

SMART HART® ELECTRONIC PRESSURE, LEVEL & VACUUM TRANSMITTERS

27S-01 DATA SHEET 1 of 5



Series 27S



27S series allows the measurement of pressure, vacuum and level of liquids, in industrial process at different working conditions. These transmitters have a Smart-Hart® type electronic provided with programmable threshold and a microcontroller, which allows a more accurate and reliable management of the sensor if compared with the traditional analogue transmitters, also giving diagnostic information about the transmitter functioning.

APPLICATION FIELDS

27 Series transmitters are used in industrial and marine applications detect pressure of liquids, gas and vapours. For versions not considered in the specification ask our technical office .

TECHNICAL FEATURES

- Supply 12÷4 Vdc
- Output 4÷20mA 2 wire system (max 21.5mA)
- Communication Protocol: HART® Revision 6.0
- Total accuracy $\pm 0.2\%FS$ (*)
- Adc: 16bit sigma/delta
- Zero thermal drift $<\pm 0.02\%FS/^{\circ}C$ (-10÷60°C) (*)
- Span thermal drift $<\pm 0.01\%FS/^{\circ}C$ (*)

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Continue TECHNICAL FEATURES

- Max load: $R_{i_{max}} = (V_{dc} - 12V) / 21.5mA$;
- Load for HART® compliance: $220\text{ohm} < R_l < 600\text{ohm}$
- Long term stability $< 0.1\%FS/\text{year}$
- Relative humidity $< 98\%Rh$
- Operating temperature: $-40 \div 85^\circ\text{C}$ (Minimal temperature -25°C in $p > 500\text{bar}$ span)
- Storage temperature: $-55 \div 90^\circ\text{C}$
- Protection against supply transient and built-in RFI/EMI filter
- Protection rating IP67
- Response time: 250msec

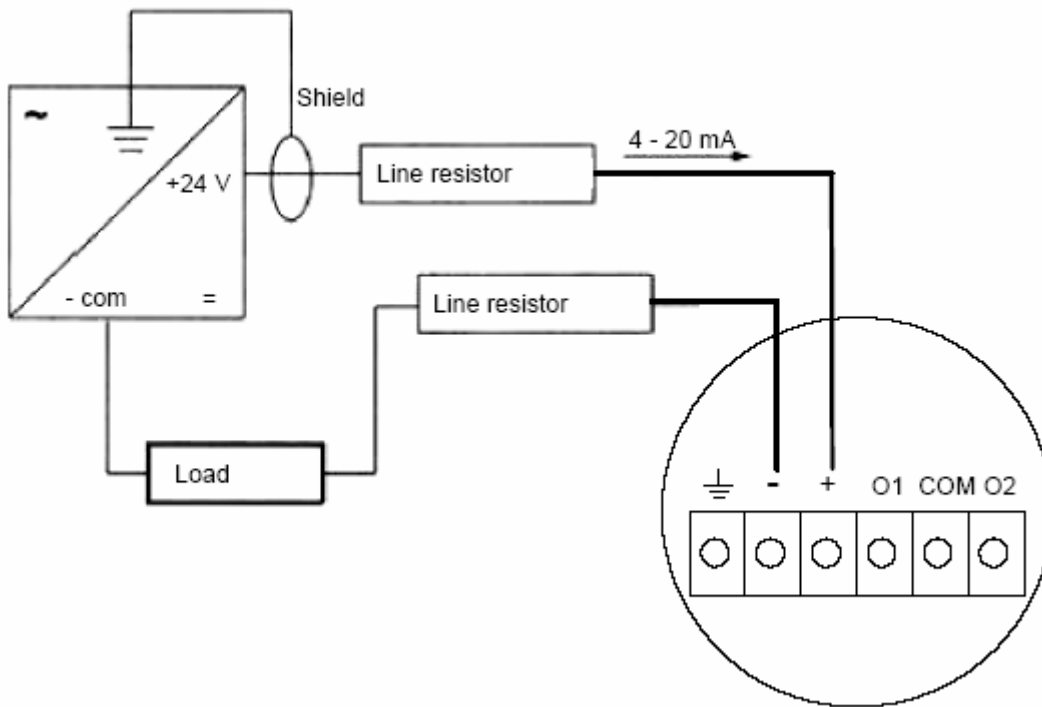
Notes (*):

Unless otherwise stated, performance specifications are given at maximum span. Accuracy and drifts are given for instruments with integral sensor and diaphragm; they may vary according to sensor type and execution.

