

COMMANDER 320

Booster Pump

Pressure Switch

Specification DataFile

■ **Protection for the pasteurization process**

- ensuring a high quality, safe product for your customers

■ **High visibility LED displays**

- continuous indication of Raw and Pasteurization pressures

■ **IP66 (NEMA4X) enclosure**

- suitable for use in hosedown areas

■ **Dual analog output**

- for raw, pasteurization or differential pressure

■ **Three (5A) relays included as standard**

- booster pump, bypass valve and alarm

■ **Front face deviation bargraph**

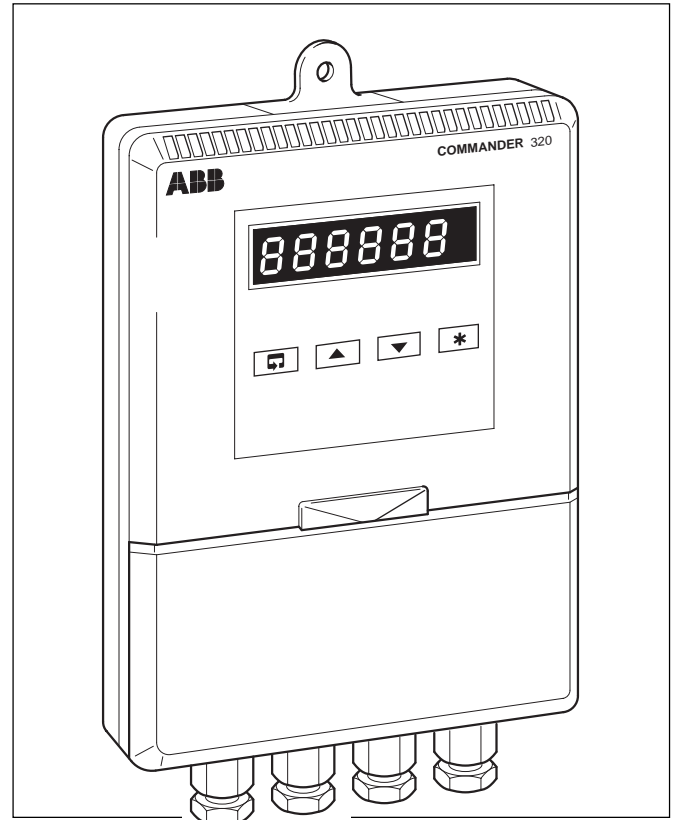
- shows at a glance difference between raw and pasteurized signals

■ **Inbuilt transmitter power supplies**

- ability to power both loops in standard unit

■ **Range of hygienic pressure transducers**

- complete solution from one supplier



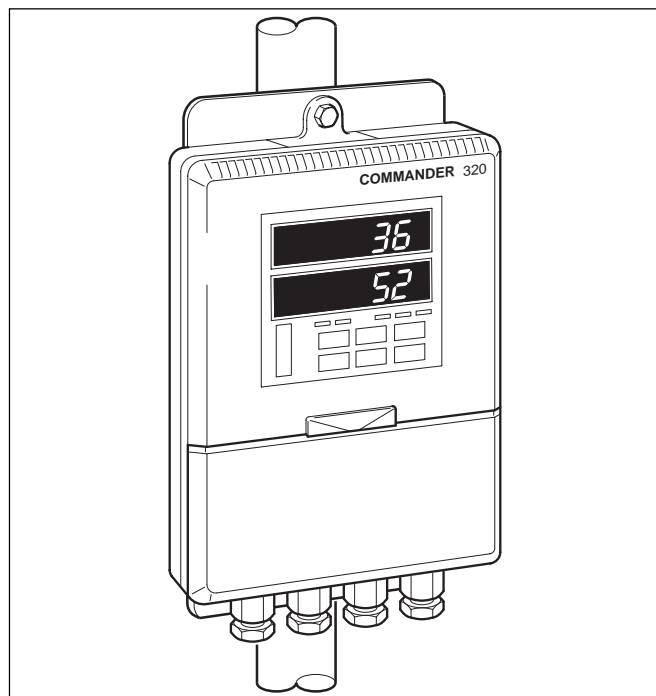
COMMANDER 320 – ensuring a continuous quality product every time

