

BODAS

Temperature sensor for air TSA

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- ▶ Temperature measurement of the ambient air and the charge air in vehicles

Function

The sensor element comprises a PTC nickel thin-film resistor, which is vapor-deposited onto a ceramic carrier substrate. This small plate is mounted in a plastic housing to protect it from damage. The lattice structure and hydrodynamic design of the inlet and outlet limit the sensor time constant and/or the delay.

Contents

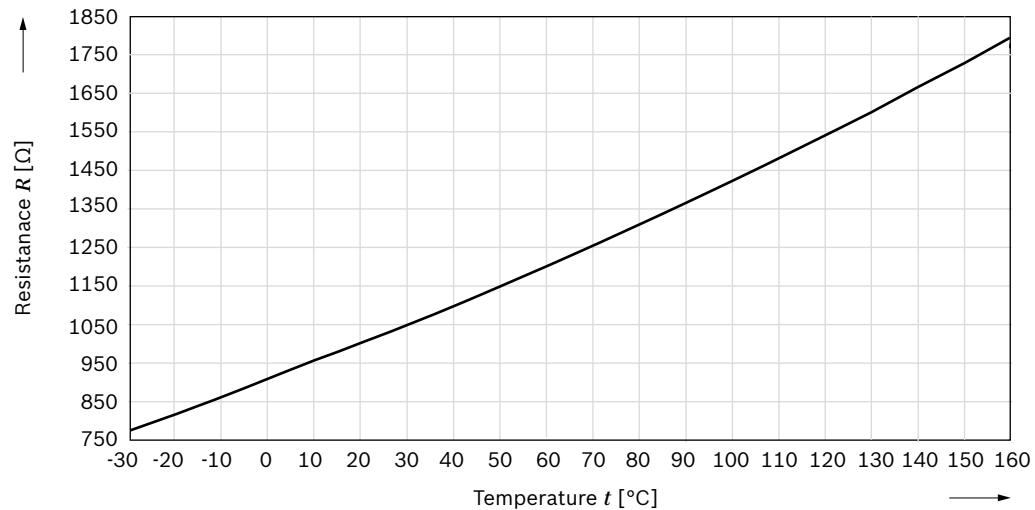
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Technical data

Model	TSA
Measuring range	-30 °C to 130 °C
Resistance at 20 °C	1,000 Ω
Tolerance at 20 °C	±0.5 K corresponds to ±0.3 % of R ₂₀
Tolerance at 100 °C	±1.1 K corresponds to ±0.5 % of R ₁₀₀
Maximum permissible current	5 mA
Time constant (in standing water)	→ 0
Type of protection	IP 64 with the connector plugged in
Plug connection	Jet connector, 2-pin
Fixing	2 x M6

Material number	
Sensor (without accessories)	0 538 009 203
Accessories (connector set)	1 834 484 094
Connector set comprising:	1x connector housing, 2x contact spring, 1x protective cap The connector set is not included in the delivery contents.

