Posicionador de Aire-Aire PP-981

DESCRIPTION

The ADCATROL PP 981 positioner requires an input signal of 0,2÷1bar (3÷15psi) for proportional control actuator. The positioner compares the output signal from a controller with the position feedback, and varies a pneumatic output signal to the actuator accordingly. The actuator position is therefore guaranteed for any controller output signal and the effects of varying differential pressure.



MAIN 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 ... 80 °C (-40 ... 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 (IP65 on request).
- Certificate No. 90/20226 (E2) Lloyd's Register of shipping for use on vessels.
- Base device: II 2 G c IIB/IIC T4/T6 according to Atex.
- When with electrical options:

II 2 G EEx ib/ia IIB/IIC T4/T6 according to Atex.



OPTIONS: Inductive limit switch, two wire system.
Inductive Limit Switch, three-wire system.
Limit switch assembly with Micro-switch.
Connection manifold with gauges.
Electrical position transmitter 4-20 mA.

AVAIL.
MODELS: PP981.

PNEUMATIC CONNECTIONS: Female G 1/8" ISO 228.

INSTALLATION: Any position.

TECHNICAL DATA

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

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

Supply
Supply air pressure . . . . . 1.4 ... 6 bar (20 ... 90 psig)
Supply air. . . . . free of oil, dust, water
according to IEC 654-2

Ambient conditions
Ambient temperature . . . . . -40 ... 80 °C (-40 ... 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 ... 80 °C (-58 ... 176 °F)
Protection class . . . . . IP 54 (IP 65 on request)

Materials
Base plate . . . . . Aluminium (Alloy No. 230)
finished with DD-varnish grey blue
Cover. . . . . impact resistant polyester black or grey blue
All moving parts of feedback system . . . . . 1.4305 / 1.4571
Mounting bracket 1.4301

Weight
single acting
without gauges. . . . . approx. 0.7 kg (1.5 lbs)
with gauges . . . . . approx. 0.8 kg (1.8 lbs)
double acting . . . . . approx. 0.9 kg (2.0 lbs)
attachment kit
for diaphragm actuators . . . . approx. 0.3 kg (0.6 lbs)
for rotary actuators . . . . . approx. 0.5 kg (1.1 lbs)

Data measured according to VDI/VDE 2177
1) Data based on following parameters:
stroke 30 mm, feedback lever, effective length 117.5, max. amplification, supply air pressure 3 bar
2) measured at air supply 1.4 bar and 50 % of signal range

Response characteristic[1)]
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

Air consumption
supply air pressure
air consumption
single acting
1.4 bar (20 psig). . . . . 200 l_n/h (7.1 scfh)
3.0 bar (45 psig). . . . . 400 l_n/h (12.4 scfh)
6.0 bar (90 psig). . . . . 600 l_n/h (21.2 scfh)
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)

Air output
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)

CAPACITY AT MAXIMUM DEVIATION				
AIR PRESSURE SUPPLY (bar)	**1,4**	**2**	**4**	**6**
Without booster (Ln/h)	2700	3500	5500	7500
With booster LEXG-FN/GN (Ln/h)	18000	24000	40000	55000
With booster LEXG-HN (Ln/h)	38000	48000	80000	110000

Gauges
Indicating range
Input. . . . . 0 ... 1.6 bar (0 ... 23 psig)
Output . . . . . 0 ... 10 bar (0 ... 150 psig)
Error limit . . . . . class 1.6

ADDITIONAL EQUIPMENT

Inductive Limit Switch, two-wire system

Input . . . . . Stroke / angle from actuator via positioner feedback lever

Output . . . . . 2 inductive proximity sensors acc. to DIN 19 234 resp. 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 kOhms
Residual ripple . . . . . < 5 %
Permissible line resistance . . . . . < 100 Ohms

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 EEx 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∝H
Internal capacitance . . . . . 30 nF
Ambient temperature
Temperature class T6 . . . -40 ... 65 °C (-4 ... 149 °F)
T1 to T5 . . . -40 ... 80 °C (-4 ... 176 °F)

1) For the standard version, one switching amplifier is required
For the security version a fail-safe switching amplifier for each inductive proximity sensor is required
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, stroke 30 mm and maximum gain
7) National installation regulations must be observed
8) For retrofitting the product must be tested by a qualified inspector as a special version in accordance with ElexV.

Inductive Limit Switch, 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 ... 30 V
Residual ripple . . . . . ± 10 %, U_S = 30 V
Switching frequency . . . . . 2 kHz
Constant current . . . . . 100 mA

Response characteristic [6)]
Gain . . . . . continuously adjustable from 1:1 to approx. 7:1
Switching differential . . . . . < 1 %
Switching point repeatability. . . . . < 0.2 %

Limit Switch Assembly with Micro-switches

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. 250 V
Switching current with ohmic resistance . . . . . max. 5 A
inductive resistance . . . . max. 2 A
Bulb, metal filament . . . . max. 0.5 A

CONNECTED LOAD, DIRECT CURRENT		
Switching voltage, max.	**Ohmic load**	**Inductive load**
V	A	A
30	5	3
50	1	1

Response characteristic [6)]
Gain . . . . . continuously adjustable from 1:1 to approx. 7:1
Switching differential . . . . . < 2.5 %
Switching point repeatability. . . . . < 0.2 %

Electrical Position Transmitter

Input . . . . . Stroke / angle from actuator via positioner feedback lever
Sensor. . . . . resistive precision conductive plastic element
Stroke range . . . . . 15 ... 80 mm (0.6 ...3.15 in)
. . . . . < 15 mm (0.6 in) on request
Angular range . . . . . 60 ... 120 °
Output . . . . . Two-wire system
Signal range . . . . . 4 ... 20 mA
Permitted load. . . . . $R_{B\max} = \frac{U_S - 12V}{0.02A}$
(U_S = Supply voltage

Power supply
Supply voltage . . . . . DC 12 ... 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 % /□Δ R_B max
Temperature effect . . . . . < 0.3 % / 10 K

Explosion protection [2)] [3)]
Type of protection . . . . . II 2 G EEx 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 µH
Internal capacitance . . . . . to earth 10 nF or 6 nF differential

Ambient temperature
Temperature class T6 . . . -40 ... 40 °C (-40 ... 104 °F)
T5 . . . . -40 ... 55 °C (-40 ... 131 °F)
T4 . . . . -40 ... 80 °C (-40 ... 176 °F)

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, 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 ... 80 °C (-40 ... 176 °F) for the fail-safe version of inductive limit switch

Common Data [4)]

Ambient conditions
Ambient temperature [5)] [6)]. . -25 ... 80 °C (-13 ... 176 °F)
-40 ... 80 °C (-40 ... 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. 80 °C (-40…..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 mm^2 (AWG 14)

Materials
Base plate . . . . . Galvanized steel
Control vane. . . . . Aluminium
Setting mechanism . . . . . Fibre 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 89/336/EWG
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
over voltage 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