ABB Service Manual

V18345-1004210001

1. Description

V18345-1004210001

3. Product Information

V18345-1004210001 | ABB | Electro-Pneumatic Positioner

Manufacturer : ABB

Product No. : V18345-1004210001

Product Type : Electro-Pneumatic Positioner

Case / Mounting : 1 = Case made of aluminium, varnished,protection IP 65 (NEMA 4X) for mounting to linear actuators acc. to DIN/IEC 534 / NAMUR or to rotary actuators acc. to VDI/VDE 3845 also ready for integral mounting

0

Input / communication port : 0 = with connector plug for LKS adapter and

FSK module for HART communication

Explosion protection : 4= ATEX EEx n A II T6

Output / safe position (in case of an electrical power failure) : 2 = fail freeze

Connections : 1 = Cable : Thread 1/2-14 NPT, Air pipe : Thread 1/4-18 NPT

Option modules for analog or digital position feedback : 0=Without

Optional mechanical kit for digital position feedback : 0 = without

0

Design (varnish / coding) : 1 = Standard

Weight : 1.7 Kg

Low operating cost

■ Compact design

■ Well-proven technology

■ Robust and environmentally ruggedized

■ Wide operating temperature range -40...+85 °C

■ Easy to commission, “single push-button”

operating philosophy

■ Mechanical position indicator

■ ATEX, FM, CSA and IECEx approvals

■ For SIL2 safety loops

Input

Signal

Two_x0001_wire technology

Nominal range 4...20 mA

Split range configuration between 20% and 100% of the

nominal range

Max. 25 mA / 30 V

Min. 3.4 mA (without analog pos. feedback)

3.5 mA (with analog pos. feedback)

Start from 3.8 mA

Load voltage at 20 mA 8.7 V DC without explosion protection

9.7 V DC for intrinsically safe device

Impedance at 20 mA 435 ohms without explosion protection

485 ohms for intrinsically safe device

Digital input

Control voltage 24 V DC (12...30 V DC)

0...10 V DC: Logical “0“

12...30 V DC: Logical “1“

Current max. 4 mA

Digital output (control circuit to DIN 19234/NAMUR)

Supply voltage. 5...11 V DC

Current < 1.0 mA Logical “0“

Current > 2.0 mA Logical “1“

Effective direction: normally logical “0“ or logical “1“

(configurable)

Output

Range

0...6 bar (0...90 psi)

Air capacity

at supply pressure of 1.4 bar (20 psi)

5.0 kg/h = 3.9 Nm3/h = 2.3 scfm

at supply pressure of 6 bar (90 psi)

13 kg/h = 10 Nm3/h = 6.0 scfm (Booster on request)

Output function

for single or double acting actuators,

air is vented from actuator or actuator is blocked in case of electrical

power failure

Shut-off values

end position 0 % = 0...45 %

end position 100 % = 55...100 %

Travel

Angle of rotation

Used range 25...120 ° (rotary actuators, optionally 270 °)

25...60 ° (linear actuators)

Travel limit

Min. and max. limits,

freely configurable within 0...100 % of total travel (min. range > 20 %)

Travel time prolongation

Range of 0...200 seconds, separately for each direction

Positioning time limit

Range 0...200 seconds (monitoring parameter for control until the

deviation reaches the tolerance band)

Air supply

Instrument air

free of oil, water and dust to DIN/ISO 8573_x0001_1

pollution and oil content according to Class 3

(purity: max. particle size 5 µm, max. particle density 5 mg/m3

oil content: max. concentration 1 mg/m3

pressure dew point: 10 K below operating temperature

Supply pressure

1.4...6 bar (20...90 psi)

NOTICE: Do not exceed the max. operating pressure of the actuator!