COMMANDER 320

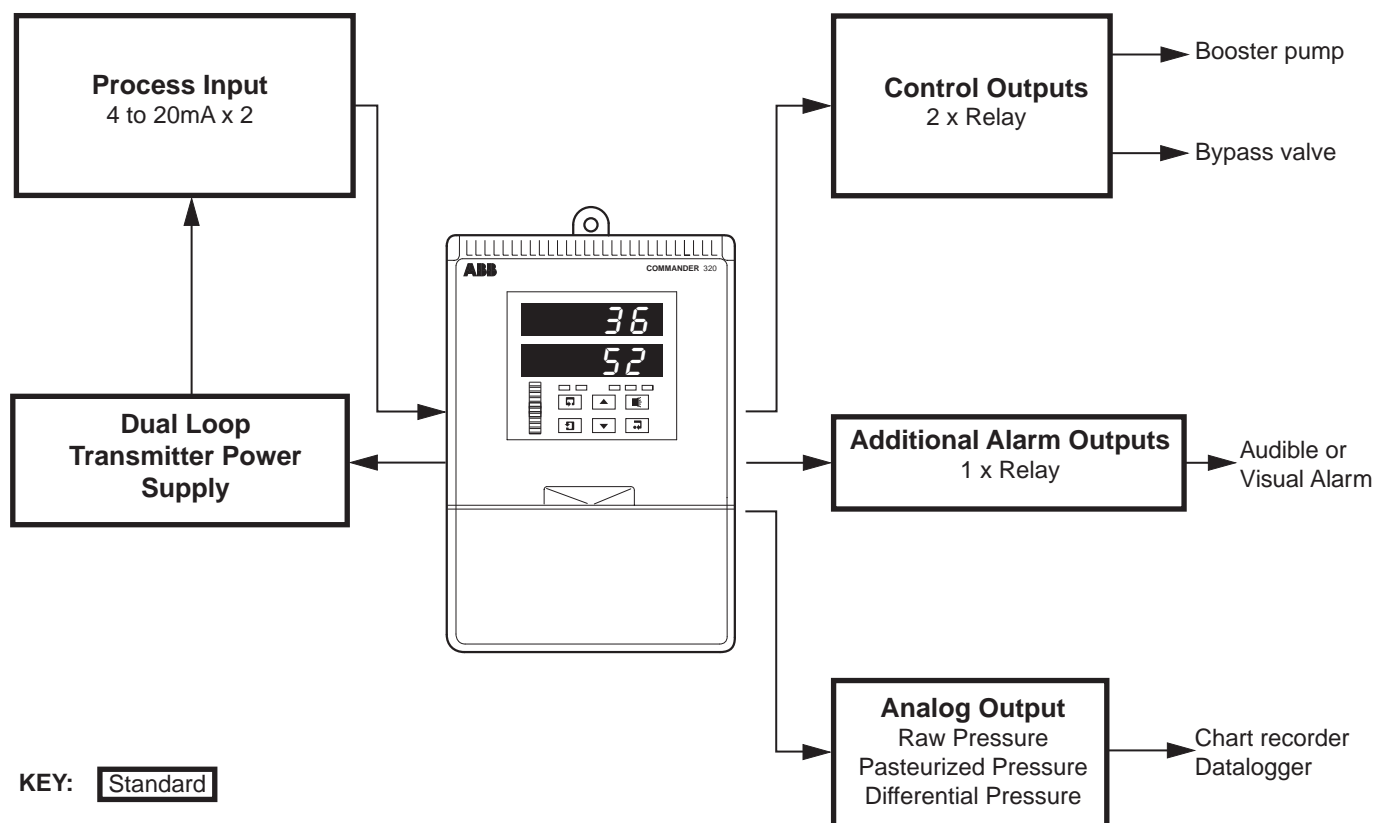
The **COMMANDER 320** is designed to act as a differential pressure switch for use in the regeneration section of a pasteurizer. The C320 is connected to two **hygienic pressure sensors**, one on the raw product side of the regenerator, the other on the pasteurized product side. If the difference in pressure falls below a preset value the C320 will stop the booster pump and switch the bypass valve.

Also included is an additional relay to activate a visual, or audible, alarm which can be acknowledged and de-energized via a dedicated button on the front facia.

