



Decide with confidence

Pressure And Differential Pressure Switches



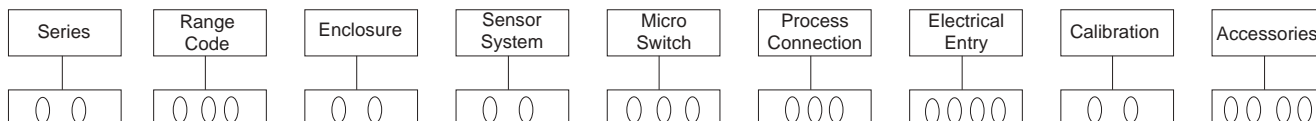
SANMUR CONTROLS PVT. LTD.

An ISO 9001:2008 Certified Company

The name "SANMUR" has been synonymous with reliability and quality in terms of products, services and systems integration. With a view to serving the market more effectively "Sanmur" is now manufacturing the following product ranges under approval from the leading test agency Electrical Research Development Association (ERDA), who are recognized by National Accreditation Board for Testing and Calibration Laboratories (NABL), Department of Science and Technology (DST), Govt. of India. Weather proof enclosure tests conforming to IP – 66 degree of protection as per IS 13947-1993 has been approved by the Institute for Design of Electrical Measuring Instruments, (IDEMI), Mumbai.

"Sanmur" can also cater to customised range of pressure and differential pressure switches for wide spectrum of industry covering textile machinery, boilers, furnaces, power generation and distribution, railways, steel, fertilizers and pharmaceuticals, paper and pulp, food and beverages, cement, ship yard, environment etc.

ORDERING PATTERN



SWITCH SERIES

"SANMUR" offers pressure and differential pressure switches as standard products in the following series.

1) SD Series (Order Code: SD)	Pressure Switches with fixed differentials for all ranges using SS diaphragm
2) SA Series (Order Code: SA)	Pressure Switches with adjustable differential using SS diaphragm
3) SL Series (Order Code: SL)	Pressure Switches with low range, low pressure and fixed differential using SS diaphragm
4) DP Series (Order Code: DP)	Differential Pressure Switches using SS diaphragm.

RANGE CODE

SWITCH RANGE (Kg/cm ²)	RANGE CODE	AVAILABLE IN SERIES	MAX. PRESSURE (Kg/cm ²)
-0.9 0	C00	SA, SD	10 for SA, SD
-0.5 +0.5	C05	SA, SD, DP	-do-
-0.9 +1.5	C15	-do-	-do-
-0.9 3	0C3	SD	-do-
0.1 1.1	101	SA, SD, DP, SL	10 for SA, SD / 2 for SL
0.1 1.5	105	-do-	-do-
0.2 2.0	002	-do-	-do-
0.0 4.0	004	SA, SD, DP	10 for SA, SD
0.6 6.0	006	-do-	-do-
0.5 10	010	-do-	15 for SA, SD, DP
1 16	016	SA, SD, DP	24 for SA, DP, SD
2 25	025	SA, SD	40 for SA, SD
2 32	032	SA, SD	50 for SA, SD
2 40	040	SA, SD	60 for SA, SD
5 63	060	SD	100 for SD
10 ... 100	100	-do-	120 for SD
10160	160	SD	240 for SD
50250	250	SD	350 for SD

-20 +20 mbar	C20	SL, DP	2 Kg/cm ²
-40 +40 mbar	C40	SL, DP	-do-
5 20 mbar	M02	SL	-do-
10 50 mbar	M05	SL, DP	-do-
10 100 mbar	M10	-do-	-do-
00 300 mbar	M30	-do-	-do-
40 400 mbar	M40	SL	-do-
60 600 mbar	M60	SL	-do-
50 1000 mbar	1M0	SL	-do-
Customer specs.	XXX		

ENCLOSURES

The instruments will be available in three types of enclosures.

Weather Proof (Order Code: WP)	Pressure Die cast aluminium enclosure with powder coating conforming to IP-66 degree of protection as per IS 13947-1993
Flame Proof (Order Code: FP)	Flame Proof and Weather Proof enclosure of cast iron for gas group I & LM-6 material for gas groups IIA & IIB, certified by ERTL - Kolkata as per IS-2148-1981 and IP-66 degree of protection.
Flame Proof (Order Code: FC)	Flame Proof and weatherproof enclosure of LM-6 material certified by ERTL - Kolkata for gas group IIC as per IS-2148-1981 and IP-66 degree of protection.

