



LINEAR PNEUMATIC ACTUATORS PA (100 cm² to 2400 cm²)

DESCRIPTION

PA series pneumatic multi-spring actuators with rolling diaphragm, offering decreased hysteresis and good linearity throughout the operating range. Available in air to close and air to open versions, for modulating and on/off services.

MAIN FEATURES

Multi-spring compact design.
Actuators with rolling diaphragm.
High spring thrusts and stroking speeds.
Strokes up to 60 mm.
Sizes from 100 cm² to 2400 cm².
Yoke and stem coupling with mounting according to NAMUR (DIN IEC 60534-6-1).
Operation temperature range from -20 °C to 80 °C.

OPTIONS AND

ACCESSORIES: Top mounted handwheel.
Stroke limiter.
Stainless steel construction.
Positioners, limit switches, I/P converters, volume boosters, feedback units and others.

USE: Actuation of ADCATrol control valves, or others on request.

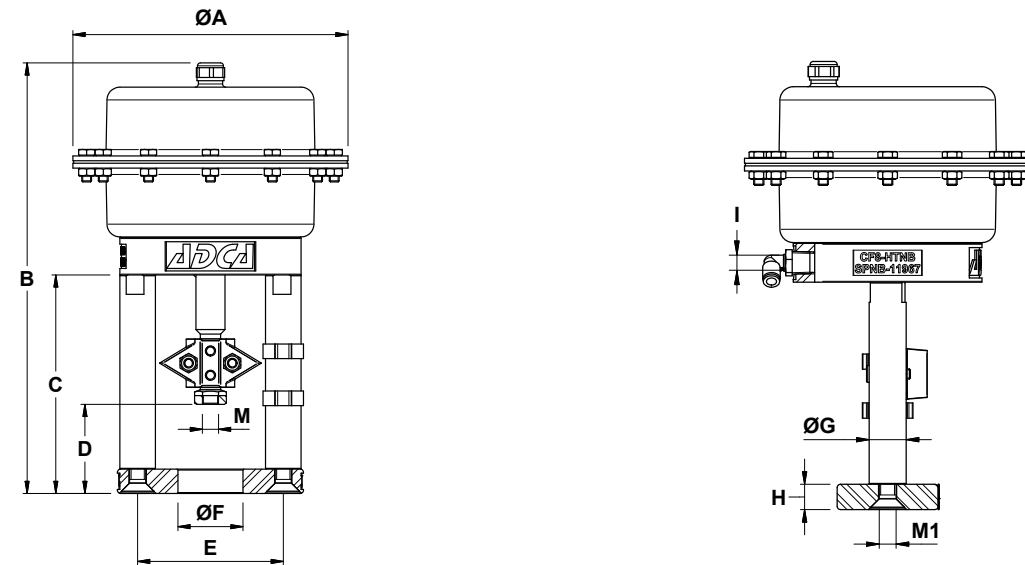
AVAILABLE

MODELS: PA10, PA25, PA40, PA80, PA80D and PA80T – mild steel.
PA10i, PA25i and PA40i – stainless steel.



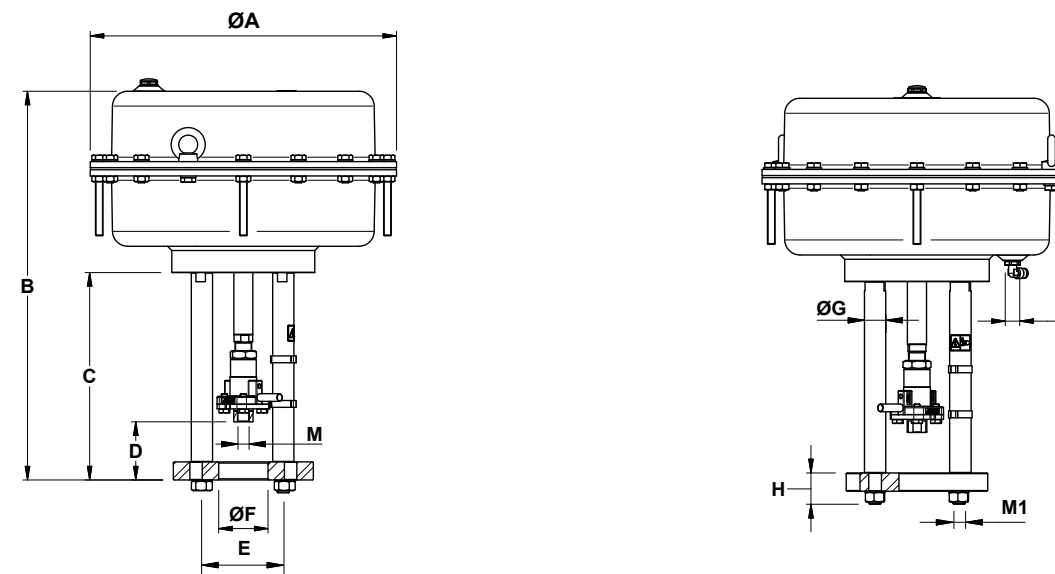
SPRING RANGES AND ACTUATOR THRUSTS														
ACTUATOR MODEL	DIAPHRAGM AREA (cm ²)	RATED STROKE (mm)	SPRING RANGE (bar)	SPRING QTY.	SPRING FORCE AT 0 mm TRAVEL (N)	SPRING FORCE AT RATED TRAVEL (N)	ACTUATOR FORCE (N) IN RELATION TO MOTIVE AIR PRESSURE (bar)						MAX. AIR SUPPLY (bar)	
							1,4	2	3	3,5	4	5		6
PA10	100	20	0,2 - 1 a)	1	200	1000	400	1000	2000	2500	3000	4000	5000	6
			1 - 2	1	1000	2000	-	-	1000	1500	2000	3000	4000	
			2 - 4	1	2000	4000	-	-	-	-	-	1000	2000	
PA25	250	20	0,2 - 1 a)	4	500	2500	1000	2500	5000	6250	7500	10000	12500	
			0,4 - 2 a)	8	1000	5000	-	-	2500	3750	5000	7500	10000	
			1 - 2	4	2500	5000	-	-	2500	3750	5000	7500	10000	
			1,5 - 3	6	3750	7500	-	-	-	1250	2500	5000	7500	
PA40	400	30	0,2 - 1 a)	4	800	4000	1600	4000	8000	10000	12000	16000	20000	
			0,4 - 2 a)	8	1600	8000	-	-	4000	6000	8000	12000	16000	
			1 - 2	4	4000	8000	-	-	4000	6000	8000	12000	16000	
			1,5 - 3	6	6000	12000	-	-	-	2000	4000	8000	12000	
PA80	800	30 60	0,2 - 1 a)	4	1600	8000	3200	8000	16000	20000	24000	32000	40000	
			0,4 - 2 a)	8	3200	16000	-	-	8000	12000	16000	24000	32000	
			1 - 2	4	8000	16000	-	-	8000	12000	16000	24000	32000	
			1,5 - 3	6	12000	24000	-	-	-	4000	8000	16000	24000	
PA80D	1600	60	0,2 - 1 a)	8	3200	16000	6400	16000	32000	40000	48000	64000	80000	
			0,4 - 2 a)	16	6400	32000	-	-	16000	24000	32000	48000	64000	
			1 - 2	8	16000	32000	-	-	16000	24000	32000	48000	64000	
			1,5 - 3	12	24000	48000	-	-	-	8000	16000	32000	48000	
PA80T b)	2400	60	0,2 - 1 a)	12	4800	24000	9600	24000	48000	60000	72000	96000	120000	
			0,4 - 2 a)	24	9600	48000	-	-	24000	36000	48000	72000	96000	
			1 - 2	12	24000	48000	-	-	24000	36000	48000	72000	96000	
			1,5 - 3	18	36000	72000	-	-	-	12000	24000	48000	72000	
PA80T b)	2400	60	2 - 4	24	48000	96000	-	-	-	-	-	24000	48000	

a) Actuator with 25% additional possible spring compression, allowing setting of 0,4 - 1,2 bar (0,2 - 1 bar) and 0,8 - 2,4 (0,4 - 2 bar) operating ranges.



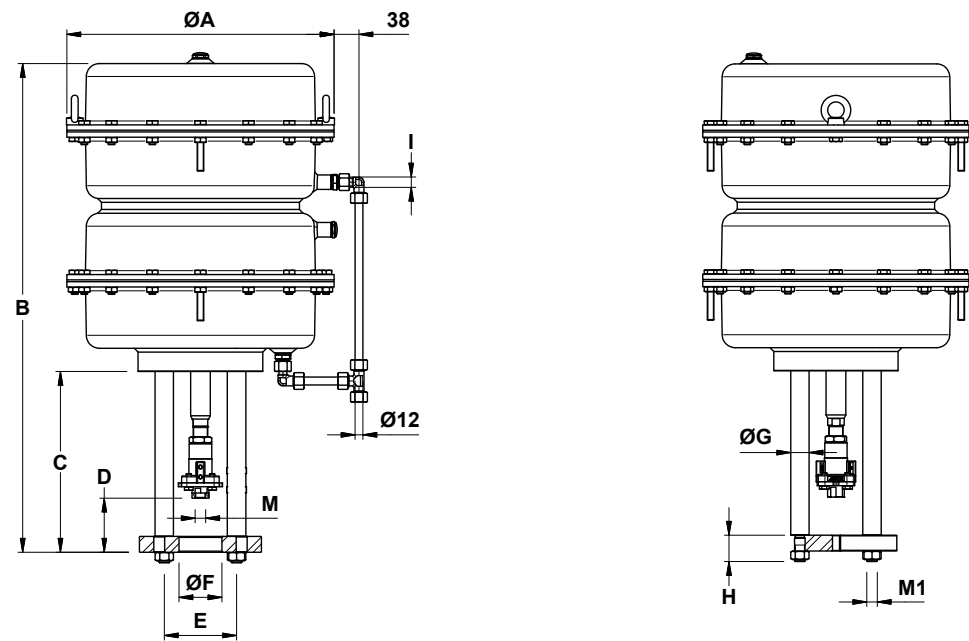
DIMENSIONS (mm)												
MODEL	ØA	B	C	D	E	ØF	ØG	H	I	M *	M1	WEIGHT (kg)
PA10	170	251	135	55	90	40,5	22	15	G1/4"	M10 x 1	M10	6,3
PA25	250	260	135	55	90	40,5	22	15	G1/4"	M10 x 1	M10	10,1
PA40	300	325 / 360	160 / 195	68	100 / 110	40,5 / 45	22	15	G1/4"	M10 x 1 / M16 x 1,5	M10	18,7 / 19,2

* Depending on valve stem thread. Can be course or fine thread. Other dimensions on request.
Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.
Mild steel and stainless steel construction share the same dimensions.



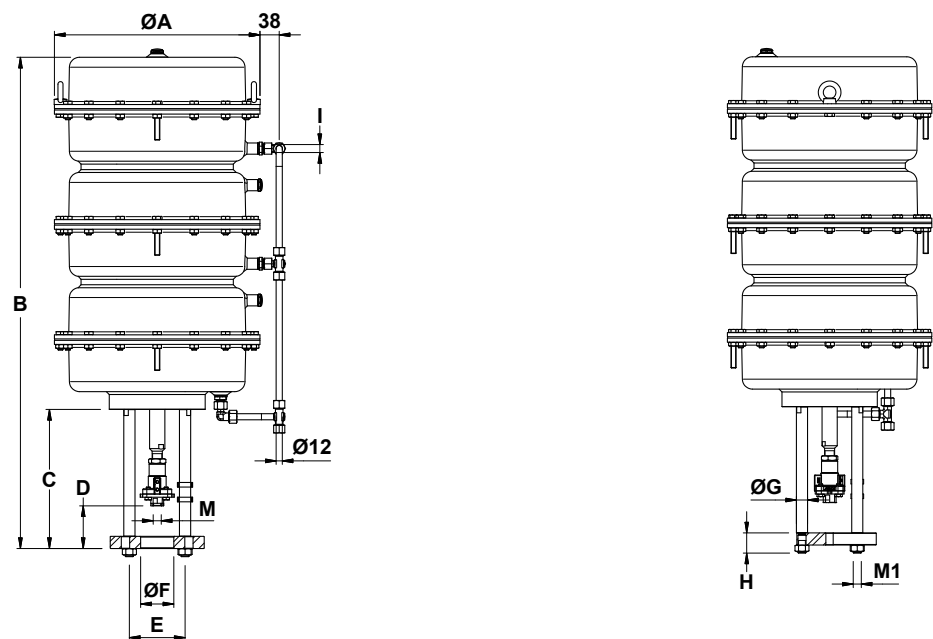
DIMENSIONS (mm)												
MODEL	ØA	B	C	D	E	ØF	ØG	H	I	M *	M1	WEIGHT (kg)
PA80	405	505 / 515 / 545	265 / 274 / 304	70 / 87 / 113	110 / Ø155	45 / 65 / 80	22 / 28	30 / 40	G 3/8"	M16 x 1,5 / M27 x 1,5	M16	50,4 / 55,4 / 59,3

* Depending on valve stem thread. Can be course or fine thread. Other dimensions on request.
Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.



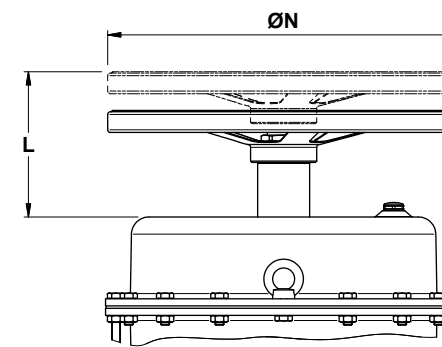
DIMENSIONS (mm)												
MODEL	ØA	B	C	D	ØE	ØF	ØG	H	I	M *	M1	WEIGHT (kg)
PA80D	405	741 / 771	274 / 304	87 / 113	155	65 / 80	28	40	G 3/8"	M16 x 1,5 / M27 x 1,5	M16	107,7 / 111,6

* Depending on valve stem thread. Can be course or fine thread. Other dimensions on request.
Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

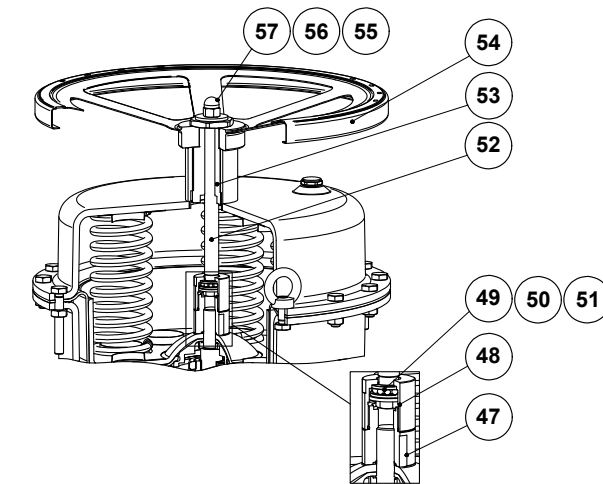


DIMENSIONS (mm)												
MODEL	ØA	B	C	D	ØE	ØF	ØG	H	I	M *	M1	WEIGHT (kg)
PA80T	405	967 / 997	274 / 304	87 / 113	155	65 / 80	28	40	G 3/8"	M16 x 1,5 / M27 x 1,5	M16	162 / 166

* Depending on valve stem thread. Can be course or fine thread. Other dimensions on request.
Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

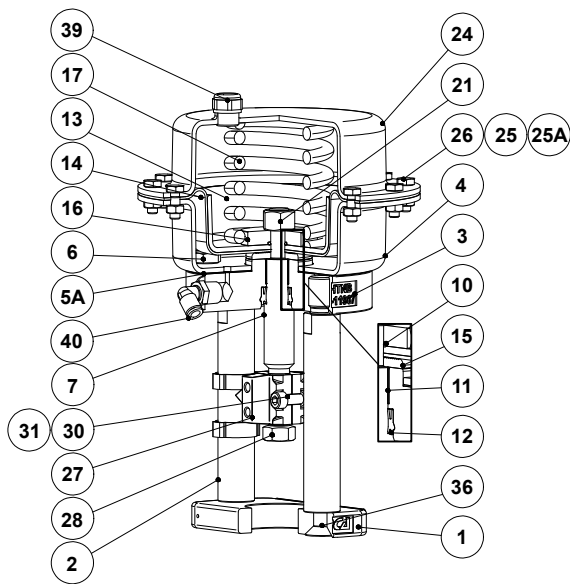


DIMENSIONS – ACTUATOR WITH TOP MOUNTED HANDWHEEL (mm)		
MODEL	ØN	L
PA10	250	106
PA25	250	106
PA40	300	111
PA80	400	156
PA80D / PA80T	Consult manufacturer	

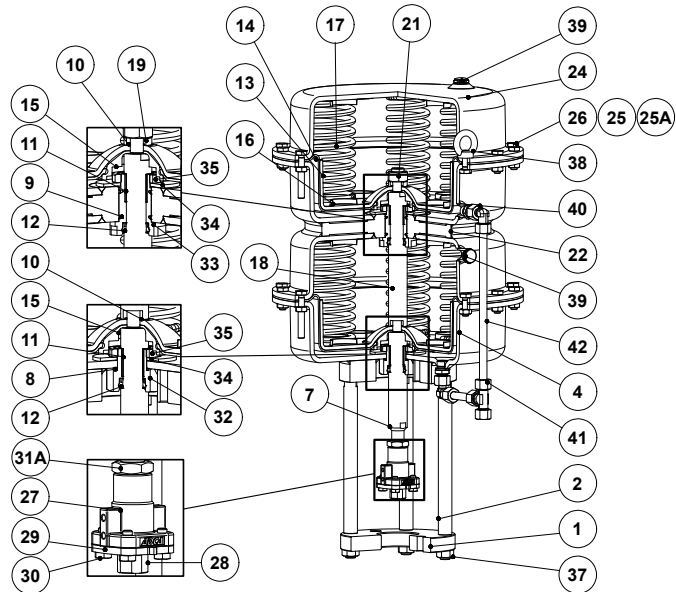


MATERIALS – ACTUATOR WITH TOP MOUNTED HANDWHEEL		
POS. N°	DESIGNATION	MATERIAL
47	Nut	AISI 316 / 1.4401
48	Nut	AISI 316 / 1.4401
49	Plain bearing	Steel / PTFE
50	Washer	Zinc plated steel
51	Bolt	AISI 304 / 1.4301
52	Stem	AISI 316 / 1.4401
53	Spindle	AISI 304 / 1.4301
54	Handwheel	Steel
55	Washer	Zinc plated steel
56	Locknut	C45E / 1.1191
57	Nut	AISI 304 / 1.4301