Both of the input signals are also available as **4 to 20mA retransmission** signals for datalogger or chart recorder.



Pipe-mounted C320 Booster Pump Switch



KEY: **Standard**

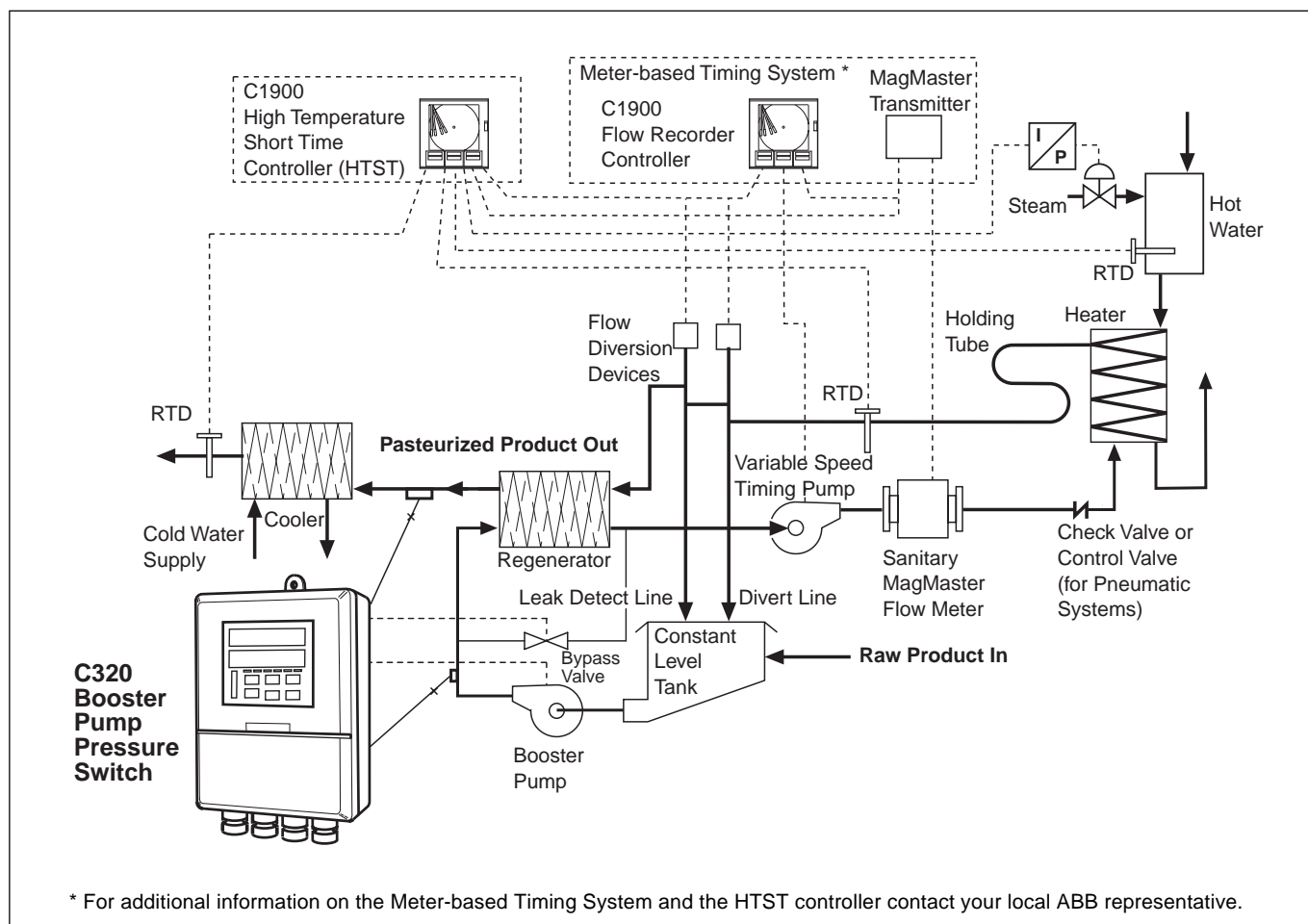
Pasteurization Pressure Control

The Commander C320 Booster Pump Pressure switch has been specifically designed for use in the regeneration part of the pasteurization process. The regeneration unit is normally a heat exchanger, with the Raw product on one side being preheated by the pasteurized product on the other side. This system is designed to save money and process time by re-using heat already in the system.

