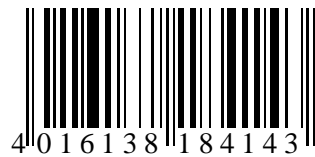


PRESSURE RESISTANT TEMPERATURE PROBE WITH THREADS M10



Order No. 18 40 82

Characteristic features

- ▶ Probe with threads M10, Ø7 x 20 mm
- ▶ Pressure resistant. 20 bar, with sealing
- ▶ High quality SEMOFLEX cable 2m, shielded
- ▶ Continuous operating temperature -40° ... 125°C
- ▶ Sensor in stainless steel protective sleeve (1.4571)
- ▶ Splash waterproof
- ▶ RJ 12 plug connector with breakage protection
- ▶ Resolution 0.06 °C
- ▶ Accuracy ±0.5 K nominal (from 0...70°C), as per data sheet of manufacturer
- ▶ Scratchpad memory for probe identification

Typical areas of application

- ▶ Pneumatics and hydraulics
- ▶ Cold storage devices
- ▶ Science and research laboratories
- ▶ Industrial temperature logging



Available probes: The reasonable priced probes with P connection cable are meant for measurement in open atmosphere, on surfaces or in non-aggressive gas medium. The probes are sealed and can bear water contact for some time. However, long term immersion in liquid is not recommended.

The models with stainless steel probe tube are chemically stable and the tube portion of probe can be submerged in liquid, the stainless steel 1.4571 does not get affected. However, in the cable termination area, the probe should not come into constant contact with liquid.

For a location in pipeline system, pressure resistant models with 1/8" or M10 threads are also available. These models with gas jet are suitable up to 20 bar.

Further customised models can be manufactured for special applications. Please send our enquiry to us!

Formation of temperature sensor Networks: All necessary components, with plug-in type RJ 12 connectors, are available for the 16 channel temperature measuring system so that a full functional system can be developed even without soldering knowledge.

The speciality about wiring of the sensors is the bus technology: All sensors can be driven parallel on a 3-wire line over which both supply and data communication can run through.

Hence, the bus topology is completely arbitrary: it can be built both as a star or extended structure. Mixed forms are also possible. It is only to be ensured that the sum of all connection cables does not exceed the maximum allowable length of approx. 60 m.

Hub: For connection of multiple probes, a hub is available with 10 ports RJ 12. One port is used for connection of temperature logger, and if necessary, another port is used for connection of another hub. As a result, 8 to 9 ports are available for connection of temperature probes.

The hub has a supply capacitor and a full resistance of 10⁻³ Ohm for compensation of connection capacitance. An RJ 12 cable 1m is also included in the scope of supply of hub, which is required for connection to a P adapter or for cascading with another hub.

Connection cable: For short connection lengths, there are no special requirements for the cable to be used. With unshielded cable, a larger connection length can be obtained in an undistorted environment, since the capacitive bus load is less. With additional measures, a total length of 60 m or more can be achieved without any problems.

In disturbed environment, the cable should be shielded in order to improve the noise immunity of the system. Due to higher capacitive loading, the maximum possible connection length is less for a shielded cable.

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Increase in connection length: The sum total length of all connection cables should be within around 60 m to ensure reliable functioning. wiring of an additional ullu resistance of 1.5 to 10 -Ohm Line DATA against +5 , the cable length can be increased with minor deterioration in measuring accurac due to higher self heating of the sensors.

Temperature range: The Dallas tem erature sensors are semiconductor sensors. The un-housed sensors are suitable for tem erature measurement in the range of -55 to 125 . These tem erature values are the final limits and o erating above these values is not at all recommended, otherwise the com onent can get damaged.

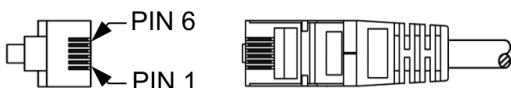
In addition, the allowable a lication tem erature also de ends on the connection cable and t e of otection sleeve used. P insulated cable gets hard and brittle below -10 and hence should not used at these lower tem eratures otherwise the insulation ma crac . Above 60 continuous o erating tem erature, the P becomes soft and can get deformed. At a rox. 80 , the material becomes lastic and the insulation gets damaged under ressure.

Installing and configuration: The Dallas tem erature sensor of t e 1820 has an internal identification serial number and can be o erated in arallel together with several other com onents on a three-wire bus. After wiring all the sensors, the P ada ter must be individuall configured for the connected sensors. O eration is not ossible without rior configuration of the s stem. Since the configuration is stored in the internal EEPROM of ada ter, this rocess is to be done onl once. Onl if an additional sensor is to be used on the existing network , the configuration needs to be re eated.

The sorting of robes, found on the network , is done on the basis of binar serial number.

Pin configuration of RJ12-plug connector: The estern- lug connector is configured as follows iew on the cable, i.e. contact surfaces of the lug! :

- 1 Shielding or unoccu ied
- 2 Ground
- 3 Dallas Data or unoccu ied
- 4 Dallas Data
- 5 +5
- 6 +5 or unoccu ied



In 4-core flat cable, PIN 1 and PIN 6 are not ocu ied. PIN 3 and 4 are bridged together at the P -ada ter. Onl PIN4 is needed to connect the data line of the sensor.

Measuring accuracy: The sensors are calibrated during manufacture and have a t ical measuring accurac of 0.5 at 23 a lication tem erature. At the u er and lower limit of measuring range, the accurac is somewhat on the lower side. Further information is available in the data sheet of com onent at the website of manufacturer.

During all tem erature measurements, the h sical conditions are also to be ta en care of in order to avoid measuring error, which mainl decides the recision of measuring arrangement.

Thermal transition resistance of measuring object-sensor: This is the main measuring error which occurs during surface measurements. This can be eliminated b roviding good thermal contact through mounting in a tube, a lling thermal conducting aste or thermal conducting adhesive.

Thermal heat transfer of sensor-ambient temperature: During surface measurements, the measuring arrangement should be thermall insulated from the surroundings, for exam le, with some foam material or mineral wood.

Thermal heat transfer of sensor-connecting wires: This measuring error can be minimised b itself, for exam le, if the connecting lead used is as thin as ossible and the connecting material is a bad thermal conductor or if the connecting wire is tem ered with the measuring object.

In rinci le, of course, the highest measuring accurac is achieved through immersion in li uids or in a mounting tube. However, an additional measuring error should be included while ta ing measurements on surfaces.

Customer's own probes: Technicall conversant users withnowledge of soldering can also ma e the robe themselves. onnector configuration of Dallas 1820 sensors is as below:



are should be ta en that a ca acitor 100 nF is directl wired at the sensor between +5 and GND, in order to im rove the EM behaviour.

You can obtain the re uired accessories from us li e sensors, flat cables, R 12-connector or crim ing tool.

Complimentary information: Further information on Dallas Touch bus and also a detailed data sheet of tem erature sensor DS 1820 is available from MA IM at the website www.maxim-ic.com or at our home age www.h.grosens.com.