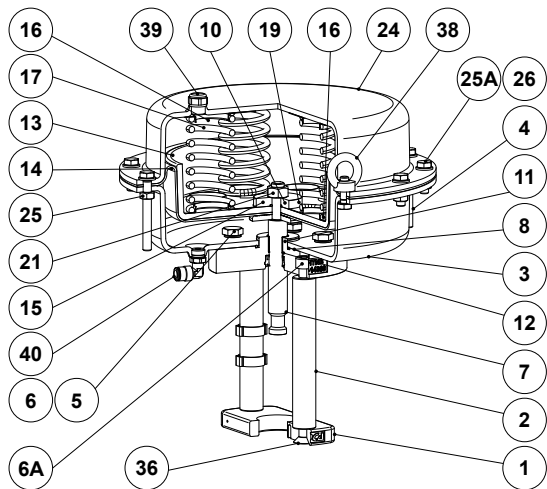
MATERIALS



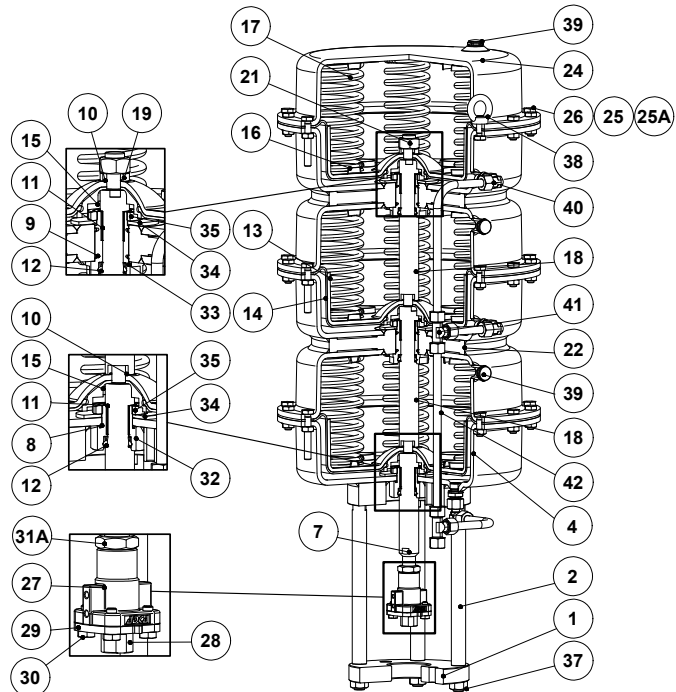
PA10



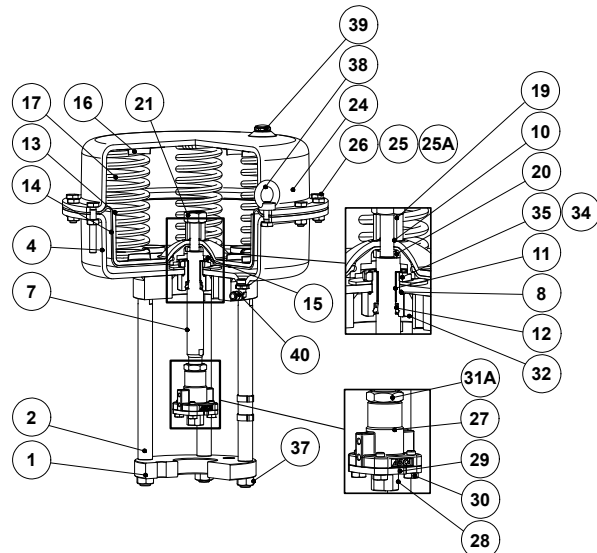
PA80D



PA25 and PA40



PA80T



PA80

MATERIALS

POS. N°	DESIGNATION	PA10, PA25 and PA40	PA10i, PA25i and PA40i
1	Lower actuator flange	A351 CF8 / 1.4308	A351 CF8 / 1.4308
2	Yoke columns	C45E / 1.1191	AISI 304 / 1.4301
3	Upper actuator flange	A351 CF8 / 1.4308	A351 CF8 / 1.4308
4	Lower actuator cover	DD13 / 1.0335	AISI 304 / 1.4301
5	Washers	Zinc plated steel	Zinc plated steel
5A	Gasket	NBR	NBR
6	Bolts	Zinc plated steel	Stainless steel A2-70
6A	Bolts	-	-
7	Actuator stem	AISI 316 / 1.4401	AISI 316 / 1.4401
8	* O-ring	NBR	NBR
10	* O-ring	NBR	NBR
11	* Plain bearing	Steel / PTFE	Steel / PTFE
12	* Seal ring	Polyurethane	Polyurethane
13	Diaphragm plate	DD13 / 1.0335	DD13 / 1.0335
14	* Diaphragm	Reinforced NBR	Reinforced NBR
15	Diaphragm disk	C45E / 1.1191	C45E / 1.1191
16	Spring guide	AISI 304 / 1.4301	AISI 304 / 1.4301
17	* Springs	Spring steel	Spring steel
19	Spacer	AISI 316 / 1.4401	AISI 312 / 1.4401
21	Nut	Zinc plated steel	Zinc plated steel
24	Upper actuator cover	DD13 / 1.0335	AISI 304 / 1.4301
25	Nuts	Zinc plated steel	Stainless steel A2-70
25A	Washers	Zinc plated steel	Stainless steel A2-70
26	Bolts	Zinc plated steel	Stainless steel A2-70
27	Coupling / Travel indicator	A351 CF8 / 1.4308	A351 CF8 / 1.4308
28	Adaptor	AISI 304 / 1.4301	AISI 304 / 1.4301
30	Bolts	Zinc plated steel	Stainless steel A2-70
31	Nuts	Zinc plated steel	Stainless steel A2-70
36	Bolts	Zinc plated steel	Stainless steel A2-70
38	Eyebolts	Zinc plated steel	AISI 304 / 1.4301
39	Vent plug	Brass; Plastic	Brass; Plastic
40	Fitting	Zinc plated steel; Plastic	Zinc plated steel; Plastic

* Available spare parts.

MATERIALS				
POS. N°	DESIGNATION	PA80	PA80D	PA80T
1	Lower actuator flange	S235JR / 1.0038	S235JR / 1.0038	S235JR / 1.0038
2	Yoke columns	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191
4	Lower actuator cover	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
7	Actuator stem	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401
8	* O-ring	NBR	NBR	NBR
9	* O-ring	-	NBR	NBR
10	* O-ring	NBR	NBR	NBR
11	* Plain bearing	Steel / PTFE	Steel / PTFE	Steel / PTFE
12	* Seal ring	Polyurethane	Polyurethane	Polyurethane
13	Diaphragm plate	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
14	* Diaphragm	Reinforced NBR	Reinforced NBR	Reinforced NBR
15	Diaphragm disk	S355JR / 1.0045	S355JR / 1.0045	S355JR / 1.0045
16	Spring guide	DC01 / 1.0330	DC01 / 1.0330	DC01 / 1.0330
17	* Springs	Spring steel	Spring steel	Spring steel
18	Intermediate actuator stem	-	AISI 316 / 1.4401	AISI 316 / 1.4401
19	Spacer	AISI 316 / 1.4401	AISI 316 / 1.4401	AISI 316 / 1.4401
20	Spacer	AISI 316 / 1.4401	-	-
21	Nut	Zinc plated steel	Zinc plated steel	Zinc plated steel
22	Intermediate cover	-	DD13 / 1.0335	DD13 / 1.0335
24	Upper actuator cover	DD13 / 1.0335	DD13 / 1.0335	DD13 / 1.0335
25	Nuts	Zinc plated steel	Zinc plated steel	Zinc plated steel
25A	Washers	Zinc plated steel	Zinc plated steel	Zinc plated steel
26	Bolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
27	Coupling / Travel indicator	A351 CF8 / 1.4308	A351 CF8 / 1.4308	A351 CF8 / 1.4308
28	Adaptor	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301
29	Coupling flange	AISI 304 / 1.4301	AISI 304 / 1.4301	AISI 304 / 1.4301
30	Bolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
31A	Nut	Zinc plated steel	Zinc plated steel	Zinc plated steel
32	* Stem guide	AISI 316L / 1.4404	AISI 316L / 1.4404	AISI 316L / 1.4404
33	Intermediate stem guide	-	AISI 316L / 1.4404	AISI 316L / 1.4404
34	* Belleville washer	Spring steel	Spring steel	Spring steel
35	Stem guide lock nut	C45E / 1.1191	C45E / 1.1191	C45E / 1.1191
37	Nuts	Zinc plated steel	Zinc plated steel	Zinc plated steel
38	Eyebolts	Zinc plated steel	Zinc plated steel	Zinc plated steel
39	Vent plug	Brass; Plastic	Brass; Plastic	Brass; Plastic
40	Fitting	Zinc plated steel	Zinc plated steel	Zinc plated steel
41	Compression fitting	-	Zinc plated steel	Zinc plated steel
42	Tube	-	AISI 304 / 1.4301	AISI 304 / 1.4301

* Available spare parts.

ACCESSORIES		
AIR FILTER REGULATOR	SOLENOID VALVE	
INDUCTIVE LIMIT SWITCH BOX	MECHANICAL LIMIT SWITCHES	
POSITION FEEDBACK UNIT	I/P CONVERTER	
POSITIONERS *		
PNEUMATIC	ELECTROPNEUMATIC	INTELLIGENT ELECTROPNEUMATIC

* Different models are available within each category.

ORDERING CODES PA									
Group designation	PA	010	S	R	2	A	XX	A1	
PA series linear pneumatic actuators	PA								
Actuator model									
PA10 (100 cm ²)		010							
PA25 (250 cm ²)		025							
PA40 (400 cm ²)		040							
PA80 (800 cm ²)		080							
PA80D (1600 cm ²)		80D							
PA80T (2400 cm ²)		80T							
Actuator construction									
Mild steel construction (standard)			S						
Stainless steel construction			I						
Direction of action									
Air to open (stem extends by spring force)				R					
Air to close (stem retracts by spring force)				D					
Rated stroke									
20 mm					2				
30 mm					3				
60 mm					6				
Spring range a)									
0,2 – 1 bar						A			
0,4 – 2 bar						B			
1 – 2 bar						D			
1,5 – 3 bar						G			
2 – 4 bar						I			
Options									
None							XX		
Top mounted handwheel b)							HX		
Stroke limiter							LX		
Yoke design and coupling									
ADCATrol VPC26, V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")								A1	
ADCAPure V926H, V926A (1/2" to 2 1/2") and V928 series (DN 15 to DN 50)								A3	
ADCATrol V16/2 series (DN 65 to DN 100 – 2 1/2" to 4")								B1	
ADCATrol V25/2 series (DN 65 to DN 100 – 2 1/2" to 4")								B2	
ADCAPure V926H (3" and 4") and V928 series (DN 65 to DN 100)								B3	
ADCATrol V25/2 series (DN 125 to DN 150 – 5" to 6")								C2	
ADCATrol V25/2 series (DN 200 – 8")								D2	
Other ADCATrol valves c)								XX	
Special versions / Extras									
Full description or additional codes have to be added in case of a non-standard combination									E

a) Not every spring range/stroke combination is available for each actuator model.

b) Not available in actuators with stainless steel construction (e.g. PA10i).

c) Exact model and size must be specified – consult the manufacturer.

How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.

LINEAR PNEUMATIC ACTUATORS PA206, PA281, PA341 and PA436 (140 cm² to 700 cm²)

DESCRIPTION

PA series pneumatic multi-spring actuators with rolling diaphragm, offering decreased hysteresis and good linearity throughout the operating range. Available in air to close and air to open versions, for modulating and on/off services.

MAIN FEATURES

Multi-spring compact design.
Actuators with rolling diaphragm.
High spring thrusts and stroking speeds.
Strokes up to 30 mm.
Sizes from 140 cm² to 700 cm².
Yoke and stem coupling with mounting according to NAMUR (DIN IEC 60534-6-1).
Operation temperature range from -20 °C to 80 °C.

OPTIONS AND

ACCESSORIES: Top mounted handwheel.
Stroke limiter.
Stainless steel construction.
Positioners, limit switches, I/P converters, volume boosters, feedback units and others.

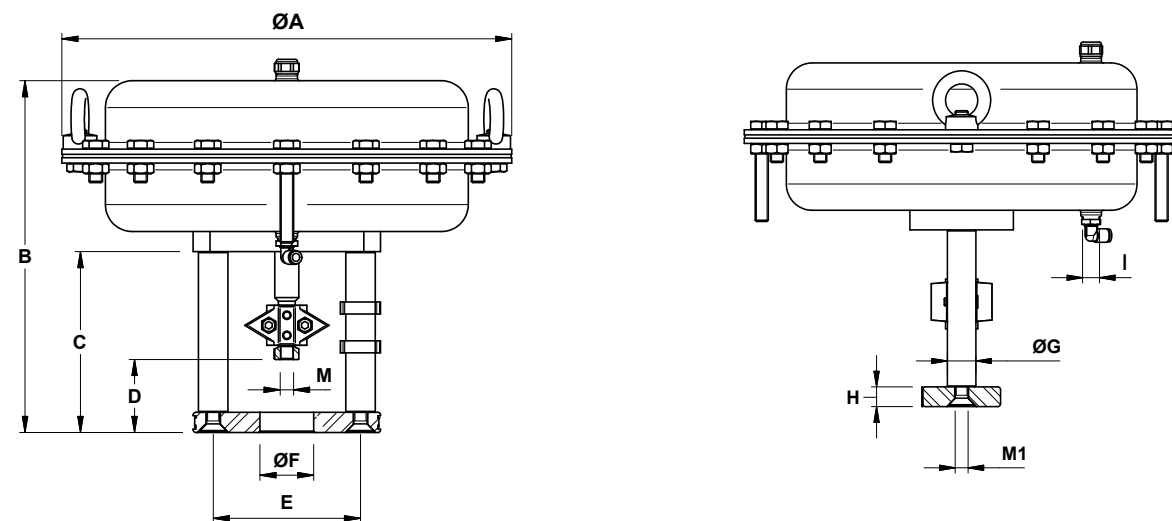
USE: Actuation of ADCATrol control valves, or others on request.

AVAILABLE MODELS: PA206, PA281, PA341 and PA436 – mild steel.
PA206i, PA281i, PA341i and PA436i – stainless steel.
For other models, please consult IS PV3.70 – PA linear pneumatic actuators.



SPRING RANGES AND ACTUATOR THRUSTS														
ACTUATOR MODEL	DIAPHRAGM AREA (cm ²)	RATED STROKE (mm)	SPRING RANGE (bar)	SPRING QTY.	SPRING FORCE AT 0 mm TRAVEL (N)	SPRING FORCE AT RATED TRAVEL (N)	ACTUATOR FORCE (N) IN RELATION TO MOTIVE AIR PRESSURE (bar)							MAX. AIR SUPPLY (bar)
							1,4	2	3	3,5	4	5	6	
PA206	140	20	0,2 - 1 a)	1	280	1000	560	1400	2800	3500	-	-	-	3,5
			1 - 3 b)	2	1400	4200	-	-	-	700	-	-	-	
PA281	300	20	0,2 - 1 a)	4	600	3000	1200	3000	6000	7500	-	-	-	
			0,4 - 2 a)	8	1200	6000	-	-	3000	4500	-	-	-	
			0,8 - 1,6	4	2400	4200	-	1200	4200	5700	-	-	-	
			1,2 - 2,4	6	3600	7200	-	-	1800	3300	-	-	-	
			1,6 - 3,2	8	4800	9600	-	-	-	900	-	-	-	
PA341	445	30	0,2 - 1 a)	4	890	4450	1780	4450	8900	11125	-	-	-	
			0,4 - 2 a)	8	1780	8900	-	-	4450	6675	-	-	-	
			0,6 - 1,4	4	2670	6230	-	2670	7120	9345	-	-	-	
			0,9 - 2,1	6	4005	9345	-	-	4005	6230	-	-	-	
PA436	700	30	0,2 - 1 a)	4	1400	7000	2800	7000	14000	17500	-	-	-	
			0,4 - 2 a)	8	2800	14000	-	-	7000	10500	-	-	-	
			1 - 2	4	7000	14000	-	-	7000	10500	-	-	-	
			1,5 - 3	6	10500	21000	-	-	-	3500	-	-	-	
			2 - 4	8	14000	28000	-	-	-	-	-	7000	14000	6

a) Actuator with 25% additional possible spring compression, allowing setting of 0,4 - 1,2 bar (0,2 - 1 bar) and 0,8 - 2,4 (0,4 - 2 bar) operating ranges.
b) Not available in air to close, "stem retracts by spring force" version.



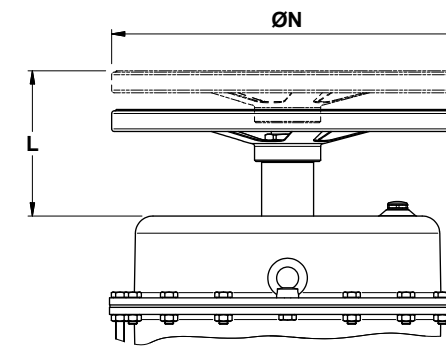
DIMENSIONS (mm)												
MODEL	ØA	B	C	D	E	ØF	ØG	H	I	M *	M1	WEIGHT (kg)
PA206	209	236	135	55	110	40	22	15	G 1/4"	M10 x 1	M10	6,5
PA281	275	243	135	55	110	40	22	15	G 1/4"	M10 x 1	M10	10
PA341	336	288 / 323	160 / 195	68	110	45	22	15	G 1/4"	M10 x 1 / M16 x 1,5	M10	16
PA436	430	316 / 351 336 / 371 **	160 / 195	68	110	45	22	15	G 1/4"	M10 x 1 / M16 x 1,5	M10	27 31 **

* Depending on valve stem thread. Can be coarse or fine thread. Other dimensions on request.

** Actuators with spring ranges 1 - 2 bar, 1,5 - 3 bar and 2 - 4 bar.

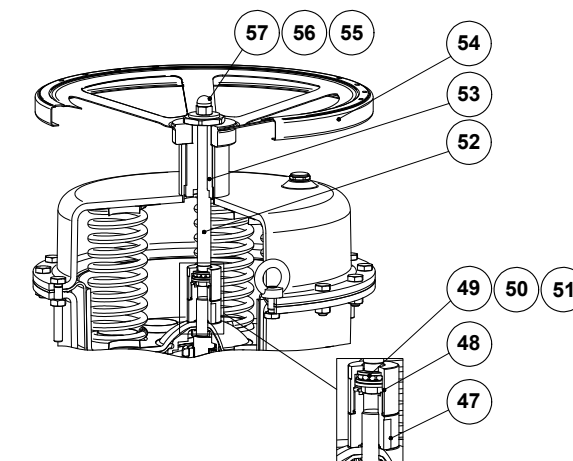
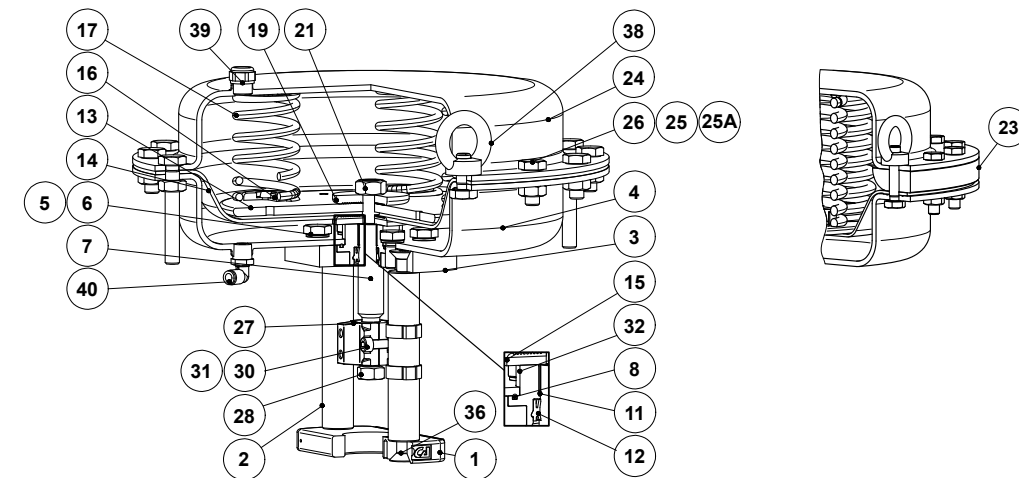
Remarks: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

Mild steel and stainless steel construction share the same dimensions.



