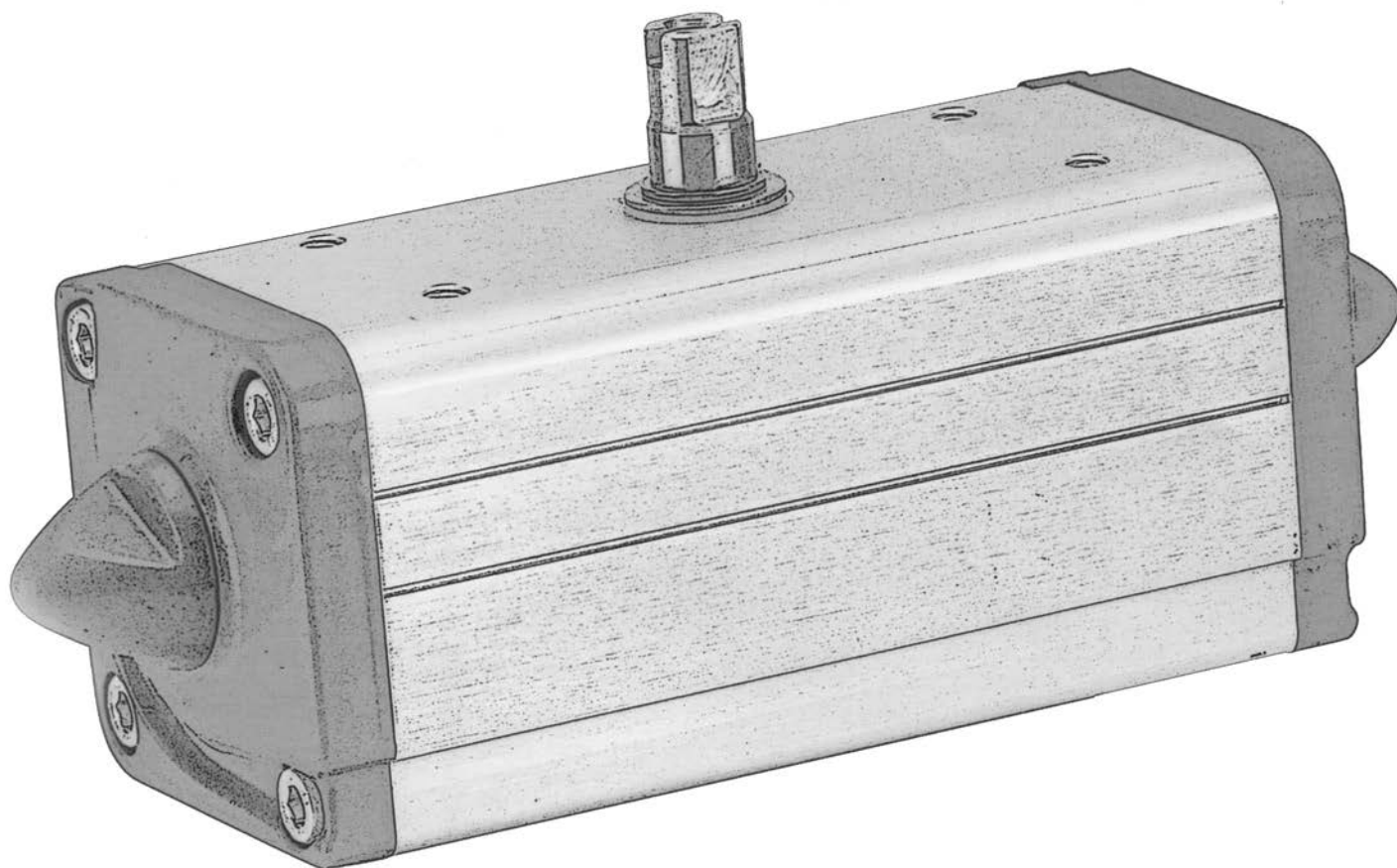


PASCO

PNEUMATIC ACTUATOR

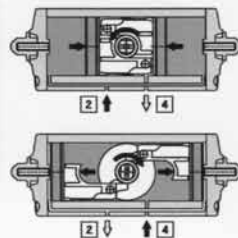


PASCO

Double Acting for valve open and close operation and Cycle Regulation.



