

Pressure Transmitter for A/C and Refrigeration Type AKS 3000



AKS 3000 is a series of absolute transmitters with high-level signal conditioned current output, developed to meet demands in A/C and refrigeration.

AKS 3000 utilizes the proved piezoresistive measuring principle, which has been used for decades in Danfoss pressure transmitters. The pressure reference is a sealed gauge. This means that atmospheric pressure variations have no influence on regulating accuracy. A must in accurate low pressure regulation.

All materials in contact with the refrigerant and materials for the housing are AISI 316L stainless steel. No soft gaskets, all environmental sealings are made through laser weldings only.

AKS 3000 has a 4 to 20 mA output, and is available with spade terminals for EN 175301-803 plug.

Features

Designed to meet A/C and refrigeration demands without compromising control accuracy concerning

Tough environment

- Vibration
- Shock during operation and transport
- Humidity and ice formation
- Temperature variations
- Corrosive media like ammonia gases and salt mist

Convenient performance

- 4 to 20 mA signal
- 1% typical accuracy
- 0.5% typical linearity
- Prepared for high pressure refrigerants
- Bar code for tracing of calibration data

Perfect system integrity

- Compact design
- Max. working pressure ≥ 33 bar
- Temperature compensation for suction line

- Optimized accuracy at -10°C and $+20^{\circ}\text{C}$ for suction line installations, see page 4
- $\frac{1}{4}$ -18 NPT, G $\frac{3}{8}$ A, G $\frac{1}{2}$ A or $\frac{1}{4}$ flare ensures tight pressure connection
- All laser welded AISI 316L stainless steel enclosure
- No soft seals
- Enclosure: IP 65

Application

- Fan speed control
- High pressure control
- Compressor capacity control
- Evaporator pressure detection
- Oil pressure control

Approvals

- UL
- CE marked acc. to the EMC directive
- GOST
- ATEX

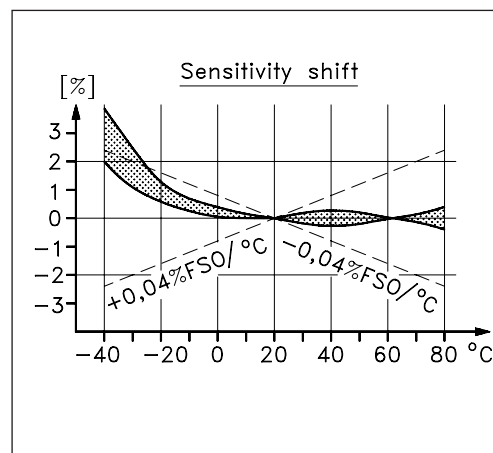
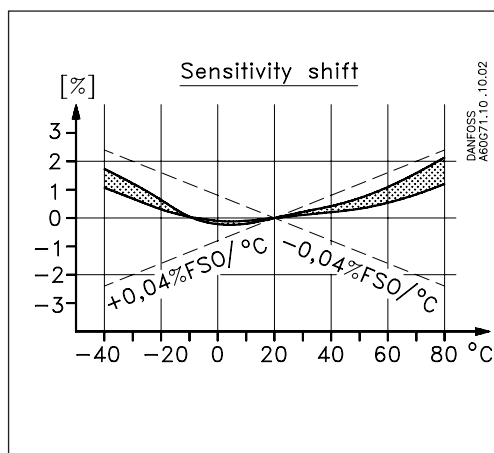
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Thermal sensitivity

AKS 3000 is calibrated to limit ambient temperature influence on the regulating accuracy. Pressure transmitters to be used at low temperature conditions, e.g. in suction lines, are calibrated at -10°C and $+20^{\circ}\text{C}$. In this way control accuracy is optimized in a temperature range of -30°C to $+40^{\circ}\text{C}$.

Pressure transmitters for general use, e.g. at normal room temperature, are calibrated at $+20^{\circ}\text{C}$ and $+60^{\circ}\text{C}$.

In this way control accuracy is optimized in a temperature range of 0°C to $+80^{\circ}\text{C}$.