DIMENSIONS – ACTUATOR WITH TOP MOUNTED HANDWHEEL (mm)		
MODEL	ØN	L
PA206	250	106
PA281	250	106
PA341	300	111
PA436	400	156

MATERIALS



MATERIALS			
POS. N°	DESIGNATION	PA206, PA281, PA341 and PA436	PA206i, PA281i, PA341i and PA436i
1	Lower actuator flange	A351 CF8 / 1.4308	A351 CF8 / 1.4308
2	Yoke columns	C45E / 1.1191	AISI 304 / 1.4301
3	Upper actuator flange	C45E / 1.1191	A351 CF8 / 1.4308; AISI 304 / 1.4301
4	Lower actuator cover	DD12 / 1.0398	AISI 304 / 1.4301
5	Washers	Zinc plated steel	Zinc plated steel
6	Bolts	Zinc plated steel	Stainless steel A2-70
7	Actuator stem	AISI 316 / 1.4401	AISI 316 / 1.4401
8	* O-ring	NBR	NBR
11	* Plain bearing	Steel / PTFE	Steel / PTFE
12	* Seal ring	Polyurethane	Polyurethane
13	Diaphragm plate	S235JR / 1.0038	S235JR / 1.0038
14	* Diaphragm	Reinforced NBR	Reinforced NBR
15	Diaphragm disk	C45E / 1.1191	C45E / 1.1191
16	Spring guide	C45E / 1.1191	C45E / 1.1191
17	* Springs	Spring steel	Spring steel
19	Spacer	C45E / 1.1191	C45E / 1.1191
21	Nut	Zinc plated steel	Zinc plated steel
23	Cover spacer	Aluminium	Aluminium
24	Upper actuator cover	DD12 / 1.0398	AISI 304 / 1.4301
25	Nuts	Zinc plated steel	Stainless steel A2-70
25A	Washers	Zinc plated steel	Stainless steel A2-70
26	Bolts	Zinc plated steel	Stainless steel A2-70
27	Coupling / Travel indicator	A351 CF8 / 1.4308	A351 CF8 / 1.4308
28	Adaptor	AISI 304 / 1.4301	AISI 304 / 1.4301
30	Bolts	Zinc plated steel	Stainless steel A2-70
31	Nuts	Zinc plated steel	Stainless steel A2-70
32	* Stem guide	AISI 304 / 1.4301	AISI 304 / 1.4301
36	Bolts	Zinc plated steel	Stainless steel A2-70
38	Eyebolts	Zinc plated steel	AISI 304 / 1.4301
39	Vent plug	Brass; Plastic	Brass; Plastic
40	Fitting	Zinc plated steel; Plastic	Zinc plated steel; Plastic
47	Nut	AISI 316 / 1.4401	AISI 316 / 1.4401
48	Nut	AISI 316 / 1.4401	AISI 316 / 1.4401
49	Plain bearing	Steel / PTFE	Steel / PTFE
50	Washer	Zinc plated steel	Zinc plated steel
51	Bolt	AISI 304 / 1.4301	AISI 304 / 1.4301
52	Stem	AISI 316 / 1.4401	AISI 316 / 1.4401
53	Spindle	AISI 304 / 1.4301	AISI 304 / 1.4301
54	Handwheel	Steel	Steel
55	Washer	Zinc plated steel	Zinc plated steel
56	Locknut	C45E / 1.1191	C45E / 1.1191
57	Nut	AISI 304 / 1.4301	AISI 304 / 1.4301

* Available spare parts.

ACCESSORIES		
AIR FILTER REGULATOR	SOLENOID VALVE	
INDUCTIVE LIMIT SWITCH BOX	MECHANICAL LIMIT SWITCHES	
POSITION FEEDBACK UNIT	I/P CONVERTER	
POSITIONERS *		
PNEUMATIC	ELECTROPNEUMATIC	INTELLIGENT ELECTROPNEUMATIC

* Different models are available within each category.

ORDERING CODES PA									
Group designation	PA	206	S	R	2	A	XX	A1	
PA series linear pneumatic actuators	PA								
Actuator model									
PA206 (140 cm ²)		206							
PA281 (300 cm ²)		281							
PA341 (445 cm ²)		341							
PA436 (700 cm ²)		436							
Actuator construction									
Mild steel construction (standard)			S						
Stainless steel construction			I						
Direction of action									
Air to open (stem extends by spring force)				R					
Air to close (stem retracts by spring force)				D					
Rated stroke									
20 mm					2				
30 mm					3				
Spring range a)									
0,2 – 1 bar						A			
0,4 – 2 bar						B			
0,6 – 1,4 bar						J			
0,8 – 1,6 bar						C			
0,9 – 2,1 bar						K			
1 – 2 bar						D			
1 – 3 bar						E			
1,2 – 2,4 bar						F			
1,2 – 2,8 bar						L			
1,5 – 3 bar						G			
1,6 – 3,2 bar						H			
2 – 4 bar						I			
Options									
None							XX		
Top mounted handwheel b)								HX	
Stroke limiter									LX
Yoke design and coupling									
ADCATrol VPC26, V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")									A1
ADCAPure V926H, V926A (1/2" to 21/2") and V928 series (DN 15 to DN 50)									A3
ADCATrol V16/2 series (DN 65 to DN 100 – 21/2" to 4")									B1
ADCATrol V25/2 series (DN 65 to DN 100 – 21/2" to 4")									B2
ADCAPure V926H (3" and 4") and V928 series (DN 65 to DN 100)									B3
Other ADCATrol valves c)									XX
Special versions / Extras									
Full description or additional codes have to be added in case of a non-standard combination									E

a) Not every spring range/stroke combination is available for each actuator model.
b) Not available in actuators with stainless steel construction (e.g. PA206i).
c) Exact model and size must be specified – consult the manufacturer.
How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.

LINEAR ELECTRIC ACTUATORS EL (1,2 kN to 25 kN)

DESCRIPTION

The EL series linear electric actuators are designed for operation of control valves in modulating and on/off services in process engineering and industrial applications. The self-locking stem nut is driven by an electric motor via a gearing. Load-dependent switches and/or mechanical limit switches define the stops for the end positions.

MAIN FEATURES

Modular retrofittable design.
24 V AC, 115 V AC, 230 V AC, 400 V AC 50/60 Hz and 24 V DC supply voltages.
Manual operation with disengagement of the actuator motor.
IP 65 (EL12 IP 43) protection.
Valve protection against excessive force due to load-dependent seating.
Mounting to valves made via yoke or mounting flange DIN 3358, enabling easy connection to all types of valves. Standard version is suitable for ADCATrol valves.
Defined closing force in the end positions leading to tight valve shut-off.
Stall proof synchronous motors (or brake motors for higher positioning forces) ensure highest positioning accuracy.
Mechanical stroke indication via anti-rotation bar.
Exact, backlash-free measurement of actual valve stroke by direct coupling to the valve stem.
Universally usable actuators due to control via 3-point-step controllers, analogue input signals (0 to 10 V, 0(4) to 20 mA), or fieldbus systems. Limit switches are easily adjustable for stroke limitation or as signal for intermediate positions.

OPTIONS AND

ACCESSORIES: Electronic positioner.
Additional limit switches.
Potentiometers e.g. for 3-point-step control in closed loop.
0(4) to 20 mA electronic position feedback units.
Heating resistor.
Special coatings and finishes for aggressive environments.

USE: Actuation of ADCATrol control valves, or others on request.

AVAILABLE MODELS: EL12, EL20, EL45, EL80, EL120 and EL250.





TECHNICAL DATA

MODEL	EL12	EL20	EL45	EL45.1	EL45.2
Positioning force (kN)	1,2	2,0	4,5	4,5	4,5
Positioning speed (mm/min / mm/s) a)	8 / 0,14	15 / 0,25	17 / 0,28	25 / 0,4	50 / 0,8
Power consumption – 230 V (W)	4	6,6	28	28	32
Nominal current – 230 V (A)	0,017	0,029	0,135	0,135	0,160
Type of motor b)	Syn	Syn	Asyn	Asyn	Asyn
Motor protection c)	B				
Maximum stroke (mm)	35	50 (75 on request)			
Supply voltages d)	24 V / 115 V / 230 V / 400 V 50/60 Hz, 24 V DC				
Type of duty acc. to IEC 34-1	S1 – 100%		S4 – 30% c.d.f. 600 c/h		
Cable entry	3 x M16 x 1,5	2 x M16 x 1,5 and 1 dummy plug M16 x 1,5			
Electrical connection	Inside terminal board, terminal configuration according to electric connection wiring diagram				
Switch off in end position	2 load dependent switches, max. 250 V AC, rating for resistive load: max. 5 A, for inductive load: max. 3 A				
Mounting position	As desired, except downward position				
Ambient temperature	- 20 °C to 60 °C				
Lubricant for gearing	Klüber Mickrolube GL 261 grease				
Position indicator	By anti-rotation bar				
Manual adjustment	Crank handle	Side handwheel			
Enclosure protection acc. to EN 60529	IP 43	IP 65			
Trapezoidal thread	Tr 8 x 1,5	Tr 14 x 3			
Connection type	EN ISO 5210 F05				

MODEL	EL80	EL80.1	EL80.2	EL120	EL120.1	EL120.2
Positioning force (kN)	8,0			12		
Positioning speed (mm/min / mm/s) a)	13,5 / 0,2	25 / 0,4	50 / 0,8	13,5 / 0,2	25 / 0,4	50 / 0,8
Power consumption – 230 V (W)	25	34	152	25	34	152
Nominal current – 230 V (A)	0,11	0,15	0,78	0,11	0,15	0,78
Type of motor b)	Syn	Syn	Asyn	Syn	Syn	Asyn
Motor protection c)	B	B	T	B	B	T
Maximum stroke (mm)	80					
Supply voltages d)	24 V / 115 V / 230 V / 400 V 50/60 Hz, 24 V DC					
Type of duty acc. to IEC 34-1	S4 – 30% c.d.f. 600 c/h					
Cable entry	2 x M16 x 1,5 and 1 dummy plug M16 x 1,5					
Electrical connection	Inside terminal board, terminal configuration according to electric connection wiring diagram					
Switch off in end position	2 load dependent switches, max. 250 V AC, rating for resistive load: max. 5 A, for inductive load: max. 3 A					
Mounting position	As desired, except downward position					
Ambient temperature	- 20 °C to 60 °C					
Lubricant for gearing	Klüber Mickrolube GL 261 grease					
Position indicator	By anti-rotation bar					
Manual adjustment	Side handwheel					
Enclosure protection acc. to EN 60529	IP65					
Trapezoidal thread	Tr 20 x 3					
Connection type	DIN 3210 G0					



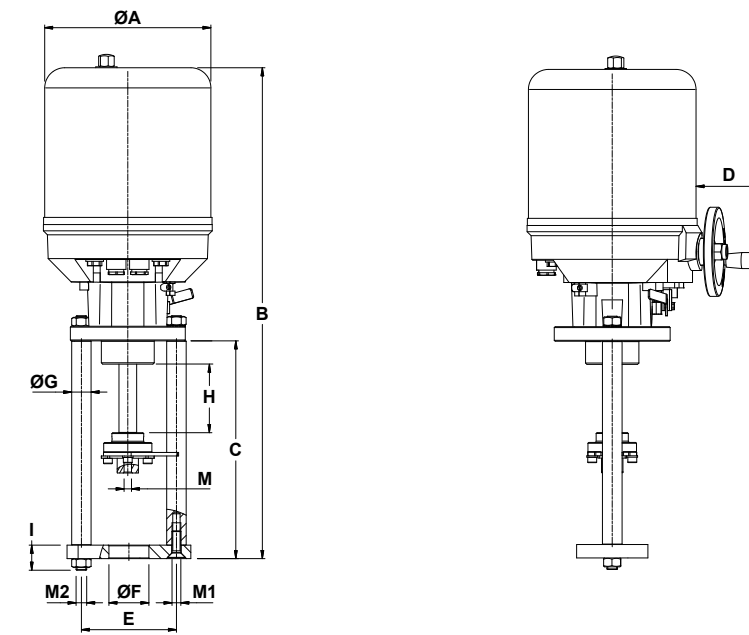
MODEL	EL 250.1	EL 250.2
Positioning force (kN)	25	
Positioning speed (mm/min / mm/s) a)	25 / 0,4	50 / 0,8
Power consumption – 230 V (W)	157	218
Nominal current – 230 V (A)	0,73	1,0
Type of motor b)	Asyn	
Motor protection c)	T	
Maximum stroke (mm)	100	
Supply voltages d)	24 V / 115 V / 230 V / 400 V 50/60 Hz, 24 V DC	
Type of duty acc. to IEC 34-1	S4 – 30% c.d.f. 600 c/h	
Cable entry	2 x M20 x 1,5 and 1 dummy plug M16 x 1,5	
Electrical connection	Inside terminal board, terminal configuration according to electric connection wiring diagram	
Switch off in end position	2 load dependent switches, max. 250 V AC, rating for resistive load: max. 5 A, for inductive load: max. 3 A	
Mounting position	As desired, except downward position	
Ambient temperature	- 20 °C to 60 °C	
Lubricant for gearing	Klüber Mickrolube GL 261 grease	
Position indicator	By anti-rotation bar	
Manual adjustment	Side handwheel	
Enclosure protection acc. to EN 60529	IP 65	
Trapezoidal thread	Tr 26 x 5	
Connection type	DIN 3210 G0	

- a) At 60 Hz, the positioning speed and input power increase by 20%.
- b) Syn – synchronous motor; Asyn – asynchronous motor.
- c) B – stallproof motor; T – thermoswitch for temperature monitoring.
- d) Other supply voltages on request.

OPTIONS AND ACCESSORIES	
DESIGNATION	DESCRIPTION
FG	Switching and signaling unit (teletransmitter assembly). The FG unit is the base necessary for the assembly of all remaining options.
WE	Additional limit switches for signaling end positions or intermediate positions, freely adjustable, max. 250 V AC, rating for resistive load max. 5 A, for inductive load max. 3 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.
WE-G	Additional limit switches for signaling end positions or intermediate positions, freely adjustable, with gold-plated contacts for low voltage, max. 30 V AC, rating for resistive load max. 0,1 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.
POT	Potentiometer 100/130/200/500/1000/5000 Ohms or 10 kOhms Linearity error £ 0.5 %, max. 1.5 W, contact current 30 mA max. 2 pieces
ESR100	Electronic position feedback 2/3-wire unit. Remark: Includes POT 5000 Ohms. Inductive travel measuring, output 0(4) to 20 mA. Connection 24 V DC (not possible for EL12).
PEL100	Electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
PEL200	Intelligent electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20 mA, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
HZ/WP	Heating resistor with thermoswitch against moisture with automatic temperature regulation, max. 15 Watts Supply voltage 24, 115, 230 V 50/60 Hz
STALA / FLA	Yoke for adaptation to valves. Refer to dimension sheet.
ZFLA	Mounting flange with central attachment Mxx. Refer to dimensions sheet (thrust rod must be secured against revolving).
KS	Compact plug 10/24 poles with additional housing at actuator voltages ≤ 500 V.
LA-TR	Special finish coating for use in the tropics ("tropics coating").
A-IP65	Version IP 65: with bellows at thrust rod and metal cover with seal (for EL12)
A-FAB	Version with bellows at thrust rod (for EL20, 45, 80 and 120).

ELECTRICAL CONNECTIONS				
3~ ASYNCHRONOUS MOTOR WITH BRAKE AND THERMOSWITCH	1~ ASYNCHRONOUS MOTOR WITH BRAKE AND THERMOSWITCH	SYNCHRONOUS MOTOR WITH THERMOSWITCH	SYNCHRO- NOUS MOTOR	BASIC WIRING DIAGRAM INCLUDING OPTIONS
				Switch-off in both end positions is made via two load-dependant switches, e.g. two-way valves with upper stroke limit and three-way mixing valves.
				Switch-off in the lower end position is made via a load-dependent switch and on the upper end position via a mechanical limit switch, e.g. two-way valves without upper stroke limit.
				Control of three-phase actuators with thermoswitch. Switch off in end position is made via two load-dependant switches to control e.g. three-way mixing valves. Remarks: For motors without thermoswitch, the wiring to terminal 4 and 5 is not applicable.
				Control of three-phase actuators with thermoswitch. Switch off in end position is made via a load-dependent switch and a mechanical limit switch to control e.g. two-way valves without upper stop. Remarks: For motors without thermoswitch, the wiring to terminal 4 and 5 is not applicable.

WE – Limit switch
HZ – Heater with thermoswitch
POT – Potentiometer
ESR – Electronic position feedback
PEL – Electronic positioner
WSE – External reversing contactor unit
REG – Process controller



DIMENSIONS (mm)													
MODEL	Ø A	B	C	D	E	Ø F	Ø G	H	I	M *	M1	M2	WGT. (kg)
EL12	129	315	175	–	100	40	16	35	–	M10	M10	–	2,1
EL20 / EL45	148	474	205	42	100 / 110	40 / 45	22	50	41	M10 / M16	M10	M16	8
EL80 / EL120	188	572	245	70	100 / 110	40 / 45	22	80	41	M10 / M16	M10	M16	13
EL250	216	668	260	70	125	45 / 65	22	100	41	M16 / M20	–	M16	19

* Depending on valve stem thread. Can be coarse or fine thread.
Remark: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

ORDERING CODES EL							
Group designation	E	12	1	X	X	X	A1
EL series linear electric actuator	E						
Actuator model							
EL12		12					
EL20		20					
EL45		40					
EL45.1		41					
EL45.2		42					
EL80		60					
EL80.1		61					
EL80.2		62					
EL120		70					
EL120.1		71					
EL120.2		72					
EL250		80					
EL250.1		81					
EL250.2		82					
Supply voltage							
230 V AC 50/60 Hz			1				
115 V AC 50/60 Hz			2				
24 V AC 50/60 Hz			3				
24 V DC			4				
400 V AC 3~ 50/60 Hz			5				
Electronic positioner and teletransmitter assembly							
Without FG teletransmitter assembly and electronic positioner				X			
FG teletransmitter assembly				T			
PEL100 electronic positioner				P			
PEL200 intelligent electronic positioner				I			
Limit switches							
Without additional limit switches					X		
One additional WE limit switch					1		
Two additional WE limit switches					2		
Position feedback unit							
Without position feedback unit						X	
ESR100 electronic position feedback unit						F	
Yoke design and coupling							
ADCATrol V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")							A1
ADCAPure V926H, V926A (1/2" to 2 1/2") and V928 series (DN 15 to DN 50) a)							A3
ADCATrol V16/2 series (DN 65 to DN 100 – 3" to 4")							B1
ADCATrol V25/2 series (DN 65 to DN 100 – 3" to 4")							B2
ADCAPure V926H (3" and 4") and V928 series (DN 65 to DN 100) a)							B3
ADCATrol V25/2 series (DN 125 to DN 150 – 5" to 6")							C2
ADCATrol V25/2 series (DN 200 – 8")							D2
Other ADCATol valves b)							XX
Special versions / Extras							
Full description or additional codes have to be added in case of a non-standard combination							E

a) Require an additional WE limit switch for switching off in the upper end position. Except V928MV, V928MH and V928D.
b) Exact model and size must be specified – consult the manufacturer.
Remark: Options and accessories not mentioned in the ordering codes table must be requested separately, e.g.: E.201XXXA1 fitted with HZ/WP heating resistor with thermoswitch.
How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.

LINEAR ELECTRIC ACTUATORS WITH FAIL-SAFE FUNCTION ELR

DESCRIPTION

The ELR series linear electric actuators are designed for operation of control valves in modulating and on/off services in process engineering and industrial applications. The self-locking stem nut is driven by an electric motor via a gearing. Load-dependent switches and/or mechanical limit switches define the stops for the end positions. In case of power failure, the electric linear actuator runs into the respective fail-safe position by spring force (thrust rod either extended or retracted). In modulating duty, the end position seating is made via mechanical limit switches.

MAIN FEATURES

Modular retrofittable design.
24 V AC, 115 V AC, 230 V AC, 400 V AC 50/60 Hz and 24 V DC supply voltages.
Electric manual operation with OPEN/CLOSE buttons.
IP 54 protection.
Valve protection against excessive force due to load-dependent seating.
Mounting to valves made via yoke or mounting flange DIN 3358, enabling easy connection to all types of valves. Standard version is suitable for ADCATrol valves.
Defined closing force in the end positions leading to tight valve shut-off.
Stall proof synchronous motors (or brake motors for higher positioning forces) ensure highest positioning accuracy.
Mechanical stroke indication via anti-rotation bar.
Exact, backlash-free measurement of actual valve stroke by direct coupling to the valve stem.
Universally usable actuators due to control via 3-point-step controllers, analogue input signals (0 to 10 V, 0(4) to 20 mA), or fieldbus systems.
Limit switches are easily adjustable for stroke limitation or as signal for intermediate positions.

