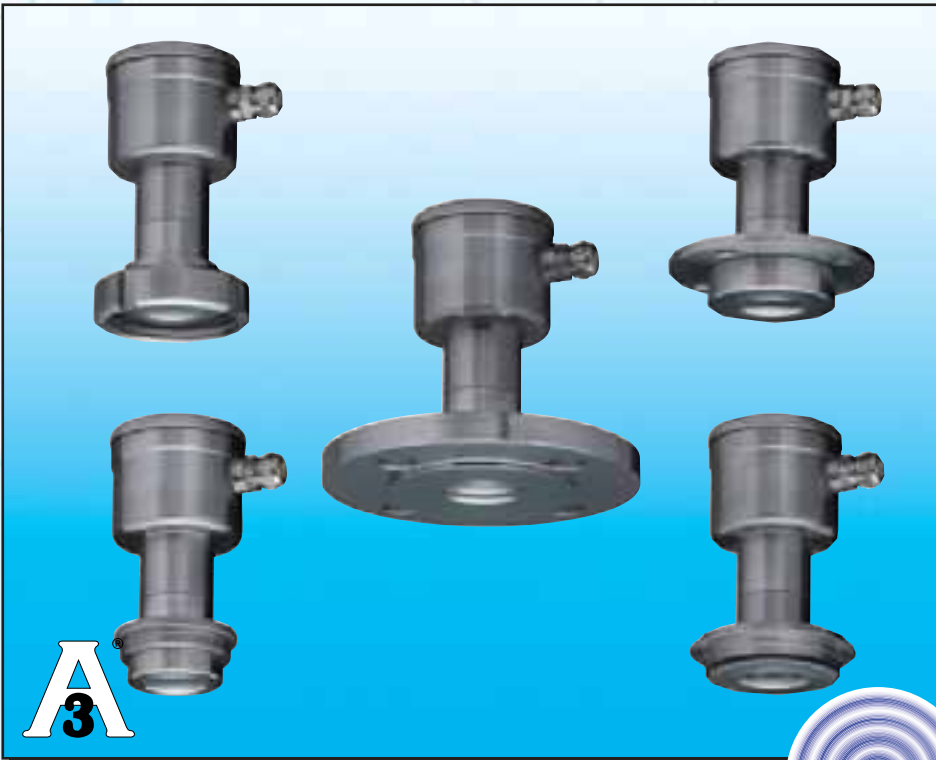




## PRESSURE AND LEVEL TRANSMITTERS "ALL STAINLESS"

### SERIES 8000-SAN

- OUTPUT 4-20 mA / 2-WIRE
- ZERO AND SPAN ADJUSTABLE
- ALL FORMS OF HYGIENIC/SANITARY CONNECTIONS AVAILABLE
- VERY STRONG FLUSH MOUNTING DIAPHRAGM
- LARGE RANGEABILITY
- INTEGRAL 3½ DIGIT L.C.D. INDICATOR (OPTION)
- TRULY NON-INTERACTIVE ZERO AND SPAN
- INTRINSICALLY SAFE ATEX II1G (EEx ia IIC T4)



8000-SAN with sanitary weld-on nipple diam. 85 mm

### DESCRIPTION

The Series 8000-SAN are solid state pressure and level transmitters based upon a piezo silizium sensor and a strong flush mounted diaphragm. The transmitters are fully temperature compensated. The Series 8000-SAN units are especially designed to be non-clogging and capable of being cleaned in-place (CIP and SIP). They fully meet the needs of the food and beverage, chemical and pharmaceutical industries. In order to be fully compatible with the process they are monitoring, the Series 8000-SAN units offer a wide range of process connections and a choice of materials from which the wetted parts are fabricated. All versions enjoy ATEX approval for Intrinsic Safe applications.

