

DAR 7 / DAR 25 / DAR 40 / DAR 60 / DAR 120

Pressure sensor in stainless steel design



Fig. 1: DAR 7...DAR 60



Fig. 2: DAR 120

Features

- Records pressures in liquid and gaseous refrigerants in refrigeration plants
- Converts pressure into a standard electrical signal 4...20mA
- 5 versions for different measurement ranges:

DAR 7	-0,5...7bar = 4...20mA
DAR 25	0...25bar = 4...20mA
DAR 40	0...40bar = 4...20mA
DAR 60	0...60bar = 4...20mA
DAR120	0...120bar = 4...20mA
- Compact design with integrated signal amplifier
- Polarity-safe, plug-in connection by two-wire fabricated cable (3.5m) with M12 plug
- Fully welded, metal measurement cell with excellent overload protection
- No mechanical ageing, high temperature resistance
- Media-compatible with all standard refrigerants, incl. propane / R290 ($\text{CH}_3\text{CH}_2\text{CH}_3$), ammonia / R717 (NH_3) and carbon dioxide / R744 (CO_2)
- Standard thread for refrigeration technology

Writing conventions

Symbol	Meaning
 WARNING	Avoid the described hazard: Otherwise death or serious bodily injury can result.

For your safety

For safe operation and to avoid personal injury and equipment damage through operating error, always read these instructions, become familiar with the device, and follow all safety instructions on the product and in this document, as well as the safety guidelines of Wurm GmbH & Co. KG Elektronische Systeme. Keep these instructions ready to hand for quick reference and pass them on with the device if the product is sold.

Wurm GmbH & Co. KG Elektronische Systeme accepts no liability in case of improper use or use for other than the intended purpose.

Target group	These instructions are intended for refrigerating plant construction technicians.
Intended use	DAR 7, DAR 25, DAR 40, DAR 60 and DAR 120 are pressure sensors for measuring pressure in fluid and gaseous refrigerants in refrigeration plants.



WARNING

Danger of bodily injuries and property damage!

- In the case of hazardous refrigerants, such as oxygen, acetylene, combustible or poisonous materials, and for refrigeration equipment, compressors etc., the relevant regulations must be observed in addition to all general rules. Residue of measurement media in dismantled pressure gauges can result in hazards to people, equipment and the environment. Adequate ventilation must be ensured. Protective gloves and eye protection must be worn.
- Do not exceed the overload limit of the corresponding measurement range or pressure sensor! Otherwise, bursting of the pressure sensor can result!
- Do not open the device!
- Do not repair the device yourself! If required, send it in for repair with an exact description of the fault!
- Any operation other than that described is improper and therefore must be prevented.

Validity of the documentation

Date	
2021-09	Documentation status

This document automatically ceases to be valid if a new technical description is issued.

Manufacturer: Wurm GmbH & Co. KG Elektronische Systeme, Morsbachtalstraße 30, D-42857 Remscheid

For further information, see our website at www.wurm.de

Installation

	WARNING Danger of bodily injuries and property damage! - When installing or removing the pressure sensor, make sure that the line is free of pressure. - Take the device out of operation if it is faulty or damaged (such as visible damage to the device) and therefore endangers safe operation.
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	NOTE - Select the right pressure gauge with regard to measurement range, design and specific measurement conditions before installing or start-up. - Installation requires a size-24 combination wrench, which should be used with a maximum force of 20Nm.
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The pressure sensors are connected via the standard thread to the cooling circulation.

To avoid condensation on the housing and thus the possible penetration of moisture inside the sensor, care must be taken that the pressure sensor housing always has a temperature above the current dew point.

The thermal influence on the pressure transmitter via the pipelines must be kept as low as possible.

It is therefore not permitted, for example, to install the pressure sensor directly in suction collecting lines or other lines with large pipe cross sections. The connection should always be made via a non-insulated pipeline with a minimum internal diameter of 4mm and a minimum length of 200mm.

The electrical cable connection is made via a prefabricated cable with a standardised M12 plug DIN EN 175301-803.

	NOTE Damage to the cable insulation can result in leaking and thus water penetration and false measurement results.
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Characteristics curves

Current	I / mA	4	5	6	7	8	9	10	11	12
DAR 7	p / bar	-0,50	-0,03	0,44	0,91	1,38	1,84	2,31	2,78	3,25
DAR 25	p / bar	0,00	1,60	3,10	4,70	6,30	7,80	9,40	10,90	12,50
DAR 40	p / bar	0,00	2,50	5,00	7,50	10,00	12,50	15,00	17,50	20,00
DAR 60	p / bar	0,00	3,80	7,50	11,30	15,00	18,80	22,50	26,30	30,00
DAR 120	p / bar	0,00	7,50	15,00	22,50	30,00	37,50	45,00	52,50	60,00