The main drawback is that untreated product is very close to pasteurized product, only separated by a thin plate. Over time these plates can crack and untreated product could mix

with the pasteurized product. To stop this happening the pasteurized product is pressurized above the untreated product pressure; therefore if the plate does crack only pasteurized product can mix with untreated product.

The C320 is used in conjunction with the two Hygienic pressure transmitters to measure both pasteurized and untreated product pressures. If the difference falls below a preset level it stops the Booster pump and the activates bypass valve, thereby preventing the possible supply of untreated product.



Pasteurization Pressure Control Schematic

Pasteurization – Control and Recording

Raw product is pumped from the constant level tank to the heating section where the temperature is raised to exceed the pasteurization low limit. The hot product temperature is measured and recorded at the end of the holding tube. Until the pasteurization limit is exceeded, the product is recycled to the constant level tank by the Flow Diversion Device. Once pasteurization temperature is exceeded, the hot product, through the forward flow port, is routed to the regenerator and

cooling sections of the heat exchanger. The red pen records and monitors the hot product pasteurization temperature. The violet pen records the position of the flow diversion valve, FDD. Both of these pens record on the same time line. The green pen records the selected diversion temperature, on multiple divert systems, where up to eight may be selected. The event pen can also indicate when the process is in CIP or secondary divert due to low pressure.

Specification

Summary

COMMANDER 320 Booster Pump Pressure Switch

Two analog inputs

Three relays

Two analog outputs

IP66 (NEMA 4X) housing

Operation

Display

High-intensity, 7-segment, 0.56 in. (14mm), 2 x 6 red
I.e.d. display
11-element I.e.d. deviation bargraph

Configuration

User-defined via front panel

Analog Inputs

Number

Two 4 to 20mA signals

Input sampling rate

160ms per channel

Input impedance

10 Ω

Broken sensor protection

Programmable Up/Downscale or None

Input noise rejection

Common mode rejection	>140dB at 50/60Hz with 500 Ω imbalance
Series mode rejection	>60dB at 50/60Hz

Accuracy

Measurement error	< $\pm 0.2\%$ of reading or $\pm 0.5\mu\text{A}$
Display range	-9999 to +9999

Transmitter power supply

24V 60mA max. powers two loops, fitted as standard

Outputs/Inputs

Relay outputs

Three relays – SPST 5A 120/240V a.c. normally open or
normally closed:

Relay 1 – for booster pump or bypass valve control

Relay 2 – for booster pump or bypass valve control

Relay 3 – for warning light or horn

Retransmission

4 to 20mA for Raw and Pasteurized Product or pressure
differential

Max. load 15V (750 Ω at 20mA)

Accuracy $\leq 0.1\%$ of span

Logic input – for manual switching of Pump or Valve

TTL or Volt-free

Minimum pulse 250ms

Electrical

Voltage

115V $\pm 15\%$ or 230V $\pm 15\%$ 50/60Hz (link selectable)

Power consumption

<10VA

Power interruption protection

<60ms/<3 cycles, no effect

>60ms/>3 cycles, controlled reset

Environmental

Operating limits

14° to 131°F (-10° to 55°C), 0 to 95%RH non-
condensing

Temperature stability

<0.02% of reading or 0.5 $\mu\text{V}/^\circ\text{F}$ (1 $\mu\text{V}/^\circ\text{C}$)

Housing dust/water protection

IP66 (NEMA 4X)