SENSOR SYSTEM

The combinations of Sensor types and materials available in "Sanmur" range of Pressure and Differential Pressure Switches are as below

Type	Material	Wetted Parts	Order Code
Diaphragm	SS	Aluminium	AS
Diaphragm	SS	MS (EN 8)	MS
Diaphragm	SS	SS	SS
Diaphragm	SS	Brass	BS

Note: *Non-standard material like Silicon, EPDM, VITON can also be given. Order code for these will be XA as per customer requirement.

SENSOR SIZES

Range Code	Series	Sensor Size (mm) Diameter x Length
M40, M60, 1M0,	SL	81 x 41
C20, C40, M02, M05, M10, M 30	SL	100 x 43
025,032,040,060,100	SA, SD	40 x 31
C00, C05, C15	SA, SD	55 x 40
101, 105, 002,	SA, SD	55 x 30
C00, C05, C15, 101,105, 002, 004, 006, 010, 016	DP	58 x 67
M05, M10, M30	DP	102 x 54
004, 006, 010, 016	SA, SD	44 x 28
160, 250	SD	60 x 40

MICRO SWITCHES: - (Electrical Data)

Micro switch Type	No. of MSW	Elec. Rating			Order Code	Available in series	
		AC	DC				
			Res.	Ind			
SPDT-general purpose	1 2	5 A / 250 V AC		0.2 0.01	100 200	SA, SD, DP	
SPDT-general purpose, low dead band	1	5 A / 250 V AC		0.25 0.50 5	0.03 0.07 3	101	SD, DP
SPDT-general purpose low dead band	1 2	10A / 250 V AC 10 A / 250 V AC		0.2 0.4 2	0.02 0.03 1	102 202	SD, DP
SPDT	1	15A / 250 V AC		0.25 0.5	0.02 0.03	103	SA, SD, DP
SPDT – low dead band, high current	1 2	15 A / 250 V AC 15 A / 250 V AC		0.2 0.4 2	0.02 0.03 1	104 204	SA, DP, DP
SPDT – high dead band	1 2	15 A / 250 V AC 15 A / 250 V AC		- -	- -	105 205	SD, DP,
*Hermetically sealed with silver contacts	1 2	4A / 230 V AC 4A / 230 V AC		4	2	106 206	SD, DP
*Hermetically sealed with gold contacts.	1 2	1A / 125 VAC 1A / 125 VAC		- -	- -	107 207	SD, DP
SPDT General Purpose	1 2	15A / 250 V AC 15A / 250 V AC		0.2 0.4 2	0.02 0.03 1	108 208	SA, SD, DP
SPDT – High Dead Band	1	15A / 250 V AC		-	-	109	SA
SPDT*high DC rating	1	10A / 125 V AC		10 15 15 15	6 10 15 15	110	SA, SD
DPDT* (2 NO . 2 NC.)	1	10 A / 250 V AC		0.2 0.3 6	0.01 0.02 1	111	SA, SD