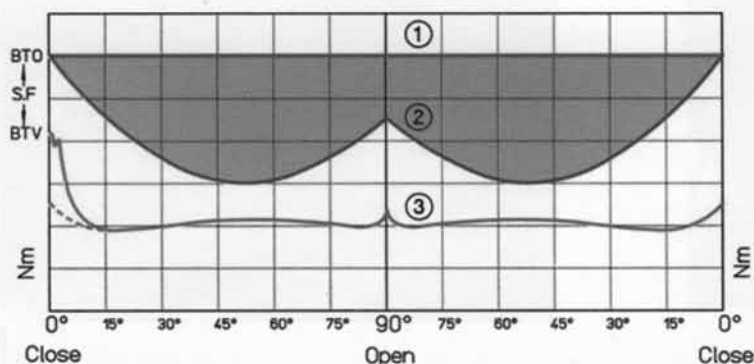
ISO 5211



CODE	NOMINAL TORQUE Nm at 5,6 Bar	ISO FLANGE	A	B	C depth	D depth	E depth	Number of screws	X / 2	Air Consumption l/cycle
DAN008401S	8	F03	36	-	M5 - 8	-	9 - 10	4	45°	0,034
DAN015401S	15	F03	36	-	M5 - 8	-	11 - 13	4	45°	0,08
		F04	42	-	M5 - 8	-				
DAN030401S	30	F03 - F05	36	50	M5 - 8	M6 - 9	11 - 13	4	45°	0,15
		F04	42	-	M5 - 8	-				
DAN060401S	60	F04	42	-	M5 - 8	-	14 - 16	4	45°	0,30
DAN060402S		F05 - F07	50	70	M6 - 9	M8 - 12	17 - 19	4	45°	0,55
DAN106401S	106	F05 - F07	50	70	M6 - 9	M8 - 12	17 - 19	4	45°	0,55
DAN180401S	180	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	0,95
DAN240401S	240	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	1,3
DAN360401S	360	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	1,8
DAN480401S	480	F10 - F12	102	125	M10 - 15	M12 - 18	27 - 29	4	45°	2,6
DAN720401S	720	F10 - F12	102	125	M10 - 15	M12 - 18	27 - 29	4	45°	3,5
DAN960401S	960	F10-12	120	125	M10 - 15	M12 - 18	36 - 38	4	45°	4,9
		F14	140	-	M16 - 24	-				
DAN1440401S	1440	F12	125	-	M12 - 18	-	36 - 38	4	45°	7,6
		F14	140	-	M16 - 24	-				
DAN1920401S	1920	F12 - F16	125	165	M12 - 18	M20 - 30	46 - 48	4	45°	10,2
		F14	140	-	M16 - 24	-				
DA2880E16DOA	2880	F16	165	-	M20 - 30	-	46 - 48	4	45°	20,0
DA3840E1600A	3840	F16	165	-	M20 - 30	-	46 - 48	4	45°	24,3
DA5760E25DOA	5760	F25	254	-	M16 - 24	-	55 - 58	8	22,5°	38,0
DA8000E25DOA	8000	F25	254	-	M16 - 24	-	55 - 58	8	22,5°	50,0

Scotch Yoke System: a technical choice

Scotch Yoke 5° Off-Set actuator converts the energy supplied to the pistons in a NON LINEAR variable torque: the highest value corresponds to the start position, the lowest to the middle run phase while for the closing torque increases up to an intermediate value.



Energy Saving System (A and B graph)

The two diagrams (to the left, double acting actuator; on the page 8, spring return actuator) show the torques development during the valve cycle.

1: Rack & Pinion flat torque,

2: Scotch Yoke torque,

3: Represents the typical valve torque

The blue area determined by the difference between the areas defined by Rack & Pinion and Scotch Yoke diagrams shows the Motive Energy Saving. This can be easily verified comparing the compressed air consumption stated in our data table and any Rack & Pinion manufacturer.

