

## 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
- CO<sub>2</sub> 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 CO<sub>2</sub>
- 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

**Technical data**
**Performance (EN 60770)**

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 table page 4
Burst pressure	> 6 × FS

**Electrical specifications**

Nominal output signal (short-circuit protection)	10 – 90% of [U <sub>B</sub> ]
Supply voltage [U <sub>B</sub> ] (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/10V
Output impedance	< 25 Ω
Load [R <sub>L</sub> ] (load connected to ground)	R <sub>L</sub> ≥ 10 kΩ 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 temperature range				See ordering
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 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
Insulation resistance				> 100 MΩ at 100 V DC
Vibration stability	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
Shock resistance	Shock	500 g / 1 ms		IEC 60068-2-27
	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 and Canada	Electrical safety	File no. E31024, E311982
	Explosive safety	File no. E227388
CE marked according to the EMC directive		89/ 336/ EC
Ex approval for sale in Europe		ATEX II 3G Ex na IIA T3 Gc
For sale in Russia, Belarus and Kazakhstan		EAC (EurAsian conformity)

**Technical data**  
(continued)

**Explosive atmospheres**

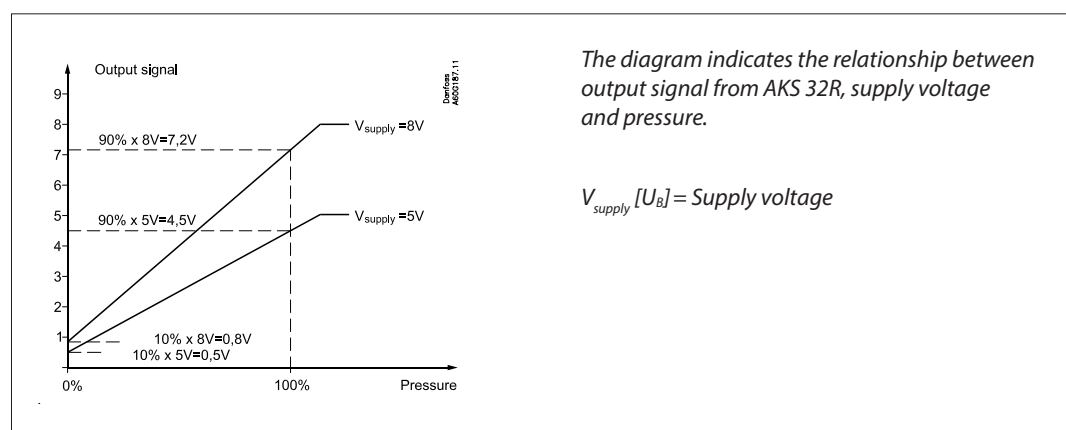
Zone 2 applications	II 3G Ex nA IIA T3 Gc -20C<Ta<+85C	EN60079-0; EN60079-15
---------------------	--	-----------------------

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
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, R454B, R502, R507, R513A, R600, R600a, R717 (NH <sub>3</sub> ), R744 (CO <sub>2</sub> ), R1270

**Output signal**

**Ordering**

	Type	Operating range [bar]	Permissible working pressure PB [bar]	Compensated temp. range [°C]	Code no.				
					¼ NPT <sup>1)</sup>	G ¾ A <sup>2)</sup>	¼ in· flare <sup>3)</sup>	¾ solder	¼ in· female flare <sup>3)</sup> with deflator
	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			
		-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				

