

Model WEP

Electro-pneumatic positioner

WEP positioner
A valve control without compromise



Standard 4-20 mA input

Single acting, force-balance operating principle

Excellent dynamic response

– short positioning time and negligible positioning error

Field adjustable

– for valve strokes between 14 mm and 102 mm (1/2 in and 4 in)

Single feedback cam with three standard characteristics

Accurate means of split-ranging the signal and/or selecting the valve action

Set and forget reliability

Complies with relevant international standards for test procedures, environmental protection against harsh plant conditions

Model WEP, identifies the valve positioner of the P3300 Series of field mounting instruments; it consists of two functional parts: the input stage accepts a 4-20 mA signal and produces a corresponding 3-15 psi pneumatic signal used by the positioning section.

WEP positioner ensures that the control valve plug position is always directly proportional to the input signal, regardless of diaphragm actuator hysteresis, packing-box friction or off-balance force on the valve plug.

The valve responds to infinitely small changes in the controller output signal when process lags require the use of wide proportional band.

Problems usually associated with plant instability due either to oversized valves or non-linear trim characteristics are minimized by selecting one of the three feedback cam alternative positions.

Turn-down ratio 4 to 1 by a single controller output signal split ranging for sequential operation of two or more control valves is standard.

FUNCTIONAL SPECIFICATIONS

Input signal

4 to 20 mA dc

Split-range

Any value up to 25% of specified input range

Input resistance

< 170 Ω

Auxiliary air supply pressure (instrument air)

1.4 to 4 bar, 140 to 400 kPa, 20 to 60 psi

Auxiliary supply static consumption

- @ 140 kPa, 1.4 bar, 20 psi supply : 350 NI/h (0.21 scfm)
- @ 275 kPa, 2.75 bar, 40 psi supply : 460 NI/h (0.28 scfm)
- @ 400 kPa, 4 bar, 60 psi supply : 560 NI/h (0.34 scfm)

Flow capacity (dynamic)

- @ 140 kPa, 1.4 bar, 20 psi supply:
 - input increasing: up to 9000 NI/h
 - input decreasing: up to 9000 NI/h
- @ 275 kPa, 2.75 bar, 40 psi supply:
 - input increasing: up to 16000 NI/h
 - input decreasing: up to 9000 NI/h
- @ 400 kPa, 4 bar, 60 psi supply:
 - input increasing: up to 18000 NI/h
 - input decreasing: up to 9000 NI/h

Start point and span adjustments

Separate, continuous, internal on the positioning section

Stroke length

Any value between 14 mm and 102 mm (1/2 in and 4 in) providing feedback lever rotation is 50°

Output to actuator

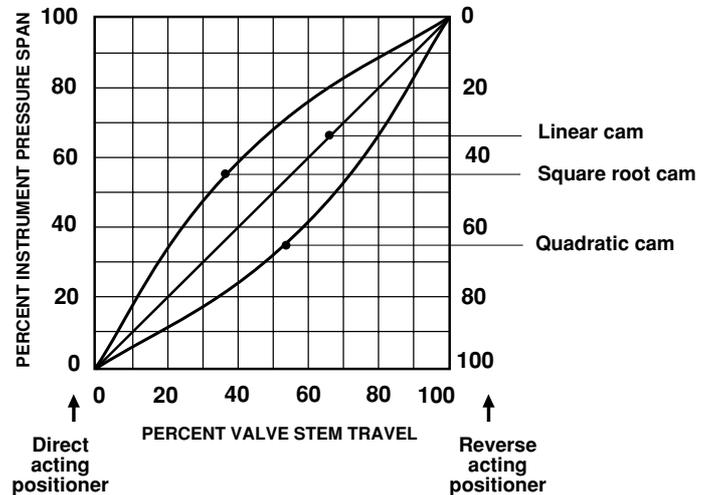
Up to 95% of auxiliary supply pressure; direct or reverse acting selectable on the positioning section

Cam characteristics

See figure.

Linear, quadratic or square root pattern.

Special characterization is available on request.