OPTIONS AND ACCESSORIES:

Electronic positioner.
Additional limit switches.
Potentiometers e.g. for 3-point-step control in closed loop.
0(4) to 20 mA electronic position feedback units.
Heating resistor.
Special coatings and finishes for aggressive environments.

USE:

Actuation of ADCATrol control valves, or others on request.

AVAILABLE MODELS:

ELR2.1, ELR2.2 and ELR2.3.



TECHNICAL DATA

MODEL	ELR 2.1	ELR 2.2	ELR 2.3
Positioning force – CLOSED (kN) a)	≥ 0,9	≥ 2,2	≥ 2,2
Positioning force – OPEN (kN) a)	≤ 5,3	≤ 4,0	≤ 4,0
Maximum stroke (mm)	35	35	46
Positioning speed modulating duty (mm/min / mm/s) b)	17,5 / 0,29		
Positioning speed in case of power failure Fail-safe function (mm/s)	~4,1		
Power consumption (230 V) motor (W)	8,5		
Power consumption (230 V) magnet (W)	15		
Type of motor c)	Syn		
Motor protection d)	B		
Supply voltages e)	24 V / 115 V / 230 V 50/60 Hz		
Closing direction (Fail-safe function)	Extending thrust rod or retracting thrust rod		
Cable entry	2 x M16 x 1,5 and 2 dummy plugs M20 x 1,5		
Type of duty acc. to IEC 34-1	S1 – 100% c.d.f., S4 – 30% c.d.f. 1200 c/h		
Electrical connection	Inside terminal board, terminal configuration according to electrical connection wiring diagram		
Switch off in end position	2 limit switches, max. 250 V AC, rating for resistive load, max. 10 A, for inductive load, max. 10 A		
Mounting position	Any, except downward		
Ambient temperature	-20 °C to 50 °C		
Lubricant for gearing	Renolit AL-WIK 260 X		
Position indicator	By anti-rotation bar		
Manual adjustment	Electrical adjustment via push buttons (only possible when voltage is present)		
Enclosure protection acc. to EN 60529	IP 54		
Connection type	EN ISO 5210 F05 (also refer to options)		
Test / approvals	Actuator has been tested by TÜV (German Technical control board) according to DIN 32730 (safety functions for water and steam in heating systems)		

- a) Force depends on valve stroke according to Chart 1.
- b) At 60 Hz, the positioning speeds and input power increase by 20%.
- c) Other supply voltages on request.
- d) Syn – synchronous motor; Asyn – asynchronous motor.
- e) B – stallproof motor; T – thermoswitch for temperature monitoring.

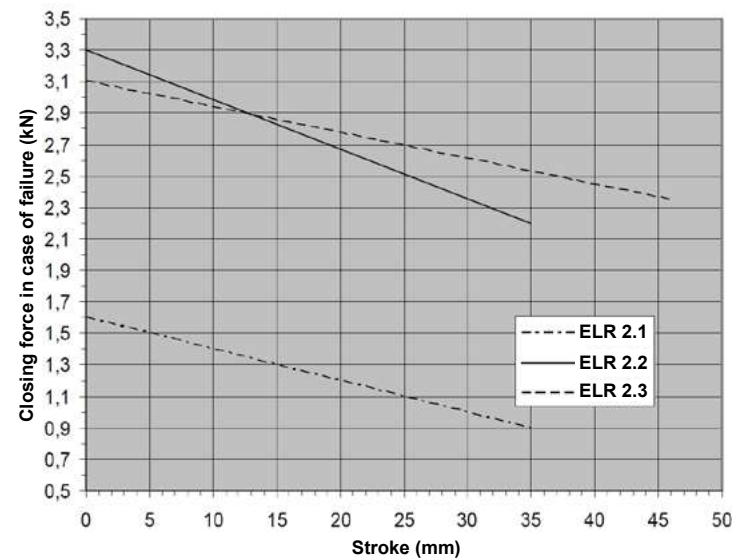
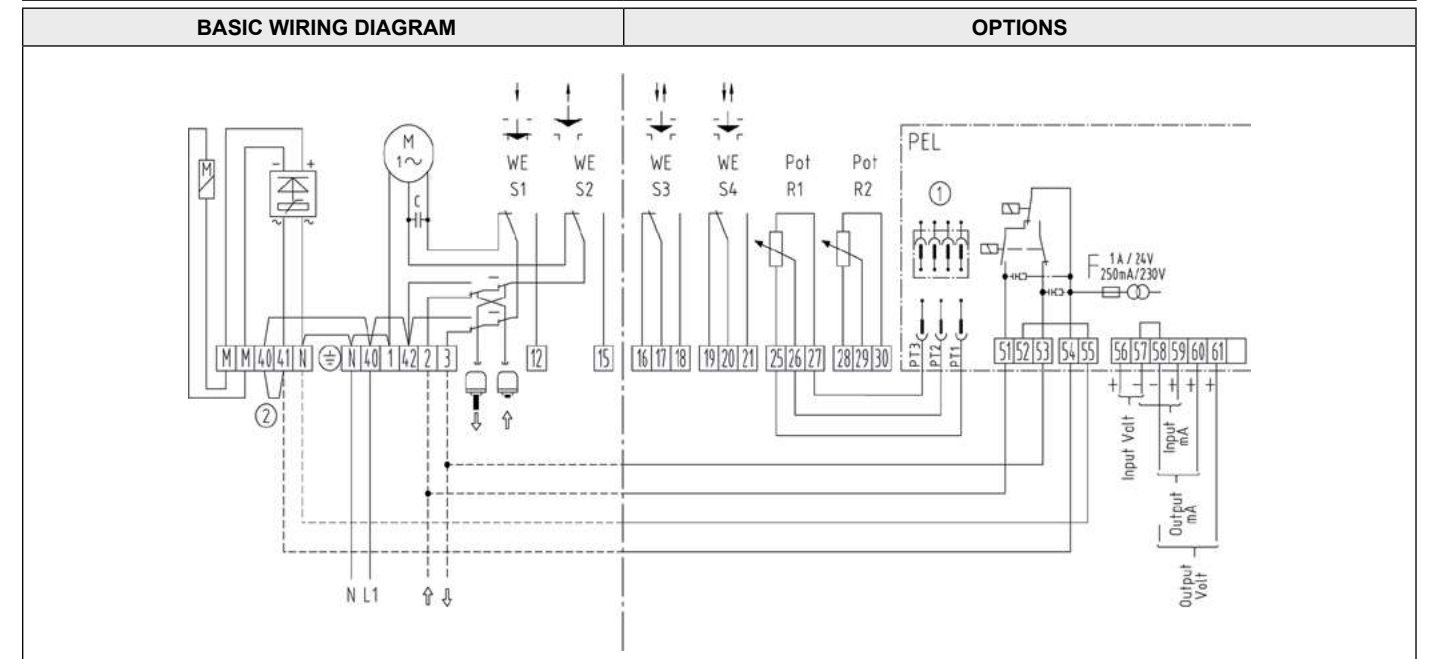


Chart 1 – Closing force according to valve stroke.

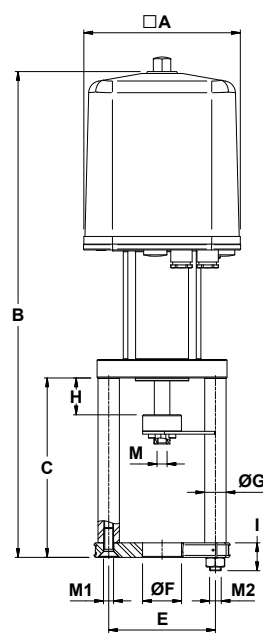
OPTIONS AND ACCESSORIES

DESIGNATION	DESCRIPTION
FG	Switching and signaling unit (teletransmitter assembly). The FG unit is the base necessary for the assembly of all remaining options.
WE	Additional limit switches for signaling end positions or intermediate positions, freely adjustable, max. 250 V AC, rating for resistive load max. 5 A, for inductive load max. 3 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.
WE-G	Additional limit switches for signaling end positions or intermediate positions, freely adjustable, with gold-plated contacts for low voltage, max. 30 V AC, rating for resistive load max. 0.1 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.
POT	Potentiometer 100/130/200/500/1000/5000 Ohms or 10 kOhms Linearity error ± 0.5 %, max. 1.5 W, contact current 30 mA max. 2 pieces
ESR100	Electronic position feedback 2/3-wire unit. Remark: Includes POT 5000 Ohms. Inductive travel measuring, output 0(4) to 20 mA. Connection 24 V DC (not possible for EL12).
PEL100	Electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20 mA, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
PEL200	Intelligent electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20 mA, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
STALA / FLA	Yoke for adaptation to valves. Refer to dimension sheet.
KUP-EL2	Elastic thrust rod coupling effective on both sides.
LA-TR	Special finish coating for use in the tropics ("tropics coating").

ELECTRICAL CONNECTIONS



- WE – Limit switch
- HZ – Heater with thermoswitch
- POT – Potentiometer
- ESR – Electronic position feedback
- PEL – Electronic positioner



DIMENSIONS (mm)												
MODEL	□A	B	C	E	ØF	ØG	H	I	M*	M1	M2	WEIGHT (kg)
ELR2.1	162	497 / 515 **	170	100 / 110	40 / 45	22	35	41	M10	M10	M16	8,7
ELR2.2	162	518 / 555 **	170	100 / 110	40 / 45	22	35	41	M10	M10	M16	9,3
ELR2.3	162	539 / 575 **	170	100 / 110	40 / 45	22	46	41	M10	M10	M16	10

* Depending on valve stem thread. Can be course or fine thread.

** With PEL electronic positioner

Remark: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

ORDERING CODES ELR							
Group designation	E	2A	1	X	X	X	A1
EL series linear electric actuator	E						
Actuator model							
ELR2.1		2A					
ELR2.2		2B					
ELR2.3		2C					
Supply voltage							
230 V AC 50/60 Hz			1				
115 V AC 50/60 Hz			2				
24 V AC 50/60 Hz			3				
24 V DC			4				
400 V AC 3~ 50/60 Hz			5				
Electronic positioner and teletransmitter assembly							
Without FG teletransmitter assembly and electronic positioner				X			
FG teletransmitter assembly				T			
PEL100 electronic positioner				P			
PEL200 intelligent electronic positioner				I			
Limit switches							
Without additional limit switches					X		
One additional WE limit switch					1		
Two additional WE limit switches					2		
Position feedback unit							
Without position feedback unit						X	
ESR100 electronic position feedback unit						F	
Yoke design and coupling							
ADCATrol V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")							A1
ADCATrol V16/2 series (DN 65 to DN 100 – 3" to 4")							B1
ADCATrol V25/2 series (DN 65 to DN 100 – 3" to 4")							B2
ADCATrol V25/2 series (DN 125 to DN 150 – 5" to 6")							C2
ADCATrol V25/2 series (DN 200 – 8")							D2
Other ADCATrol valves a)							XX
Special versions / Extras							
Full description or additional codes have to be added in case of a non-standard combination							E

a) Exact model and size must be specified – consult the manufacturer.

Remark: Options and accessories not mentioned in the ordering codes table must be requested separately, e.g.: E.2A1TXXA1 with special LA-TR finish coating.

How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.

LINEAR ELECTRIC ACTUATORS AVF234S and AVM234S

DESCRIPTION

The AVM234S / AVF234S valve actuators offer automatic adaptation to the stroke of the valve, precision activation and high energy efficiency with minimal operating noise.

Ideal for use with any DSH series direct steam injection humidifier and in TDS (Total Dissolved Solids) control systems VCP blowdown valves.

In case of power failure/interruption, the AVF234S actuator runs, spring driven, into its respective fail-safe position (thrust rod extended). In modulating duty, the end position seating is made via limit switches.

MAIN FEATURES

IP 66 protection.

Automatic detection of control signal with LED indications.

Adjustable characteristic curve (linear, quadratic and equal-percentage) and running time via DIP switch.

Automatic adaptation to valve stroke.

Manual operation with disengagement of the actuator motor.

Mechanical stroke indication.

Spring-return feature (AVF234S).

Switching input (2-point or 3-point-step control) or analog input (0...10 V or 4...20 mA).

OPTIONS AND

ACCESSORIES: Split-range unit for adjusting sequences.
230 V AC and 100 V AC power supply modules.
Auxiliary change over contacts.
Potentiometers, e.g. for 3-point-step in closed loop.
Adapters for high temperature conditions.

USE: Actuation of V series ADCATrol control valves, or others on request.

AVAILABLE MODELS: AVM234S.
AVF234S - Fail-safe with spring-return.



TECHNICAL DATA

ACTUATOR MODEL	AVM234S	AVF234S
Power supply	230 V 50/60 Hz / 110 V 50/60 Hz / 24 V 50/60 Hz / 24 V DC	
Power consumption a)	10 W (20 VA) for 24 V 50/60 Hz and 24 V DC; 13 W (28 VA) for 230 V 50/60 Hz	
Running time of motor mm/min (mm/s)	10 (0,17), 15 (0,25), 30 (0,50)	
Running time of spring b)	-	15...30 s
Actuating power	2,5 kN	2 kN
Response time for 3-point-step	200 ms	
Number of spring returns	-	>40,000
Actuator stroke	0...49 mm	0...40 mm
Housing material	Fire-retardant plastic	

a) Choose transformer for this value, otherwise malfunctions may occur.

b) Return time equates to stroke of 14...40 mm and does not depend on set running time.

POSITIONER	
Control signal 1	0...10 V, Ri=100 kΩ
Control signal 2	4...20 mA, Ri=50 Ω
Positional feedback 0-10V	0...10 V; load > 2,5 kΩ
Starting point U0	0 V or 10 V
Control span ΔU	10 V
Switching range Xsh	300 mV

AMBIENT CONDITIONS	
Admissible ambient temperature	-10...55 °C
Admissible ambient humidity	< 95% rh, no condensation
Temperature of medium c)	Max. 130 °C (180 °C or 200 °C with accessories)

c) Adaptor needed for higher temperatures (180 °C or 200 °C) (see accessories and options).

STANDARDS AND DIRECTIVES	
Type of protection	IP66 (EN 60529)
Protection class	III (IEC 60730)
EMC Directive 2014/30/EU d)	EN 61000-6-2, EN 61000-6-4
Low-voltage directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	III

d) EN 61000-6-2: HF immunity, limitation of feedback signal between 80 MHz and 1000 MHz criterion B, otherwise criterion A.

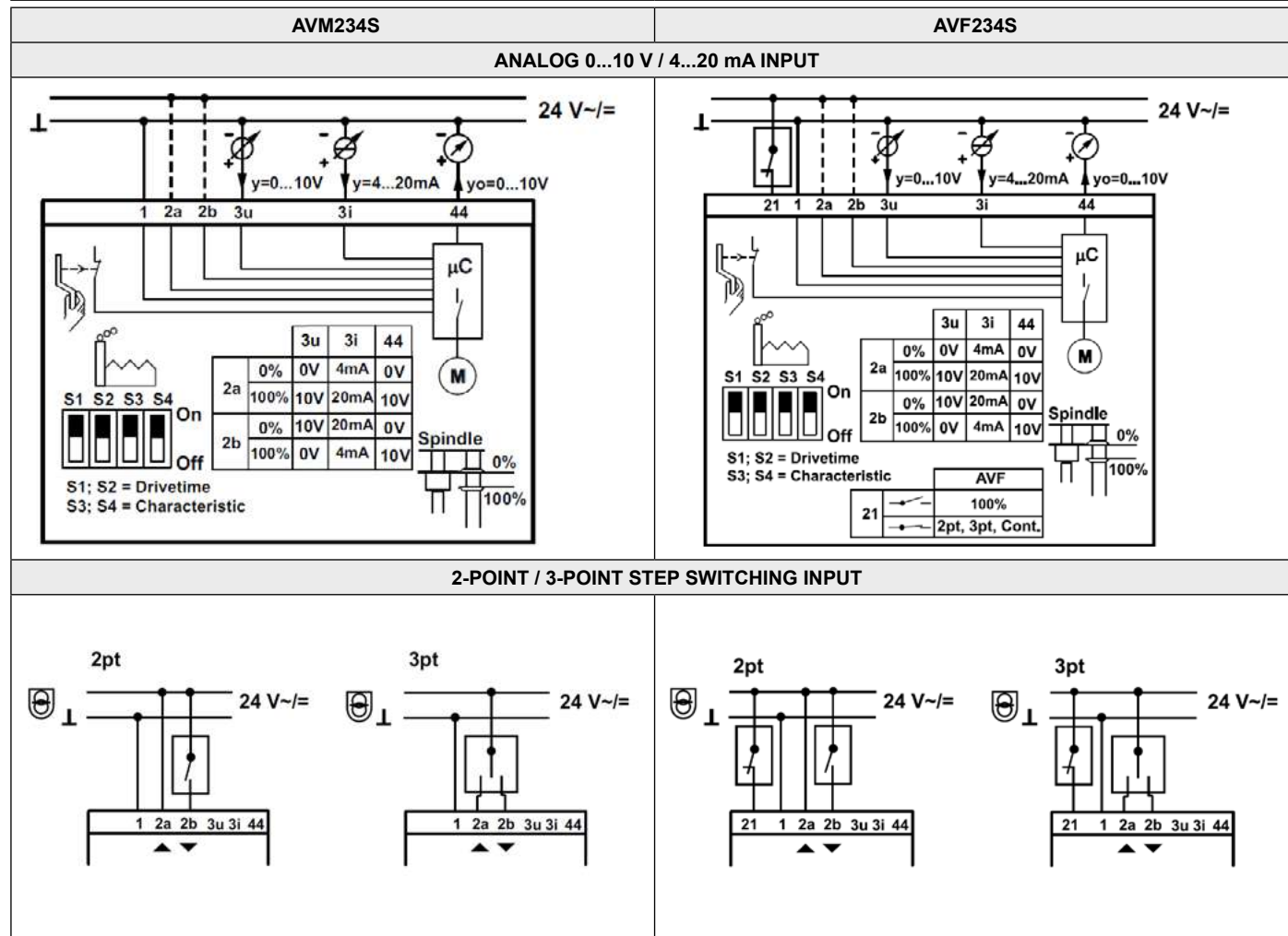
OPTIONS AND ACCESSORIES

OPTIONS AND ACCESSORIES	TYPE
Split-range unit for adjusting sequences, fitted in separate junction box	313529 001
Module for 2-point/3-point and analogue activation; additional power 2 VA; 230 V AC ± 15% supply voltage	372332 001
Module for 2-point/3-point and analogue activation; additional power 2 VA; 100 V AC ± 15% supply voltage	372332 002
Aux. change-over contacts 12...250 V ac; Infinitely variable, min. 100 mA and 12 V permissible load 6(2) a)	372333 001
Aux. change-over contacts 12...250 V ac; Gold plated, from 1 mA, to max. 30 V, wider range 3(1) a)	372333 002
Potentiometer 2 kΩ 1 W 24 V	372334 001
Potentiometer 130 Ω 1 W 24 V	372334 002
Potentiometer 1 kΩ 1 W 24 V	372334 006
Adapter required when the temperature of the medium is 130...180 °C	372336 180
Adapter required when the temperature of the medium is 180...240 °C	372336 240

