

Data sheet

Pressure transmitter for general
industrial purposes with diagnostics**DST P300**

The compact high temperature pressure transmitter is designed for use in almost all industrial applications, and offers a reliable pressure measurement, even under harsh environmental conditions.

The flexible pressure transmitter program covers different output signals, absolute or gauge (relative) versions, measuring ranges from 0 – 1 to 0 – 600 bar and a wide range of pressure and electrical connections.

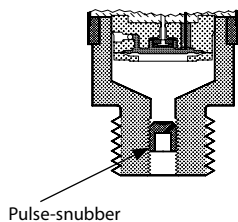
A robust design with an excellent vibration stability and a high degree of EMC / EMI protection equip the pressure transmitter to meet the most stringent industrial requirements.

Running a powerful ARM-based microcontroller, the DST P300 offers diagnostic functions and performance features.

Features

- Robust electronic platform for harsh electrical environments
- Available output signals:
 - 10 - 90% of supply voltage
 - 4 - 20 mA
 - Absolute voltage
- For media temperatures up to 125 °C
- A wide range of pressure and electrical connections
- Enclosure and wetted parts of AISI 316L
- Fully digitally compensated
- Diagnostic functions
- Scalable performance features available

Application and media conditions



Application

Cavitation, liquid hammer and pressure peaks may occur in liquid filled hydraulic systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops.

The problem may occur on the inlet and outlet side, even at rather low operating pressures.

Media condition

Clogging of the nozzle may occur in liquids containing particles. Mounting the transmitter in an upright position minimizes the risk of clogging, because the flow in the nozzle is limited to the start-up period until the dead volume behind the nozzle orifice is filled.

The media viscosity has only little effect on the response time. Even at a viscosities up to 100 cSt, the response time will not exceed 4 ms.

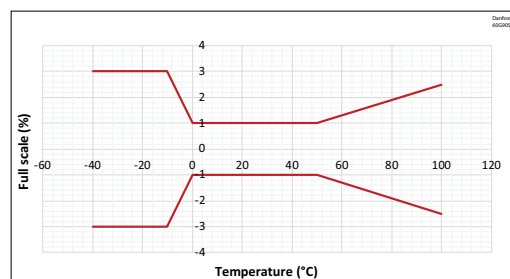
Technical data

Performance (EN 60770)

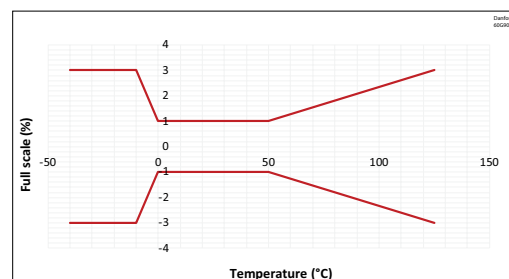
Accuracy @ 20°C	≤ ± 1% FS (max), ≤ 0,5%FS (typ.)
Total Error Band (incl. non-linearity, hysteresis, repeatability, thermal error, offset and FS span) ⁽¹⁾	Default TEB profile - see graph below
Response time ⁽¹⁾	< 2 ms
Overload pressure (static)	6 × FS (max. 1500 bar)
Burst pressure	6 × FS (max. 2000 bar)
Power-up time	< 50 ms
Durability, P: 10% – 90% FS	> 10 mil. cycles

⁽¹⁾ Programmable filtering available

mA version



ratiometric/absolute voltage version



Electrical specifications

Nom. output signal (short-circuit protected)	4 – 20 mA	0 – 5, 1 – 5, 1 – 6 V	0 – 10 V, 1 – 10 V	Ratiometric 10 – 90% of [U _B]
Supply voltage [U _B], polarity protected	9 – 32 V DC	9 – 32 V DC	15 – 32 V DC	4.5 – 5.5 V DC
Supply – current consumption	–	≤ 5 mA	≤ 8 mA	≤ 5 mA at 5 V DC
Supply voltage dependency	< 0.1% FS / 10 V	< 0.05% FS / 10 V		--
Ratiometricity	–	–		< 0.05% FS / 4.5 – 5.5 V
Output limitation	22.4 mA	0-5V: 5.75 V 1-5V: 5.6 V 1-6V: 6.75 V	0-10V: 11.5 V	≈ supply voltage
Sink / Source	–	< 1 mA		
Load [R _L] (load connected to 0 V)	R _L ≤ (U _B – 9V) / 0.02 A	R _L ≥ 10 kΩ	R _L ≥ 15 kΩ	R _L ≥ 10 kΩ at 5 V DC