EMC

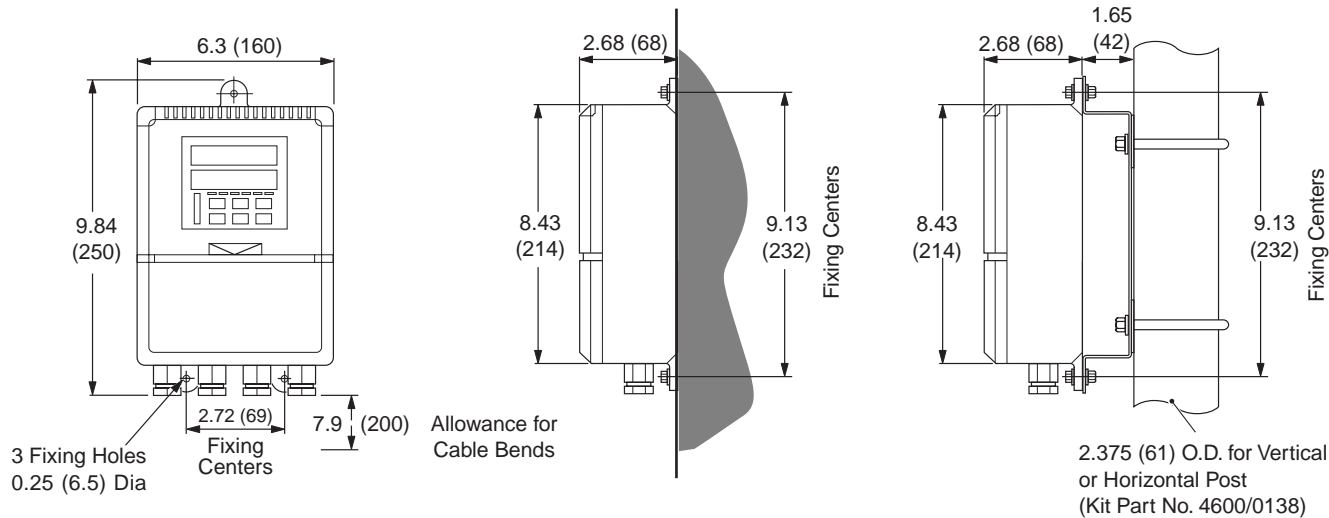
Emissions – meets requirements of EN50081-2

Immunity – meets requirements of EN50082-2

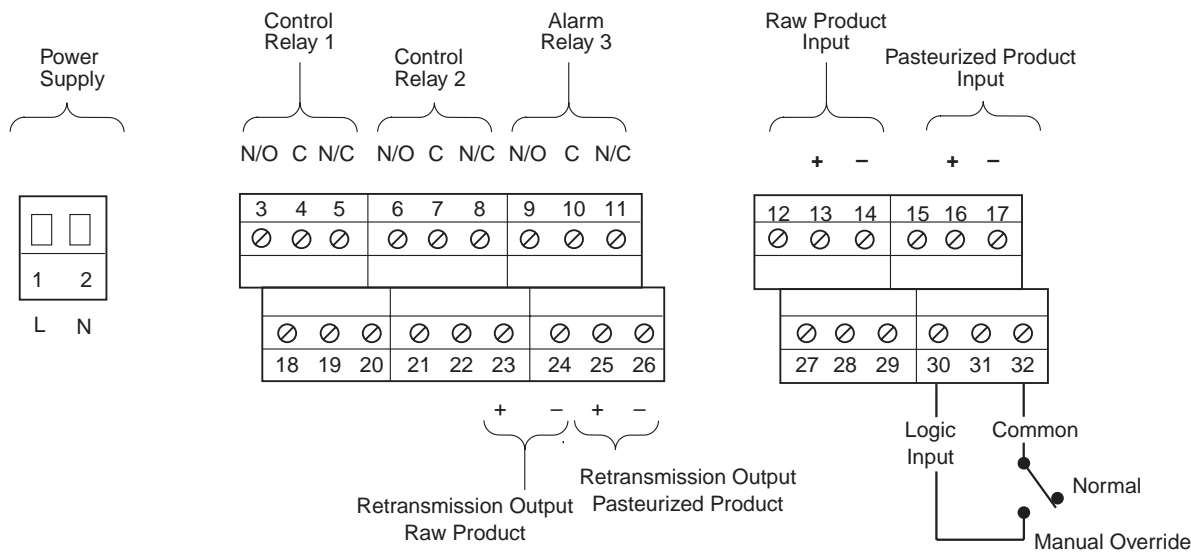
CE marked

Dimensions

Dimensions in in. (mm)
Weight 4.5lb (2kg)



