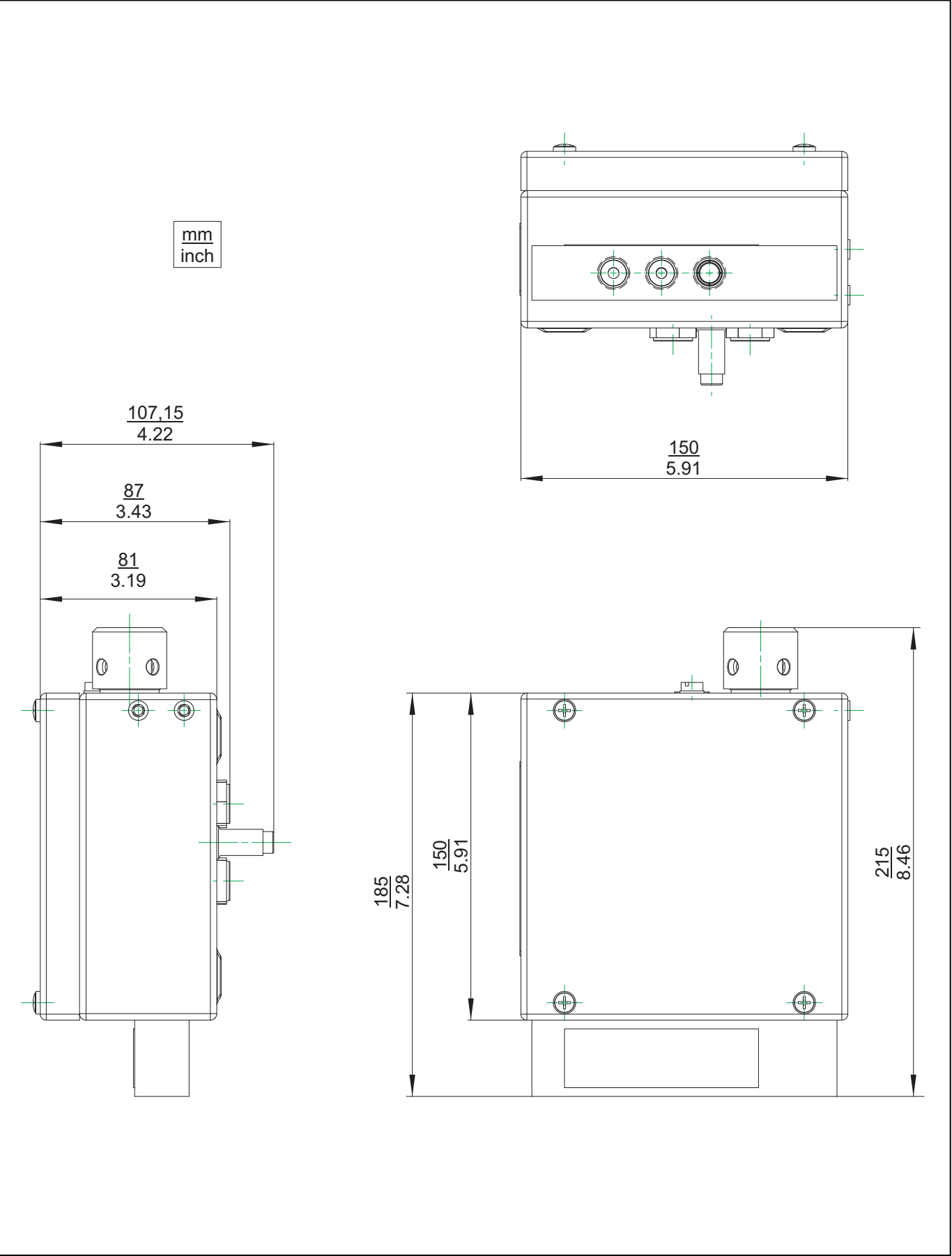


Built-in position transmitter Code W

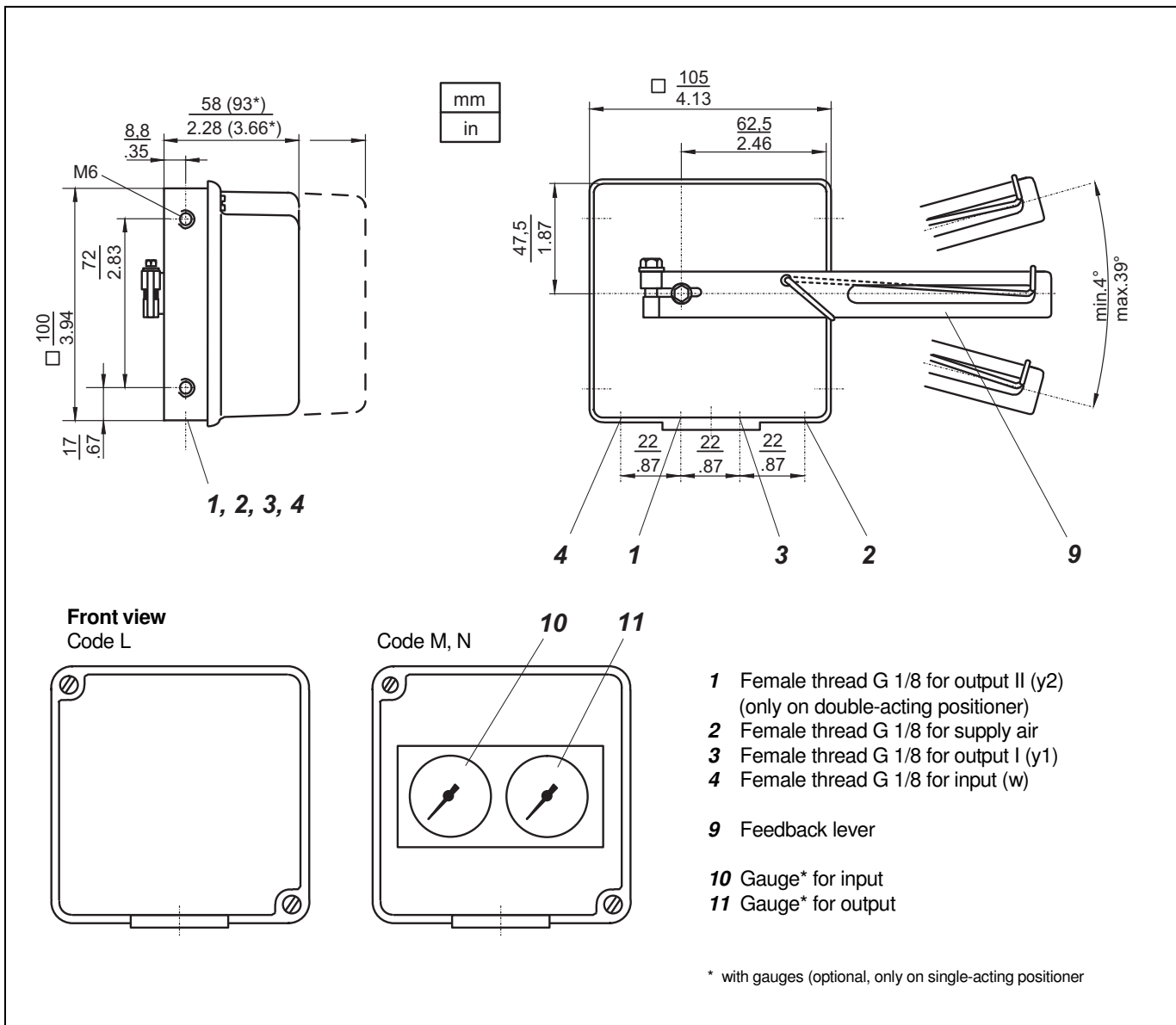


- 1 Cable gland
- 2 Dummy plug, can be replaced with 1
- 3 Connection terminals (+/-)
- 4 Ground connection

DIMENSIONS SRP981 Special version in Stainless Steel housing



DIMENSIONS, CONNECTIONS



Schneider Electric Systems USA, Inc.
38 Neponset Avenue
Foxboro, MA 02035
United States of America
<http://www.schneider-electric.com>

Global Customer Support
Inside U.S.: 1-866-746-6477
Outside U.S.: 1-508-549-2424
<https://pasupport.schneider-electric.com>

Copyright 2010-2018 Schneider Electric
Systems USA, Inc. All rights reserved.

****Schneider Electric is a trademark** of Schneider Electric Systems USA, Inc., its subsidiaries, and affiliates. All other trademarks are the property of their respective owners.**



Hitma Instrumentatie
www.hitma-instrumentatie.nl
info@hitma-instrumentatie.nl
+31 (0)297 - 514 833

België / Belgique
www.hitma-instrumentatie.be
info@hitma-instrumentatie.be
+32 (0)2 - 387 28 64