ABB Service Manual

V18345-1020121001

1. Description

V18345-1020121001

3. Product Information

V18345-1020121001 | ABB | Electro-Pneumatic Positioner

Manufacturer : ABB

Product No. : V18345-1020121001

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 : 2 = FSK module for HART communication

Explosion protection : 0 = Without

Output / safe position (in case of an electrical power failure) : 1 = Single acting, fail safe

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

Option modules for analog or digital position feedback : 1 = Plug-in module analog position feedback (sign. range 4 ... 20 mA)

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