* Consult SANMUR for Switching Differential / gold contacts

SWITCHING DIFFERENTIAL CHART

Range (Kg/cm ²)	Model	Micro Switch Code							
		100	101	102	103	104	105	108	109
-0.9 0	SD	0.12	0.15	0.08	0.1	0.1	0.4	0.1	-
	SA	0.12 - 0.25	-	-	0.1 - 0.24	0.1 - 0.2	-	0.1 - 0.25	-
-0.9 1.5	SD	0.12	0.2	0.1	0.12	0.1	0.4	0.1	-
	SA	0.12 - 0.25	-	-	0.12 - 0.25	0.1 - 0.3	-	0.1 - 0.25	-
-0.9 3	SD	0.5	0.5	0.1	0.4	0.3	-	0.3	-
-0.5 0.5	SD, DP	0.12	0.12	0.1	0.1	0.1	0.25	0.12	-
	SA	0.12 - 0.25	-	-	0.1 - 0.2	0.1 - 0.2	-	0.12 - 0.25	-
0.1 1.1	SD, DP	0.1	0.1	0.02	0.1	0.04	0.2	0.1	-
	SA ₁	0.1 - 0.2	-	-	0.1 - 0.2	0.04 - 0.2	-	0.1 - 0.25	0.1 - 0.4
0.1 1.5	SD, DP	0.12	0.15	0.04	0.12	0.06	0.2	0.12	-
	SA	0.12 - 0.2	-	-	0.12 - 0.22	0.06 - 0.3	-	0.12 - 0.3	0.1 - 0.5
0.2 2	SD, DP	0.15	0.15	0.05	0.14	0.08	0.2	0.15	-
	SA	0.15 - 0.2	-	-	0.14 - 0.24	0.08 - 0.3	-	0.15 - 0.3	0.1 - 0.5
0 4	SD, DP	0.35	0.4	0.1	0.2	0.12	0.35	0.25	-
	SA	0.35 - 0.7	-	-	0.2 - 0.7	0.12 - 0.5	-	0.25 - 0.7	0.4 - 1.5
0.6 6	SD, DP	0.5	0.5	0.1	0.3	0.2	0.6	0.35	-
	SA	0.5 - 0.7	-	-	0.3 - 0.7	0.2 - 0.7	-	0.35 - 1	0.5 - 2
0.5 10	SD, DP	0.7	0.6	0.1	0.5	0.4	1.2	0.6	-
	SA	0.7 - 1.8	-	-	0.5 - 1.6	0.4 - 3	-	0.6 - 4	1.2 - 4
1 16	SD, DP	1	1	0.2	0.8	0.5	2	0.8	-
	SA	1 - 1.8	-	-	0.8 - 1.8	0.5 - 3	-	0.8 - 4	1.5 - 5
2 25	SD	2	2	0.4	2	1.2	4	2	-
	SA	2 - 5	-	-	2 - 3.5	1.2 - 3	-	2 - 5	4 - 10
2 32	SD	3.5	2.5	0.8	2.5	1.5	5	2.5	-
	SA	3.5 - 6.5	-	-	2.5 - 4	1.5 - 4	-	2.5 - 5	4 - 10
2 40	SD	5	3	0.8	3	1.5	6.5	3.5	-
	SA	5 - 8	-	-	3 - 5	1.5 - 4	-	3.5 - 6	5 - 10
5 63	SD	6	6	1.5	5	4	11	4	-
10 100	SD	10	7	2.5	8	7	15	10	-
10 160	SD	25	12	6	25	18	-	20	-
50 250	SD	30	20	10	30	20	-	25	-
-20 + 20 mbar	SL	-	5	10	-	12	-	15	-
	DP	-	5	10	-	-	-	-	-
-40 + 40 mbar	SL	20	13	10	15	12	-	15	-
	DP	-	13	10	-	-	-	-	-
5 20 mbar	SL	15	5	5	10	12	-	15	-
10 50 mbar	SL, DP	15	10	5	12	12	10	15	-
10 100 mbar	SL, DP	15	10	5	15	12	20	15	-
0 300 mbar	SL, DP	20	10	5	20	15	50	20	-
40 400 mbar	SL	20	10	5	25	15	50	20	-
60 600 mbar	SL	30	15	5	30	20	40	30	-
50 1000 mbar	SL	40	15	5	35	20	90	30	-

For 2SPDT versions (Example 201,202 etc.), & flame proof versions the switching differential will be approximately 1.5 times the corresponding value for 1 SPDT version, given in the chart. In 2 SPDT version the 2 microswitches will operate almost at the same set point, with a maximum difference of 2% FSR.

PROCESS CONNECTION

The different process connections available with ordering codes are as under

Size	Type of Threads					
	BSP (F)	BSP (M)	NPT (F)	NPT (M)	BSPT (F)	BSPT (M)
1/4"	A1M A1S	A2M A2S	A3M A3S	A4M A4S	A5M A5S	A6M A6S
1/8"	B1M B1S	B2M B2S	B3M B3S	B4M B4S	B5 B5S	B6M B6S
1/2"	E1M E1S	E2M E2S	E3M E3S	E4M E4S	E5M E5S	E6M E6S
3/8"	D1M D1S	D2M D2S	D3M D3S	D4M D4B	D5M D5S	D6M D6S

Note: M = MS (EN 8) , S = SS
Code 99X for customer specific requirement.

