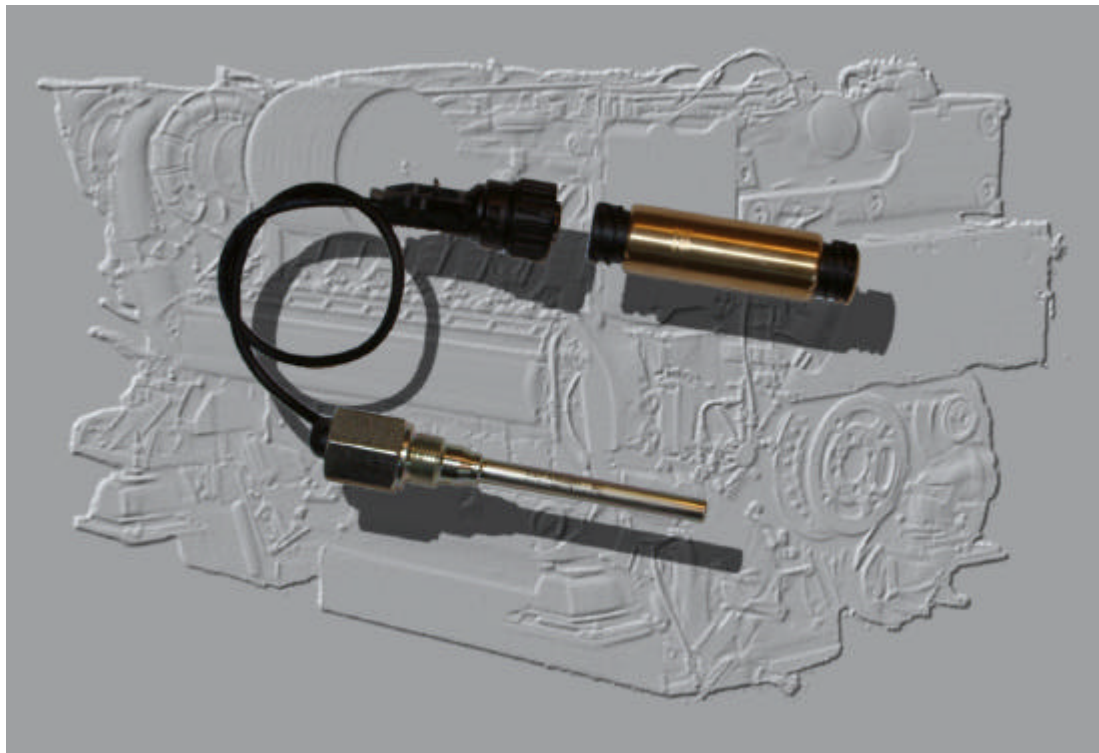


BEDIA Analogue Oil Level / Temperature Detection

In touch with the medium



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General Description / Typical Applications

The BEDIA analogue oil level temperature detection offers the possibility of measuring the oil pan level and oil temperature with one sensor. Additionally the evaluation electronics offers a MIN- and MAX-detection e. g. for controlling of an automatic refilling.

The oil level / temperature is indicated from the electronics after typ. 1 s from power up, so that the level can be evaluated shortly after the ignition system is switched on, but still before the motor starts.

The oil level can also be detected after a delay time of e. g. 15 minutes after the motor has stopped, so that there is a representative quantity of oil in the pan to decide if the automatic refilling should be activated. The MIN- and MAX-level points can e. g. be used for that purpose.

The display (by instrument) or processing of the electronics output signals has to be provided by the user.

Functional Principle

The thin resistive wire in the sensor tube is momentary heated by a current pulse. The resultant resistance change depends on the temperature of the oil and how far the sensor is immersed into the medium. The measured value is evaluated via a microprocessor, which controls the analogue and switch outputs of the evaluation electronics.

The oil level and temperature are indicated by separate analogue 1-5 V outputs. MIN- and MAX-level points are indicated by two open collector switch outputs.

Features

4-Wire Measurement

To reach a high precision and an independence from wire resistances, the connection between the evaluation electronics and the sensor element is based on a 4-wire measurement method. This offers the opportunity to use different sensor cable lengths without influencing the measurement results.

Level Measurement: Intelligent Dynamic Level Averaging

The level of the medium is evaluated in the microprocessor via an intelligent dynamic level averaging. All measured values are interpreted at first regarding their plausibility. The used averaging method offers the possibility to prevent false measurement values over a far range, e. g. caused by an a short time instable medium level or a glitch, without losing the capability to follow a quicker changing medium level.