Made by:

**KLAY-INSTRUMENTS B.V.**

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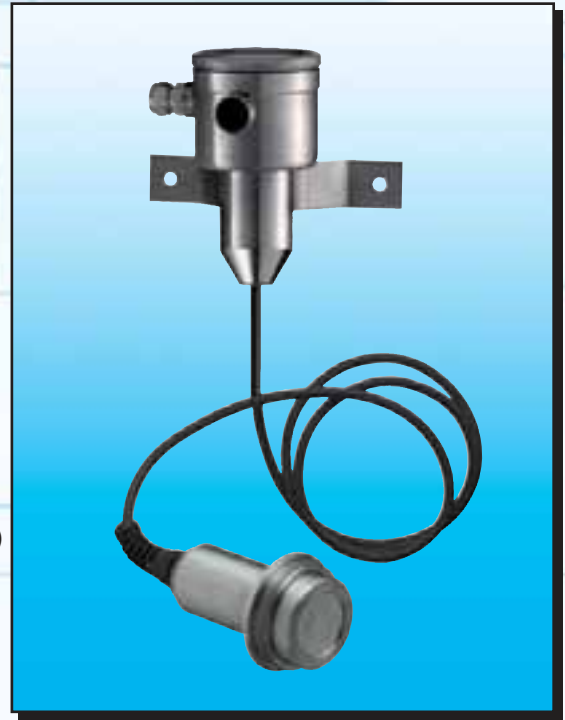


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## SPECIFICATIONS

Measuring ranges	: 0,1 bar to 80 bar
Output signal	: 4-20 mA, 2-wire
Overall accuracy	: 0,2% of adjusted span
Power supply	: 13 to 40 VDC (Exi: 17-28 VDC)
Electrical connection	: PG9, 1/2" NPT or M20
External load (max.)	: 550 Ohm/24 V to 1250 Ohm/40 V
Process temperature	: -20°C to +100°C (140°C/45mins.) (8000-SAN-cable -20°C to +140°C)
Temperature sensitivity	: +/- 0,015%/K
Ambient temperature	: -20°C to +70°C
Adjustment	: Zero and span internally
Process connections	: See pages 2 and 3 (More than 50)
Wetted parts	: AISI 316 (standard) Options: Hasteloy C (G7), Tantalum (G18)
Electronics housing	: AISI 304 (standard) Option: AISI 316 (code G9)
Vacuum ranges available	(see ordercode)

Specifications can change without notice



Model 8000-SAN-Cable with separate electronics

### Description 8000-SAN-Cable

This version has been developed for applications where space does not allow easy adjustment of a standard model and for applications with a process temperature above 95°C continuously with a max. temperature of 140°C. The Pressure Sensor and Transmitting electronics are physically separate but are joined by an interconnecting "vented" cable. The zero and span can easily be set at a convenient mounting area while the actual sensor is measuring at the desired point. The standard cable length is 3 m. (Specify cable length in order code.) In case of **high temperature**, this cablemodel can go up to 250°C continuously, specify **HT** in ordercode.

## ORDERINGCODE

Order code basic transmitter			SERIES 8000-SAN				
Order code with cable			SERIES 8000-SAN-Cable (. . . m)				
Measuring range (bar) min. ... max.	Max. overpressure bar	Adjustable span-range (bar) min. / max.					
0 - 0,1 ...0,4	6,4	0 - 0,1 / 0 - 0,4	B				
0 - 0,4 ...0,7	6,4	0 - 0,4 / 0 - 0,7	C				
0 - 0,7 ...1,5	10,5	0 - 0,7 / 0 - 1,5	D				
0 - 1 ...4	16	0 - 1 / 0 - 4	E				
0 - 2,5 ...10	30	0 - 2,5 / 0 - 10	F				
0 - 7,5 ...16	60	0 - 7,5 / 0 - 16	G				
0 - 16 ...50	120	0 - 16 / 0 - 50	H				
0 - 40 ...80	200	0 - 40 / 0 - 80	I				
<b>PROCESS CONNECTIONS:</b>							
- Milkcoupling DIN 11851, DN 25 (ranges E till I), DN 40, DN 50 (all ranges)			M..				
- Hygienic weld-on nipple, diam. 85 mm (other diameters on request)			W..				
- Tri-clamp connection 1 1/2", 2" or 3" (specify size)			L..				
- Flange (AISI 316) DIN or ANSI, all sizes available (specify size)			F..				
- Other connections: G1 1/2"(X3), Varivent(X4), IDF(X5), DRD(X7), SMS (X9), etc... (specify)			X..				
<b>OPTIONS:</b>							
- Digital local Indicator 3 1/2 digit, programmable (EEx i, not programmable)				I			
- Vacuum Ranges (Specify relative or absolute). Compound range available (example -1 / +1 bar)					V		
- High Temperature version with cooling fins. Always specify Process Temperature					HT		
- Intrinsic safe: ATEX  II1G (EEx ia IIC T4)						Ex	
- Special versions: Example: Other materials; Hasteloy C(G7) or Gold plated Diaphragm(G16), Tantalum(G18)							G