ELECTRICAL ENTRY / CABLE GLAND

TYPE			ORDER CODE
3/4" ET	-	Direct	DEO
3/4" ET	-	SS adapter	DES
1/2" NPT (F)	-	Brass adapter	DE1
1/2" NPT (F)	-	SS adapter	DE2
1/2" BSP (F)	-	Brass adapter	DE3
1/2" BSP (F)	-	SS adapter	DE4
3/4" ET - SCCG	-	--	DEN
3/4" ET - DCCG with Brass	-	WP / FP / FC	W1B / F1B / C1B
3/4" ET - DCCG with SS	-	WP / FP / FC	W1S / F1S / C1S
1/2" NPT - DCCG with Brass	-	WP / FP / FC	W2B / F2B / C2B
1/2" NPT - DCCG with SS	-	WP / FP / FC	W2S / F2S / C2S
1/2" BSP (F) - DCCG with Brass	-	WP / FP / FC	W3B / F3B / C3B
1/2" BSP (F) - DCCG with SS	-	WP / FP / FC	W3S / F3S / C3S
7 Pin connector	-	WP / FP / FC	7WP / 7FP / 7FC
4 Pin Connector	-	WP / FP / FC	4WP / 4FP / 4FC

Note: For Dual entry suffix D
For Dual entry - 1 plugged suffix P.

CALIBRATION

The switches can be calibrated for actuation of contacts on decreasing / increasing pressures. This includes series SD, SA, SL and DP.

The calibration and range scale for all the series are provided in bar / Kg/cm². The order codes are as below:

Decreasing pressure in bar	-	DB
Increasing pressure in bar	-	IB
Decreasing pressure in Kg/cm ²	-	DK
Increasing pressure in Kg/cm ²	-	IK

ACCESSORIES

Wide range of accessories can be provided with the instruments as per customer requirement. These will include:

Order Code

1)	Snubber	D
2)	Syphons	Y
3)	Manifold	Z
4)	Chemical Seals	S
5)	Tag Plate	T
6)	Mounting Brackets	
	Standard	N
	Pipe / Yoke mounting	Q
7)	Any other accessory	X
8)	No accessory	O

GENERAL SPECIFICATIONS

Standard	: The switches generally conform to BS-6134 standards
Repeat accuracy	: $\pm 1\%$ of full-scale range
Scale Accuracy	: The scale is primarily for guidance. However, the accuracy is generally $\pm 2\%$ of FSR.
Ambient Temperature	: -30 to 70° C permissible range.
Mounting	: The switches may be installed in any one of the following manner. Wall / panel / field / yoke mounting.
Set point	: Select range so that set point lies between 20 - 80% of span
High Voltage Strength	: The instrument with stands 0.5 – 0.6 KV between open contacts for 1 second & 2 KV between terminals & earth.
Insulation Resistance	: >10 M ohm at 500 V
Intrinsic safety	: Switches are classified as simple electrical apparatus as per BS-5345-6.3.3 and so may be used in intrinsically safe systems without certification if the energy levels are limited to 1.2 V, 0.1 A or 25 mW.