BTv: Break Torque Valve, BTO: Break Torque Open

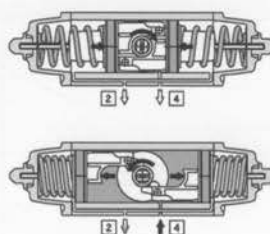
S.F: Safety Factor

PASCO

OUTPUT TORQUE TABLE (Nm) α° = ROTATION ANGLE

SIZE	α°	3 bar	4 bar	5 bar	5,6 bar	6 bar	7 bar	8 bar
DA 8	0°	4,3	5,7	7,1	8,0	8,6	10,0	11,4
	45°	2,1	2,8	3,6	4,0	4,3	5,0	5,7
	90°	4,3	5,7	7,1	8,0	8,6	10,0	11,4
DA 15	0°	8,0	10,7	13,4	15,0	16,1	18,8	21,4
	50°	4,0	5,4	6,7	7,5	8,0	9,4	10,7
	90°	6,0	8,1	10,1	11,3	12,1	14,1	16,1
DA 30	0°	16,1	21,4	26,8	30,0	32,1	37,5	42,9
	50°	8,0	10,7	13,4	15,0	16,1	18,8	21,4
	90°	12,0	16,1	20,1	22,5	24,1	28,1	32,1
DA 60	0°	32,1	42,9	53,6	60,0	64,3	75,0	85,7
	50°	16,1	21,4	26,8	30,0	32,1	37,5	42,9
	90°	24,1	32,1	40,2	45,0	48,2	56,3	64,3
DA 106	0°	56,8	75,7	94,6	106,0	113,6	132,5	151,4
	50°	28,4	37,9	47,3	53,0	56,8	66,3	75,7
	90°	42,9	57,1	71,4	80,0	85,7	100,0	114,3
DA 180	0°	96,0	128,4	160,8	180,0	193,2	225,6	264,8
	50°	48,0	64,8	80,4	90,0	96,0	112,8	128,4
	90°	72,0	97,2	121,2	135,0	145,2	169,2	193,2
DA 240	0°	128,6	171,4	214,3	240,0	257,1	300,0	342,9
	50°	64,3	85,7	107,1	120,0	128,6	150,0	171,4
	90°	96,4	128,6	160,7	180,0	192,9	225,0	257,1
DA 360	0°	192,0	256,8	321,6	360,0	386,4	451,2	513,6
	50°	96,0	129,6	160,8	180,0	192,0	225,6	264,8
	90°	144,0	194,4	242,4	270,0	290,4	338,4	386,4
DA 480	0°	257,1	342,9	428,6	480,0	514,3	600,0	685,7
	50°	128,6	171,4	214,3	240,0	257,1	300,0	342,9
	90°	192,9	257,1	321,4	360,0	385,7	450,0	514,3
DA 720	0°	384,0	513,6	643,2	720,0	772,8	902,4	1027,2
	50°	192,0	259,2	321,6	360,0	384,0	451,2	529,6
	90°	288,0	388,8	484,8	540,0	580,8	676,8	772,8
DA 960	0°	514,3	685,7	857,1	960,0	1028,6	1200,0	1371,4
	50°	257,1	342,9	428,6	480,0	514,3	600,0	685,7
	90°	385,7	514,3	642,9	720,0	771,4	900,0	1028,6
DA 1440	0°	768,0	1027,2	1286,4	1440,0	1545,6	1804,8	2057,4
	50°	384,0	518,4	643,2	720,0	768,0	902,4	1059,2
	90°	576,0	777,6	969,9	1080,0	1161,6	1353,6	1545,6
DA 1920	0°	1028,6	1371,4	1714,3	1920,0	2057,1	2400,0	2742,9
	50°	514,3	685,8	857,1	960,0	1028,6	1200,0	1371,4
	90°	771,4	1028,6	1285,7	1440,0	1542,9	1800,0	2057,1
DA 2880	0°	1543	2057	2571,4	2880	3085,7	3600	4114,3
	50°	771,4	1028,6	1285,7	1440	1543	1800	2057,1
	90°	1157	1543	1928,6	2160	2314,3	2700	3085,7
DA 3840	0°	2050	2840	3425	3840,0	4110	4800,0	5485
	50°	1025	1370	1710	1920,0	2055	2400,0	2740
	90°	1540	2055	2570	2880,0	3085	3600,0	4014
DA 5760	0°	3085,7	4114,3	5143	5760	6171,4	7200	8228,6
	50°	1542,9	2057	2571,4	2880	3085,7	3600	4114,3
	90°	2314,3	3085,7	3857,1	4320	4628,6	5400	6171,4
DA 8000	0°	4285,7	5714,3	7142,9	8000	8571,4	10000	
	50°	2142,9	2857,1	3571,4	4000	4285,7	5000	
	90°	3214,3	4285,7	5357,1	6000	6428,6	7500	