# OVERVIEW OF PROCESS CONNECTIONS SERIES 8000-SAN



## CODE M (DN25, 40 OR 50) MILK COUPLING

Series 8000-SAN-RANGE-M offers a choice of three dairy fittings in accordance with DIN 11851. The DN25 or 1" version has a very strong diaphragm developed specifically for pressure measurement in the food and pharmaceutical industries.

This model is available in pressure ranges from 0-1 bar (code E) to 0-80 bar (code I).

Higher pressure versions available on request.

The DN40 or DN50 (1½" and 2") versions which can be used for both level and pressure measurement are available from 0-0,08 bar (30" water column). When ordering, always specify code letter and size. The matching weld-on nipple can also be ordered.



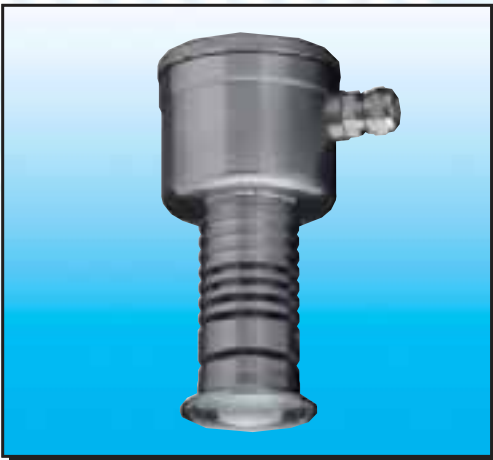
## CODE W (85 mm) SANITARY WELD-ON NIPPLE

The best connection for level measurement. The nipple (diam. 85 mm) is welded directly into the tank and the Transmitter is connected to it by means of a locking. This results in the diaphragm being virtually flush with the tank wall.

The standard packing ring between the weld-on nipple and the transmitter is made of PTFE.

The standard weld-on nipple size is diam. 85 mm. Other sizes can be made on request. There is a special version for welding on a pipeline with a diameter of 48 mm (Specify W48 in ordercode).

Please indicate the required size when ordering.



## CODE L (1½" OR 2") TRI-CLAMP

Several Tri-clamp connections are available for the food and pharmaceutical industries.

The 1½" version is for pressure measurement only and is only available for units within the ranges 0-1 bar (Range E) to 0-80 bar (Range I).

For low pressure and level measurements, from 0-0,08 bar and up, the 2" tri-clamp connection is available. Please indicate the required size when ordering.



## CODE F FLANGE CONNECTION

The flange fittings are equal to the weld-on nipple (code W) version. Therefore these models are easily interchangeable. All standard flanges are available, DIN (DN 40, 50 or 80) and ANSI (1½", 2" or 3"). Special flange versions at request.

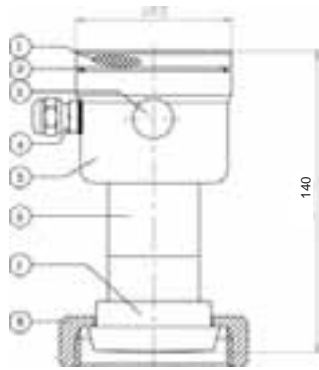
**Note:** More than 50 different process connections are available. Use code X at orderingcode and specify process connection.