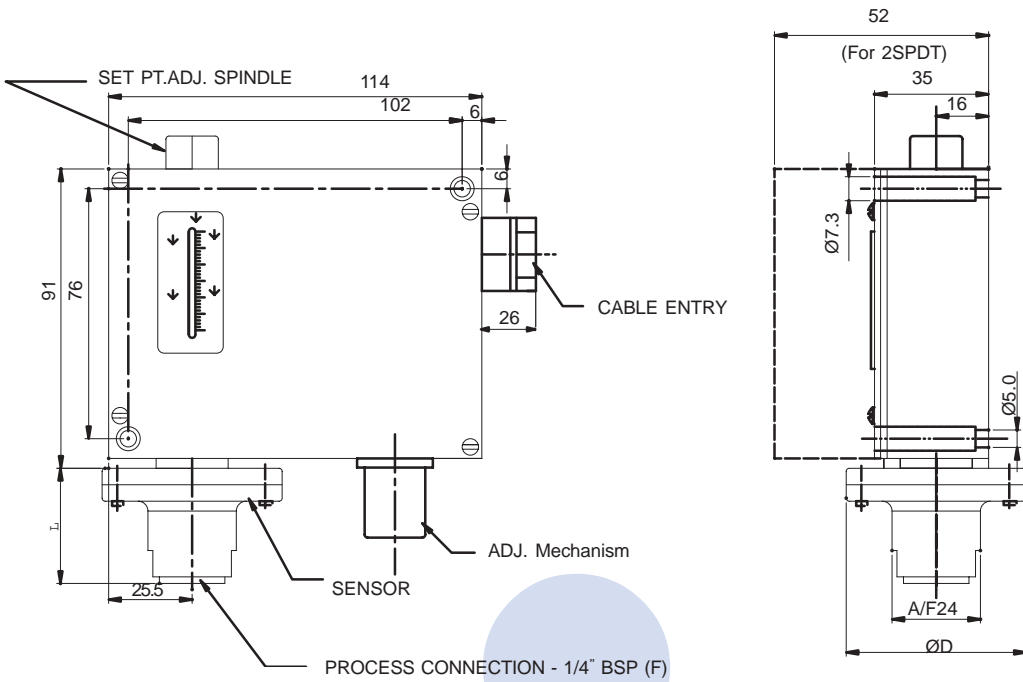
Note: Specifications are subject to change without prior notice due to continuous product development.

Pressure Conversion Table

Table	Kg/cm ²	mmHg	bar	mbar	mmWC	psi (lb/in ²)	KPa
Kg/cm ²	1	735.56	0.9807	980.7	10000	14.2233	98.066
mmHg	0.001359	1	0.00133	13332	13.5951	0.01934	0.13332
bar	1.01972	750.062	1	1000	10197.16	14.5038	10 ²
mbar	1.01972.10 ⁻³	0.7501	0.001	1	10.197	0.0145	0.1
mmWC	0.0001	0.07355	0.000098	0.098	1	0.00142	9.8067.10 ⁻³
psi (lb/in ²)	0.07031	51.715	0.06895	68.950	703.07	1	6.8947
KPa	0.0101972	7.50062	10 ⁻²	10	101.9716	0.145038	1

