



Pressure transmitter

AKS 32 / AKS 33

Description

AKS 32 and AKS 33 are pressure transmitters that measure a pressure and convert the measured value to a standard signal:

- 1 – 5 V DC or 0 – 10 V DC for AKS 32
- 4 – 20 mA for AKS 33

A robust design makes the AKS very suitable for application within a number of fields e.g.

- Air conditioning systems
- Refrigeration plant
- Process control
- Laboratories

Features & benefits

- Fully digitally compensated, developed specially for refrigeration plants.
 - LP: -30 – 40 °C ($\leq$ 16 bar)
 - HP: 0 – 80 °C ($>$ 16 bar)
- Compatibility with all refrigerants incl. ammonia means less stock and greater application flexibility
- Built-in voltage stabiliser, i.e. the AKS pressure transmitters can be powered from an unregulated voltage supply of
- Effective protection against moisture means that the sensor can be mounted in very harsh environments, e.g. in
- Robust construction gives protection against mechanical influences such as shock, vibration and pressure surge.
- No adjustment necessary. With the highly developed sensor technology and sealed gauge principle, the accuracy
- EMC protection according to EU EMC-directive (CE-marked)
- UL approved
- Polarity protected inputs
- For use in zone ATEX 2 explosive atmospheres

Ordering

Product code numbers

AKS 32, version 1 – 5 V

Operating range		Max. working pressure PB	Compensated temperature range	Code no.		
				EN 175301-803, plug Pg 9		
[bar]		[bar]	[°C]	¼ NPT ⁽¹⁾	G ¾ A ⁽²⁾	¼ in. flare ⁽³⁾
LP	-1 – 6	33	-30 – 40	060G2000	060G2004	060G2068
	-1 – 12	33	-30 – 40	060G2001	060G2005	060G2069
HP	-1 – 20	40	0 – 80	060G2002	060G2006	060G2070
	-1 – 34	55	0 – 80	060G2003	060G2007	060G2071
	-1 – 50	100	0 – 80	-	-	060G2155

AKS 32, version 0 – 10 V

Operating range		Max. working pressure PB	Compensated temperature range	Code no.		
				EN 175301-803, plug Pg 9		
[bar]		[bar]	[°C]	¼ NPT ⁽¹⁾	G ¾ A ⁽²⁾	¼ in. flare ⁽³⁾
LP	-1 – 5	33	-30 – 40	-	060G2038	-
	-1 – 9	33	-30 – 40	060G2013	060G2036	060G2082
HP	-1 – 24	40	0 – 80	060G2014	060G2037	060G2083
	-1 – 39	60	0 – 80	060G2080	060G2079	060G2084

AKS 33, version 4 – 20 mA

Operating range		Max. working pressure PB	Compensated temperature range	Code no.					
				EN 175301-803, plug Pg 9			Cable		
[bar]		[bar]	[°C]	¼ NPT ⁽¹⁾	G ¾ A ⁽²⁾	¼ in. flare ⁽³⁾	¼ NPT ⁽¹⁾	G ¾ A ⁽²⁾	¼ in. flare ⁽³⁾
LP	-1 – 5	33	-30 – 40	060G2112	060G2108	060G2047	-	-	-
	-1 – 6	33	-30 – 40	060G2100	060G2104	060G2048	-	060G2120	-
	-1 – 9	33	-30 – 40	060G2113	060G2111	060G2044	-	-	060G2062
	-1 – 12	33	-30 – 40	060G2101	060G2105	060G2049	060G2117	-	-
	0 – 16	40	-30 – 40	060G2114	060G2109	-	-	-	-
HP	-1 – 34	55	0 – 80	060G2103	060G2107	060G2051	060G2119	-	060G2065
	-1 – 20	40	0 – 80	060G2102	060G2106	060G2050	060G2118	-	-
	0 – 25	40	0 – 80	060G2115	060G2110	060G2045	-	060G2127	060G2067

⁽¹⁾ ¼ - 18 NPT

⁽²⁾ Thread ISO 228/1 - G ¾ A (BSP)

⁽³⁾ 7/16 - 20 UNF Is also available in US-version (1 – 6 V) and with 1/8-27 NPT connection. Please contact Danfoss

Note: For a detailed overview of our existing code numbers, please visit the Danfoss Product Store at store.danfoss.com. You can use the filtering options to find the right sensor for your specific needs.