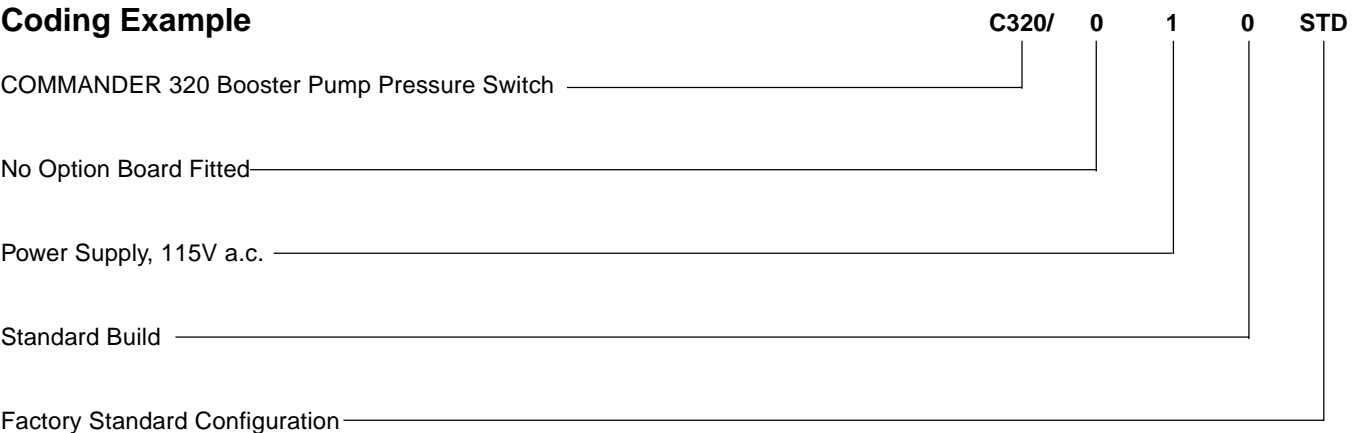
Wiring Connections



Ordering Guide

COMMANDER 320 Booster Pump Pressure Switch		C320	/	X	X	X	XXXX
Option Board		None		0			
Power Supply		115V a.c. 230V a.c.			1 2		
Build		Standard				0	
Programming/Special Features		Configured to factory standard Configured to customer details					STD CUS

Coding Example



P880 Series Hygienic Pressure Transmitters for Food and Chemical Industries

The hygienic flush diaphragm transmitters of the P880 Series are ideally suited to fulfill the pressure measurement requirements of the food, dairy and pharmaceutical industries.

The cleanliness requirements of the food processing industry have dictated the hygienic design of these transmitters. They can also withstand, without damage, the various cleaning phases specific to these industries e.g. sterilizing cycles, autoclaving and steam flushing.

- Stainless steel 316L flush diaphragm
- IP65
- High temperature
- Performance evaluation report delivered by INRA laboratory

Specification (20°C)

Range

0 to 100 psig standard
Other ranges available

Output signal

4 to 20mA

Supply voltage

13 to 40V d.c.

Electromagnetic compatibility

European directive 89/336/CEE
CE mark

Maximum load impedance (between +M/-M)

> 5kΩ

Global error (linearity, hysteresis and repeatability)

Typ. $\leq \pm 0.2\%$ F.S.
Max. $\leq \pm 0.3\%$ F.S.

Compensated temperature range (zero and span)

Standard 14° to 131°F (−10° to +55°C)

Operating temperature range

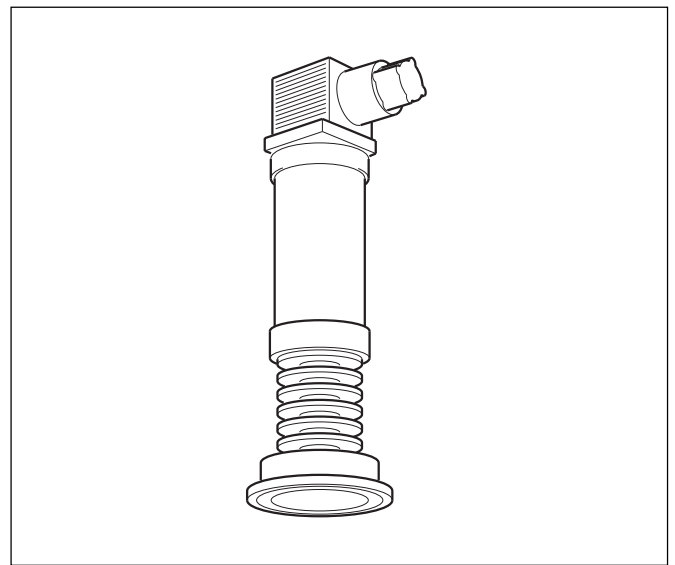
−13° to 185°F (−25° to +85°C)