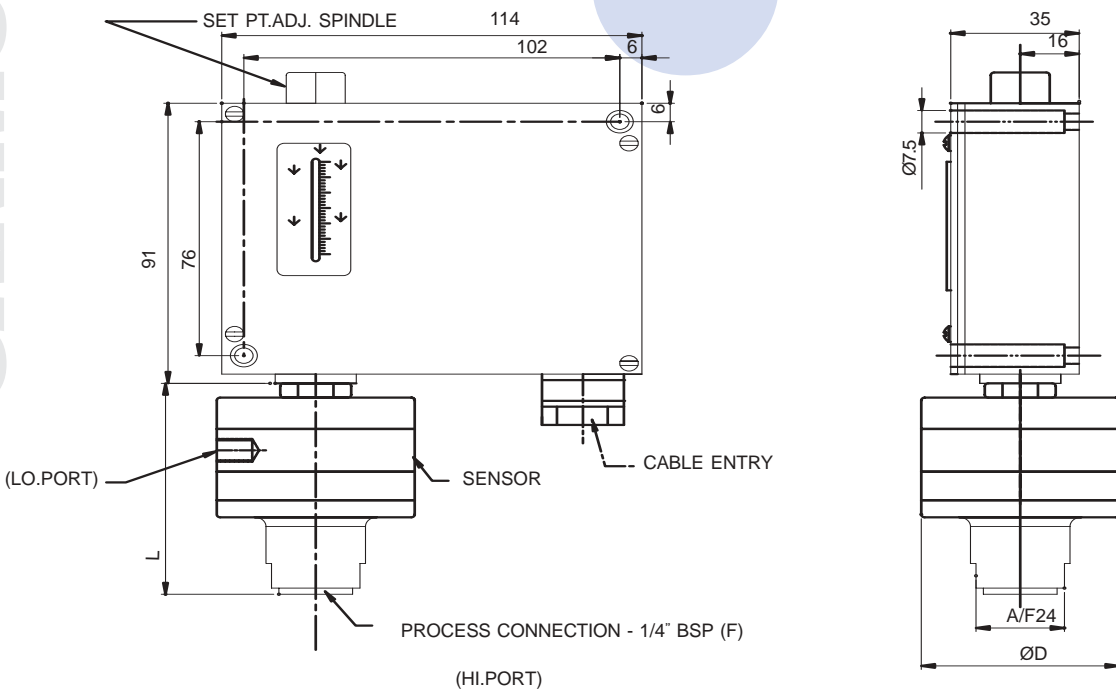
SA SERIES INSTRUMENTS

CONTROL

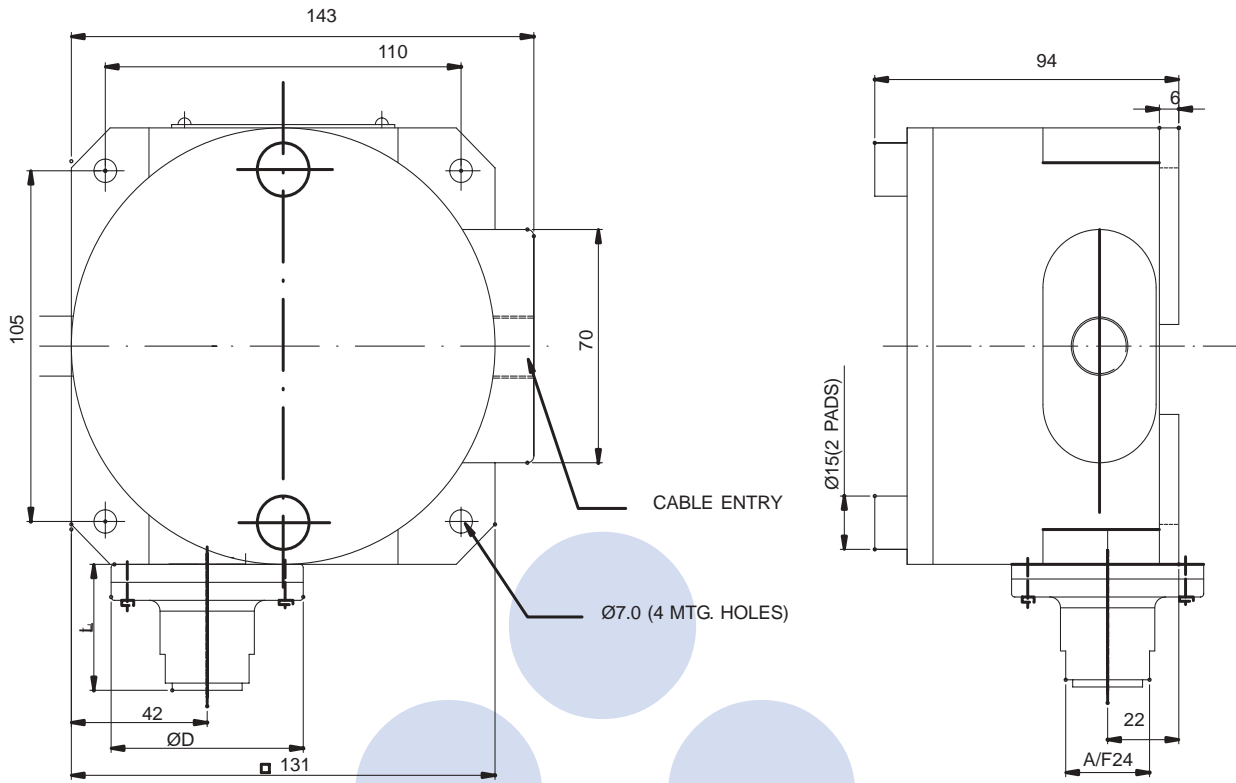


DP SERIES INSTRUMENTS

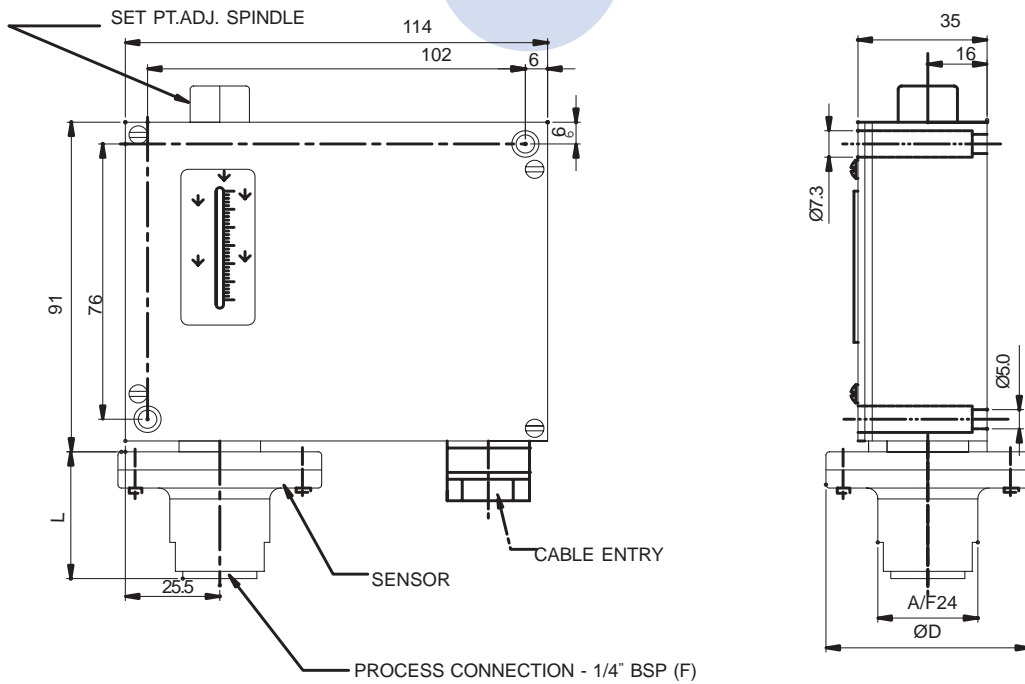
SAMPLER



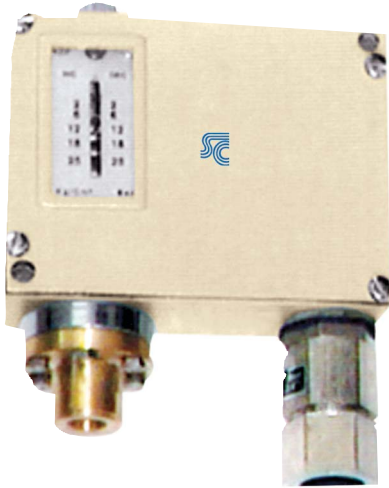
INSTRUMENTS WITH FLAMEPROOF ENCLOSURE



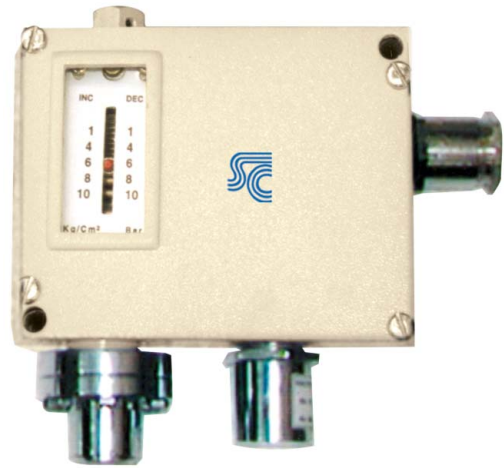
SD & SL SERIES INSTRUMENTS



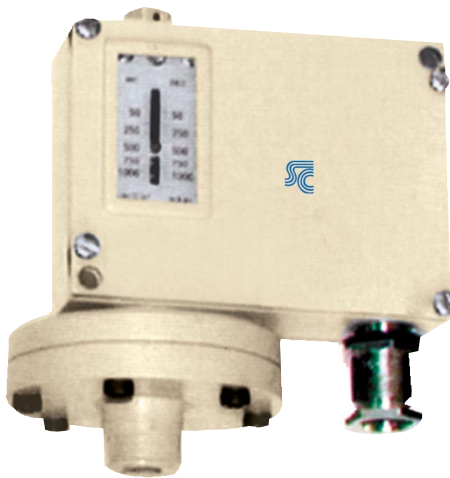
SD SERIES



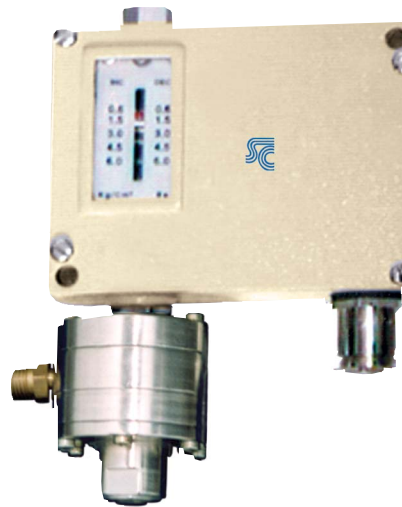
SA SERIES