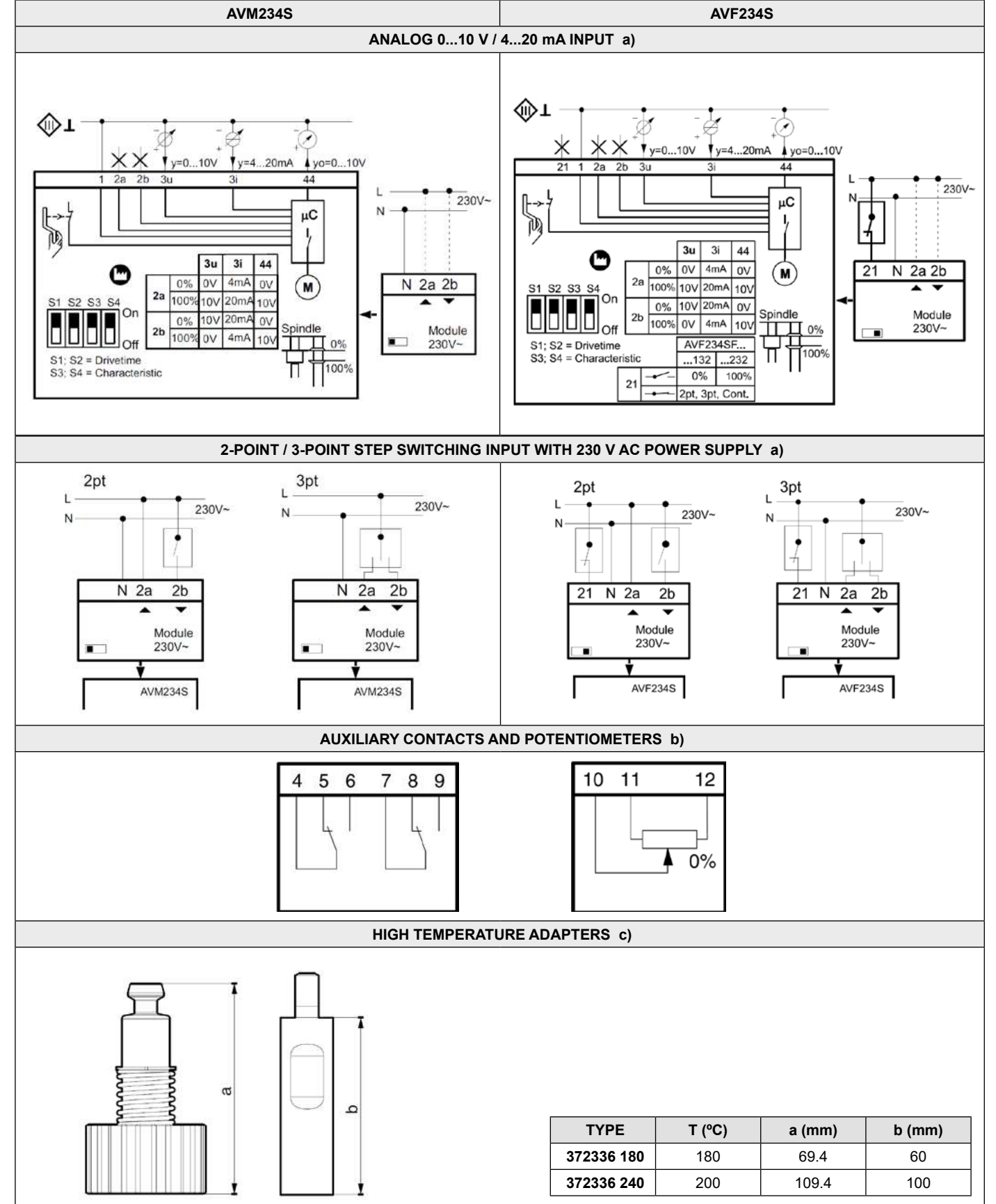
a) Two contacts each.

ELECTRICAL CONNECTIONS

BASIC WIRING DIAGRAMS



OPTIONS AND ACCESSORIES WIRING DIAGRAMS

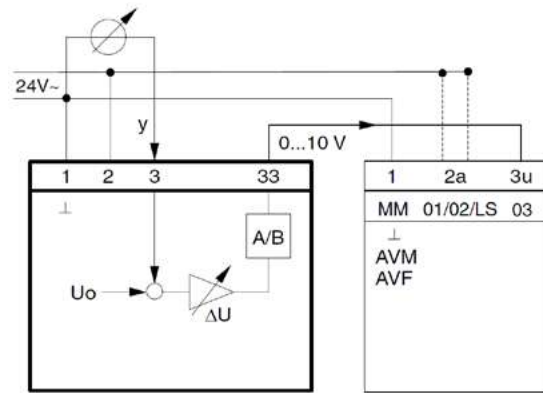


OPTIONS AND ACCESSORIES WIRING DIAGRAMS

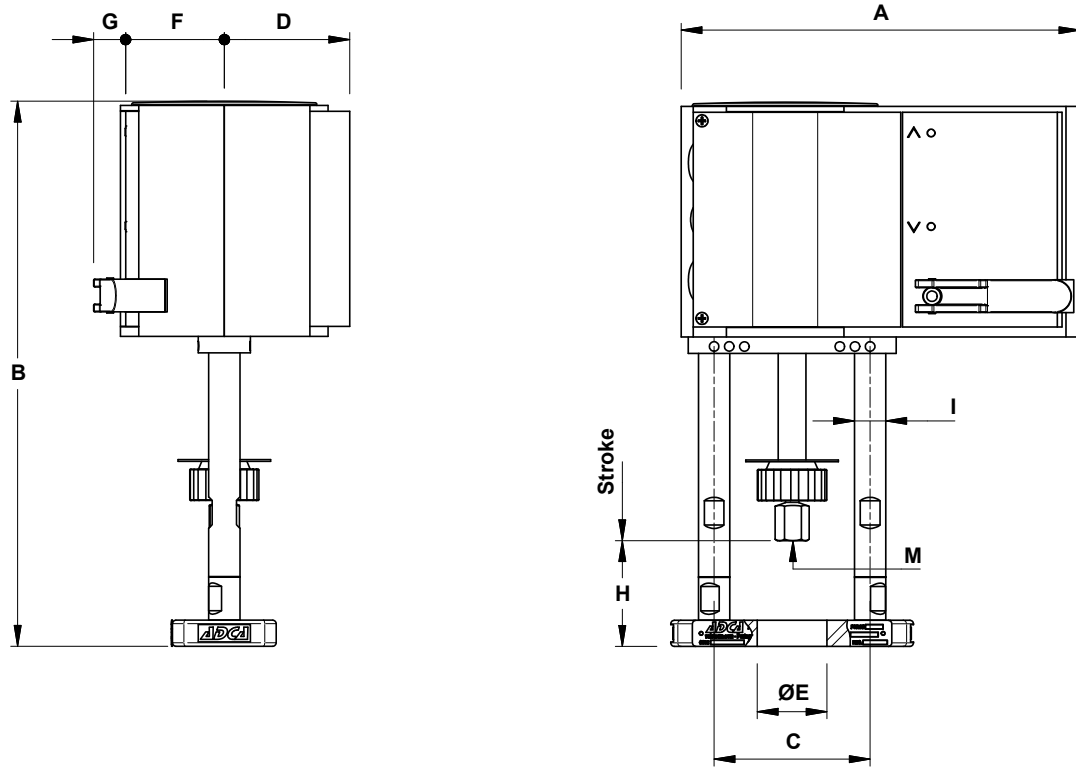
AVM234S

AVF234S

SPLIT RANGE UNIT d)



- a) Using accessory type 372332 001. Same connections apply for the 100 V AC modules (type 372332 002).
- b) Accessories type 372333 001, 372333 002, 372334 001, 372334 002 and 372334 006.
- c) Accessories type 372336 180 and 372336 240.
- d) Accessory type 313529 001.



DIMENSIONS (mm)

MODEL	A	B	C	D	ØE	F	G	H	I	M	WEIGHT (kg)
AVM234S AVF234S	230	314	90	72	40	57	18	37	18	M10	4,1

TYPE OF CHARACTERISTIC CURVES

Desired character. curve	Switch coding	Characteristic curve for valve	Characteristic curve for drive	Effective on valve
Equal percentage				
Quadratic				
Linear				
Equal percentage				
Linear				

= factory setting

MOTOR RUNNING TIME SELECTION GUIDE

Run time per mm	Switch coding	Run time for 14 mm stroke	Run time for 20 mm stroke	Run time for 40 mm stroke
2s		28s ± 1	40s ± 1	80s ± 4
4s		56s ± 2	80s ± 4	160s ± 4
6s		84s ± 4	120s ± 4	240s ± 8

= factory setting

ELECTRO-PNEUMATIC POSITIONERS PE986

DESCRIPTION

The ADCATrol PE986 is an electro-pneumatic positioner used for direct operation of pneumatic linear or rotary actuators by means of electrical controllers or control systems with a 4 to 20 mA, 2 to 10 V or split ranges output.

The positioner features a compact design and a modular construction which allows easy attachment of options such as limit switches, analog feedback modules, manifolds, volume boosters, amongst others.

MAIN FEATURES

- Compact and flexible design.
- Mounting onto any linear or rotary actuator.
- Single or double acting.
- Supply pressure up to 6 bar.
- Adjustable amplification and damping.
- Independent adjustment of stroke range and zero position.
- Resistant to vibration effect in all directions.
- ATEX approval (Ex ia).

OPTIONS AND ACCESSORIES

- Module for analog position feedback.
- Digital position feedback with inductive switches (two or three-wire system).
- Digital position feedback with microswitches.
- Attachment kit for linear actuators acc. to IEC 534/NAMUR.
- Attachment kit with rotary adaptor for rotary actuators acc. to VID/VDE 3845.
- Connection manifold with gauges.
- ATEX approval (Ex d): Version PE983.
- Volume boosters.



TECHNICAL DATA

GENERAL	
Material	Housing: Alluminium finished with DD-varnish black Mounting bracket: Alluminium Moving parts of feedback system: AISI 303 / 1.4305 or AISI 316Ti / 1.4571
IP rating	Protection class IP 54 (IP 65 on request)
Pneumatic connections	Female threaded ISO 228 G 1/8"
Electrical connections	M20 x 1,5 Cable glands Screw terminals: max. 2.5 mm ²
Weight	Single acting: approx. 1,5 kg Double acting: approx. 1,8 kg Attachment kit: For diaphragm actuators: approx. 0,3 kg For rotary actuators: approx. 0,5 kg

AMBIENT CONDITIONS	
Ambient temperature	-40 °C to 80 °C
Relative humidity	Up to 100%
Operating conditions	According to IEC 654-1; The device can be operated at a class D2 location
Transport and storage temperature	-50 °C to 80 °C
Storage conditions	According to IEC 60 721-3-1: 1K5, 1B1, 1C2, 1S3, 1M2

ELECTROMAGNETIC COMPATIBILITY (EMC)	
Operating conditions	Industrial environment
Immunity	According to EN 61326 and EN 61000-6-2
Emission	According to EN 61326, Class A and EN 61000-6-3

Remark: NAMUR recommendation fulfilled

CE MARKING	
Electromagnetic compatibility	89/336/EWG
Low-voltage regulation	73/23/EWG not applicable

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

INPUT SIGNAL	
Signal range	4 to 20 mA or 2 to 10 V
Input resistance	< 200 Ω at 20 °C
Stroke range	20 to 100% of the nominal operating range
Angular range	Linear: 30 ° to 120 ° Equal percentage: 90 °; from 70 ° linear

OUTPUT SIGNAL	
Output to actuator	0 to 100 % supply air pressure

AIR SUPPLY *	
Air supply pressure	1,4 to 6 bar (20 to 90 psig)
Solid particle size and density	Class 2
Oil rate	Class 3
Pressure dew point	10K below ambient temperature

* According to ISO 8573-1.

Remark: For air supply, we recommend the ADCA P10 filter regulator.

AIR CONSUMPTION	
Single acting	Air supply 1.4 bar (20 psig) 200 NI/h (7,1 scfh)
	Air supply 3.0 bar (45 psig) 400 NI/h (12,4 scfh)
	Air supply 6.0 bar (90 psig) 600 NI/h (21,2 scfh)
Double acting	Air supply 1.4 bar (20 psig) 350 NI/h (10,6 scfh)
	Air supply 3.0 bar (45 psig) 550 NI/h (17,7 scfh)
	Air supply 6.0 bar (90 psig) 750 NI/h (33,5 scfh)

AIR OUTPUT	
Load effect *	
-3 % for delivery flow 2350 NI/h (83 scfh)	
+3 % for exhausted flow 1900 NI/h (67 scfh)	

* Measured with air supply 1,4 bar and 50% of the signal range.

RESPONSE CHARACTERISTIC *	
Amplification	Adjustable
Sensitivity	< 0,1% F.S.
Non-linearity (terminal based adjustment)	< 1,0 % F.S.
Hysteresis	< 0,3 % F.S.
Supply air dependency	< 0,3 % / 0,1 bar
Temperature effect	< 0,5 % / 10 K

* Data based on the following parameters: stroke 30 mm, feedback lever 117,5 mm, max. amplification, air supply pressure 3 bar.

OPTIONS AND ACCESSORIES

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 a)
Current consumption	Vane clear: > 3 mA Vane interposed: < 1 mA
Supply voltage	DC 8 V, Ri approx. 1 kΩ
Residual ripple	< 5 %
Permissible line resistance	< 100 Ω
Response characteristic b)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 1 % Switching point repeatability: < 0,2 % EMC: according to EN 60 947-5-2

a) For the standard version one switching amplifier is required. For the security version fail-safe amplifier for each inductive proximity sensor is required; Operating mode minimum (= low) / maximum (= high) selectable by adjustment of switch vanes; Operating mode normally closed circuit / normally open circuit selectable at switch amplifier output.

b) For feedback lever effective length 117,5 mm (4,63 in), stroke 30 mm (1,28 in) and maximum gain.

LIMIT SWITCH ASSEMBLY WITH MICROSWITCHES		
Input	Stroke / angle from actuator via positioner feedback lever	
Output	2 micro switches d)	
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 (refer to the following table)		
Switching voltage, max. (V)	Ohmic load (A)	Inductive load (A)
30	5	3
50	1	1
75	0,75	0,75
125	0,5	0,03
250	0,25	0,03
Response characteristic d)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 2,5 % Switching point repeatability: < 0,2 %	

d) For feedback lever effective length 117,5 mm (4,63 in), stroke 30 mm (1,28 in) and maximum gain.

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 b)
Supply voltage US	DC 10 to 30 V
Residual ripple	± 10 %, US = 30 V
Switching frequency	2 kHz
Constant current	100 mA
Response characteristic c)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 1 % Switching point repeatability: < 0,2 %

b) Operating mode minimum (= low) / maximum (= high) selectable by adjustment of switch vanes; Contact closed within the positive range.

c) For feedback lever effective length 117,5 mm (4,63 in), stroke 30 mm (1,28 in) and maximum gain.

CONNECTION MANIFOLD WITH GAUGES	
Indicating range	Stroke / angle from actuator via positioner feedback lever
Error limit	class 1.6
Pneumatic connections	Female threads Q1/4-18 NPT according to DIN 45 141

ANALOG POSITION FEEDBACK	
Sensor	Resistive precision conductive plastic element
Input	Stroke/angle from actuator via position feedback lever; Stroke range: 8 to 100 mm (0,3 to 4 in) Angular range: 60 ° to 120 °
Output	Two-wire system Signal range: 4 to 20 mA
Permitted load	$R_{Bmax} = (US - 12 V) / 0,02A$ (US = Supply voltage)
Power supply	Supply voltage: DC 12 to 36 V Permitted ripple: < 10 % p.p. Supply voltage dependency: < 0,2 %
Response characteristic e)	Non-linearity with terminal based setting: < 1,0 % F.S. Hysteresis: < 0,5 % F.S. External resistance dependency: < 0,2 % / R_{Bmax} Temperature effect: < 0,3 % / 10 K

e) For feedback lever effective length 117,5 mm (4,63 in), stroke 30 mm (1,28 in) and maximum gain.

COMMON DATA FOR OPTIONS AND ACCESSORIES

GENERAL	
IP rating	Protection class IP 54; IP 65 on request
Mounting	Attachment to positioner
Electrical connections	Line entry: 1 or 2 cable glands M20 x 1,5 or 1/2"-14 NPT (others with Adapter AD-...) Cable diameter: 6 to 12 mm (0,24 to 0,47 in) Screw terminals: max. 2.5 mm ² (AWG14) Optionally: Threaded gland made of AISI 303 (1.4305)
Materials	Base plate: galvanized steel Control vane: aluminium Setting mechanism: fibre glass-reinforced polyamide

AMBIENT CONDITIONS	
Ambient temperature f)	-25 to 80 °C
Relative humidity	Up to 100%
Operating conditions	According to IEC 654-1; The device can be operated at a class D2 location
Transport and storage temperature	-40 °C to 80 °C

f) Refer to the section "Explosion protection", in page 5, with respect to explosion-protected equipment; -40 °C to 80 °C for the fail-safe version of inductive limit switch.

SAFETY REQUIREMENTS

SAFETY	
Acc. to EN 61 010-1 (resp. IEC 1010-1)	safety class III, pollution degree 2, overvoltage category I
Limit Switch (accessory equipment)	safety class II, pollution degree 2, overvoltage category II

EXPLOSION PROTECTION TYPE Ex ia/ib	
Basic device type	AI 633
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 of input circuit: U _i : 30 V I _i : 150 mA P _i : refer to the following table:	

P _i (W)	T6 (°C)	T4 (°C)
2	40	90
1,5	50	90
1	57,5	90

Internal inductance	Negligible
Internal capacitance	Negligible
The control circuit is galvanically separate from earth and all other electric circuits.	

EXPLOSION PROTECTION ZONE 2 *	
It is recommended that the instrument version for protection type Ex ia is used. In the Federal Republic of Germany, these instruments may be operated in Zone 2 with non-intrinsically safe circuits if the operating values do not exceed the maximum reference values.	

EXPLOSION PROTECTION ACCORDING TO FM AND CSA *	
Electro-pneumatic positioner type BIM 633 Intrinsically safe, Class I, Division 1, Groups A, B, C, D, hazardous locations.	

* National installation regulations must be observed.

LIMIT SWITCH	
Type of protection intrinsic safety Ex ib/ia IIB/IIC with the following maximum values: U _i : 16 V I _i : 25 mA P _i : 64 mW Internal inductance: 100 µH Internal capacitance: 30 nF	
The signal circuits are galvanically separate from earth, from each other and from all other electric circuits.	

POSITION TRANSMITTER	
Type of protection intrinsic safety Ex ib/ia IIB/IIC with the following maximum values: For temperature class T4 and a maximally permissible outside ambient temperature of 80 °C: U _i : 30 V I _i : 130 mA P _i : 0,9 W	
For temperature class T4 and a maximally permissible outside ambient temperature of 60 °C: U _i : 22 V I _i : 66 mA P _i : 0,5 W	
The effective internal inductance Li left amounts to 9 µH, the effective capacity Ci against earth amounts to 10 nF and/or differential 6 nF. The supply and signal circuits are galvanically separate from earth and from all other electric circuits.	

**ELECTRO-PNEUMATIC POSITIONERS
PI991**

DESCRIPTION

The ADCATrol PI991 is a digital intelligent electronically configurable positioner with communication capabilities, designed for mounting to pneumatic linear or rotary actuators. Communication protocols include analog (4 to 20 mA) with or without superimposed HART communication, PROFIBUS PA and FOUNDATION Fieldbus-H1.

The advanced diagnostic can be partially shown on the local LCD of the positioner or fully on a PC or a DCS workstation with a DTM based software (VALcare or Valve Monitor).

The PI991 also has the capability to control a Partial Stroke Test (PST) that offers to operators a tool to identify the trouble-proof function of ESD (Emergency Shut Down) valves.



MAIN FEATURES

- Low operating cost.
- Compact and flexible design.
- Easy to commission with user-friendly interface.
- Status and diagnostic messages displayed on LCD.
- Integrated mechanical position indicator.
- Mounting onto any linear or rotary actuator.
- Single or double acting.

OPTIONS AND ACCESSORIES

- HART, Profibus PA or FOUNDATION Fieldbus-H1 communication.
- SIL3 certification.
- ATEX, FM, CSA and IECEx approvals.
- Stainless Steel housing for Offshore or Food and Beverage applications.
- Module for analog position feedback.
- Binary inputs and outputs.
- Digital position feedback with inductive switches (two or three-wire system).
- Digital position feedback with microswitches.
- Positioner with remote sensor.
- Sensors for supply air pressure and output pressure.
- Attachment kit for linear actuators acc. to IEC 534/NAMUR and rotary actuators acc. to VDI/VDE 3845.
- Connection manifold with gauges.
- Infrared Interface for wireless communication.
- Partial Stroke Test (PST) for Emergency Shut Down applications.