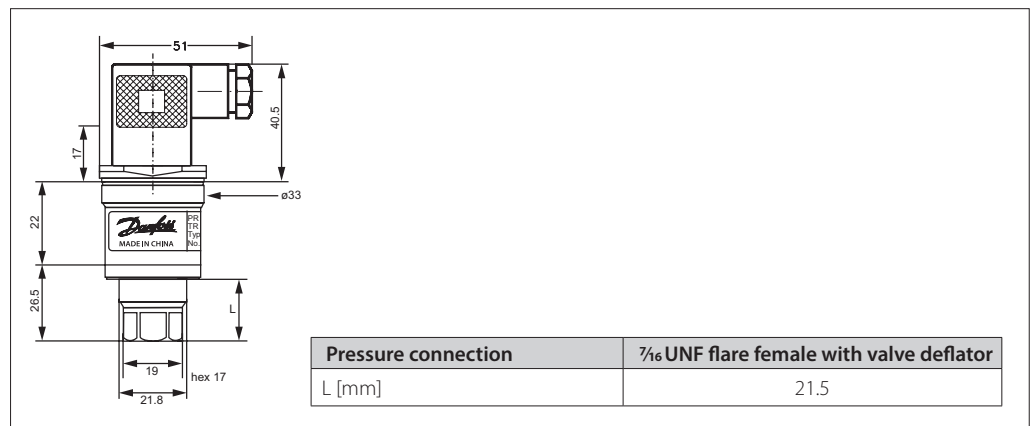
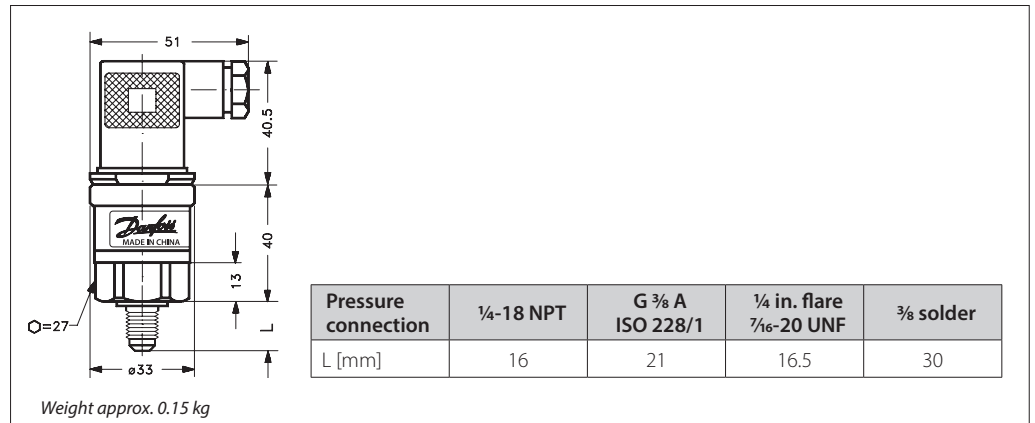
<sup>1)</sup> ¼-18 NPT

<sup>2)</sup> Thread ISO 228/1 - G ¾ A (BSP)

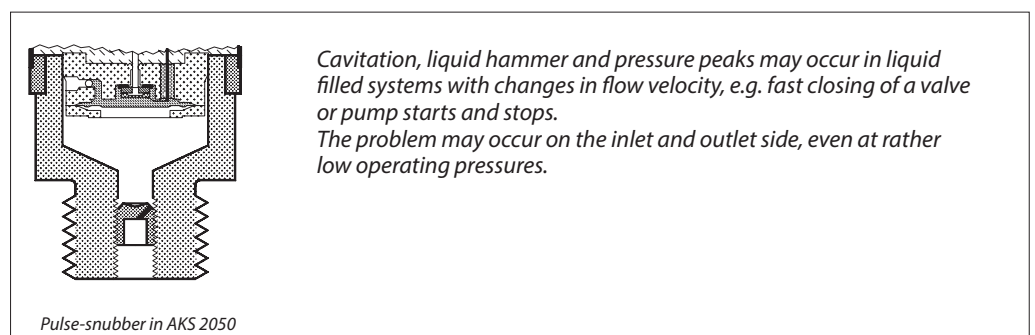
<sup>3)</sup> 7/16-20 UNF

<sup>4)</sup> Incl. Pg 9 plug

## Dimensions and weight



## Pulse-snobber, AKS 2050



## Plug connections