Ordering

AKS 3000

Operating range bar	Max. working pressure PB bar	Calibration at $^{\circ}\text{C}$	Code no.			
			EN 175301-803 plug, Pg 9			
			G $\frac{3}{8}$ A	G $\frac{1}{2}$ A	$\frac{1}{4}$ - 18 NPT	$\frac{1}{4}$ flare
-1 → 6	33	- 10 / +20	060G1040	-	-	060G1321
-1 → 9	33		-	060G1895	060G1051	060G1007
-1 → 12	33		060G1058	060G1896	060G1052	060G1323
-1 → 20	50		060G1049	-	060G1053	060G1010
0 → 18	50	+20 / +60	-	-	060G1068	060G1325
0 → 25	50		060G1041	060G1608	060G1080	060G1019
0 → 30	60		-	-	060G1081	060G1327
0 → 40	100		060G1066	-	-	060G1328
0 → 60	100		-	060G3631	060G1083	-

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Technical data

Performance

Accuracy	±1% FS (typ.) / ±2% FS (max.)
Non-linearity	< ±0.5% FS
Hysteresis and repeatability	≤ ±0.1% FS
Thermal zero point shift	≤ ±0.2% FS/10K (typ.) ≤ ±0.4% FS/10K (max.)
Thermal sensitivity (span) shift	≤ ±0.2% FS/10K (typ.) ≤ ±0.4% FS/10K (max.)
Response time	< 4 ms
Max. operating pressure	See ordering table

Electrical specifications

Rated output signal	4 to 20 mA
Supply voltage, V_{supply} (polarity protected)	10 to 30 V d.c.
Voltage dependency	< 0.2% FS/10 V
Current limitation	28 mA (typ.)
Max. load, R_L	$R_L \leq \frac{V_{\text{supply}} - 10 \text{ V}}{0.02 \text{ A}} \quad [\Omega]$

Environmental conditions

Operating temperature range (ambient temperature)				−40 to 80°C
Max. media temperature [°C]				115 - 0.35 × ambient temperature
Compensated temperature range		≤ 16 bar	LP: −30 to 40°C	
		> 16 bar	HP: 0 to 80°C	
Transport temperature range				−50 to 85°C
EMC - Emission				EN 61000-6-3
EMC - Immunity	Electrostatic discharge	Air	8 kV	EN 61000-6-2
		Contact	4 kV	EN 61000-6-2
	RF	field	10 V/m, 26 MHz - 1 GHz	EN 61000-6-2
		conducted	3 V _{rms} , 150 kHz - 30 MHz	EN 61000-6-2
	Transient	burst	4 kV (CM), Clamp	EN 61000-6-2
		surge	1 kV (CM,DM) at R _g = 42 Ω	EN 61000-6-2
Insulation resistance				> 100 MΩ at 100 V d.c.
Vibration stability	Sinusoidal	20 g, 25 Hz - 2 kHz		IEC 60068-2-6
	Random	7,5 g _{rms} , 5 Hz - 1 kHz		IEC 60068-2-34, IEC 60068-2-36
Shock resistance	Shock	500 g / 1 ms		IEC 60068-2-27
	Free fall			IEC 60068-2-32
Enclosure				IP 65 (IEC 60529)

Approvals

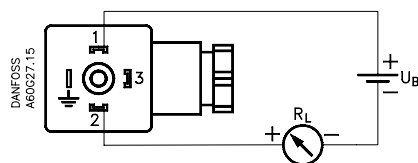
UL recognized for sale in the USA and Canada	Electrical safety	File no. E310 24
	Explosive safety	File no. E227388
CE marked according to the EMC directive	89/ 336/ EC	
Ex approval for sale in Europe	ATEX Ex II 3GEx-na II AT3	
Gost Pocc	DK A Я 45. B05936	

Mechanical characteristics

Electrical connection	EN 175301-803 plug/ 2 m cable
Wetted parts, material	EN10088-1-1.4404 (AISI 316L)
Housing material	EN10088-1-1.4404 (AISI 316L)
Weight	0.15 kg
Media	HFC, CFC, HCFC, ammonia

Electrical connection, Two-wire, 4 - 20 mA

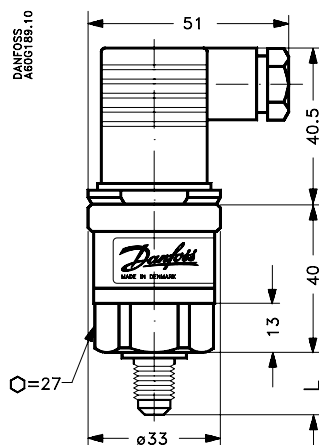
EN 175301-803 plug



- 1 Supply +
- 2 Supply −
- 3 Unused
- ⊕ Connected to transmitter housing

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Dimensions and weight



All dimensions in mm

Pressure Connection	$\frac{1}{4}$ -18 NPT	G $\frac{3}{8}$ A ISO 228/1	G $\frac{1}{2}$ A	$\frac{1}{4}$ flare $\frac{7}{16}$ - 20 UNF	Weight kg	
					plug	cable
L [mm]	16	21	20	16.5	0.15	0.20