

## Data Sheet

Pressure transmitter  
Type **AKS 32R** and **AKS 2050**

AKS 32R is a ratiometric pressure transmitter that converts the measured pressure to a linear output signal. The output signal is relative to the supply voltage meaning that the min. pressure output will be 10% of the actual supply voltage and the max. pressure output will be 90% of the actual supply voltage.

At a supply voltage of 5 V, the output signal is:

- 0.5 V at min pressure range
- 4.5 V at max. pressure range

The robust design and the ratiometric output signal makes the transmitter suitable for systems together with ratiometric A/D converters within a number of fields:

- A/C systems
- Refrigeration plant
- CO<sub>2</sub> plant
- Process control
- Laboratories

**Features**

- Highly developed sensor technology means great regulation accuracy
- Selective temperature compensation
- Compatible with all refrigerants incl. ammonia and CO<sub>2</sub>
- Robust construction gives protection against mechanical influences such as shock, vibration, and pressure surge
- Polarity protected inlets
- Sealed gauge measuring principle (pressure reference = 1013 mbar)
- For use in zone 2 explosive atmospheres

## Product specification

### Technical data

**Table 1: Performance (EN 60770)**

Features	Description
Accuracy (incl. Linearity, Hysteresis and repeatability)	± 0.3% FS (typ.)
	± 0.8% FS (max.)
Non-linearity (best fit straight line)	< ± 0.2% FS
Hysteresis and repeatability	≤ ± 0.1% FS
Thermal zero point operation	≤ ± 0.1% FS/10K (typ.)
	≤ ± 0.2% FS/10K (max.)
Thermal sensitivity operation	≤ ± 0.1% FS/10K (typ.)
	≤ ± 0.2% FS/10K (max.)
Response time	< 4 ms
Max. working pressure	See <a href="#">Dimensions and weight</a>
Burst pressure	> 6 × FS
Power-up time	< 50 ms

**Table 2: Electrical specifications**

Features	Description
Nominal output signal (short-circuit protection)	10 – 90% of [U <sub>b</sub> ]
Supply voltage [U <sub>b</sub> ] (polarity protected)	4.5 – 5.5 V DC at 5 V DC (nom.)
Power consumption	< 5 mA at 5 V DC
Ratiometricity	< 0.05% FS / 4.5 – 5.5 V
Sink / source	< 1 mA
Load [R <sub>L</sub> ] (load connected to ground)	RL ≥ 10 kΩ at 5 V DC

**Table 3: Environmental conditions**

<b>Sensor operating temperature range</b>	Normal			-40 – 125 °C
	ATEX Zone 2			-10 – 85 °C
<b>Media temperature range</b>				-40 – 125 °C
<b>Compensated temperature range</b>				See ordering
<b>Transport / storage temperature range</b>				-50 – 85 °C
<b>EMC – Emission</b>				EN 61000-6-3
<b>EMC – Immunity</b>	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 <sub>rms</sub> , 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
<b>Insulation resistance</b>				> 100 MΩ at 100 V DC
<b>Vibration stability</b>	Sinusoidal	20 g, 25 Hz – 2 kHz		IEC 60068-2-6
	Random	7.5 g <sub>rms</sub> , 5 Hz – 1 kHz		IEC 60068-2-64
<b>Shock resistance</b>	Shock	500 g / 1 ms		IEC 60068-2-27
	Free fall	1 m		IEC 60068-2-32
<b>Enclosure (IP protection fulfilled together with mating connector)</b>				IP65-IEC 60529

## Dimensions and weight

Table 4: Dimensions

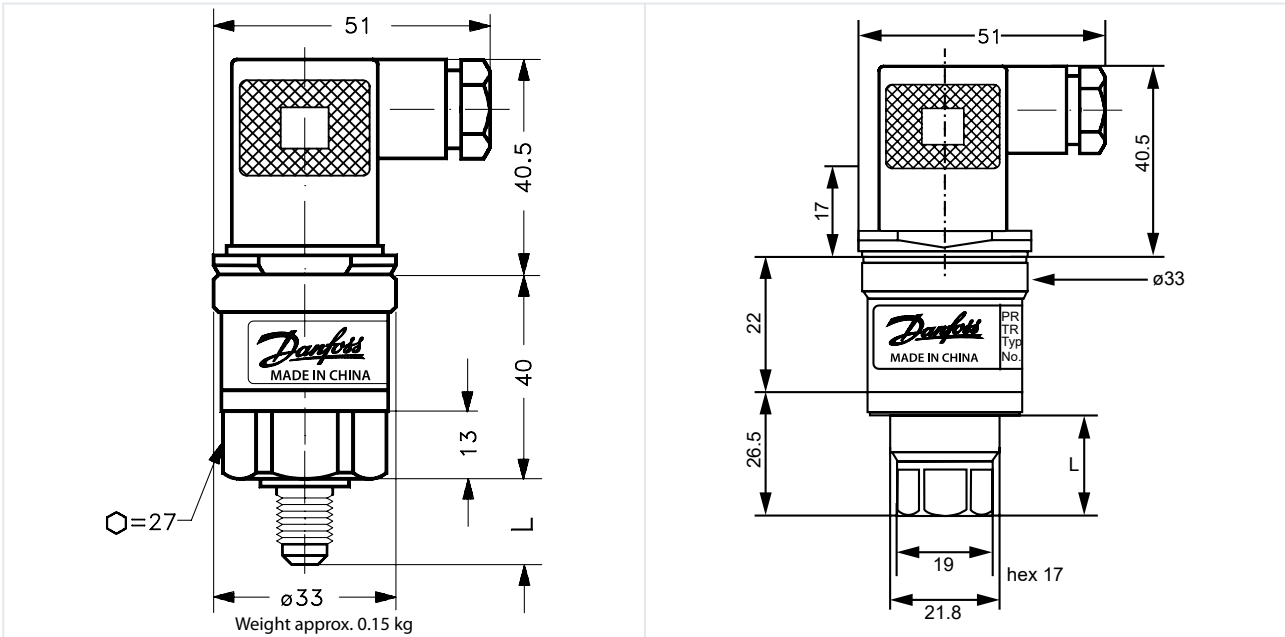
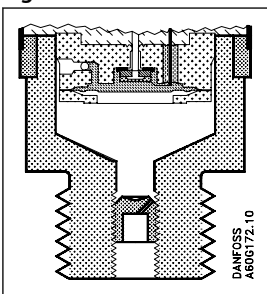