MIN / MAX Detection: Intelligent Level Tendency Detection

To offer a useful performance of the MIN and MAX level detection, the actual detected measurement value is compared with previous values. If in the order of events a logic tendency is cognizable, e. g. that the level was continuously sinking in the measurements before or the level was rather near to the MIN value, a reached MIN-level is indicated immediately with the next cycle. To prevent an unwanted permanent alternation of the MIN / MAX outputs a reset hysteresis is integrated.

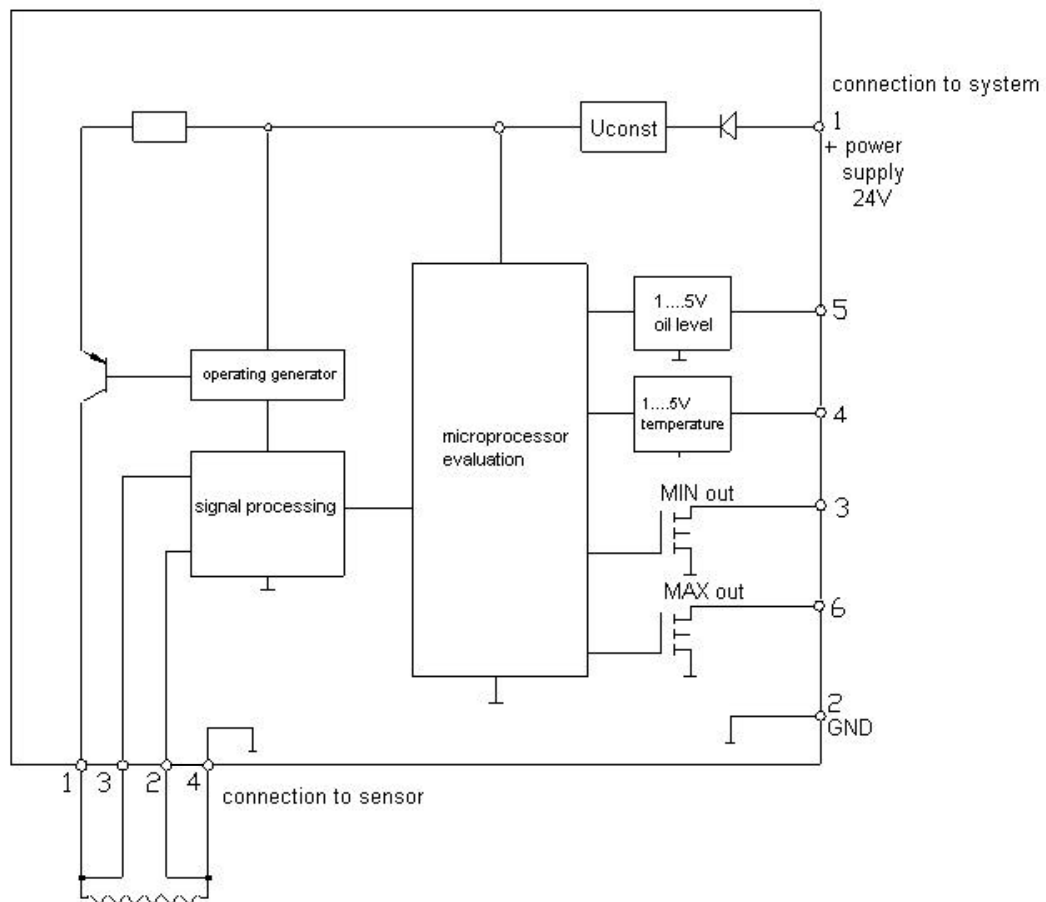
Integrated Control Function

In the time from "Power up" till the appearance of the first actual measurement value (typ. 1 s) the electronics generates test signals. The analogue level and temperature outputs indicate a voltage of 5 V, while the MIN- and MAX-switch outputs are activated.

Error Detection

In case of an eventual wire breakage of the connection cables to the sensor, a breakage of the sensor wire itself or a short-circuit of the sensor element, a permanent voltage of = 0.2 V appears at the analogue level and temperature outputs. This signal offers the user e. g. to detect an error by evaluating that signal level. The MIN- and MAX -outputs will be disabled immediately after detecting an error.