TECHNICAL DATA

GENERAL	
Material	Housing: AISI 316L / 1.4404 st. steel, 1,25 mm thick
IP rating	Protection class IP 66 NEMA 4X
Impact Resistance	7 Joule acc. to EN 50014
Pneumatic connections	Female threaded ISO 228 G 1/4"
Electrical connections	M20 x 1,5 Cable glands Screw terminals: max. 2.5 mm ²
Weight	Complete positioner: 3,5 kg

AMBIENT CONDITIONS	
Ambient temperature	-40 °C to 80 °C

AIR SUPPLY	
Air supply pressure	1,4 to 6 bar *
Supply air quality	According to ISO 8573-1
Max. particle size and density	Class 2
Max. oil contents	Class 3

* 1,4 to 7 bar with spool valve.

HART COMMUNICATION (TWO-WIRE SYSTEM)	
Reverse polarity protection	built-in standard feature
Signal range	4 to 20 mA
Operating range	3.6 to 21 mA
Voltage	12 to 36 V DC (unloaded circuit)
Maximum load	420 Ohms (8.4 V at 20 mA)
Communication signal	HART, 1200 Baud, FSK modulated on 4 to 20 mA

PROFIBUS-PA	
Data transfer	acc. to PROFIBUS- PA profile class B based on EN 50170 and DIN 19245 part 4

FOXCOM COMMUNICATION (DIGITAL OPERATING MODE)	
Input signal	digital
Supply voltage	13 to 36 V DC
Supply current	~ 9 mA at 24 V DC
Communication signal	FoxCom digital, 4800 Baud, FSK modulated on supply Voltage

INPUT SIGNAL	
Stroke range	8 to 260 mm
Angular range	Up to 95°

Remark: All "intelligent" versions are supplied with micro controller.

RESPONSE CHARACTERISTIC	
Sensitivity	< 0,1% of travel span
Non-linearity (terminal based adjustment)	< 0,4 % of travel span
Hysteresis	< 0,3 % of travel span
Supply air dependency	< 0,1 % / 1 bar
Temperature effect	< 0,3 % / 10 K
Mechanical effect	10 to 60 Hz up to 0,14 mm, 60 to 500 Hz up to 2 g: < 0,25 % of travel span

FIELDBUS COMMUNICATION (ACC. TO FISCO)	
Input signal	digital fieldbus
Supply voltage	9 to 32 V DC
Operating current	10.5 mA ±0.5 mA (base current)
Current amplitude	±8 mA
Fault current	base current +0 mA (+4 mA by means of independent FDE-safety circuit)

FOUNDATION FIELDBUS H1	
Data transfer	FF Specification Rev. 1.4, Link-Master (LAS)
Function blocks	AO, PID, Transducer, Resource, 2 x DI, DO

WITHOUT COMMUNICATION (4 TO 20 MA - TWO-WIRE SYSTEM)	
Reverse polarity protection	built-in standard feature
Signal range	4 to 20 mA
Operating range	3,8 to 21,5 mA
Voltage	DC 8 to 36 V (unloaded circuit)
Maximum load	300 Ohms (6 V at 20 mA)

Remarks: For full product specifications, including requirements for use in potentially explosive atmospheres, different communication protocols (Profibus PA and FOUNDATION Fieldbus-H1) and others, please consult.

**ELECTRO-PNEUMATIC POSITIONERS
TZIDC**

DESCRIPTION

The ADCATrol TZIDC is a digital intelligent electronically configurable positioner with communication capabilities designed for mounting to pneumatic linear or rotary actuators. It features a small and compact design, a modular construction, and an excellent cost-performance ratio.

Fully automatic determination of the control parameters and adaptation to the final control element yield considerable time savings and an optimal control behaviour.

MAIN FEATURES

- Low operating cost.
- Compact and flexible design.
- Easy to commission with user-friendly interface.
- Increased shock and vibration resistance with gearless sensor activation.
- Reliable and efficient, with integrated maintenance-friendly air filters.
- Automatic adjustment of control parameters during operation.
- Integrated mechanical position indicator.
- Wide operating temperature range (-40 to +85 °C).
- Mounting onto any linear or rotary actuator.
- Single or double acting.

OPTIONS AND ACCESSORIES:

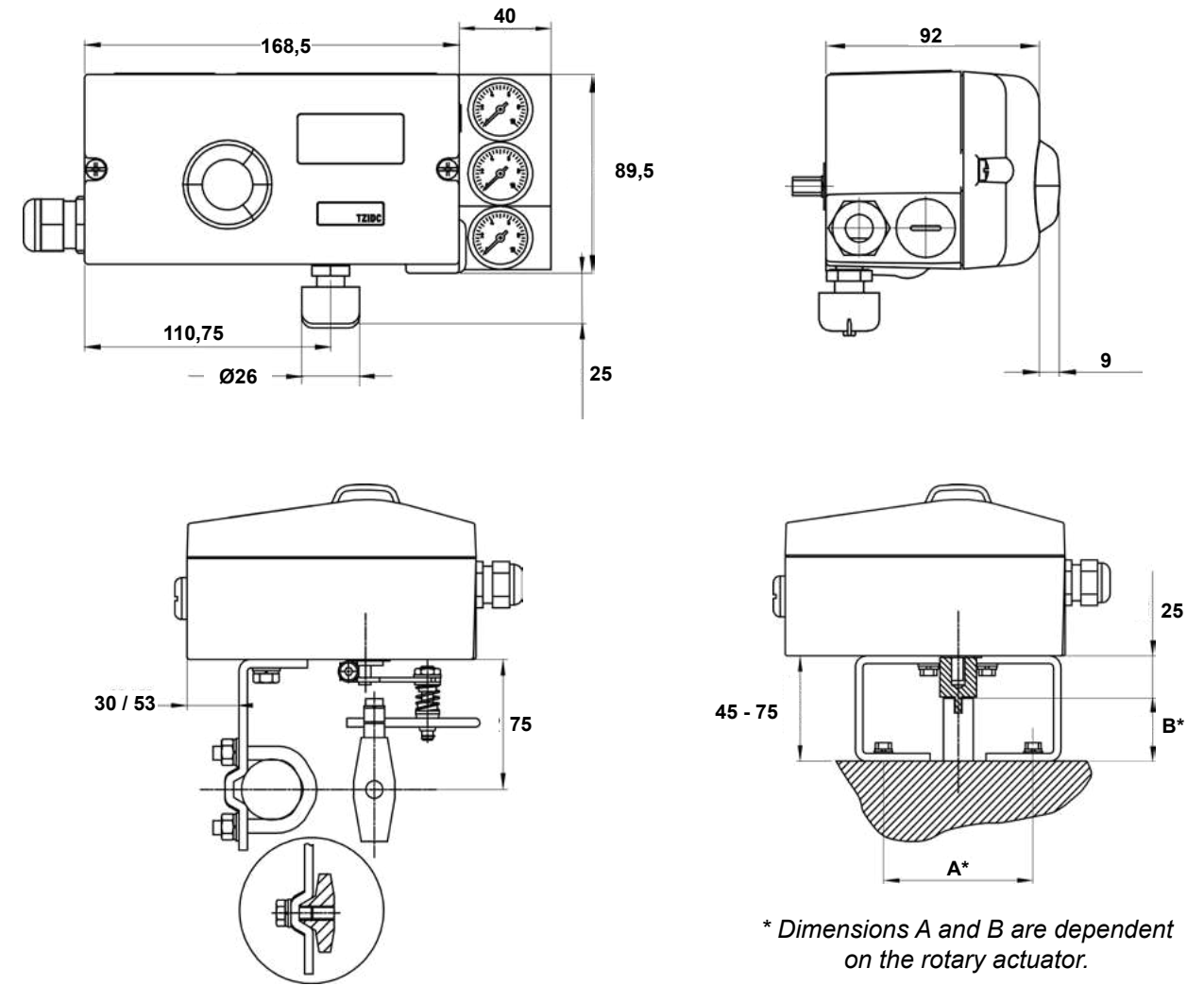
- HART, Profibus PA or FOUNDATION Fieldbus-H1 communication.
- ATEX, FM, CSA, GOST and IECEx approvals.
- SIL2 certification.
- Module for analog position feedback.
- Digital position feedback with inductive proximity switches.
- Digital position feedback with 24 V microswitches.
- Positioner with remote sensor.
- Attachment kit for linear actuators acc. to IEC 534/ NAMUR and rotary actuators acc. to VDI/VDE 3845.
- Connection manifold with gauges.
- PC adapters for communication.
- PC software for remote configuration and operation.

AVAILABLE MODELS:

TZIDC.



DIMENSIONS (mm)



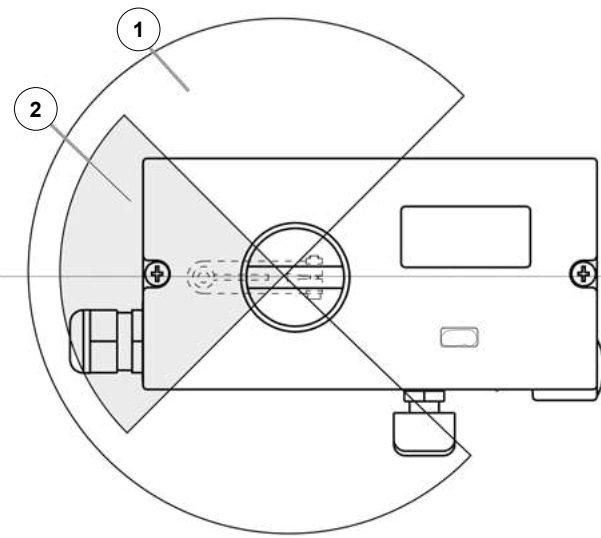
* Dimensions A and B are dependent on the rotary actuator.

TECHNICAL DATA

GENERAL	
Material	Aluminum with ≤ 0.1% copper
IP rating	Protection class IP 65 (IP 66 on request) NEMA 4X
Surface	Electrostatic dipping varnish with epoxy resin, stove-hardened
Pneumatic connections	Female threaded ISO 228 G 1/4"
Electrical connections	M20 x 1,5 Cable glands Screw terminals: max. 1.0 mm ² for options max. 2.5 mm ² for bus connector
Weight	1,7 kg
Mounting orientation	Any

DIRECTIVES AND COMMUNICATION	
Directives	Compliant with: - EMC directive 2004/108/EC from 12/2004 - EC Directive for CE conformity marking
Communication	- HART® protocol 5.9 as standard, optionally HART® protocol 7.4 - Profibus PA - FOUNDATION Fieldbus H1 - Local connector for LCI (not in explosion protection area) - HART communication via 20 mA signal line with (optional) FSK modem

TRAVEL	
Rotation angle	
Measuring range	270°
Working range (Fig.1)	Linear actuators: min. 25°, max. 45°
	Rotary actuators: min. 25°, max. < 270°
Travel limit	Min. and max. limits, freely configurable between 0 to 100% of total travel (min. range > 20%)
Travel prolongation	Range of 0 to 200 s, separately for each direction
Dead band time limit	Setting range of 0 to 200 s (monitoring parameter for control until the deviation reaches the dead band)



- 1 Measuring range
- 2 Operating range

Fig. 1 – Measuring and operating ranges

AIR SUPPLY *	
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 temp
Supply pressure **	1.4 to 6 bar
Air consumption ***	< 0.03 kg/h / 0.015 scfm

* Free of oil, water and dust, according to DIN/ISO 8573-1. Pollution and oil content according to Class 3.

** Do not exceed the maximum operating pressure of the actuator!

*** Independent of supply pressure.

TRANSMISSION DATA AND CONTRIBUTING FACTORS	
Output Y1	
Increasing	Increasing setpoint signal 0 to 100% Increasing pressure at output
Decreasing	Increasing setpoint signal 0 to 100% Decreasing pressure at output
Action (setpoint signal)	
Increasing	Signal 4 to 20 mA = Position 0 to 100%
Decreasing	Signal 20 to 4 mA = Position 0 to 100%

Characteristic curve (travel = f {setpoint signal}) *	
Deviation	≤ 0.5%
Tolerance band	0,3 to 10%, adjustable
Dead band	0,1 to 10%, adjustable
Resolution (A/D conversion)	> 16,000 steps
Sample rate	20 ms
Influence of ambient temp.	≤ 0.5% per 10 K
Reference temperature	20 °C
Influence of vibration	≤ 1% to 10 g and 80 Hz
Seismic vibration	Meets requirements of DIN/IEC 68-3-3 Class III for strong and strongest earthquakes

* Linear, equal percentage 1:25 or 1:50 or 25:1 or 50:1 and freely configurable with 20 reference points

AMBIENT CONDITIONS	
Ambient temperature	
During operation, storage and transport	-40 °C to 85 °C -25 °C to 85 °C -40 °C to 100 °C *
Relative humidity	
Operation (closed housing and air supply switched on)	95% (annual average), condensation permissible
Transport and storage	75% (annual average), non-condensing.

* Increased temperature range only with TZIDC Remote Sensor.

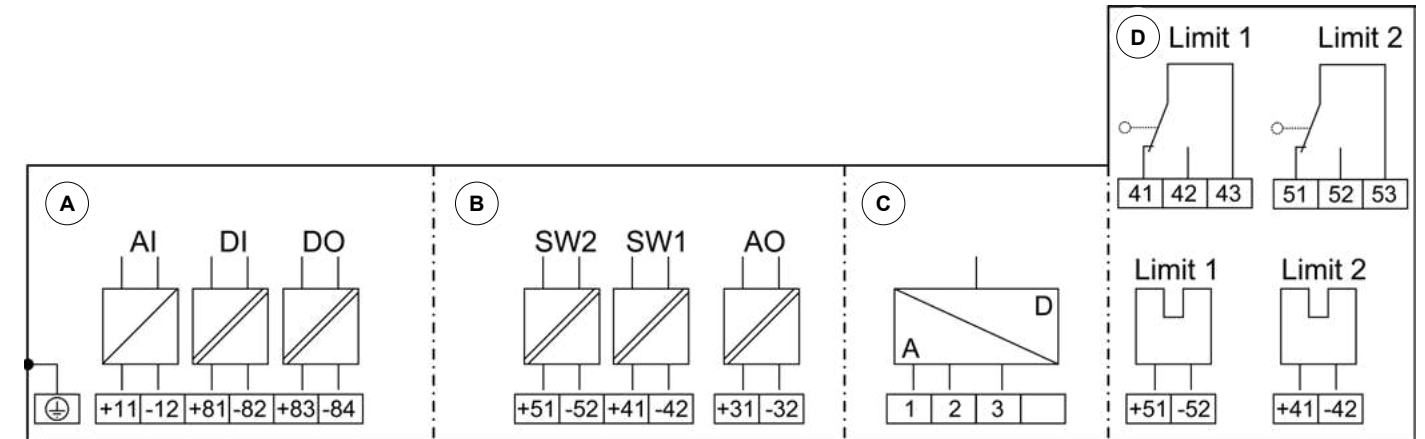
SAFETY INTEGRITY LEVEL	
TZIDC meets the following requirements	- Functional safety acc. to IEC 61508 - Explosion protection (depending on the model) - Electromagnetic compatibility acc. to EN 61000

Without the input signal, the pneumatic module in the positioner vents the drive and the installed spring in it moves the valve to a predetermined end position (OPEN or CLOSED).

SIL specific safety-related characteristics				
Device	SFF	PFDav	λ _{dd} + λ _s	λ _{du}
TZIDC with supply current 0 mA	94%	1.76 x 10 ⁻⁴	651 FIT	40 FIT

Remarks: Applies to applications with single-acting and depressurizing pneumatics.

ELECTRICAL CONNECTIONS
Positioner / TZIDC control unit connections



- A Basic device
- B Options

- C Connection TZIDC Remote Sensor / remote position sensor (only for TZIDC Control Unit version)
- D Limit value monitor with proximity switches or microswitches (not for TZIDC Control Unit version)

TERMINALS	
TERMINAL	DESCRIPTION
+11 / -12	Analog input
+81 / -82	Binary input DI
+83 / -84	Binary output DO2
+51 / -52	Digital feedback SW1 (optional module)
+41 / -42	Digital feedback SW2 (optional module)
+31 / -32	Analog feedback AO (optional module)
1 / 2 / 3	TZIDC remote sensor *
+51 / -52	Limit switch Limit 1 with proximity switch (optional)
+41 / -42	Limit switch Limit 2 with proximity switch (optional)
41 / 42 / 43	Limit switch Limit 1 with microswitch (optional)
51 / 52 / 53	Limit switch Limit 2 with microswitch (optional)

* Only for options TZIDC Remote Sensor or TZIDC for remote position sensor.

Remarks: The TZIDC can be fitted either with proximity switches or microswitches as limit switches. It is not possible to combine both variants. For the version TZIDC Control Unit with TZIDC Remote Sensor, the limit switches are located in the TZIDC Remote Sensor.

BINARY OUTPUT DO *	
Terminals	+83 / -84
Supply voltage	5 to 11 V DC (Control circuit in accordance with DIN 19234 / NAMUR)
Output "logical 0"	> 0,35 mA to < 1,2 mA
Output "logical 1"	> 2,1 mA
Direction of action	Configurable "logical 0" or "logical 1"

* Output configurable as alarm output by software.

ANALOG INPUT SIGNAL	
Set point signal (two-wire technology)	
Terminals	+11 / -12
Nominal operating range	4 to 20 mA
Split range config.	can be parameterized between 20 and 100% of the nominal operating range
Operating range limits	3.8 to 50 mA
Load voltage	9.7 V at 20 mA
Impedance	485 Ω at 20 mA

DIGITAL INPUT	
Function	- no function - move to 0% - move to 100% - hold previous position - block local configuration - block local configuration and operation - block any access (local or via PC)

BINARY INPUT DI	
Terminals	+81 / -82
Supply voltage	24 V DC (12 to 30 V DC)
Input "logical 0"	0 to 55 V DC
Input "logical 1"	11 to 30 V DC
Input current	Maximum 4 mA

OPTIONAL MODULES

MODULE FOR ANALOG FEEDBACK AO *

Terminals	+31 / -32
Signal range	4 to 20 mA (split ranges can be parameterized)
Supply voltage (two-wire technology)	24 V DC (11 to 30 V DC)
Characteristic curve	Rising or falling (configurable)
Deviation	< 1%

Remarks: Without any signal from the positioner (e.g. "no power", "initializing", or in the event of an error), the module sets the output to >20 mA (alarm level).

* The module for analog feedback and the module for digital feedback have separate slots and can be used together.

Assembly kits for limit monitor: Two proximity switches or microswitches for independent signaling of the actuator position, switching points are adjustable between 0 to 100%

LIMIT MONITOR WITH PROXIMITY SWITCHES 1, 2

Terminals	+41 / -42 and +51 / -52	
Supply voltage	5 to 11 V DC (Control circuit in accordance with DIN 19234 / NAMUR)	
Direction of action	Metal tag in proximity switch	Metal tag outside proximity switch
Type SJ2-SN (NC)	< 1.2 mA	> 2.1 mA

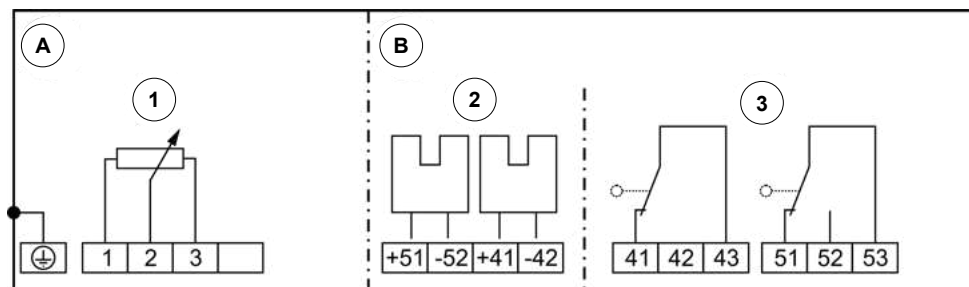
MODULE FOR DIGITAL FEEDBACK SW1, SW2 *

Terminals	+41 / -42 and +51 / -52
Supply voltage	5 to 11 V DC (Control circuit in accordance with DIN 19234 / NAMUR)
Output "logical 0"	< 1.2 mA
Output "logical 1"	> 2.1 mA
Direction of action	Configurable "logical 0" or "logical 1"
Description	2 software switches for binary position feedback (position adjustable within the range of 0 to 100%, ranges cannot overlap).