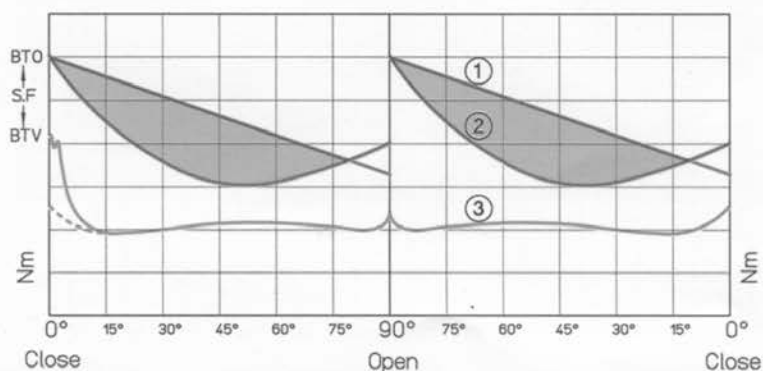
Simple Acting for valve open and close operation and Fail Safe emergency.



CODE	NOMINAL TORQUE Nm at 5,6 Bar	ISO FLANGE	A	B	C depth	D depth	E depth	Number of screws	X / 2	Air Consumption l/cycle
SRN015401S	15	F03 - F05 F04	36 42	50 -	M5 - 8 M5 - 8	M6 - 9 -	11 - 13	4	45°	0,09
SRN030401S SRN030402S	30	F04 F05 - F07	42 50	- 70	M5 - 8 M6 - 9	- M8 - 12	14 - 16	4	45°	0,17
SRN053401S	53	F05 - F07	50	70	M6 - 9	M8 - 12	17 - 19	4	45°	0,30
SRN090401S	90	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	0,55
SRN120401S	120	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	0,80
SRN180401S	180	F07 - F10	70	102	M8 - 12	M10 - 15	22 - 24	4	45°	1,0
SRN240401S	240	F10 - F12	102	125	M10 - 15	M12 - 18	27 - 29	4	45°	1,5
SRN360401S	360	F10 - F12	102	125	M10 - 15	M12 - 18	27 - 29	4	45°	2,0
SR480401S	480	F10-F12 F14	102 140	125 -	M10 - 15 M16 - 24	M12 - 18 -	36 - 38	4	45°	2,8
SR720401S	720	F12 F14	125 140	- -	M12 - 18 M16 - 24	- -	36 - 38	4	45°	4,2
SR960401S	960	F12 - F16 F14	125 140	165 -	M12 - 18 M16 - 24	M20 - 30 -	46 - 48	4	45°	5,9
SR1440E16D8A	1440	F16	165	-	M20 - 30	-	46 - 48	4	45°	11,0
SR1920E1608A	1920	F16	165	-	M20 - 30	-	46 - 48	4	45°	12,5
SR2880E16D8A	2880	F16	165	-	M20 - 30	-	46 - 48	4	45°	21,0
SR4000E16D8A	4000	F25	254	-	M16 - 24	-	55 - 58	8	22,5°	29,1

Fail to close: Safety First

In the Scotch Yoke Spring Return Actuator, the torque increases during the closing phase. This ensures a very effective valve piloting.