Product details

General data

Performance

Accuracy (incl. non-linearity, hysteresis and repeatability)	± 0.3% FS (typ.) / ± 0.8% FS (max.)
Non-linearity BFSL (conformity)	< ± 0.2% FS
Hysteresis and repeatability	≤ ± 0.1% FS
Thermal zero point shift	≤ ± 0.1% FS / 10K (typ.)
	≤ ± 0.2% FS / 10K (max.)
Thermal sensitivity (span) shift	≤ ± 0.1% FS / 10K (typ.)
	≤ ± 0.2% FS / 10K (max.)
Response time	< 4 ms
Max. working pressure	See ordering table
Burst pressure	min. 300 bar
Power-up time	< 50 ms

Electrical specifications AKS 33, 4 – 20 mA output signal

Rated output signal	4 – 20 mA
Supply voltage [UB], polarity protected	9 – 32 V DC
Supply voltage dependency	< 0.1% FS / 10 V
Output limitation	22.4 mA
Max.Load, [RL]	$R_L \leq \frac{U_B - 9V}{0.02A} [\Omega]$

Electrical specifications for AKS 32, 0 – 10 V DC output signal

Rated output signal (short-circuit protected)	0 – 10 V DC
Supply voltage [UB], polarity protected	15 – 32 V DC
Supply current consumption	< 8 mA
Supply voltage dependency	< 0.05% FS / 10 V
Sink / source	< 1 mA
Load resistance, RL	RL ≥ 15 kΩ

Electrical specifications for AKS 32, 1 – 5 V DC output signal

Rated output signal (short-circuit protected)	1 – 5 V DC
Supply voltage [UB], polarity protected	9 – 32 V DC
Supply current consumption	< 5 mA
Supply voltage dependency	< 0.05% FS / 10 V
Sink / source	< 1 mA
Load resistance, RL	RL ≥ 10 kΩ

Environmental conditions

Operating temperature range	Normal	-40 – 85 °C
	ATEX Zone 2	-10 – 85 °C
Media temperature range [°C]		-40 – 85 °C
Compensated temperature range		LP: -30 – 40 °C / HP: 0 – 80 °C
Transport/storage temperature range		-50 – 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 _{Vrms} , 150 kHz – 30 MHz		EN 61000-6-2
	Transient		burst	4 kV (CM)	EN 61000-6-2
			surge	1 kV (CM,DM)	EN 61000-6-2
Insulation resistance					> 100 MΩ at 500 V DC
Vibration stability	Sinusoidal	20 g, 25 Hz – 2 kHz			IEC 60068-2-6
	Random	7.5 grms , 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	1 m			IEC 60068-2-32
Enclosure (depending on electrical connection)		Plug version			IP65 - IEC 60529
		Cable version			IP67 - IEC 60529

Explosive atmospheres

Zone 2 applications	  II 3G Ex ec IIA T3 Gc -10°C<Ta<+85°C	EN60079-0; EN60079-7
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The products for ATEX Zone 2 are applicable in refrigeration applications employing any flammable refrigerants classified as IIA – please, refer to AKS installation guide.

In ATEX Zone 2 applications at low temperatures cable and plug must be protected against impact.

Explosive atmospheres

AKS other products can be used in end user applications employing the following flammable refrigerants: A3: R290, R600, R600a, R1270, A2L: R32, R444B, R452A/B, R454A/B/C, R455A, R1234zyef	IEC/EN 60335-2-89 (commercial refrigerating appliances) IEC/EN 60335-2-40 (electrical heat pumps, air-conditioners)
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For other products not ATEX Zone 2 assessed, an ignition risk assessment has been conducted with reference to IEC/EN 60335-2-89 (commercial refrigerating appliances) and IEC/EN 60335-2-40 (electrical heat pumps, air-conditioners).

For countries where safety standards are not an indispensable part of the safety system, Danfoss recommends the installer to seek a third-party approval of the system containing flammable refrigerant. Note: Please, follow specific selection criteria stated in the data sheet for these particular refrigerants.