Technical data
(continued)

Environmental conditions

Sensor operating temperature ¹⁾	4 - 20 mA		-40 – 100 °C
	10 - 90% of Vs and abs. voltage		-40 – 125 °C
Media temperature range			-40 – 125 °C
Ambient temperature			See page 6
EMC – Emission			EN 61000-6-3
EMC – Immunity (Output > 1 GHz - deviation < 3%)			EN 61000-6-2
Insulation resistance			> 100 MΩ at 500 V DC
Vibration stability	Random	7.5 g _{rms} , 5 Hz – 1 kHz	IEC 60068-2-64
Shock resistance	Shock	500 g / 1 ms	IEC 60068-2-27
Enclosure (depending on electrical connection)			See page 6

¹⁾ Operating temperature is a result of influence from media temperature, ambient temperature and self-heating contribution from the internal electronics.

Explosive atmospheres

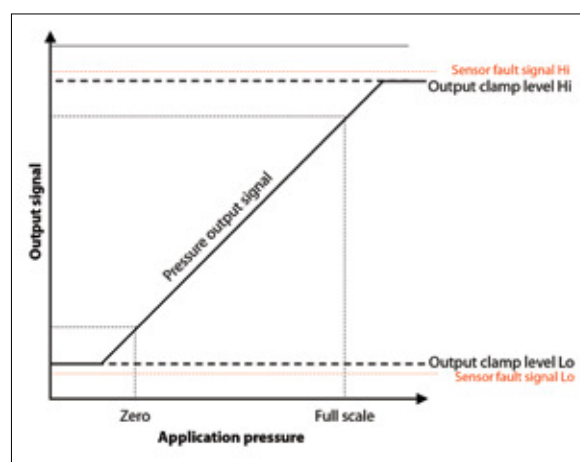
Zone 2 applications	CE Ex II 3G Ex nA IIA T3 Gc -10 °C < Ta < +85 °C	EN60079-0; EN60079-15; EN60079-7
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When used in ATEX Zone 2 areas at low temperatures the cable and plug must be protected against impact

Mechanical characteristics

Materials	Wetted parts	EN 10088-1; 1.4404 (AISI 316 L)
	Enclosure	EN 10088-1; 1.4404 (AISI 316 L)
	Electrical connections	See page 6
	Pressure connections	See page 5
Net weight (depending on pressure connection and electrical connection)		0.2 – 0.3 kg

Output and diagnostics



Pressure output signal

- Defines the measuring range of the sensor.

Output clamp levels

- Limit the pressure output signal if the pressure rises above or falls below the normal range.

Sensor fault signal

- Output at this level signals a sensor fault. The fault signal setting can be high or low.

Flexible output clamping and flexible fault signal error level to application fit available.

Contact Danfoss for detailed information and requirements.

Self-diagnostic default levels

* programmable filtering available

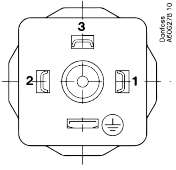
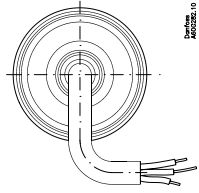
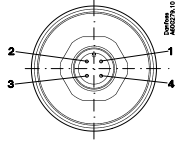
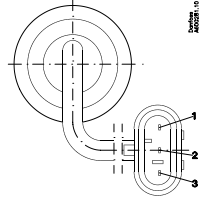
	Ratiometric % of supply voltage	4-20mA	0-5V	1-5V	1-6V	0-10V	1-10V
Zero	10%	4mA	0V	1V	1V	0V	1V
FS	90%	20mA	5V	5V	6V	10V	10V
Span	80%	16mA	5V	4V	5V	10V	9V
Output clamp level Lo	4%	3,8mA	NA	0,5V	0,5V	N/A	0,5V
Output clamp level Hi	99%	20,5mA	5,5V	5,5V	6,5V	11V	11V
Fault signal Lo	2%	-	-	-	-	-	-
Fault signal Hi	-	21,5mA	5,8V	5,8V	6,8V	11,5V	11,5V

Ordering standard

[illegible]

Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information.