Example:

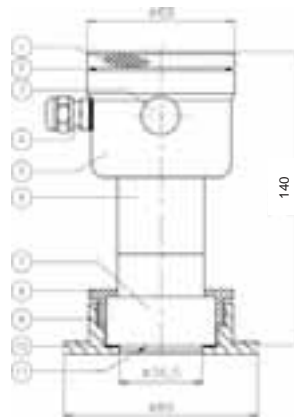
G 1 ½"(X3), Varivent(X4), IDF(X5), DRD(X7), SMS(X9), etc.

## DIMENSIONS (mm)

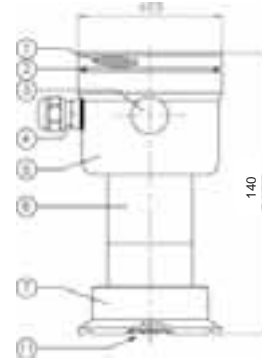
CODE M



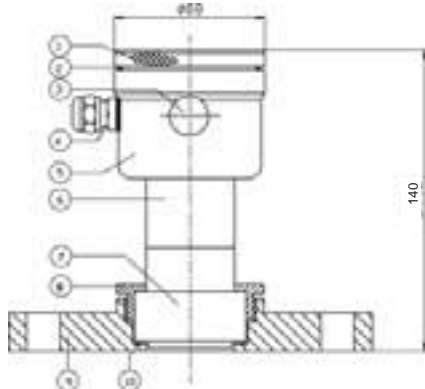
CODE W



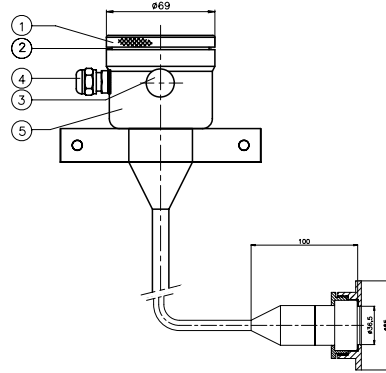
CODE L



CODE F



8000-SAN-CABLE



**Parts description:**

1. Cover	AISI 304
2. O-ring	EPDM
3. Venting	
4. Cable entry	
5. Electr. compartment	AISI 304
6. Connecting part	AISI 304
7. Diaphragm ring	AISI 316
8. Lockring	AISI 304
9. Weld-on nipple / -flange	AISI 316
10. Packing ring	PTFE

## CERTIFICATES AND OPTIONS

### Temperature Compensation

All Klay transmitters with a flush diaphragm are fully temperature compensated and are equipped with the unique **KLAY Flush Diaphragm Technology**. (Detailed brochure available).

For **High Temperature Applications** where the process temperature is continuously above 100°C we manufacture special transmitters with cooling fins to reduce the temperature (Series 8000-SAN with HT option). With a compact 8000-SAN transmitter with option HT we can go up to 180°C (see photo) and with separation by a cable between process connection and electronics housing (Type 8000-SAN-Cable-HT) we can go up to 250°C continuously! The HT option is not available for range B and C.



## APPLICATIONS

### Level measurement:

The 8000-SAN Series can be used for all kinds of level measurement on storage tanks in the food, dairy (milk storage tanks), beverage, pharmaceutical, chemical and paper industry.

Various process connections can be used, like a DIN milk-coupling, tri-clamp or a DIN/ANSI flange.

For sanitary applications we advise to use our sanitary weld-on nipple (diam. 62 mm or 85 mm) code W. (see page 3).



Level measurement on storage tanks

### Pressure measurement:

The 8000-SAN Series can also be used as a pressure transmitter. Applications are for example: protection of pumps and installations for under or over pressure.

Process connections are: DIN, SMS and IDF couplings and tri-clamps from 1" till 3".



Pressure transmitter on line

All our pressure transmitters from Series 8000-SAN have a flush mounted diaphragm. For applications on steam, water, gasses and vapours, our ceramic pressure transmitter 'Peramic' with 1/2" BSP/NPT process connection can be used.

For information on the 'Peramic' see page 6.