LIMIT MONITOR WITH 24V MICROSWITCHES 1, 2

Terminals	+41 / -42 and +51 / -52	
Supply voltage	Maximum 24 V AC/DC	
Load rating	Maximum 2 A	
Contact surface	10 µm Gold (AU)	

TZIDC Remote sensor electrical connections



- A** Basic device
- B** Options
- 1** Position sensor
- 2** Limit monitor with proximity switches (optional)
- 3** Limit monitor with microswitches (optional)

TERMINALS	
TERMINAL	DESCRIPTION / CONNECTION
1 / 2 / 3	TZIDC control unit
+51 / -52	Proximity switches Limit 1 (optional)
+41 / -42	Proximity switches Limit 2 (optional)
41 / 42 / 43	Microswitches Limit 1 (optional)
51 / 52 / 53	Microswitches Limit 2 (optional)

Remarks: The TZIDC Remote Sensor can be fitted either with proximity switches or microswitches as limit switches. It is not possible to combine both variants.

Remark: For full product specifications, including requirements for use in potentially explosive atmospheres, different communication protocols (Profibus PA and FOUNDATION Fieldbus-H1) and others, please consult.

**PNEUMATIC POSITIONERS
PP981**

DESCRIPTION

The ADCATrol PP981 is a pneumatic positioner used for direct operation of pneumatic linear or rotary actuators by means of pneumatic controllers with a 0,2 to 1 bar proportional control signal. 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.

The positioner features a compact design and a modular construction which allows easy attachment of options such as limit switches, analog feedback modules, manifolds, volume boosters, amongst others.

MAIN FEATURES

- Compact and flexible design.
- Mounting onto any linear or rotary actuator.
- Single or double acting.
- Supply pressure up to 6 bar.
- Adjustable amplification and damping.
- Independent adjustment of stroke range and zero position.
- Resistant to vibration effect in all directions.
- ATEX approvals.

OPTIONS AND ACCESSORIES

- Module for analog position feedback.
- Digital position feedback with inductive switches (two or three-wire system).
- Digital position feedback with microswitches.
- Attachment kit for linear actuators acc. to IEC 534/NAMUR.
- Attachment kit with rotary adaptor for rotary actuators acc. to VID/VDE 3845.
- Connection manifold with gauges.
- Volume boosters.



TECHNICAL DATA

GENERAL	
Material	Housing: Aluminium finished with DD-varnish grey blue; Cover: impact resistant polyester grey blue; Moving parts of feedback system: AISI 303 / 1.4305 or AISI 316Ti / 1.4571 Mounting bracket: AISI 304 / 1.4301
IP rating	Protection class IP 54 (IP 65 on request)
Pneumatic connections	Female threaded ISO 228 G 1/8"
Weight	Single acting without gauges: approx. 0,7 kg Single acting with gauges: approx. 0,8 kg Double acting: approx. 0,9 kg Attachment kit: For linear actuators: approx. 0,3 kg For rotary actuators: approx. 0,5 kg

AMBIENT CONDITIONS	
Ambient temperature	-40 °C to 80 °C
Relative humidity	Up to 100%
Operating conditions	According to IEC 654-1; The device can be operated at a class D2 location
Transport and storage temperature	-50 °C to 80 °C

RESPONSE CHARACTERISTIC *	
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
Temperature effect	< 0,3 % / 10 K

* Data based on the following parameters: stroke 30 mm, feedback lever 117,5 mm, max. amplification, air supply pressure 3 bar.

GAUGES	
Indication range	
Input	0 to 1,6 bar
Output	0 to 10 bar
Error limit	Class 1.6

INPUT SIGNAL	
Signal range	0,2 to 1 bar or split range down to Δw 0,2 bar
Stroke range	8 to 100 mm
Angular range	Linear: 30 ° to 120 ° Equal percentage: 90 °; from 70 ° linear

OUTPUT SIGNAL	
Output to actuator	0 to 100 % supply air pressure

AIR SUPPLY	
Air supply pressure	1,4 to 6 bar
Supply air	Free of oil, dust or water, according to IEC 654-2

AIR CONSUMPTION	
Single acting	With 1,4 bar air supply: 200 NI/h
	With 3 bar air supply: 400 NI/h
	With 6 bar air supply: 600 NI/h
Double acting	With 1,4 bar air supply: 350 NI/h
	With 3 bar air supply: 550 NI/h
	With 6 bar air supply: 750 NI/h

AIR OUTPUT	
Load effect *	
-3 % for delivery flow 2350 NI/h	
+3 % for exhausted flow 1900 NI/h	

* Measured with air supply 1,4 bar and 50% of the signal range.

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

OPTIONS AND ACCESSORIES

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 a)
Current consumption	Vane clear: > 3 mA Vane interposed: < 1 mA
Supply voltage	DC 8 V, Ri approx. 1 k Ω
Residual ripple	< 5 %
Permissible line resistance	< 100 Ω
Response characteristic b)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 1 % Switching point repeatability: < 0,2 %
Explosion protection c)	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 μ H Internal capacitance: 30 nF
Ambient temperature	Temperature class T6: - 40 to 65 °C T1 to T5: - 40 to 80 °C

a) For the standard version one switching amplifier is required. For the security version, a fail-safe amplifier for each inductive proximity sensor is required; Operating mode minimum (= low) / maximum (= high) selectable by adjustment of switch vanes; Operating mode normally closed circuit / normally open circuit selectable at switch amplifier output.

b) For feedback lever effective length 117,5 mm, stroke 30 mm (1,28 in) and maximum gain.

c) National installation regulations must be observed; For retrofitting the product must be tested by a qualified inspector as a special version in accordance with ElexV.

LIMIT SWITCH ASSEMBLY WITH MICROSWITCHES	
Input	Stroke / angle from actuator via positioner feedback lever
Output	2 micro switches f)
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 (refer to the following table)	

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

Response characteristic g)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 2,5 % Switching point repeatability: < 0,2 %
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f) Operating mode minimum (= low) / maximum (= high) selectable by adjustment of switch vanes; Contact closed within the positive range.

g) For feedback lever effective length of 117,5 mm, stroke 30 mm and maximum gain.

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 d)
Supply voltage US	DC 10 to 30 V
Residual ripple	\pm 10 %, $U_S = 30$ V
Switching frequency	2 kHz
Constant current	100 mA
Response characteristic e)	Gain: continuously adjustable from 1:1 to approx. 7:1 Switching differential: < 1 % Switching point repeatability: < 0,2 %

d) Operating mode minimum (= low) / maximum (= high) selectable by adjustment of switch vanes; Contact closed within the positive range.
e) For feedback lever effective length 117,5 mm, stroke 30 mm and maximum gain.

ANALOG POSITION FEEDBACK	
Sensor	Resistive precision conductive plastic element.
Input	Stroke/angle from actuator via position feedback lever; Stroke range: 15 to 80 mm (< 15 mm on request) Angular range: 60° to 120°
Output	Two-wire system; Signal range: 4 to 20 mA
Permitted load	$R_{Bmax} = (U_S - 12 V) / 0,02A$ ($U_S =$ Supply voltage)
Power supply	Supply voltage: DC 12 to 36 V Permitted ripple: < 10 % p.p. Supply voltage dependency: < 0,2 %
Response characteristic h)	Non-linearity with terminal based setting: < 1,0 % F.S. Hysteresis: < 0,5 % F.S. External resistance dependency: < 0,2 % / ΔR_{Bmax} Temperature effect: < 0,3 % / 10 K
Explosion protection i)	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 μ H Internal capacitance: to earth 10 nF or 6 nF differential
Ambient temperature	Temperature class T6: - 40 to 40 °C Temperature class T5: - 40 to 55 °C Temperature class T4: - 40 to 80 °C

h) For feedback lever effective length of 117,5 mm, stroke 30 mm and maximum gain.

i) National installation regulations must be observed; For retrofitting the product must be tested by a qualified inspector as a special version in accordance with ElexV.

COMMON DATA FOR OPTIONS AND ACCESSORIES

GENERAL	
IP rating	Protection class IP 54; IP 65 on request
Mounting	Attachment to positioner
Electrical connections	Line entry: 1 or 2 cable glands M20 x 1,5 (others with Adapter AD-...) Cable diameter: 6 to 12 mm Screw terminals: max. 2.5 mm ² (AWG14)
Materials	Base plate: galvanized steel Control vane: aluminium Setting mechanism: fibre glass-reinforced polyamide

AMBIENT CONDITIONS	
Ambient temperature j)	- 25 to 80 °C; - 40 to 80 °C
Relative humidity	Up to 100%
Operating conditions	According to IEC 654-1; The device can be operated at a class D2 location
Transport and storage temperature	- 40 °C to 80 °C

j) Without explosion protection; - 40 to 80 °C for the fail-safe version of inductive limit switch.

CE MARKING

Electromagnetic compatibility	89/336/EWG
Low-voltage regulation	w/o Ex: 73/23/EWG (with Ex: not applicable)

ELECTROMAGNETIC COMPATIBILITY (EMC)

Operating conditions	Industrial environment
Immunity	Acc. to NAMUR recommendation NE21, EN 61326 and EN 61000-6-2
Emission	According to EN 55011, Group 1, Class A and EN 61000-6-2

SAFETY

Acc. to DIN EN 61010-1 (DIN IEC 61010-1) (VDE 0411 part 1)	safety class III; over voltage category I; internal fuses: none; external fuses: Limitation of power supplies for fire protection has to be observed due to EN 61010-1 9.3.
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**ELECTRO-PNEUMATIC CONVERTERS
PC25**

DESCRIPTION

The ADCATrol PC25 is a compact device which converts a standard analog signal to a standard pneumatic signal, for the change-over between electrical controllers to pneumatic control valves, or from electrical measuring systems to pneumatic controllers. The PC25 is a force balance device, which converts a 4 to 20 mA input signal into a proportional linear 0,2 to 1 bar output signal, with a respective supply pressure of 1,7 to 5 bar.



MAIN FEATURES

Particularly compact design.
Good dynamic response.
Immune to mechanic vibrations.
Low maintenance and low consumption.
High reliability.
Adjustable output measuring span.

OPTIONS: Pressure gauge on body.
Other output pressure ranges.

AVAILABLE MODELS: PC25.

SIZES: 1/4".

CONNECTIONS: Female threaded NPT.

INSTALLATION: In any position.
See IMI – Installation and maintenance instructions.

TECHNICAL DATA

GENERAL	
Operating temperature	-40 to +85 °C
IP rating	IP 65
Electric connections	DIN 43650, form A
Pneumatic connections	Female threaded 1/4" NPT
Material	Passivated zinc die-casting epoxy painted, NBR diaphragms, Glass reinforced PA cover.
Operating position	Any
Weight	1 kg

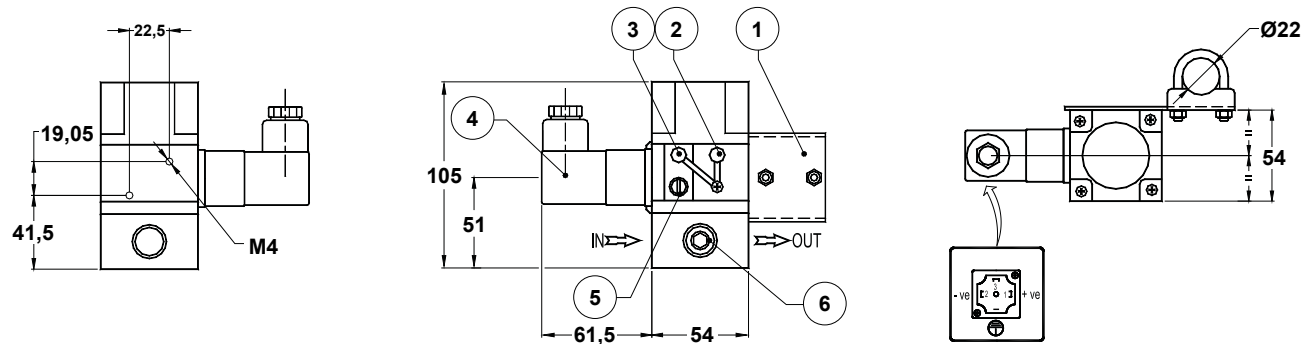
AIR SUPPLY *	
Purity	Max. particle size: 5 µm Max. particle density: 5 mg/m ³
Oil content	Max. concentration: 1 mg/m ³
Supply pressure **	1,7 to 5 bar
Air consumption	2,8 NI/min @ 1 bar

* Free of oil, water and dust, according to DIN/ISO 8573-1.
** Do not exceed the maximum operating pressure of the actuator!

ANALOG INPUT SIGNAL	
Nominal operating range	4 to 20 mA
Impedance	11 kΩ at 20 mA
Span/zero	Up to 20% of output range, adjustable
Failure mode	Output pressure fails to zero signal state

PNEUMATIC OUTPUT SIGNAL	
Output pressure	0,2 to 1 bar (others on request)
Flow capacity	> 300 NI/min, forward & relief
Linearity	≤ 0,5% of span
Hysteresis	≤ 0,5% of span
Response time	< 0,5 seconds for a 10 to 90% or 90 to 10% of output pressure into a 10cc load
Supply sensitivity	<0,075% span output change per % supply pressure change

DIMENSIONS (mm)



MATERIALS	
POS. N°	DESIGNATION
1	Mounting bracket
2	Range adjusting screw
3	Zero adjusting screw
4	Electrical connector *
5	Removable orifice
6	Gauge connection
7	Pressure gauge *
8	Filter regulator

* Optional.

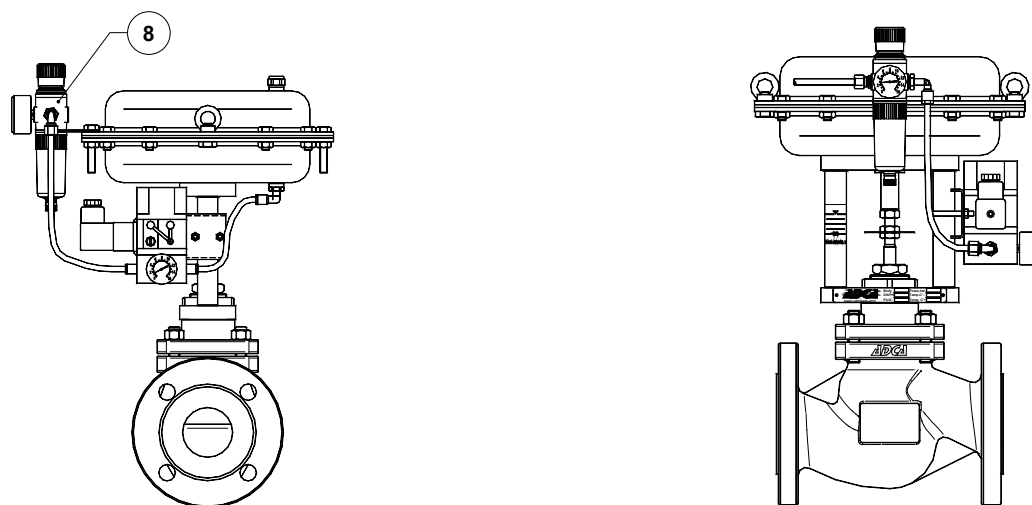
CALIBRATION

When the instrument is first installed or after a long downtime period, a moderate zero shift is normal. This is due to the rubber diaphragms which are stretched by the internal springs. After a few operations, the instrument will settle into its normal operating condition. In these circumstances, the instrument should be put to work by alternately applying zero and full scale signals several times. Zero calibration should then be carried out. Adjust zero control n°2 (anti-clockwise) to give minimum required output pressure. Adjust range control n°3 (anti-clockwise) to give maximum required output pressure.

Note: Reverse acting operation.

About 20 turns of the zero screw may be required to reset the zero point.

TYPICAL INSTALLATION



**AIR FILTER REGULATOR
P10**

DESCRIPTION

The P10 air filter regulators are used to remove both solid and liquid impurities from the air and to regulate the output pressure to the required value for general purpose pneumatic systems. The filter bowl is transparent, allowing easy monitoring of the condensate level.

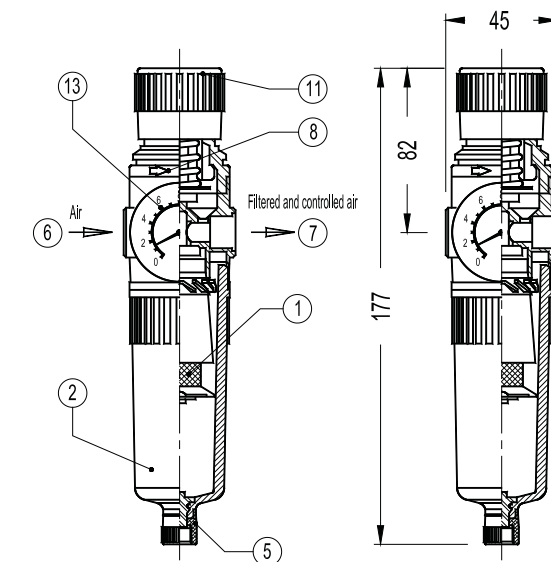
MAIN FEATURES

Self relieving.
Compact combined filter/regulator.
5 micron large surface area element.
Manual and automatic condensate exhaustion are easier when there is no pressure.
Pressure gauge D.42 x 1/8"

USE: Pneumatic systems.

AVAILABLE MODELS: P10 – aluminium and polycarbonate.

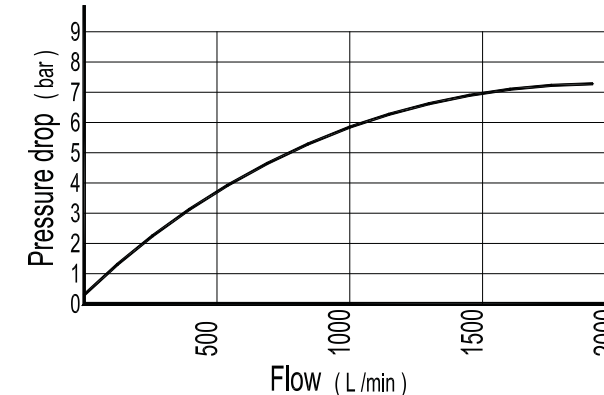
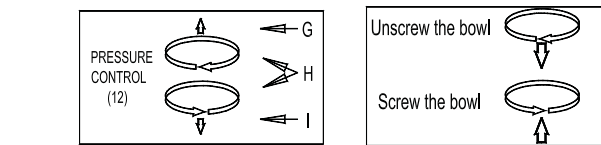
SIZE AND CONNECTION: Female threaded ISO 7 Rp 1/4".



LIMITING CONDITIONS	
Valve model	P10
Maximum upstream pressure	12 bar
Maximum downstream pressure	10 bar
Minimum downstream pressure	0,5 bar
Maximum design temperature	60 °C
Minimum operating temperature	-10 °C

MATERIALS	
POS. N°	DESIGNATION
1	Filtering element
2	Bowl (with bowl guard included)
5	Exhaust ring
6	Air inlet connection
7	Low pressure air outlet
8	Flow indicator arrow
11	Pressure regulating knob
13	Pressure gauge

* Available spare parts.



**UNIVERSAL PROCESS CONTROLLERS
UC-820**

DESCRIPTION

The ADCATrol UC-820 is a digital universal controller used in the automation of industrial processes. It is ideally suited for use with our range of instrumentation, electric and pneumatic control valves and other electrical equipment.