Current	I / mA	13	14	15	16	17	18	19	20	
DAR 7	p / bar	3,72	4,19	4,66	5,13	5,59	6,06	6,53	7,00	
DAR 25	p / bar	14,10	15,60	17,20	18,80	20,30	21,90	23,40	25,00	
DAR 40	p / bar	22,50	25,00	27,50	30,00	32,50	35,00	37,50	40,00	
DAR 60	p / bar	33,80	37,50	41,30	45,00	48,80	52,50	56,30	60,00	
DAR 120	p / bar	67,50	75,00	82,50	90,00	97,50	105,00	112,50	120,00	

Dimensions

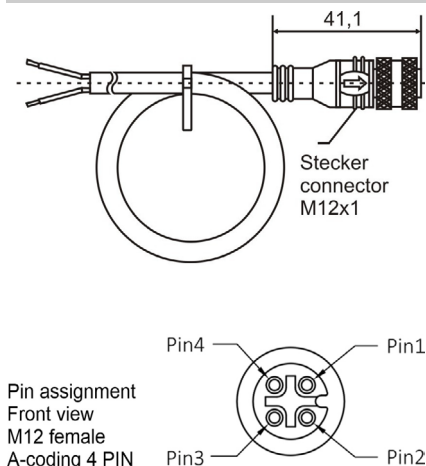


Fig. 3: DAR 7...DAR 120

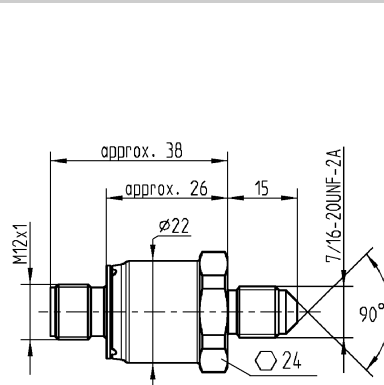


Fig. 4: DAR 7...DAR 60

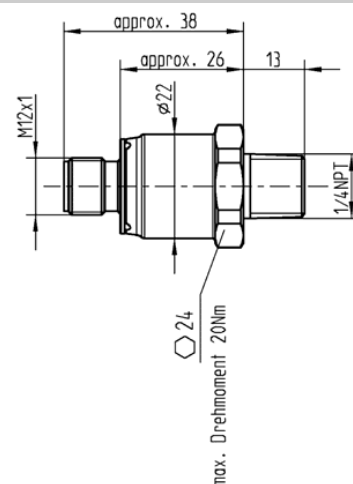


Fig. 5: DAR 120

Technical data

Power supply	7...30V=																										
Electrical connection by prefabricated cable (3.5m) and M12 plug DIN EN 175301-803	Pin 1: brown (BW) power supply (7...30V=) Pin 3: white (WH) measurement signal (4...20mA)																										
Output	4...20mA two-wire, reverse-polarity-proof (load-independent current in power supply)																										
Media temperature	-40...+100°C																										
Ambient temperature	-30...+85°C																										
Measuring range	DAR 7 -0,5...7bar DAR 120 0...120bar DAR 25 0...25bar DAR 40 0...40bar DAR 60 0...60bar																										
Overload limit	DAR 7 20bar DAR 120 320bar DAR 25 50bar DAR 40 80bar DAR 60 120bar																										
Accuracy	<table border="1"> <thead> <tr> <th></th><th>at 25°C</th><th>at 0°C</th><th>at -20°C</th></tr> </thead> <tbody> <tr> <td>DAR 7</td><td>±0.8%</td><td>±1.0%</td><td>±1.2%</td></tr> <tr> <td>DAR 25</td><td>±0.8%</td><td>±1.3%</td><td>±1.8%</td></tr> <tr> <td>DAR 40</td><td>±0.8%</td><td>±1.0%</td><td>±1.2%</td></tr> <tr> <td>DAR 60</td><td>±0.8%</td><td>±1.0%</td><td>±1.2%</td></tr> <tr> <td>DAR 120</td><td>±0,8%</td><td>±1,0%</td><td>±1,2%</td></tr> </tbody> </table> Sum of linearity, hysteresis and reproducibility				at 25°C	at 0°C	at -20°C	DAR 7	±0.8%	±1.0%	±1.2%	DAR 25	±0.8%	±1.3%	±1.8%	DAR 40	±0.8%	±1.0%	±1.2%	DAR 60	±0.8%	±1.0%	±1.2%	DAR 120	±0,8%	±1,0%	±1,2%
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Degree of protection (in assembled state)	DAR 7 IP65 DAR 25...DAR 120 IP67																										
Weight	About 100g																										
Diameter	26mm																										
Height	100mm (with plug)																										
Thread	DAR 7...DAR 60 7/16"-20UNF-2A, length 15mm DAR 120 1/4" NPT, length 13mm																										
CE conformity	– 2014/30/EU (EMC Directive)																										
EAC conformity	– TR CU 020/2011																										



NOTE

- Please also observe the technical documentation of the measurement or control electronics used.