Ambient temperature:

- Reference : +15 to +25 °C ±2°C (+59 to +77 °F ± 3°F)
- Operative limits : -40 and +85 °C (-40 and +185 °F)

Relative humidity :

- Reference : 45% to 65% RH
- Normal , operative, transport/storage limits : 0 to 100% RH condensing permissible

Barometric pressure :

- Reference : 96 kPa, 960 mbar, 720 mmHg ±10%
- Normal , operative, transport/storage limits : atmospheric pressure

Vibration (IEC 654-3) :

- Reference : none
- Normal , operative limits : severity class steady state
 - f = 1 to 10 Hz; displ. 1.5 mm - acc. 0.5 g
 - f = 10 to 60 Hz; displ. 0.15 mm
 - f = 60 to 500 Hz - acc. 2 g

PERFORMANCE SPECIFICATIONS

(Reference conditions, 4-20 mA standard input range, standard linear cam and direct acting positioner. Unless otherwise specified errors, are quoted as % of span)

Accuracy

± 1% (includes combined effects of non-linearity, hysteresis and repeatability).

Indication accuracy: ± 2% f.s.d.

Operating influences

Ambient temperature per 10K (18°F) change between the limits of -20 and +60°C (-4 and +140°F)

Zero error: ± 0.2% of span

Span error: ± 1% of reading

Double the effect between the limits of -40 and -20°C (-40 and -4°F) or +60 and +85°C (+140 and +185°F)

Auxiliary supply per 35 kPa, 350 mbar, 5 psi change

Total effect (zero and span) : ± 3%

Humidity and barometric pressure : no effect

EMI/RFI

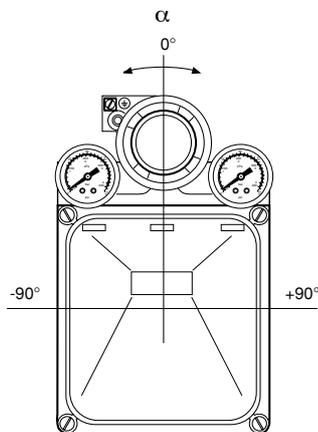
Comply with EN 50081-2/EN 50082-2 requirements and tests; CE marking.

Mounting position

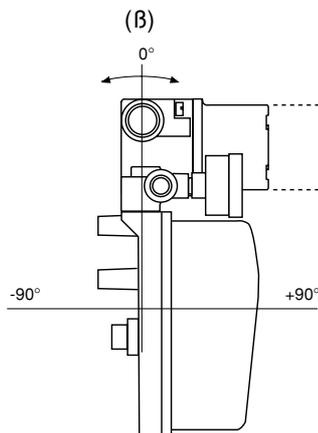
Total effect with reference to figures below:

- ±4% for a tilt of ±90° from α axis
- +7% for a tilt of -90° from β axis
- -2% for a tilt of +90° from β axis

FRONT VIEW



SIDE VIEW



PHYSICAL SPECIFICATIONS

Materials

Manifold, I/P converter housing and cover, positioner section case

Low-copper content aluminium alloy with baked epoxy finish; AISI 316 ss.

Positioner section cover

P.T.B. 20 - glass fibre reinforced polibutilentereftalathe, impact - resistant self-extinguishing polyester.

Colour: red RAL 3020

Input bellows: Brass; AISI 316 ss.

Other internal parts: AISI series 300 ss

Identification tag

AISI 316 ss permanently mounted - 20 characters max (legend to be specified)

Gauges

Brass with stainless steel case or AISI 316 ss, as specified

Optional extras

Supply and output Gauges

Ext. dia 42 mm indication on 260° (66 mm long) scale.
0 - 4 bar / 0 - 400 kPa / 0-60 psi

Airset with/without gauge

Environmental protection

Wet and dust-laden atmospheres

The instrument is weatherproof and completely enclosed to IP 55 according to IEC529 (IP 65 for I/P converter).

Pneumatic connections

Supply and output

1/4 in NPT female

Electrical connections

One 1/2 NPT or M20x1.5 or PG13.5 or 1/2 GK threaded conduit entry, direct on converter housing

Terminal block

Two terminals for signal wiring up to 2.5 mm² on converter unit.

Net weight

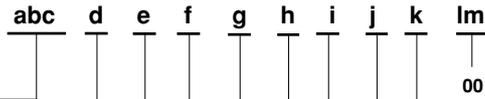
2.5 kg approx. (5.5 lb) aluminium case version without optional extras

Packing: Cardboard box

ORDERING INFORMATION

Select one character or set of characters from each category and specify complete catalog number.