Schematic Diagram of the Electronics



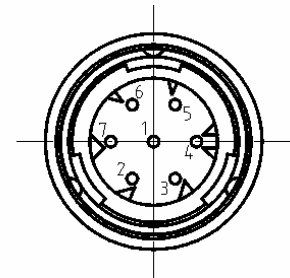
Pin Assignment of the Analogue Oil Level / Temperature Detection Electronics
(View on the contacts of the electronics)

Connection to system

bayonet 7-pin male
similar to DIN 72 585

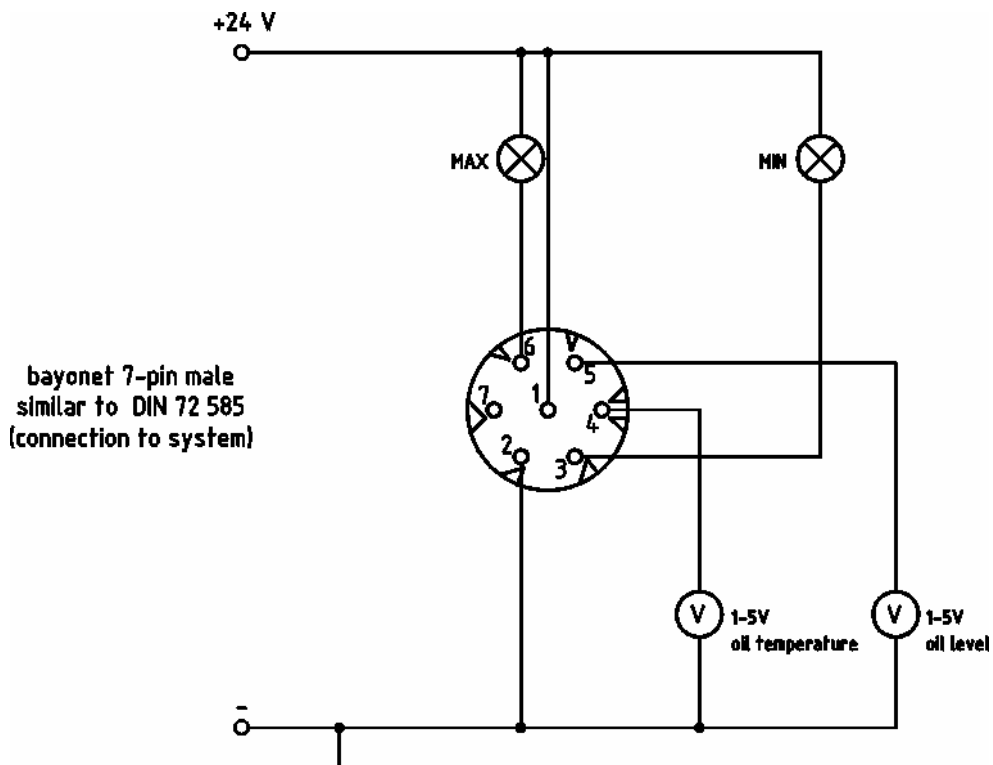
Pin Assignment System Connector:

- 1 = + Supply DC 24V
- 2 = Ground
- 3 = MIN switching Output (low side switching)
- 4 = Analogue Output Signal Temperature 1-5V
- 5 = Analogue Output Signal Level 1-5V
- 6 = MAX switching Output (low side switching)
- 7 = n. c.



Wiring Diagram

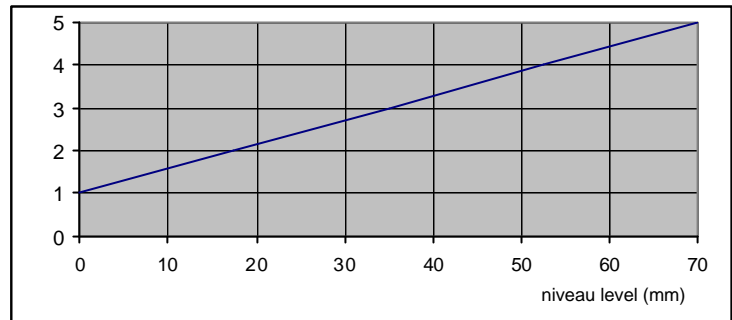
(View on the contacts of the electronics)



