

Measuring range and span limits

REF.	NOM. RANGE	SPAN	RANGE LIMITS
	mmH2O	min.(mmH2O)max	min. (mmH2O) max.
X	0 / 18	1.26 / 21.6	-18 / +18
A	0 / 50	3.6 / 60	-50 / +50
B	0 / 180	12.6 / 216	-180 / +180
C	0 / 500	36 / 600	-500 / +500
D	0 / 2500	175 / 3000	-2500 / +2500
E	0 / 6000	420 / 7200	-6000 / +6000
F	0 / 16000	1120 / 19200	-16000 / +16000
G	0 / 4(kg/cm ²)	0.28/4.8(kg/cm ²)	-4 / +4 (kg/cm ²)
H	0 / 40(kg/cm ²)	2.8 / 48 (kg/cm ²)	-40 / +40(kg/cm ²)



GENERAL

The transmitter SMART 220 measures a differential pressure in spans between 1.26mmH2O and 48kg/cm² with a static pressure up to 100 bar. The pressure measuring element is a piezoresistive sensor. It is possible to choose between sensors to satisfy the process conditions.

Span, Zero, Damping and other adjustments are made by a Hand-Held Terminal. This terminal can be connected in parallel to the transmitter at any point of the analog signal wire circuit. That means that the transmitter can be adjusted from the field or from the control room or an intermediate junction box.

The sensor generates a signal corresponding to the actual pressure and it is complete with a PTC thermistor which also transmits the temperature of the measuring cell to the electronic system. On the basis of these two values and of the configured parameters the electronic system generates a standard output signal (4 to 20mA, two wires system) and displays all the necessary data on the LCD display. The operating parameters can be changed by means of the four pushbuttons that are below the LCD display.

Among the relevant characteristics of this microprocessor based transmitter, are the following:

- wide rangeability for the measuring span (abt. 1 to 17)
- square root extraction selectable
- automatic temperature compensation in the measuring cell

FUNCTIONAL DATA

With reference to the following, please note these definitions:

Nominal range:(Referred to the sensor mounted on the instrument) the pressure range (included between a minimum and a maximum values) to measure which the sensor has been designed.

Nominal span: The pressure interval between the minimum and maximum values of the sensor nominal range. The span is a number.

Measuring range: The pressure range between minimum and maximum for which the transmitter has been calibrated.

Measuring span: The pressure interval between minimum and maximum values of the measuring range.

Input scale initial value or zero input: Minimum pressure value included in the measuring range.

Input full scale value: Maximum pressure value included in the measuring range.

1) Transmitter Parameters.

The parameters that are available for display and setting
Measuring Span: Possibility to change by 0.05% steps from 120% to 7% of the nominal span. (see table).

Zero Adjustment: By 0.1% steps from -9.9% to +9.9% of measuring span

Span Adjustment: By 0.1% steps from -9.9% to +9.9% of measuring span

Suppression/Elevation: By 0.05% steps of nominal span from 0 to 100% for elevation and from 0 to 93% for suppression

Damping : Adjustable by 1 sec steps from 0 to 15 sec.

Reverse Output and square root extraction : Selectable via software.

Measuring Units : For the measuring span display, one of the following units may be selected:

mbar, bar, kPa, MPa, mmH2O, mH2O, kg/cm², mmHg.

2) PHYSICAL CHARACTERISTICS.

Power supply : 12.35-30 Vdc with no load

Supply voltage to permissible load relation:

0/250 Ohm for 17.35 Vdc (HART DIGITAL 21.5V)

0/582.5 Ohm for 24 Vdc

0/882.5 Ohm for 30 Vdc

Output signal ; 4 -20mA, 2 wires, with superimposed digital communication (Vell 202 - HART Protocol).

Overpressure limits :See table

Settling time : 150ms (at 27 °C)

3) DIFFERENTIAL PRESSURE CELL

Max. static pressure: 100kg/cm²

Overpressure limits: 100kg/cm² on either side

Process chambers volume: 6cm³ approx.

Displacement: 0.2cm³ at span max.

4) ENVIRONMENT AND CONDITIONS**Temperature**

Process fluid : -20 ~ + 100

Housing : -20 ~ + 80

Handling and storage : -20 ~ + 90

Relative Humidity : 0 ~ 100% R.H.

LCD display reading : -10 ~ + 65

Performance

Unless otherwise stated performance specifications are referred at atmospheric pressure, nominal span, silicone oil filling and are given as a percent of span.

Accuracy rating: It is assured within the following limits:

Non linearity : Resettable with 0.1% accuracy

Repeatability : 0.10%

Hysteresis : 0.10%

Dead band : negligible

Operating Influences

Thermal drift: It is referred to -10 ~ + 65 °C range.

Zero: 0.1%/10 °C. Span: 0.1%/10 °C at nominal range.

Power supply effect :

Negligible between 12.35 and 30 V d.c.

5) PHYSICAL SPECIFICATIONS

Process wetted parts :

Diaphragm in SUS 316 L / Hastelloy C - process chambers and adapters forged steel UNI Fe50 / SUS 316 - drain and vent plugs SUS 316 - gaskets PTFE - bolts carbon steel / SUS 304

Housing : Die cast aluminum alloy AL UNI 4514 finished with epoxy resin (RAL 5014).

Filling fluid : Silicon oil.

Nameplate : Stainless steel, fixed on housing.

Bracket for 2" pipe mounting: Zinc coated carbon steel

Calibration

Standard: at nominal range, direct action, transmitter mode.

Optional: at the conditions specified with the order.

Environmental protection: The transmitter is dust and sand tight and protected against sea waves effects as defined by IEC IP 66. Complies with electromagnetic compatibility requirements (RFI, EMI, Voltage Surges) Suitable for tropical climate operation as defined in DIN 50.015.

Process connections: See table 1.

Electrical connections : Two cable entries on electronic housing, 1/2" NPT and cable gland PG 13.5 for 7 to 12mm diameter cable.

Terminal board : 2 terminals for signal wiring up to 1.5 mm² (14 AWG). Connection for ground and cable shield.

Mounting position : Any position.

Net weight : 5.1 Kg.

Option

Degreasing for oxygen service

6) EXPLOSION PROTECTION**Classification**

Type: Intrinsic safety Ex ia IIC, T6, T5, T4

Explosion proof feature Exd IIC T6,T5,T4.

Max Amb. temp.: 40 °C for T6, 55 °C for T5, 80 °C for T4

Condition A

No-load voltage: 30 V d.c.

Short circuit current: 120 mA.

Max transferred power: 0.75 W.

Condition B

No-load voltage: 25.2 V d.c.

Short circuit current: 152 mA.

Max transferred power: 0.95 W.