PRODUCT CODE



- BASE MODEL _____
- ELECTRICAL CERTIFICATION _____
- MATERIALS OF CONSTRUCTION _____
- INPUT SIGNAL RANGE _____
- ELECTRICAL CONNECTION _____
- SPRING PRESSURE RANGE OF THE ACTUATOR _____
- PRESSURE GAUGES _____
- CAM CHARACTERISTIC _____
- ACTION PRESETTING _____

abc	BASE MODEL - 1st to 3rd characters	Code
	Electro-pneumatic positioner	WEP

d	ELECTRICAL CERTIFICATION - 4th character	
	Not certified	1

MATERIALS OF CONSTRUCTION - 5th character				
e	Input bellows and relevant parts	Case	Positioner case cover	
	Brass	Aluminium	Polyester	1
	AISI 316 ss	Aluminium	Polyester	3

f	INPUT SIGNAL RANGE - 6th character	
	4 to 20 mA dc	1
	4 to 12 mA dc, Split range	4
	12 to 20 mA dc, Split range	6

g	ELECTRICAL CONNECTION - 7th character	
	1/2" NPT - f	2
	1/2" GK - f	3
	M20 x 1.5 - f	4
	Pg 13.5 - f	5

h	SPRING PRESSURE RANGE OF THE ACTUATOR - 8th character	
	3 to 15 psi	1
	20 to 100 kPa	2
	0.2 to 1 bar	3

PRESSURE GAUGES - 9th character				
i	Supply	Output	Materials (Note)	
	No	No	--	1
	No	Yes	Brass	2
	Yes	Yes	Brass	3
	No	Yes	AISI 316 ss	4
	Yes	Yes	AISI 316 ss	5

Note : The material of the case is Stainless Steel

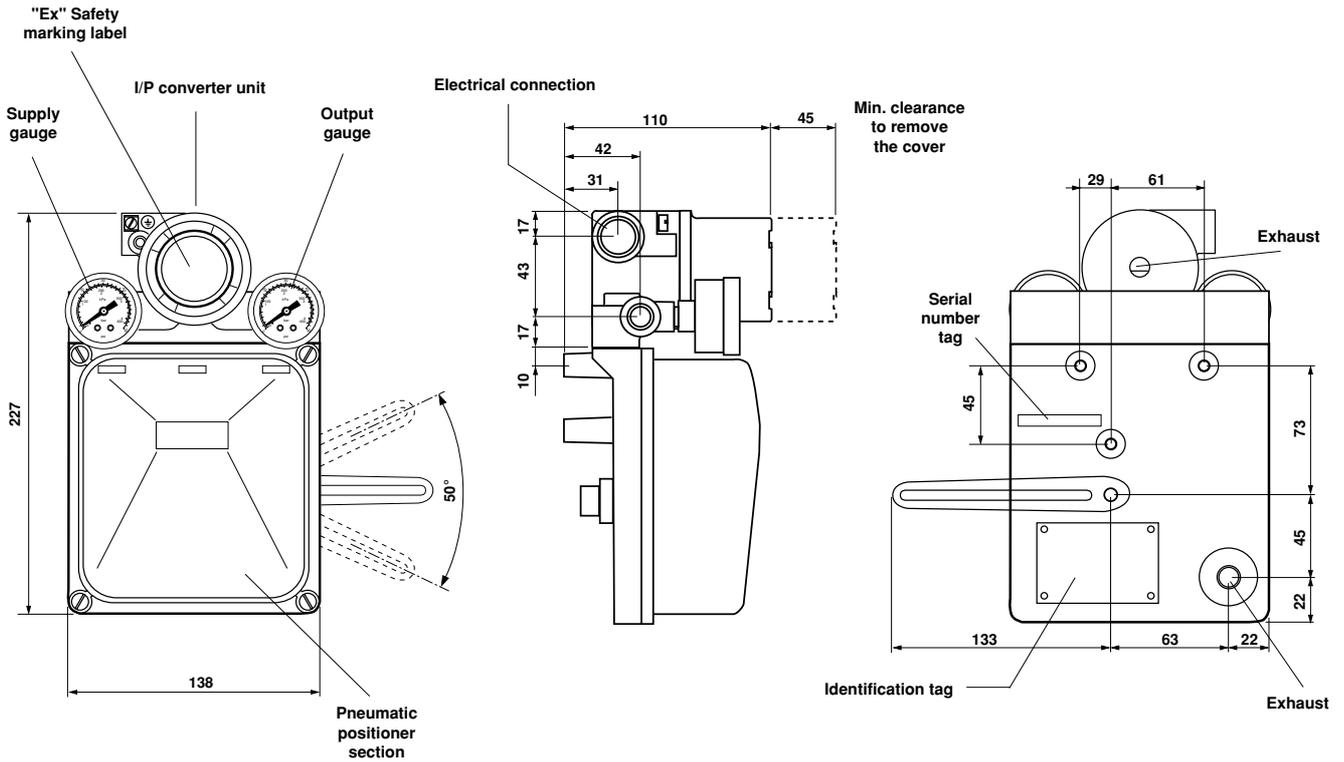
j	CAM CHARACTERISTIC - 10th character	
	Standard	1