Air consumption

< 0.03 kg/h / 0.015 scfm (independent of supply pressure)

Transmission data and influences

Output 1

Increasing: increasing signal 0...100 %

increasing output pressure OUT 1

Decreasing: increasing signal 0...100 %

decreasing output pressure OUT 1

Action (signal)

Direct: signal 4...20 mA = position 0...100 %

Reverse: signal 20...4 mA = position 0...100 %

Characteristic curve (travel = f □signal□)

linear, equal percentage 1:25 or 1:50 or 25:1 or 50:1

and freely configurable with 20 reference points

Characteristic deviation

≤ 0.5 %

Tolerance band

0.3...10 %, adjustable

Dead band

0.1...10 %, adjustable

Resolution (A/D conversion)

> 4000 steps

Sample rate

20 msec

Influence of ambient temperature

≤ 0.5 % for every 10 °C change in temperature

Influence of vibration

≤ ± 1 % up to 10 g and 80 Hz

Seismic requirements

Meets requirements of DIN/IEC 68_x0001_3_x0001_3 Class III for strong and strongest earthquakes

Influence of mounting orientation

No effect

Meets the requirements of the following directives

EMC Directive 89/336/EEC as of May 1989

EC Directive for CE conformity marking

Communication

HART Protocol 5.1

Local connector for LKS (local communication interface) adapter

HART communication via 20 mA signal line with (optional) FSK modem

Environmental capabilities

Ambient temperature

_x0001_40 °C to +85 °C for operation, storage and transport

_x0001_25 °C to +85 °C with proximity switches SJ2_x0001_S1N (NO)

Relative humidity

Operational (with closed housing and air supply switched on):

95 %(annual average), condensation permissible

Transport and storage:

75 % (annual average), non_x0001_condensing

Case

Material/Protections

Aluminum, protection class IP 65 / NEMA 4X

Surface/color

Electrostatic dipping varnish with epoxy resin, stove_x0001_hardened

Case varnished black, RAL 9005, matt,

Cap Pantone 420

Electrical connections

Screw terminals:

max. 1.0 mm2 for options, max. 2.5 mm2 for analog signal

NOTICE: Do not expose the terminals to strain!

Cable entry:

2 threads 1/2_x0001_14 NPT or M20x1.5

(1 with cable gland and 1 with pipe plug)

Pneumatic connections

Threads G 1/4 or 1/4_x0001_18 NPT

Weight

1.7 kg

Explosion protection

FM J.I. 3005029 (3610, 3611)

Intrinsically safe

CL I, Div. 1, Grp. A-B-C-D

CL II, Div. 1, Grp. E-F-G

CL III, Div. 1

Non_x0001_incendive

Suitable for use in Div. 2 environment

CSA Certification 1052414

Intrinsically safe; Enclosure 4X; T4, max. 85°C

CL I, Div. 1, Grp. A-B-C-D

CL II, Div. 1, Grp. E-F-G

CL III, Div. 1

Non_x0001_incendive; Enclosure 4X, max. 85°C

CL I, Div. 2, Grp. A-B-C-D

CL II, Div. 2, Grp. E-F-G

CL III

ATEX Ex II 2G EEx ib IIC T6

Examination certificate TÜV 98 ATEX 1370 X

Type: Intrinsically safe

Device class: II 2G (EEx ib IIC)

Temperature class: T4, T5, T6

Perm. ambient temperature: T4: -40 °C < Tamb < 85 °C

T5: -40 °C < Tamb < 50 °C

T6: -40 °C < Tamb < 35 °C

ATEX II 3G EEx n A II T6

Examination certificate TÜV 02 ATEX 1943 X

Type: Explosion-proof (Zone 2)

Device class: II 3G (EEx n A II)

Temperature class: T4, T5, T6

Perm. ambient temperature: T4: -40 °C < Tamb < 85 °C

T5: -40 °C < Tamb < 65 °C

T6: -40 °C < Tamb < 50 °C

IECEx Ex ib IIC T6

Examination certificate IECEx TUN 04.0015X, Issue No.: 0

Type: Intrinsically safe

Temperature class: T4, T5, T6

Perm. ambient temperature: T4: _x0001_40 °C < Tamb < 85 °C

T5: -40 °C < Tamb < 50 °C

T6: -40 °C < Tamb < 35 °C