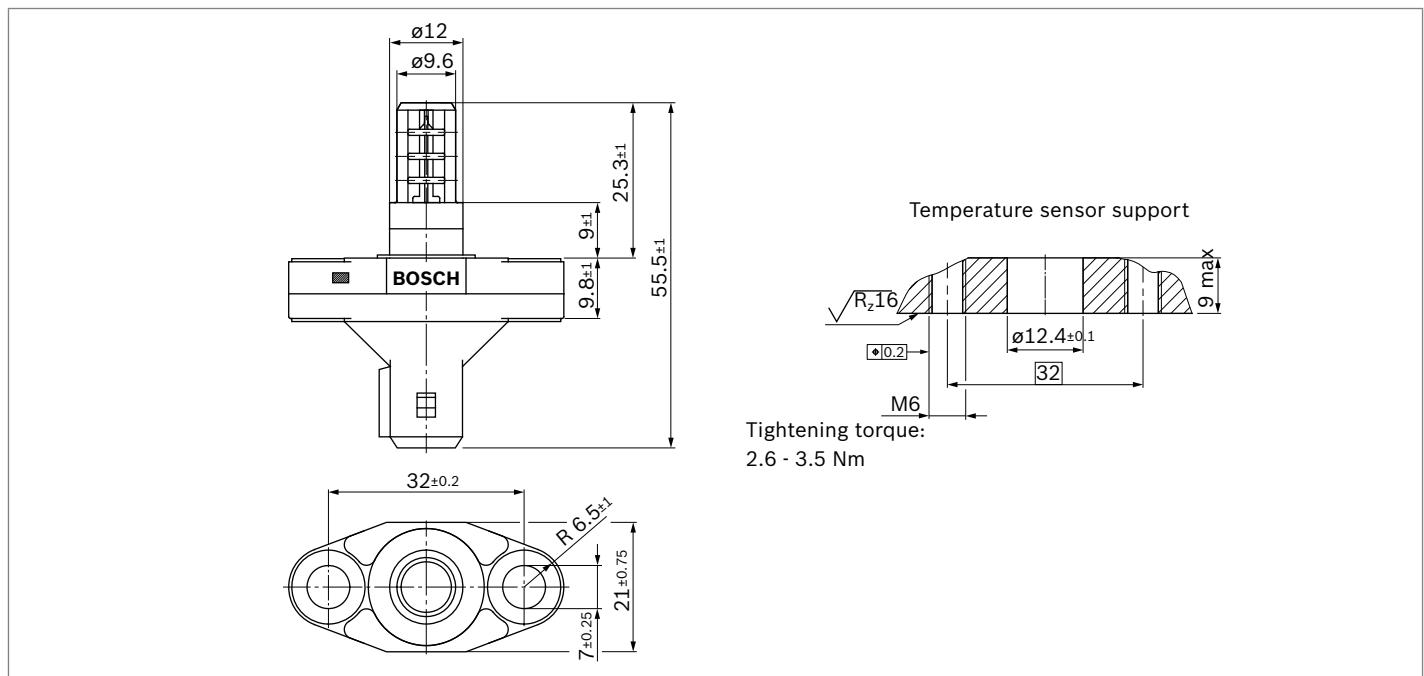
Curve



Data temperature / resistance

Temperature t	°C	-30	-25	-20	-15	-10	-5	0	5	10	15
Resistance R	Ω	775,2	796,3	817,7	839,5	861,5	883,8	906,4	929,4	952,6	976,2
Temperature t	°C	20	25	30	35	40	45	50	55	60	65
Resistance R	Ω	1000	1024,1	1048,6	1073,4	1098,4	1123,8	1149,4	1175,4	1201,7	1228,3
Temperature t	°C	70	75	80	85	90	95	100	105	110	115
Resistance R	Ω	1255,1	1282,3	1309,8	1337,6	1365,7	1394,1	1422,8	1451,8	1481,1	1510,7
Temperature t	°C	120	125	130	135	140	145	150	155	160	
Resistance R	Ω	1540,6	1570,8	1601,3	1632,2	1663,3	1694,7	1726,5	1758,5	1790,8	

Dimensions



Safety instructions

General Instructions

- ▶ Before finalizing your design request a certified installation drawing.
- ▶ The suggested circuits do not imply any technical liability for the system on the part of Rexroth.
- ▶ It is not permissible to open the sensor or to modify or repair the sensor. Modifications or repairs to the wiring could lead to dangerous malfunctions.
- ▶ Connections in the hydraulic system may only be opened in depressurized state.
- ▶ The sensor may only be assembled/disassembled in depressurized and deenergized state.
- ▶ System developments, installations and commissioning of electronic systems for controlling hydraulic drives must only be carried out by trained and experienced specialists who are sufficiently familiar with both the components used and the complete system.
- ▶ When commissioning the sensor, the machine may pose unforeseen hazards. For this reason, before commissioning the system, you must ensure that the vehicle and the hydraulic system are in a safe condition.
- ▶ Make sure that nobody is in the machine's danger zone.
- ▶ No defective or incorrectly functioning components may be used. If the sensor should fail or fail to operate properly, it must be replaced.