OUTPUT TORQUE TABLE (Nm) α° = ROTATION ANGLE

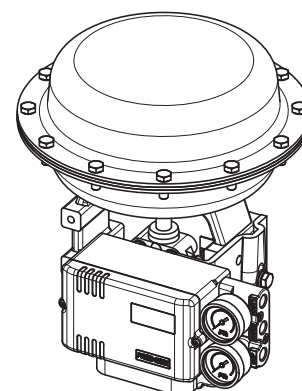
SIZE	α°	2,8 bar ÷ 40 PSI air spring		3,5 bar ÷ 50 PSI air spring		4,2 bar ÷ 60 PSI air spring		5,6 bar ÷ 80 PSI air spring	
SR 15	0°	7,5	5,0	9,3	6,3	11,3	7,5	15,0	10,0
	50°	3,7	3,7	4,7	4,7	5,6	5,6	7,5	7,5
	90°	5,0	7,5	6,3	9,3	7,5	11,3	10,0	15,0
SR 30	0°	15	10	18,8	12,5	22,5	15	30	20
	50°	7,5	7,5	9,4	9,4	11,3	11,3	15	15
	90°	10	15	12,5	18,8	15	22,5	20	30
SR 53	0°	26,5	17,5	33,0	22,0	40,0	26,5	53,0	35,0
	50°	13,0	13,0	16,5	16,5	19,5	19,5	26,0	26,0
	90°	17,5	26,5	22,0	33,0	26,0	40,0	35,0	53,0
SR 90	0°	45	30	56,4	37,5	67,5	45	90	60
	50°	22,5	22,5	28,2	28,2	33,9	33,9	45	45
	90°	30	45	37,5	56,4	45	67,5	60	90
SR 120	0°	60	40	75	50	90	60	120	80
	50°	30	30	37,5	37,5	45	45	60	60
	90°	40	60	50	75	60	90	80	120
SR 180	0°	90	60	112,5	75	135	90	180	120
	50°	45	45	56,2	56,2	67,5	67,5	90	90
	90°	60	90	75	112,5	90	135	120	180
SR 240	0°	120	80	150	100	180	120	240	160
	50°	60	60	75	75	90	90	120	120
	90°	80	120	80	150	120	180	160	240
SR 360	0°	180	120	225	150	270	180	360	240
	50°	90	90	112,5	112,5	135	135	180	180
	90°	120	180	150	225	180	270	240	360
SR 480	0°	240	160	300	200	360	240	480	320
	50°	120	120	150	150	180	180	240	240
	90°	160	240	200	300	240	360	320	480
SR 720	0°	360	240	450	300	540	360	720	480
	50°	180	180	225	225	270	270	360	360
	90°	240	360	300	450	360	540	480	720
SR 960	0°	480	320	600	400	720	480	960	640
	50°	240	240	300	300	360	360	480	480
	90°	320	480	400	600	480	720	640	960
SR 1440	0°	788,3	582,3	900	675	1200,0	900,0	1440	1080
	50°	410,7	410,7	450	450	630,0	630,0	720	720
	90°	582,3	788,3	675	900	900,0	1200,0	1080	1440
SR 1920	0°	960	640	1200	800	1440	960	1920	1280
	50°	480	480	600	600	720	720	960	960
	90°	640	960	800	1200	960	1440	1280	1920
SR 2880	0°	1440	960	1800	1200	2160	1440	2880	1920
	50°	720	720	900	900	1080	1080	1440	1440
	90°	960	1440	1200	1800	1440	2160	1920	2880
SR 4000	0°	2000	1340	2500	1675	3000	2010	4000	2680
	50°	1000	1000	1250	1250	1500	1500	2000	2000
	90°	1340	2000	1675	2500	2010	3000	2680	4000

Smart performance with innovative and ever-strong coil drive even under harsh working environments



Features

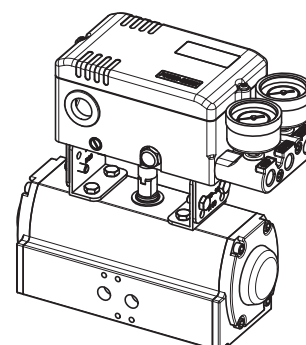
- ▶ Easy and quick auto-calibration
- ▶ Detecting RA (reverse acting) or DA (direct acting) automatically regardless of wrong air connections
- ▶ Available to use for single or double acting without any special adjustments
- ▶ Compact design allowing to be installed on small actuators
- ▶ Providing error messages against performance failures
- ▶ Possible to test the actuator with any fixed signal under a test mode
- ▶ Programmable characteristic curve with 17 points
- ▶ Wide operating temperature range -30 ~ +80 °C
- ▶ Improved control of high-friction globe and ball valves by eliminating an overshoot and a hunting
- ▶ Low air consumption
- ▶ Providing a mounting bracket to meet IEC 60534-6-1 for linear valves
- ▶ Supporting a NAMUR mounting pattern VDI/VDE 3845 (IEC 60534-6-2) and providing a multi-size mounting bracket for rotary valves



- SS2L (Linear Type)

Options

- ▶ Output position transmitter (4 - 20 mA)
- ▶ 2 x alarm limit or micro switch (SPDT)
- ▶ Explosion proof type (IECEx / ATEX / KC Ex ia IIC T5)
- ▶ HART communication
- ▶ Profibus communication (in progress)
- ▶ Fieldbus Foundation communication (in progress)



- SS2R (Rotary Type)

