

Data sheet

Pressure transmitter with ratiometric output signal AKS 32R and AKS 2050



AKS 32R is a ratiometric pressure transmitter that converts the measured pressure to a linear output signal. The min. value of the output signal is less than 10% of the actual supply voltage. The max. value is more than 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
- CO2 plant
- Process control
- Laboratories

AKS 2050 is identical to AKS 32R but for high pressure and with pulse-snubber in the pressure connection.

Features

- Highly developed sensor technology means great regulation accuracy
- Selective temperature compensation
- Compatible with all refrigerants incl. ammonia and CO²
- · Built-in voltage stabilizer
- Effective protection against moisture
- Robust construction gives protection against mechanical influences such as shock, vibration, and pressure surge
- EMC protected in accordance with the EU EMC-directive (CE-marked)
- Polarity protected inlets
- Output signal specially adjusted to ratiometric A/D-converters
- Sealed gauge measuring principle (pressure reference = 1013 mbar)
- UL approved
- For use in zone 2 explosive atmospheres

$\textbf{Data sheet} \ | \ \textbf{Pressure transmitter with ratiometric output signal, AKS 32R and AKS 2050}$

Technical data

Performance (EN 60770)

Accuracy (incl. Linearity, Lhystorosis and repeatability)	± 0.3% FS (typ.)
Accuracy (incl. Linearity, Hysteresis and repeatability)	± 0.8% FS (max.)
Non-linearity (best fit straight line)	< ± 0.2% FS
Hysteresis and repeatability	≤ ± 0.1% FS
Thermal zero point appration	≤ ± 0.1% FS/10K (typ.)
Thermal zero point operation	≤ ± 0.2% FS/10K (max.)
Thermal sensitivity operation	≤ ± 0.1% FS/10K (typ.)
Thermal sensitivity operation	≤ ± 0.2% FS/10K (max.)
Response time	< 4 ms
Max. working pressure	See table page 4
Burst pressure	>6×FS

Electrical specifications

Nominal output signal (short-circuit protection)	10 – 90% of [U ^B]		
Supply voltage [U ₈] (polarity protected)	4.75 – 8 V DC at 5 V DC (nom.)		
Power consumption	< 5 mA at 5 V DC		
Voltage dependence, supply	< 0.05% FS / 10 V		
Output impedance	< 25 Ω		
Load [RL] (load connected to ground)	$R^{\perp} \ge 10 \text{ k}\Omega$ at 5 V DC		

Environmental conditions

Operating temperature range (ambient temperature)		Normal			-40 − 85 °C, / -40 − 125 °C			
		ATEX Zone 2			-10 − 85 °C			
Max. media temperature [°C]					115 - (0.35 x ambient temperature)			
Compensated tem	perat	ure range				See ordering		
Transport / storage	e tem	perature ra	nge			-50 – 85 °C		
EMC – Emission						EN 61000-6-3		
	Elec	trostatic	Air 8		8 kV	EN 61000-6-2		
	discharge		Contact		4 kV	EN 61000-6-2		
EMC les es un itu	RF	0.5		d	10 V/m, 26 MHz – 1 GHz	EN 61000-6-2		
EMC – Immunity	KF		conducted		3 Vrms, 150 kHz – 30 MHz	EN 61000-6-2		
	Тион			st	4 kV (CM)	EN 61000-6-2		
	Transient		Surç	ge	1 kV (CM, DM)	EN 61000-6-2		
Insulation resistan	ce					> 100 MΩ at 100 V DC		
Vibration stability		Sinusoida	ısoidal 20		z – 2 kHz	IEC 60068-2-6		
		Random		7.5 g ^{rms} , 5 Hz – 1 kHz		IEC 60068-2-64		
		Shock	500 g / 1 r		ms	IEC 60068-2-27		
Shock resistance		Free fall		1 m		IEC 60068-2-32		
Enclosure (IP protection fulfilled together with mating connector)			IP65-IEC 60529					

Approvals

UL recognized for sale in the USA	Electrical safety	File no. E31024, E311982	
and Canada	Explosive safety	File no. E227388	
CE marked according to the EMC direct	89/ 336/ EC		
Ex approval for sale in Europe	ATEX II 3G Ex na IIA T3 Gc		
For sale in Russia, Belarus and Kazakhsi	EAC (EurAsian conformity)		