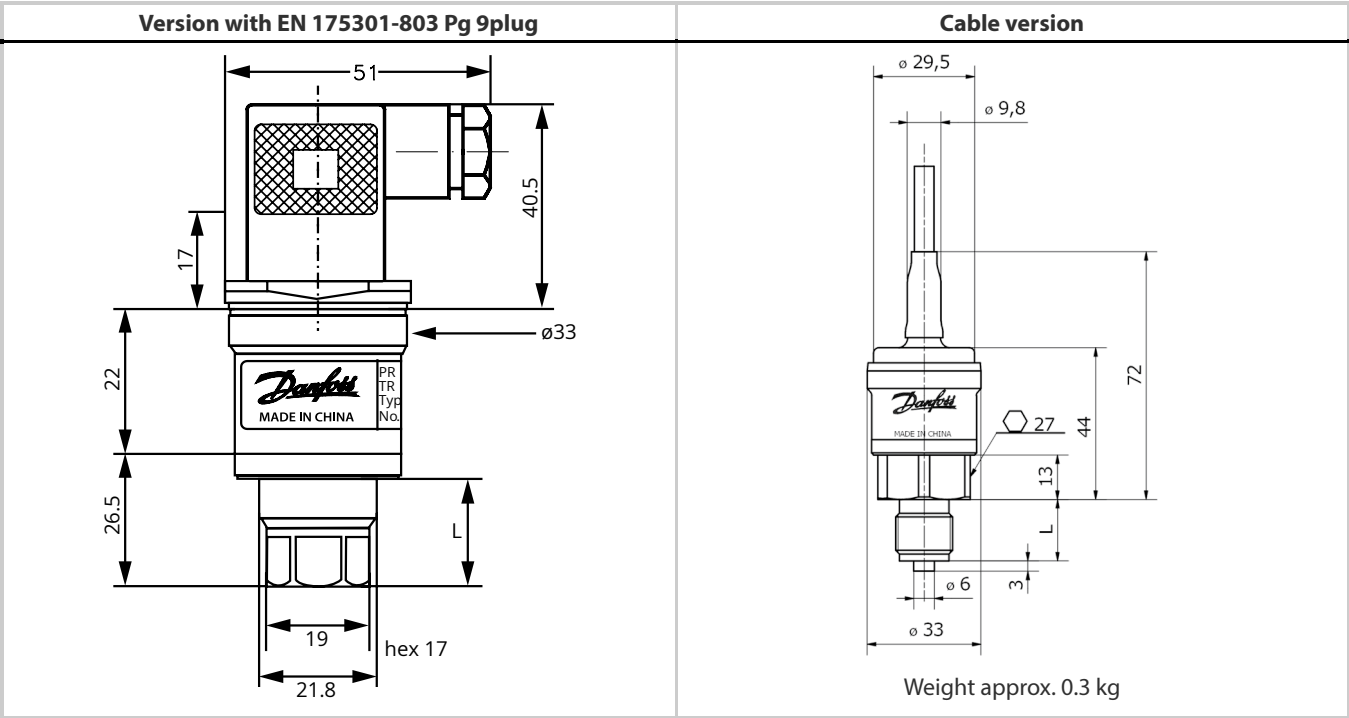
Mechanical characteristics

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)
Refrigerants	DR3, DR55, DR7, HDR110, L40, R1234yf, R1234ze, R1270, R1290, R134a, R22, R227, R23, R290, R32, R404A, R407A, R407B, R407C, R407F, R410A, R413A, R417A, R422A, R422D, R427A, R438A, R444B, R447A, R448A, R449A, R449B, R450A, R452A/B, R454A/B/C, R455A, R502, R507, R513A, R600, R600a, 717 (NH3), R744 (CO2), R1270



Dimensions

Dimension and weight



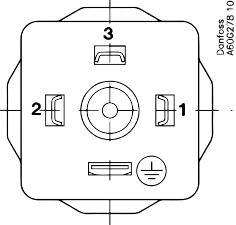
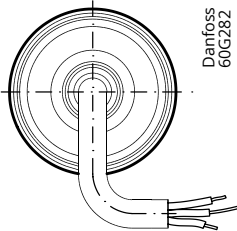
Pressure Connection	¼ - 18 NPT	G ¾ A ISO 228/1	¼ in. flare
L [mm]	16	18	16.5

Note: Dimensions are in mm, unless stated otherwise.



Connections

Electrical connections

Type code	A1	A3
		
Ambient temperature	-40 – 85 °C	-30 – 80 °C
Electrical connection 4 – 20 mA output	Pin 1: + supply Pin 2: ÷ supply Pin 3: not used  Earth : Connected to AKS enclosure	Brown wire: + supply Black wire: ÷ supply Red wire: not used Orange wire: not used Screen: not connected to AKS enclosure
Electrical connection 0 – 5, 0 – 10 V output	Pin 1: + supply Pin 2: ÷ supply/common Pin 3: + output  Earth : Connected to AKS enclosure	Brown wire: + output Black wire: ÷ supply/common Red wire: + supply Orange wire: not used Screen: not connected to AKS enclosure

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
Electrical Safety Certificate	UL E311982	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	UL E510763	UL - Underwriters Laboratories inc.	
Manufacturer's Declaration	Danfoss MD 060R3160.00	Danfoss	China RoHS
Pressure Safety Certificate	TSSA CRN.0F18477.5123467890YTN	TSSA - Technical Standards & Safety Authority	CRN
Explosive Safety Certificate	UL E227388	UL - Underwriters Laboratories inc.	UL-CSA, Explosive
Electrical Safety Certificate	UL E494625	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	UL E31024	UL - Underwriters Laboratories inc.	
EU-UK Declaration	Danfoss EU-UK 064G9615.11	Danfoss	EMC, EU RoHS, ATEX, UK RoHS
UA Declaration	Danfoss UA 2023-01-10 Regulators PL01 PL04	Danfoss	Pressure, PED
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.05-22	LLC CDC EURO TYSK - Ukraine	Pressure
UA Declaration	Danfoss UA 2024-07-25 cooling sensors	Danfoss	LVD, EMC
EAC Declaration	EAC KZ 7100841.13.12.00005	EAC - Eurasian Customs Union	EMC
Export Control Declaration	Pressure & Temperature Sensors	Danfoss	
EU Declaration	EU Doc PL40 Packaging	Danfoss	Packaging
EU Declaration	PPWR Packaging EU PL04	Danfoss	Packaging

Contact details

Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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