k	ACTION PRESETTING - 11th character	
	Direct action	0
	Reverse action	5

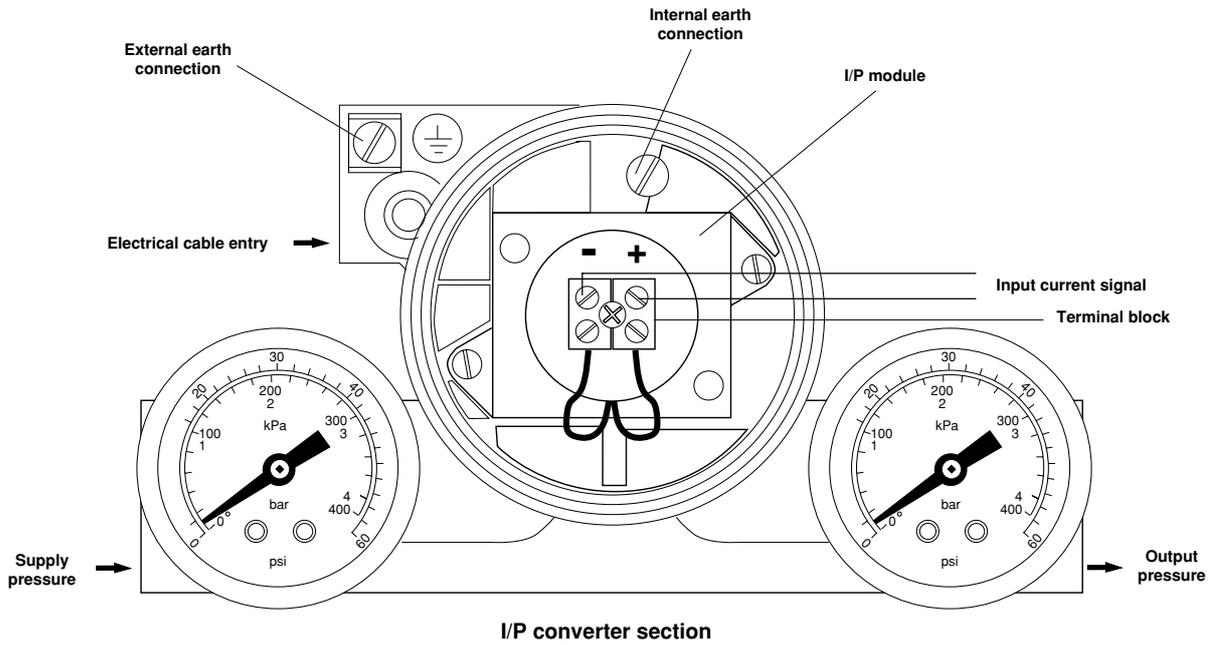
lm	12th to 13th characters	
	Use code	00

DIMENSIONS

(not for construction unless certified)



PNEUMATIC AND ELECTRIC CONNECTIONS



Contact us

ABB Ltd.

Process Automation

Howard Road
St. Neots
Cambridgeshire PE19 8EU
UK
Tel: +44 (0)1480 475321
Fax: +44 (0)1480 217948

ABB Inc.

Process Automation

125 E. County Line Road
Warminster
PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH

Process Automation

Schillerstr. 72
32425 Minden
Germany
Tel: +49 551 905 534
Fax: +49 551 905 555

ABB S.p.A.

Process Automation

Via Statale 113
22016 Lenno (CO)
Italy
Tel: +39 0344 58111
Fax: +39 0344 56278

www.abb.com

Note

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts - is forbidden without prior written consent of ABB.

Copyright© 2010 ABB
All rights reserved