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Technical data *(continued)*

Explosive atmospheres

Zone 2 applications	C € (Ex) II 3G Ex nA IIA T3 Gc -20C <ta<85c< th=""><th>EN60079-0; EN60079-15</th></ta<85c<>	EN60079-0; EN60079-15
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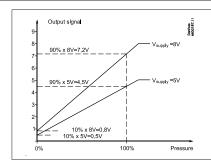
In ATEX Zone 2 applications with temperatures <-10 °C the cable and plug must be protected against impact.

The product was approved in compliance with ATEX. Ignition risk is evaluated in accordance to ATEX. **AKS 32R / AKS 2050** can be applied on systems with **R290**, **R600**, **R600a** and **R1270** as the working fluid. For countries where safety standards are not an indispensable part of the safety system, Danfoss recommends the installer to seek a third party approval for the system containing flammable refrigerant. Note, please follow specific selection criteria stated in the datasheet for these particular refrigerants. This product is approved for **R290**, **R600**, **R600a** and **R1270** by ignition source assessment in accordance with standard EN13463-3.

Mechanical characteristics

Housing material and material	in contact with medium	EN 10088-1; 1.4404 (AISI 316 L)		
Weight		0.15 kg		
Pofrigorants	DR3, DR55, DR7, HDR110, L40, R1234yf, R1234z R32, R404A, R407A, R407B, R407C, R407F, R410 R438A, R444B, R447A, R448A, R449A, R449B, R4 R600a, R717 (NH3), R744 (CO2), R1270	A, R413A, R417A, R422A, R422D, R427A,		

Output signal



The diagram indicates the relationship between output signal from AKS 32R, supply voltage and pressure.

 $V_{supply}[U^B] = Supply \ voltage$

Ordering

		Operating	Permissible	Compensated	Code no.				
	Туре	range [bar]	working pressure PB [bar]	temp. range [°C]	1/4 NPT 1)	G 3/8 A 2)	¼in· flare ³)	3∕8 solder	¼ in· female flare ³) with deflator
		-1 – 12	33	-30 – 40	060G1037	060G1038	060G1036	060G3551	060G6323
	AKC 33D	-1 - 12	33	-30 - 40	-	-	060G6339 ⁴)	-	060G5961 ⁴)
<u>ш</u>	AKS 32R	-1 – 34	55	0 – 80	-	-	060G009	060G3552	060G6341
		-1 – 34	55	0 – 80	-	-	060G6340 ⁴)	-	-
ਚ	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			-	

^{1) 1/4-18} NPT

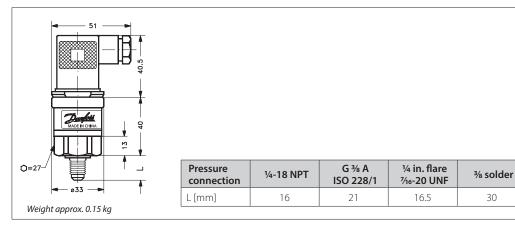
²⁾ Thread ISO 228/1 - G 3/8 A (BSP)

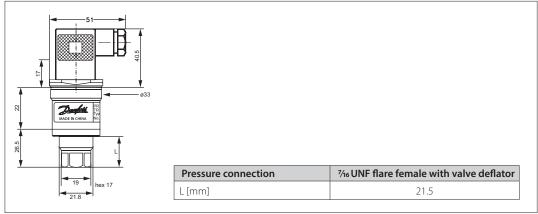
^{3) 7/16-20} UNF

⁴⁾ Incl. Pg 9 plug

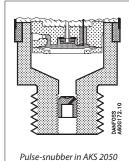


Dimensions and weight





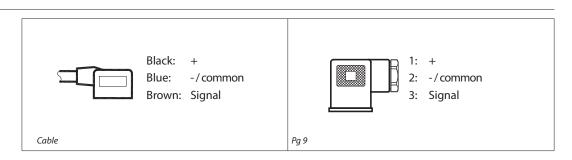
Pulse-snubber, AKS 2050



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



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