- ▶ Despite every care being taken when compiling this document, it is not possible to take into account all feasible applications. If instructions for your specific application are missing, you can contact Bosch Rexroth.

Notes on the installation point and position

- ▶ Do not install the sensor close to parts that generate considerable heat (e.g., exhaust).
- ▶ Wires are to be routed with sufficient spacing to hot or moving vehicle parts.
- ▶ A sufficiently large distance to radio systems must be maintained.
- ▶ The connector of the sensor is to be unplugged prior to electrical welding and painting operations.
- ▶ Cables/wires must be sealed individually to prevent water from entering the sensor.

Notes on transport and storage

- ▶ Please examine the sensor for any signs of transport damage. If obvious damage is present, please notify the transport contractor and Bosch Rexroth without delay.
- ▶ If the sensor is dropped, continued use is not permissible because unseen damage may affect its reliability.

Notes regarding the connection and the wiring

- ▶ Lines to the sensors are to be shielded and kept as short as possible and be shielded. The shield must be connected to the electronics on one side or to the machine or vehicle ground via a low-resistance connection.
- ▶ The sensor mating connector should only be plugged and unplugged when it is in a deenergized state.
- ▶ The sensor cables are sensitive to radiation interference. For this reason, the following measures should be taken when operating the sensor:
 - Sensor cables should be attached as far away as possible from large electric machines.
 - If the signal requirements are satisfied, it is possible to extend the sensor cable.
- ▶ Cables from the sensor to the electronics must not be routed close to other power-conducting lines in the machine or vehicle.
- ▶ The cable harness should be mechanically secured in the area in which the sensor is installed (spacing < 150 mm). The cable harness should be secured so that in-phase excitation with the sensor occurs (e.g. at the sensor bolting point).
- ▶ If possible, wires should be routed in the vehicle interior. If the wires are routed outside the vehicle, make sure that they are securely fixed.
- ▶ Wires must not be kinked or twisted, must not rub against edges and must not be routed through sharp-edged ducts without protection.

Intended use

- ▶ The sensor is designed for use in mobile working machines provided no limitations / restrictions are made to certain application areas in this data sheet.
- ▶ Operation of the sensor must generally occur within the operating ranges specified and released in this data sheet, particularly with regard to voltage, temperature, vibration, shock and other described environmental influences.
- ▶ Use outside of the specified and released boundary conditions may result in danger to life and/or cause damage to components which could result in consequential damage to the mobile working machine.

Bosch Rexroth AG
Robert-Bosch-Straße 2
71701 Schwieberdingen, Germany
Tel. +49 93 52 40 50 60
info.bodas@boschrexroth.de
www.boschrexroth.com

Improper use

- ▶ Any use of the sensor other than that described in the chapter headed "Intended use" will be considered to be improper use.
- ▶ Use in explosive areas is not permissible.
- ▶ Damages which result from improper use and/or from unauthorized, unintended interventions in the device not described in this data sheet render all warranty and liability claims with respect to the manufacturer void.

Use in safety-related functions

- ▶ The customer is responsible for performing risk analysis on the mobile working equipment and for defining possible safety-related functions.
- ▶ In safety-related applications, the customer is responsible for taking suitable measures to ensure safety (sensor redundancy, plausibility check, emergency switch, etc.).
- ▶ Product data that is necessary to assess the safety of the machine can be provided on request or are listed in this data sheet.

More detailed information

- ▶ Further information about the sensor can be found at www.boschrexroth.com/mobile-electronics.
- ▶ The sensor must be disposed of in accordance with the national regulations of your country.

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