Leveltransmitters on CIP tanks

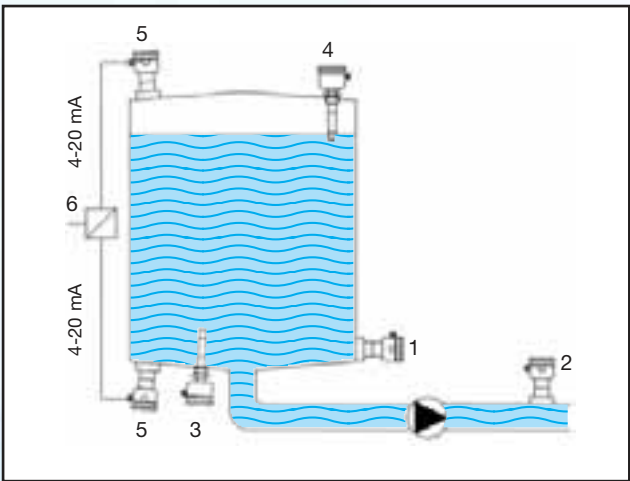
### Level control:

A lot of tank levels must be automatically controlled. For example the CIP (Cleaning In Place) tanks in the food, dairy and beverage need level transmitters to measure and control the level (continuously).

For this application the same process connections can be used as described for storage tanks, like DN 40 milkcoupling, 2" tri-clamp or sanitary weld-on nipple diam. 85 mm (code W85).

## APPLICATION EXAMPLES

1. Level transmitter, 8000-SAN Series
2. Pressure transmitter, 8000-SAN Series
3. Low level switch, type FLX or Vibra-Switch
4. High level switch, type FLX or Vibra-Switch
5. Pressure/level transmitters, for level measurement on pressurized tanks (diff. pressure). (Example: Breweries). Use 2 transmitters, calibrated at the same span, the 2 output signals (4-20 mA) will be subtracted in calculator (6) or PLC.





Factory Klay Instruments B.V. in Dwingeloo, The Netherlands

## KLAY INSTRUMENTS B.V.

Klay Instruments b.v. is an ISO 9001-2000 certified company who develops and manufactures a wide range of electronic Pressure and Level transmitters, "Intelligent" transmitters with HART® protocol or Profibus PA and pressure and level switches.

All instruments are designed and manufactured in our factory in Dwingeloo, The Netherlands. Klay Instruments has a world wide service and sales distribution network.

## OTHER INSTRUMENTATION FROM KLAY

### "INTELLIGENT" PRESSURE/LEVEL TRANSMITTERS

The Klay series 2000 SAN are a complete range of microprocessor based pressure and level transmitters with local display and adjustment by three pushbuttons. **Zero and span can be adjusted without testpressure.** The display can be used during programming to assist the operation. An engineering unit can be chosen and also the process temperature can be shown on the display. Also a damping (0-25 sec) and a current simulation (4-20 mA) can be performed. Over 50 different process connections are available including many flush diaphragm designs. The series 2000-SAN are also available with the HART® protocol. A detailed brochure is available.



### PRESSURE TRANSMITTER "PERAMIC"

The "Peramic" is an "All Stainless" pressure transmitter based on a ceramic pressure cell that can withstand high overpressures. The "Peramic" can be used for all gauge and absolute pressure measurements on steam, liquids, gasses and vapours. The available process connections are G 1/2" (1/2" BSP) or 1/2" NPT. Zero and span are internally adjustable over wide ranges. Ranges are available from 0 - 0.1 bar to 0 - 350 bar. The Peramic is also available in an "Intelligent" version, Peramic "S" (series CER-2000) including the HART® protocol. Detailed brochures of both versions are available.



### LEVEL SWITCHES FOR LIQUIDS

These compact "All Stainless" liquid Level Switches can be used in nearly all liquids. The "Vibra-Switch" is a rugged and compact levelswitch based on a vibrating probe. The type "FLX" is used for limit level switching in conductive liquids.

Both versions are available in various "hygienic" process connections, like 1" BSP, tri-clamp, milkcoupling or flange. A detailed brochure is available.



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