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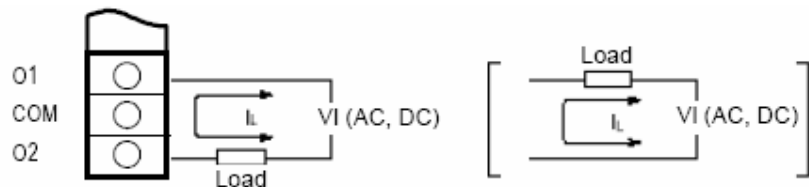
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GENERAL WIRING SCHEME

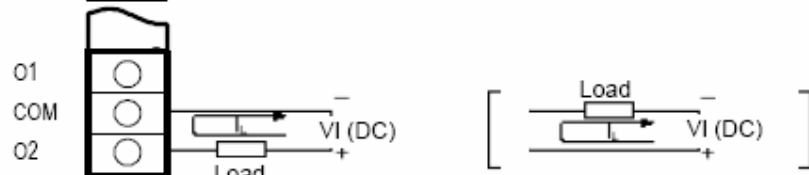
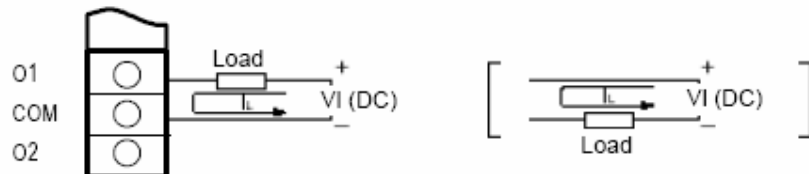


LOAD WIRING DIAGRAM

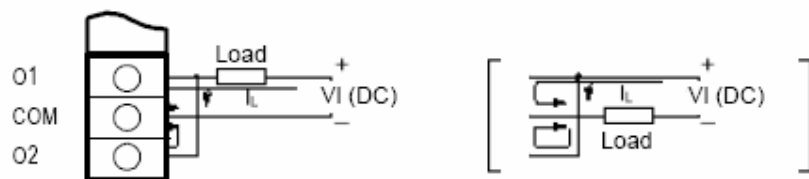
TYPE A: AC/DC



TYPE B: DC



TYPE C: DC



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Tab. 1 - General characteristics

CODE	DESCRIPTION
	PRESSURE:
R	- Relative
A	- Absolute
B	- Barometric
	SENSOR:
IP	- Integral (piezo)
SP	- Remote (piezo)
IC	- Integral (Ceramic)
SC	- Remote (Ceramic)
	* MEASURING RANGE (see table 2)
	HOUSING MATERIAL:
A	- AISI 316
	** PROCESS CONNECTIONS (see table 3 a, b, c, d)
	DIAPHRAGM MATERIAL:
A	- AISI 316 L
C	- Hastelloy C (not for connections cod. 00/01/02/04)
D	- Tantalum (Ta) (not for connections cod. 00/01/02/04/09)
E	- Ceramic
N	- None (air or non corrosive gases)
	GASKETS :
V	- FPM
T	- TFE (where foreseen)
N	- All welded
	WETTED PARTS MATERIAL :
1	- AISI 316 L
3	- Hastelloy C
5	- Flange TFE lined DN 50, 2", 11/2"
6	- Flange TFE lined DN 80, 3"
	ELECTRIC CONNECTIONS:
PG13	Nylon cable gland PG13
PG9	Nylon cable gland PG9
R12	St. St. Nipple M12 - G 1/2"
R20	St. St. Nipple M20 x 1,5 F
R24	St. St. Nipple M24 x 1,5 F
	OUTPUT SIGNAL:
1	4÷20 mA + HART
2	1 photorelay contact + HART
3	2 photorelay contacts + HART
4	1 photorelay contact + 4÷20 mA + HART
5	2 NPN Output + 4÷20 mA + HART
6	2 PNP Output + 4÷20 mA + HART

*Table 2 " Guide to the choice of measuring ranges" indicates codes and limits of application.

** Tables 3a,3b,3c and 3d list codes of standard process connections.

Tab. 2 – Measuring range

CODE	RANGE [bar] #
01*	0÷0,025..0,25
02*	0÷0,06..0,6
03*	0÷0,16...1,6
03a**	0÷0,4...1,6
04*	0÷0,4...4
04a**	0÷1,5...6
05*	0÷1...10
05a**	0÷4...16
06	0÷2,5...25
06a**	0÷15...60
07*	0÷16...160
07a**	0÷40...160
08*	0÷100..1000
08a**	0÷100..400
Z99	Other