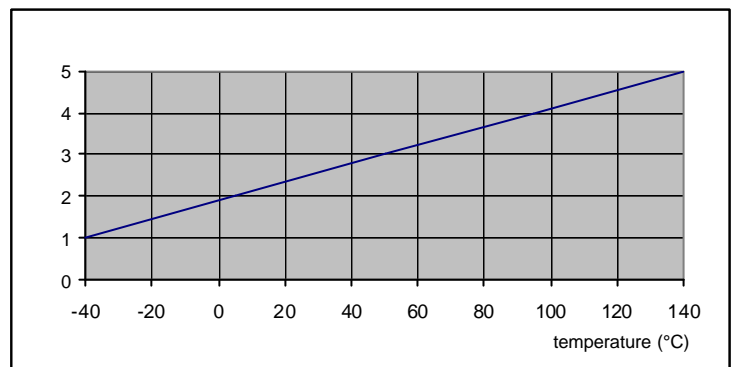
bayonet 7-pin male
similar to DIN 72 585
(connection to system)

Application Example of the Analogue Oil Level / Temperature Detection- Output Voltages

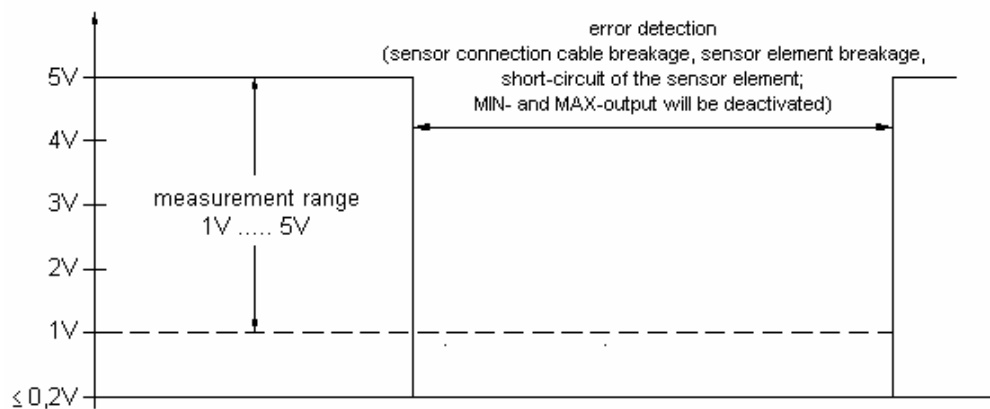
output voltage (V)	niveau level (mm)
1	0,0
2	17,5
3	35,0
4	52,5
5	70,0



output voltage (V)	temperature (°C)
1	-40,0
2	5,0
3	50,0
4	95,0
5	140,0



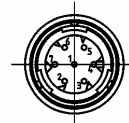
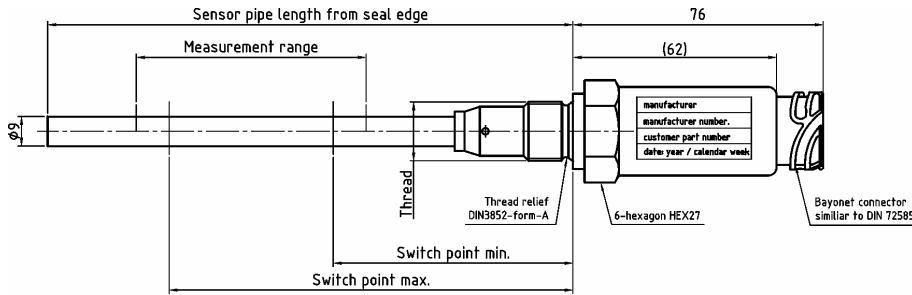
Uout level / temp.



Please send the following table completed with your data to:

BEDIA Motorentchnik GmbH & Co. KG

Fax 0049 (0) 9187 / 9509 50



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Nr.	Designation	Customer requirements	
1.0	Mounting thread	?	M18x1,5 (standard)
		?	other:
1.1	Sensor pipe length from seal edge		mm
1.2	Electrical connection	?	Bajonett DIN 72585 (standard)
		?	other:
2.0	Operating voltage		V
2.1	Analogue output Signal Level 1-5V	?	? other:
2.2	Analogue output Signal Temperature 1-5V	?	? other:
2.3	Switch point from seal edge MIN		mm Min. function
2.4	Switch point from seal edge MAX		mm Max. function
2.5	Measurement range start from seal edge		mm
2.6	Measurement range end from seal edge		mm

Additional data:

- With which display instrument must the sensor work with?

- In what equipment is the sensor to be installed in?

- What kind of oil is normally used? _____
- How many sensors are required per year? _____

Your address: _____

Company: _____

Name: _____

Telephone: _____

Fax: _____

E-mail: _____

Signature/company stamp: _____