Electrical connections

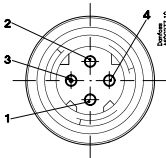
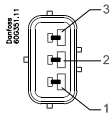
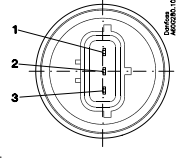
Type code	A1 & A6	A3	E3	A8
	 EN 175301-803-A, Pg 9 & Pg 11	 2 m screened cable	 EN 60947-5-2 M12 x 1; 4-pin	 AMP Superseal 1.5 series (male)
Ambient temperature	-40 – 85 °C	-30 – 85 °C	-25 – 90 °C	-30 – 85 °C
Enclosure (IP protection fulfilled together with mating connector)	IP65	IP67	IP67	IP67
Material	Glass filled polyamid, PA 6.6 ¹⁾	Poliolyfin cable with PE shrinkage tubing	Nickel plated brass, CuZn/Ni	Glass filled polyamid, PA 6.6 ²⁾
Electrical connection, 4 – 20 mA output (2 wire)	Pin 1: + supply Pin 2: ÷ supply Pin 3: not used  Earth: Connected to MBS enclosure	Brown wire: + supply Black wire: ÷ supply Red wire: not used Orange: not used Screen: not connected to MBS enclosure	Pin 1: + supply Pin 2: not used Pin 3: not used Pin 4: ÷ supply	Pin 1: + supply Pin 2: ÷ supply Pin 3: not used
Electrical connection, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, 1 – 10 V output	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output  Earth: Connected to MBS enclosure	Brown wire: + output Black wire: ÷ Supply/Common Red wire: + supply Orange: not used Screen: not connected to MBS enclosure	Pin 1: + supply Pin 2: not used Pin 3: + output Pin 4: ÷ supply/common	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output
Electrical connection Ratiometric output, 10-90% of supply voltage	Pin 1: + supply Pin 2: ÷ Supply/Common Pin 3: output  Earth: Connected to MBS enclosure	Brown wire: output Black wire: ÷ Supply/Common Red wire: + Supply Orange: Not used Screen: Not connected to MBS enclosure	Pin 1: + supply Pin 2: Not used Pin 3: output Pin 4: ÷ supply/Common	Pin 1: + supply Pin 2: ÷ supply/Common Pin 3: +output

¹⁾ Female plug: Glass filled polyester, PBT

²⁾ Wire: PTFE (teflon) Protection sleeve: PBT mesh (polyester)

Electrical connections

(continued)

Type code	C8	D9	G1
	 ISO 15170-A1-3.2-Sn Bayonet	 AMP 173065, male Flying leads 125 mm	 AMP Econoseal J series (male)
Ambient temperature	-40 – 85 °C	-40 – 85 °C	-30 – 85 °C
Enclosure (IP protection fulfilled together with mating connector)	IP67/IP69	IP67	IP67
Material	Glass filled polyester PBT ¹⁾	Glass filled polyester, PBT ¹⁾	Glass filled polyamide, PA 6.6 ¹⁾
Electrical connection, 4 – 20 mA output (2 wire)	-	Pin 1: + supply Pin 2: - supply Pin 3: not used	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: not used
Electrical connection, 0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, 1 – 10 V output	-	Pin 1: + supply Pin 2: - supply/Common Pin 3: + output	Pin 1: + supply Pin 2: ÷ supply/Common Pin 3: + output
Electrical connection Ratiometric output, 10-90% of supply voltage	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output Pin 4: Not used	-	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output

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