The controller includes a set of universal type inputs for RTD, thermocouple (TC), logic (binary) and analog inputs. The controller has options for relay, open-collector (OC) and analog outputs using the innovative SMART PID algorithm.

MAIN FEATURES

Universal measuring input: Resistance thermometer (RTD), thermocouples (TC), 0(4) to 20 mA and 0 to 5/10 V.

Set point value: constant, programmed or from the additional analog input.

On/off, PID, PID three-step and two-step control (valve control) or PID of heating-cooling type.

2 NO relay alarm outputs and 2 other outputs of choice between relay, OC or analog outputs (0/4 to 20 mA or 0 to 10 V).

Binary input control.

Soft-start function.

8 types of alarm functions.

24 V DC supply output to power transmitters and others.

Signal retransmission.

“Gain scheduling” and timer functions.

Auto-tuning using the smart PID algorithm.

Galvanically isolated inputs and outputs.

Password protection.

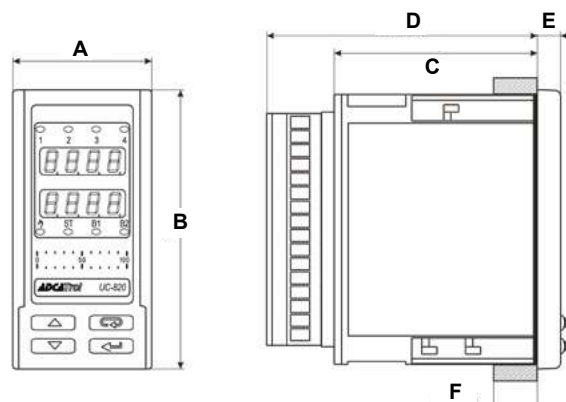
Fully programmable from the front panel.

RS-485 Modbus RTU communication.

IP rating IP 65.

AVAILABLE

MODELS: UC-820.



DIMENSIONS (mm)							
MODEL	A	B	C	D	E	F	WEIGHT (kg)
UC-820	48	96	93	70	8	15	0,2

TECHNICAL DATA

GENERAL	
Supply voltage	85 to 253 V AC/DC or 20 to 40 V AC/DC
Ambient temperature	0 to 55 °C
Storage temperature	-20 to +70 °C
Humidity	< 85%, non condensing
IP rating	IP 65 (front); IP 20 (rear)
Material	Housing in PC/ABS
Front panel	96 x 48 mm (cutout: 92 x 45 mm)
Operating position	Any
External magnetic field	0 to 400 A/m

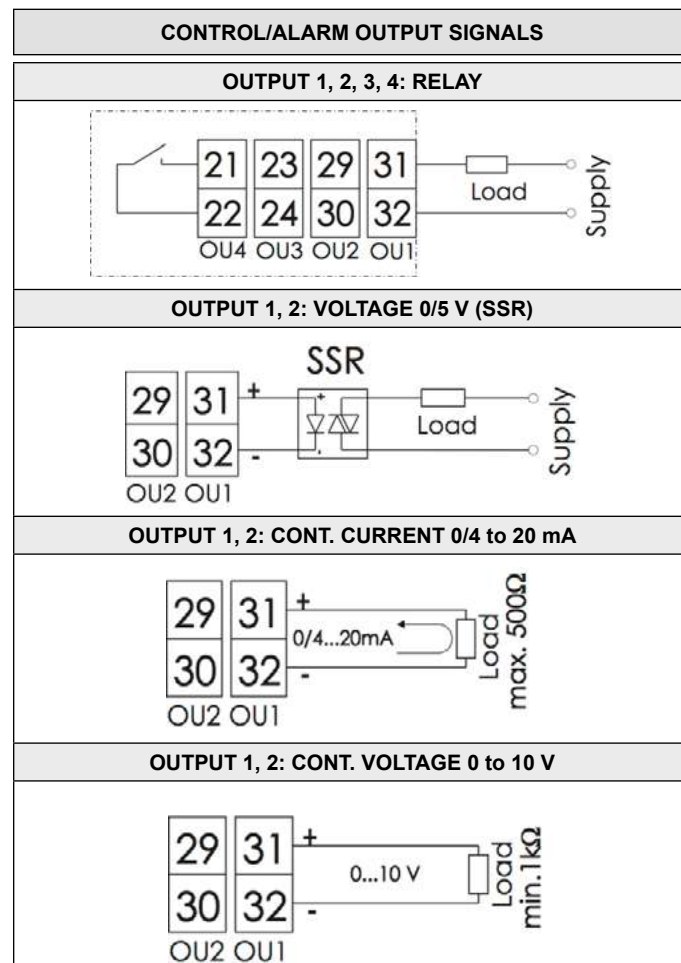
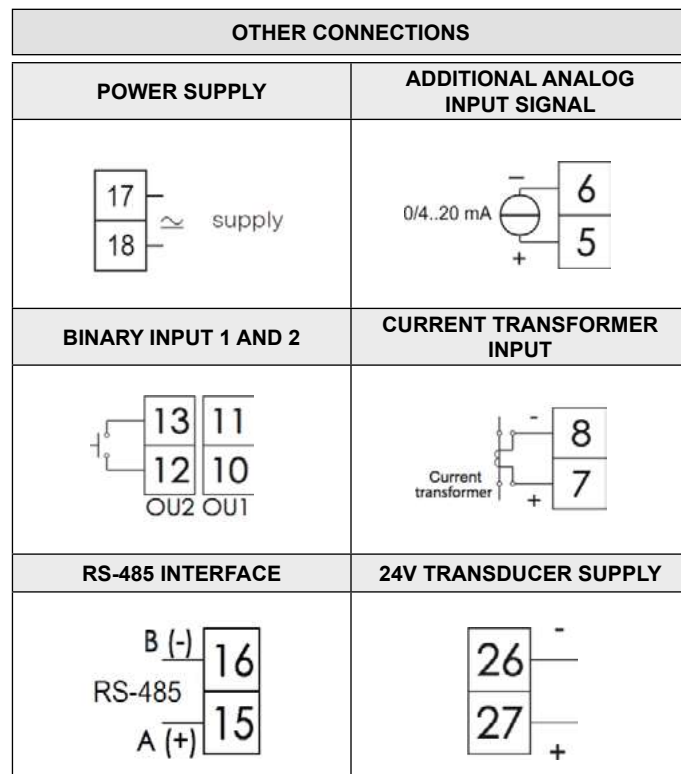
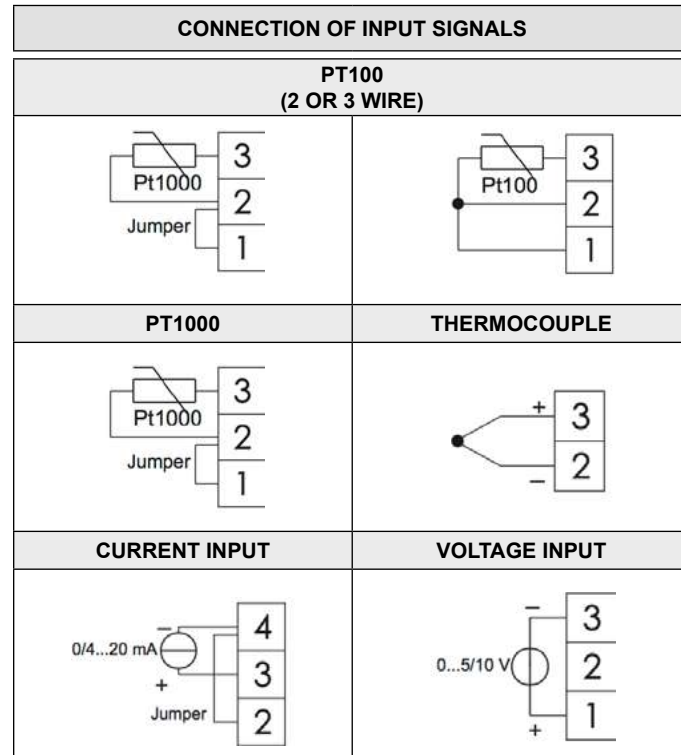
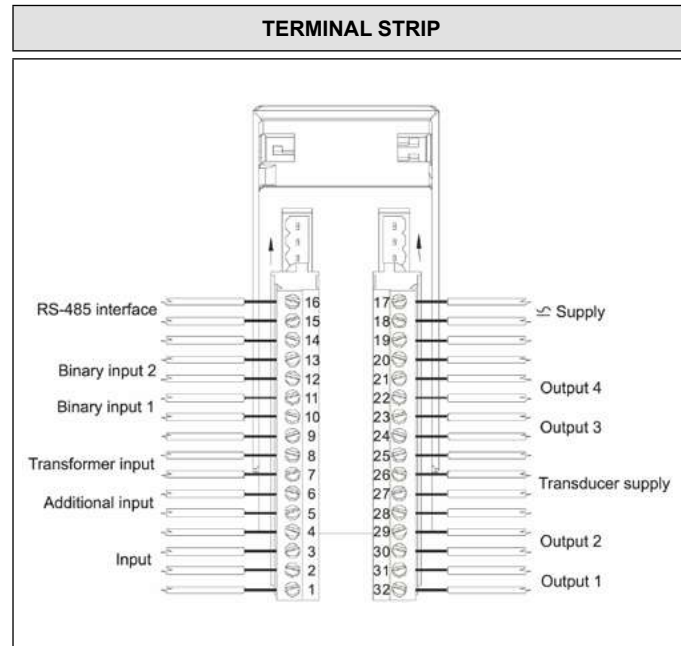
OUTPUTS	
Relay	NO volt free contacts, 2 A @ 230 V AC 2 change-over volt free contacts 0.5 A @ 230 V AC
OC open-collector	0/5 V, passive NPN, 40 mA max.
Continuous voltage	0 to 10 V, 1 kΩ min.
Continuous current	0(4) to 20 mA, 500 Ω max.
Transducer supply	24 V DC, 30 mA max.

DIGITAL INTERFACE	
Interface type	RS-485
Protocol	Modbus RTU 8N2, 8E1, 8O1, 8N1
Baud rate	4.8, 9.6, 19.2, 38.4, 57.6 kbit/s

INPUTS	
PT100	-200 to 850 °C, 0,2% error
PT1000	-200 to 850 °C, 0,2% error
Fe-CuNi (J)	-100 to 1200 °C, 0,3% error
Cu-CuNi (T)	-100 to 400 °C, 0,3% error
NiCr-NiAl (K)	-100 to 1372 °C, 0,3% error
PtRh10-Pt (S)	0 to 1767 °C, 0,5% error
PtRh13-Pt (R)	0 to 1767 °C, 0,5% error
PtRh30-PtRh6 (B)	200 to 1767 °C, 0,5% error
NiCr-CuNi (E)	-100 to 1000 °C, 0,3% error
NiCrSi-NiSi (N)	-100 to 1300 °C, 0,3% error
Current input (I)	0(4) to 20 mA, 0,2% ± 1 digit error
Voltage input (U)	0 to (5)10 V, 0,2% ± 1 digit error
Binary	Voltageless
Additional current input	0(4) to 20 mA, 0,2% ± 1 digit error

SAFETY AND COMPATIBILITY REQUIREMENTS	
Electromagnetic compatibility	Noise immunity acc. to EN 61000-6-2
	Noise emissions acc. to EN 61000-6-4
Pollution level	Level 2 acc. to EN 61010-1
Installation category	Cat. III acc. to EN 61010-1
Maximal phase-to-earth operating voltage	Supply circuit: 300 V; Remaining circuits: 50 V acc. to EN 61010-1

ELECTRICAL CONNECTIONS



ORDERING CODES UC-820					
Group designation	UC820	.1	3	1	.1
Universal process controller	UC820				
Output 1					
Relay		.1			
OC open collector 0/5 V		.2			
Continuous current 0(4) to 20 mA		.3			
Continuous voltage 0 to 10 V		.4			
Output 2					
Relay a)			1		
OC open-collector 0/5 V			2		
Continuous current 0(4) to 20 mA			3		
Continuous voltage 0 to 10 V			4		
24 V Transducer supply					
24 V DC supply for transducers, 1 W				1	
Power supply					
85 to 253 V AC/DC					.1
20 to 40 V AC/DC					.2

a) Only admissible when a relay or OC voltage output is selected on output 1.

**UNIVERSAL DISPLAY
UD-720**

DESCRIPTION

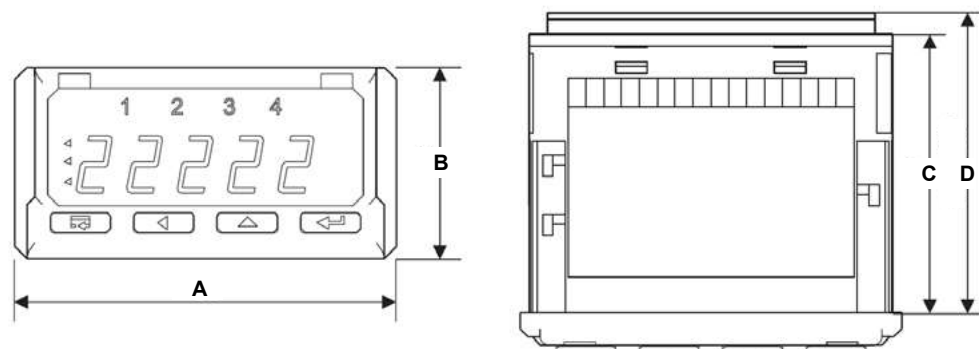
The ADCATrol UD-720 is a programmable digital panel display used for the measurement of standard sensor and analog signals applied in automation. It is ideally suited for use with our range of instrumentation such as pressure transmitters, temperature probes and others. The unit features a 24 V DC supply output for transmitters.

MAIN FEATURES

- Easy to commission with user-friendly interface.
- Measuring inputs for resistance thermometer (RTD), thermocouples (TC), 0(4) to 20 mA, 0 to 10 V, 0 to 60 mV and resistance (Ω).
- 2 NO relay alarm outputs.
- 6 types of alarm functions.
- 24 V DC supply output to power transmitters and others.
- Three color display (14 mm high) with programmable color settings based on the measured value.
- 21-point individual characteristic function for input rescaling and conversion.
- Galvanically isolated inputs and outputs.
- Fully programmable from the front panel.
- Password protection.
- IP rating IP 65.

- OPTIONS:**
- Change-over relay alarm outputs.
 - 0(4) to 20 mA and 0 to 10 V outputs for retransmission of any of the measured inputs.
 - RS-485 Modbus RTU communication.

AVAILABLE MODELS: UD-720.



DIMENSIONS (mm)					
MODEL	A	B	C	D	WEIGHT (kg)
UD-720	96	48	67	93	0,2

TECHNICAL DATA

GENERAL	
Supply voltage	85 to 253 V AC/DC or 20 to 40 V AC/DC
Ambient temperature	-25 to +55 °C
Storage temperature	-30 to +70 °C
IP rating	IP 65 (front); IP 10 (rear)
Material	Housing in PC/ABS
Humidity	< 85% without condensation
Front panel	96 x 48 mm (cutout: 92 x 45 mm)
Operating position	Any
External magnetic field	0 to 400 A/m

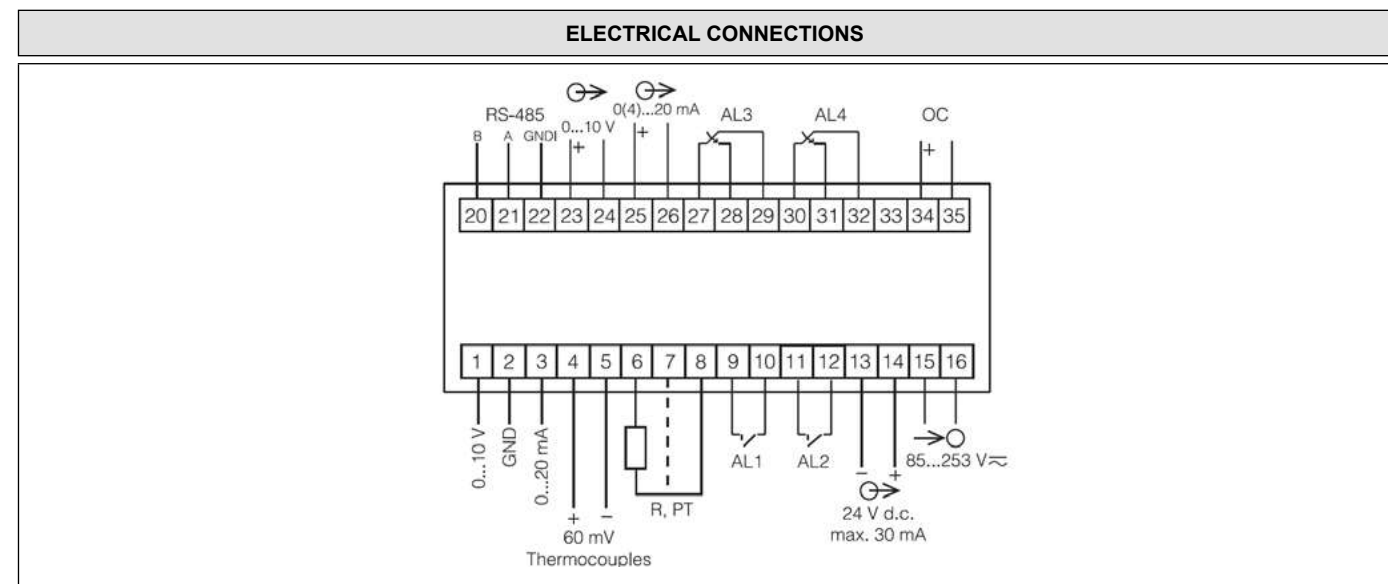
OUTPUTS	
Relay	2 NO volt free contacts, 0,5 A @ 250 V AC 2 change-over volt free contacts 0.5 A @ 230 V AC
OC open-collector	Passive NPN, 30 mA @ 30 V DC
Continuous voltage	0 to 10 V, 500 Ω min.
Continuous current	0(4) to 20 mA, 500 Ω max.
Transducer supply	24 V DC, 30 mA max.

DIGITAL INTERFACE	
Interface type	RS-485
Protocol	Modbus RTU 8N2, 8E1, 8O1, 8N1
Baud rate	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbit/s

INPUTS *	
PT100	-200 to 850 °C
PT500	-200 to 850 °C
PT1000	-200 to 850 °C
Fe-CuNi (J)	-100 to 1200 °C
NiCr-NiAl (K)	-100 to 1372 °C
PtRh10-Pt (S)	0 to 1767 °C
PtRh13-Pt (R)	0 to 1767 °C
NiCr-CuNi (E)	-100 to 1000 °C
NiCrSi-NiSi (N)	-100 to 1300 °C
Current input (I)	-20 to 20 mA
Voltage input (U)	-10 to 10 V
mV input (mV)	0 to 60 mV

* Class 0.1.
Additional errors:
Due to automatic compensation of the reference junction temperature: $\leq 1^\circ\text{C}$.
Due to automatic compensation of the cable resistance for RTDs: $\leq 0.5^\circ\text{C}$.
Due to automatic compensation of the cables for resistance measurement: $\leq 0.2 \Omega$.
From temperature changes: 100% of the class / 10 K.

SAFETY AND COMPATIBILITY REQUIREMENTS	
Electromagnetic compatibility	Noise immunity acc. to EN 61000-6-2
	Noise emissions acc. to EN 61000-6-4
Pollution level	Level 2 acc. to EN 61010-1
Installation category	Cat. III acc. to EN 61010-1
Maximal phase-to-earth operating voltage	Supply circuit: 300 V; Remaining circuits: 50 V acc. to EN 61010-1





ORDERING CODES UD-720			
Group designation	UD720	.1	.0
UD-720 universal display	UD720		
Power supply			
85 to 253 V AC/DC		.1	
20 to 40 V AC/DC		.2	
Additional outputs			
No additional outputs			.0
OC open-collector output, RS-485 and analog outputs			.1
OC open-collector output, RS-485, analog outputs and 2 change-over relay outputs			.2