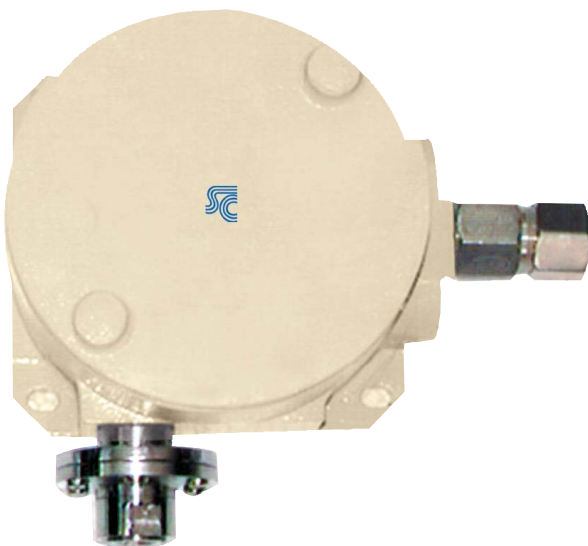
SL SERIES



DP SERIES



FLAME PROOF



2 SPDT MODEL





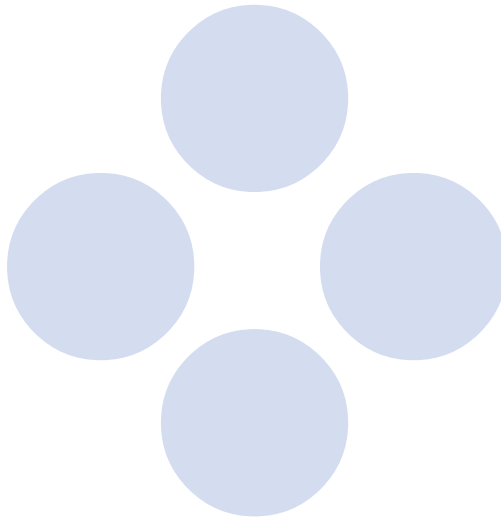
SANMUR CONTROLS PVT. LTD.

DATA SHEET FOR PRESSURE SWITCH

1	Customer	
2	Range / Set Point	
	Cut In / Cut Out	
	Calibration—Rising / Falling	
3	Nature of Pr.(Impulse/Uniform)	
4	Normal Operating Pressure / Temp	
5	Max. Working Pressure / Temp	
6	Process Connection	
7	Service Medium	
	Nature of Service Medium	
8	Application	
9	AC/DC Rating	
10	Microswitch-1 / 2 SPDT / DPDT	
11	Wetted Parts	
12	Elec. Entry / Cable gland	
13	Ambient Condition	
	IP 32/66 , Group I/IIA/IIB/IIC	
	Corrosion / Non Corrosion	
	Ambient Temperature	
14	Mounting type	
	Field / Panel / Wall / Pipe	
15	Possible Order Codes	
	1:	
	2:	
	3:	
	Final Order Code :	

SANMUR CONTROLS

Catalogue Edition
SCPL-PS-010510



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