Table 5: Dimensions and weight

Pressure connection	L [mm]
1/4-18 NP	16
G 1/2 A ISO 228/1	21
1/4 in. flare 7/16 - 20 UNF	16.5
3/8 solder	30
7/16 UNF flare female with valve deflator	21.5

## Pulse-snubber, AKS 2050

Figure 1: Pulse-snubber



Cavitation, liquid hammer and pressure peaks may occur in liquid filled 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.

## Plug connections

Table 6: Plug connections

Cable	Description	PG9	Description
	Black: + Blue: - / common Brown: Signal		1: + 2: - / common 3: Signal

## Explosive atmosphere

Table 7: Explosive atmospheres

<b>Zone 2 applications</b>	<b>II 3G</b> Ex nA IIA T3 Gc -20C<Ta<85C	EN60079-0; EN60079-15
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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.

Table 8: Flammable refrigerants

Features	Description
AKS 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-onditioners)

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

Table 9: Mechanical characteristics

Features	Descriptions
Electrical connection	EN 175301-803 plug / 2m 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, R717 (NH3), R744 (CO2), R1270

## Ordering

Table 10: Ordering

	Type	Operating range [bar]	Permissible working pressure PB [bar]	Compensated temp. range [°C]	Code no.				
					¼ NPT <sup>(1)</sup>	G ¾A <sup>(2)</sup>	7/16 in. flare <sup>(3)</sup>	¾ solder	7/16-20 Female flare with depressor <sup>(5)</sup>
	AKS 32R	-1 – 12	33	-30 – 40	060G1037	060G1038	060G1036	060G3551	060G6323
		-1 – 12	33	-30 – 40	–	–	060G6339 <sup>(4)</sup>	–	060G5961 <sup>(4)</sup>
		-1 – 34	55	0 – 80	–	–	060G0090	060G3552	060G6341
		-1 – 34	55	0 – 80	–	–	060G6340 <sup>(4)</sup>	–	–
	AKS 2050	-1 – 59	100	-30 – 40	060G6342	060G5750	–	060G6408	–
		-1 – 99	150	-30 – 40	060G6343	060G5751	–	–	–
		-1 – 159	250	0 – 80	060G6344	060G5752	–	–	–
	Connecting plug with 5 m cable (mounted on pressure transmitter obtains IP67)				060G1034				–
	Plug Pg 9				060G0008				–

- <sup>(1)</sup> 1/4-18 NPT
- <sup>(2)</sup> EN 837 - G 3/8 A
- <sup>(3)</sup> ISO 11926-2<sup>3</sup>, 7/16 - 20 UNF Flare
- <sup>(4)</sup> Incl. **Plug connections**
- <sup>(5)</sup> ISO 8434-1, 7/16-20 UNf, Female with depressor

## 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.

Some approvals may change over time. You can check the most current status at [danfoss.com](http://danfoss.com) or contact your local Danfoss representative if you have any questions.

**Table 11: Certificates, declarations and approvals**

File name	Document type	Document topic	Approval Authority
E227388	Explosive - Safety Certificate	Hazardous Locations	UL
E31024	Electrical - Safety Certificate		UL
E311982	Electrical - Safety Certificate		UL
064G9615.06	EU Declaration	ATEX/EMCD/RoHS	Danfoss
060G9688.00	Manufacturers Declaration		Danfoss
F18477.5123467890YTN	Pressure - Safety Certificate	CRN	TSSA
060R3160.00	Manufacturers Declaration	China RoHS	Danfoss
064R9402.00	Manufacturers Declaration	PED	Danfoss
060R3162.00	Manufacturers Declaration		Danfoss
E494625	Electrical - Safety Certificate		UL
1786330	Explosive - Safety Certificate		CSA

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