Calibration available with different measuring unit

*Ranges available only with piezo sensor

** Ranges available only with ceramic sensor and ceramic diaphragm

Tab. 3a: SCREWED process connections

CODE	DESCRIPTION
02	Screwed 1/2" G/BSP - M
02a	Screwed 1/2" G - F
03	Screwed 1" G- M (flush diaphragm)
03a*	Screwed 1" G - M (flush diaphragm ø 15 mm)
04	Screwed 1/2" NPT - M
04a	Screwed 1/2" NPT - F
05*	Screwed 1/2" G- M (diaphragm M44)
05a*	Screwed 1/2" NPT-M (diaphragm M44)
05b*	Screwed 1/2" G-F (diaphragm M44)
06*	Screwed 1/2" G - M (diaphragm M75)
06a*	Screwed 1 1/2" NPT - M (diaphragm M75)
07*	Screwed 1 1/2" G - M (flush diaphragm)
08*	Screwed 2" G - M (flush diaphragm)
09*	Screwed 1/2" G - M (flush diaphragm ø18,5)
09a*	Screwed 1/2" G - M (flush diaphragm ø19)
10*	Screwed 1/2" G-M (welded diaphragm)
10a*	Screwed 1/2" NPT-M (welded diaphragm)
Z99	Other

* Connections not available with ceramic diaphragm.

For more information contact our technical office.

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Tab. 3b: FLANGED process connections

CODE	DESCRIPTION
71	Flange DN 80 PN 10/25
71a	Flange DN 80 PN 10/25 est. ≤ 50 mm
71b	Flange DN 80 PN 10/25 est. ≤ 100 mm
71c	Flange DN 80 PN 10/25 est. ≤ 150 mm
71d	Flange DN 80 PN 10/25 est. ≤ 200 mm
73	Flange DN 3" ANSI 150RF
73a	Flange DN 3" ANSI 150RF est. ≤ 50 mm
73c	Flange DN 3" ANSI 150RF est. ≤ 150 mm
74	Flange DN 2" ANSI 150RF
75	Flange DN 50 PN 10/25
75a	Flange DN 50 PN 10/25 est. ≤ 50 mm
75b	Flange DN 50 PN 10/25 est. ≤ 100 mm
75c	Flange DN 50 PN 10/25 est. ≤ 150 mm
76	Flange DN 40 PN 10/40
77	Flange DN 1 1/2" ANSI150 RF
78	Flange DN 25 PN 10/40
80	Flange DN 15 PN 10/40
Z99	Special

Flanges with lower and higher ratings are available.

For special materials see contact our technical office.

Tab. 3c: SANITARY connections

CODE	DESCRIPTION
20	DIN nut DN 40
21	DIN nut DN 50
22	DIN nut DN 25
23	DIN nut DN 65
24	DIN nut DN 80
25	SMS nut DN 38
26	SMS nut DN 51
40	Triclamp 2"
41	Triclamp 2 1/2"
42	Triclamp 1 1/2"
50	SO Flange
60*	Flange ø 79 mm
Z99	Other

* Code 60 available with HC and TA diaphragm.

Tab. 3d: Process connections with WELDING RINGS

CODE	DESCRIPTION
12	Welding ring ET 12
13	Welding ring ET 13
14	Welding ring ET 14
15	Welding ring ET 15
16	Welding ring ET 16
18	Welding ring ET 18
19	Welding ring ET 19
30	Welding ring ET 30
31	Welding ring ET 31
32	Screwed ferrule 54W
Z99	Other

Connections available with HC 276 diaphragm.

These connections are mainly used in the pulp and paper industry.

Tab. 4: OPTIONS ACCESSORIES

CODE	DESCRIPTION
03/3	Process connection (cod.03) Hastelloy C 276 (cod.3)
05/3	Process connection (cod.05) Hastelloy C 276 (cod.3)
CAB	Vented cable for remote sensor version
CIP	AISI 316 st.st. capillary Ø4x2mm with nipples G1/2" M-F
DHT	Finned dissipator 1/2"G M/F for high temperature (<150°C)
E	TAG
F801	AISI 316 St.St. Counter flange ND80 NP16
FLUO	Fluorurate oil filling and degreasing
HC70	Hastelloy process ring for connection cod. 70/72
HT	Integral finned extension for high temperature (< 150°C)
MAN2	2-valves by-pass / interception manifold
NAS	AISI 316 St.St. Welding nipple G 1/2"
OVF	Protection filter against environmental elect.discharges
R18	Cooling siphon L=180 mm. AISI316 G 1/2" M-F
R18a	Cooling siphon R18 Sch.80 Pmax=100bar; Tmax=450°C
S	Seal
SGO	Degreasing for oxygen (only for ceramic sensor version)
SMO	AISI 316 St.St.Pulsation dampener G 1/2"
SRO	Upset sensor (for air)
STOM	Wall mounting bracket
STUB	Stand pipe 2" mounting bracket
TI70	Titanium process ring for connection cod. 70/72
TR60	Welding ring for ET series L=60 mm
VAN	AISI 316 St.St Root valve G 1/2"