SS2 Linear / Rotary

Smart Valve Positioner

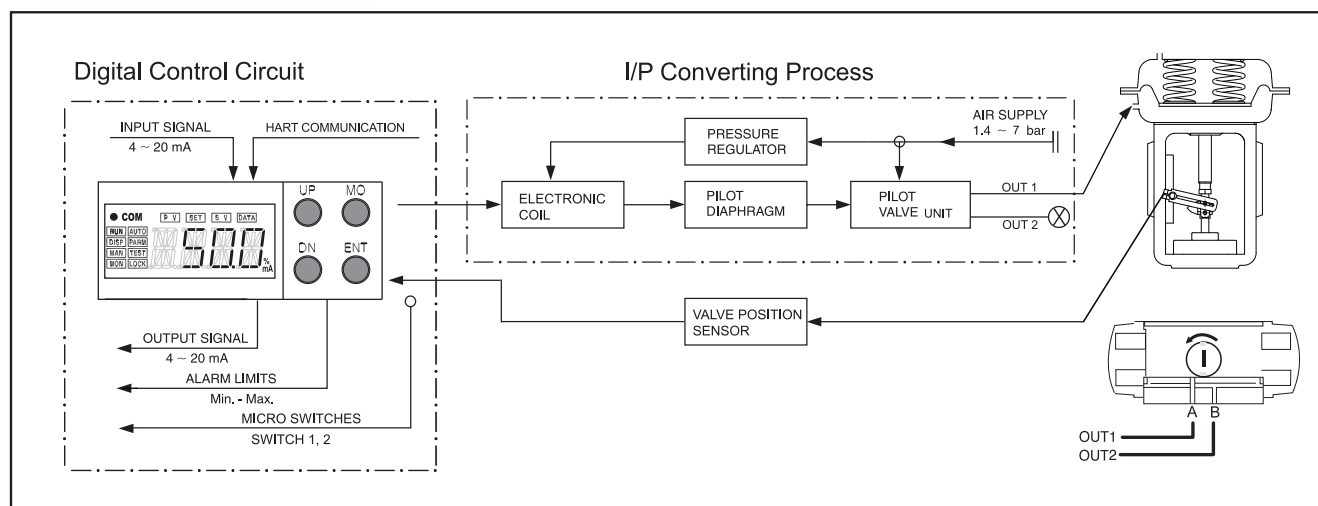
Specifications

Input Signal	4 - 20 mA @ 24 VDC
Min. / Max. Current	3.6 mA / 50 mA
Voltage Drop (Resistance)	Without Hart : 8.7 VDC (435Ω @ 20 mA) With Hart : 9.4 VDC (470Ω @ 20 mA)
Stroke / Angle	Linear type : 5 - 130 mm * Rotary type : 25 - 120°
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi), filtered, compressed dry and non-oiled to meet Class 3 of ISO 8573-1
Output Pressure Range	0 - 100% of supply air pressure
Air Capacity	80 l/min = 4.8 N ^{m³} /h = 2.8 scfm (Sup = 1.4 bar) 233 l/min = 14 N ^{m³} /h = 8.2 scfm (Sup = 6 bar)
Air Consumption	2 l/min = 0.12 N ^{m³} /h = 0.07 scfm (Sup = 1.4 ~ 6 bar)
Characteristic	Linearity < ±0.3% F.S Sensitivity < 0.2% F.S Hysteresis < 0.2% F.S Repeatability < 0.2% F.S
Performance Characteristic	Linear, EQ %, Quick open, User set (17 points)
LCD Indication	4-digit LCD indicator
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)
Scan Time	2ms
Shut-off Value	Range 0 - 10% of position signal
Valve Action	direct action (DA) / reverse action (RA)
Operating Temperature	- 30 ~ +80°C (- 22 ~ +176 °F) **
Pneumatic Connections	PT(Rc) 1/4 or NPT 1/4
Electrical Connections	2 x PF(G) 1/2 or NPT 1/2
Protection Class	IP66, intrinsically safe (IECEX / ATEX / KC Exia IIC T5)
Body Material	Aluminum die-cast / powder-painted
Weight	1.6 kg

* Up to 200mm on request

** -40°C on request

Principle of Operation



If 4-20 mA input signal is supplied, the micro processor compares input signal with position feedback and sends control signal to the I/P converting module. Pneumatic signal from the I/P converting module operates the valve and the valve stays at the desired position.