Storage temperature

−40 to 185°F (−40° to +85°C)

Temperature range

Fluid : −13° to 266°F (−25° to 130°C)
ambient $\leq 122^\circ\text{F}$ (50°C)
−13° to 356°F (−25° to +180°C)
ambient $\leq 186^\circ\text{F}$ (30°C)



Thermal zero drift

All pressure ratings: Typ. $\pm 0.015\%$ F.S./°C

Max.: $\pm 0.025\%$ F.S./°C

(Except: 0 + 1 bar: Typ. $\pm 0.025\%$ F.S./°C

Max. $\pm 0.04\%$ F.S./°C)

Optional: $\pm 0.015\%$ F.S./°C Max. for all pressure ratings

(Except: 0 + 1 bar)

Span thermal shift

Typ : $\pm 0.01\%$ /°C

Max. : $\pm 0.015\%$ /°C

Wetted parts

Stainless steel 316L flush diaphragm

Connections

Electrical : Standard, DIN 43650 connector

Hydraulic (pressure parts):

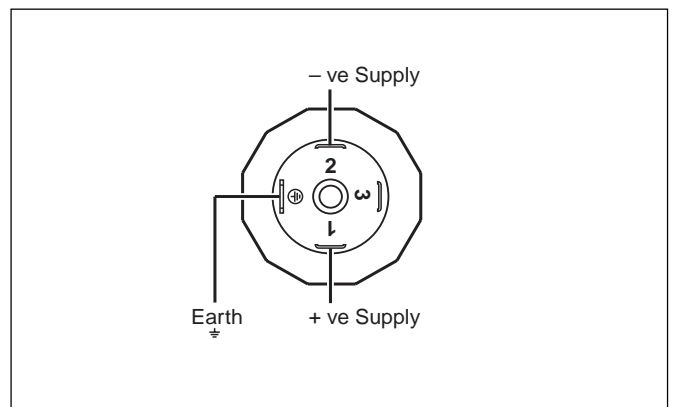
Clamp — DN 25-38-51 (1 in., 1.5 in. and 2 in.)

Filling oil: Codex

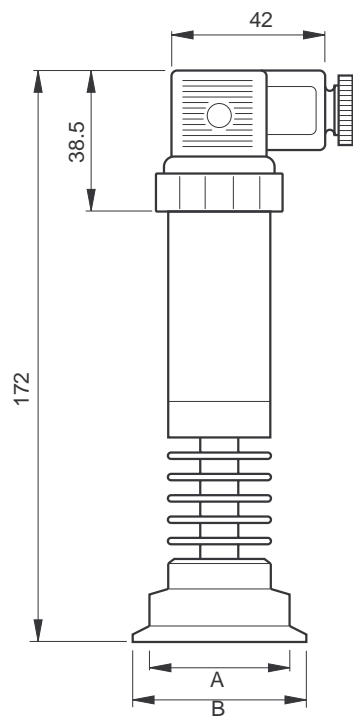
Degree of protection

IP65 (with connector)

DIN connections



Dimensions and Weights P880 Hygienic Pressure Transmitter



DIN	A	B	Weight gm (lb)
DIN 25 (1 in.)	—	50.5mm (1.99 in.)	410 (0.9)
DIN 38 (1.5 in.)	41.5mm (1.65 in.)	50.5mm (1.99 in.)	410 (0.9)
DIN 51 (2 in.)	51.4mm (2 in.)	64mm (2.52 in.)	510 (1.12)

Coding P880 Hygienic Pressure Transmitter

Hygienic Pressure Transmitter		P880 /	X	X	X	XX
Connector		DN25 (1 in.)	2	0 9	A B	
		DN38 (1½ in.)	3			
		DN51 (2 in.)	4			
Range		0 to 100psig Specify				
Cable	Units of measure	Metres Feet				
Cable	Length	None ↓ 99				00 ↓ 99



The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.
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