

# Instructions for Determining Parameters for BEDIA Intelligent TankSensor ITS65. In touch with the medium.

- No mechanical moving parts
- Robust design for heavy duty applications
- Suitable for hydraulic - and engine oil
- Precise indication of medium level
- Precise indication of the medium temperature
- Linear output signal even with non linear tank geometry
- Integral MIN or Max switching point



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**BEDIA**  
Motorentechnik



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To be able to provide you with a quote or a finished sample, we will require various details from you. Because of the numerous options that our sensor can offer, we are particularly dependent on your co-operation.

The following table provides definitions for the terms used, together with an example for the parameterisation of a sensor. A dimensioned drawing is attached with all the parameters drawn in.

**All measurements are given in [mm] from the seal edge.**

**Please enter your data on page 8,** and complete the entry with your personal information and the required number of pieces per year. To receive a quote or request a sample, please fax this page to the fax number provided.

If you require any assistance with the completion of this form, please get in touch with us.

**Contact:**

**Technical Consultant**

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Structure of the parameter table:

Parameter No.	Parameter designation	Possible values	Note
This number can be found in the data sheet.	Designation of the parameter.	Describes the values or value ranges available for this parameter.	Important notes and additional information for this parameter.
	<b>Example for the parameterisation of a sensor for the tank and description depicted on page 7.</b>		

Parameter table:

Parameter No.	Parameter designation	Possible values	Note
<b>Mechanical parameters</b>			
1.0	Mounting flange	5-hole flange ( <b>standard</b> ), diameter of pitch circle = 54mm	The six-hole flange consists of a sensor with a 5-hole flange and an adapter plate. The sensor and adapter plate are supplied pre-mounted (see drawing).
		6-hole flange, diameter of pitch circle = 80mm	
<b>A 5-hole flange was selected for the example tank.</b>			
1.1	Sensor pipe length	Minimum length: 200mm Length in [mm]	The sensor pipe, which is open to the bottom, must not be guided and must not rest on the base of the tank so that the medium to be measured can circulate within the sensor pipe. The sensor pipe should end near the intake point. This ensures that the sensor is not standing in the condensation water.
		Maximum length: 1200mm Length in [mm]	
<b>A length of 490 mm was selected for the example tank. This length results from the position of the intake fitting. The sensor pipe ends with the intake point.</b>			
1.2	Electrical connection	Bayonet cap DIN 72585 ( <b>standard</b> )	The electrical connection of the sensor is always implemented via a 4-wire cable, preferably with a bayonet cap DIN 72585 of protection class IP69k. Other plugs can also be used on request. In this case, please enter the reference source and reference designation.
		Cable with open end	
<b>A bayonet cap DIN 72585 was selected for the example sensor</b>			
1.3	Cable length	Minimum length: 100 mm Length in [mm]	The connection cable of the sensor is <b>always 4-wire</b> .
		Maximum length: 5000 mm Length in [mm]	
<b>A length of 800 mm was selected for the example sensor</b>			

**Output 1**  
*(optionally as a level switch, thermo switch, or analog temperature output)*

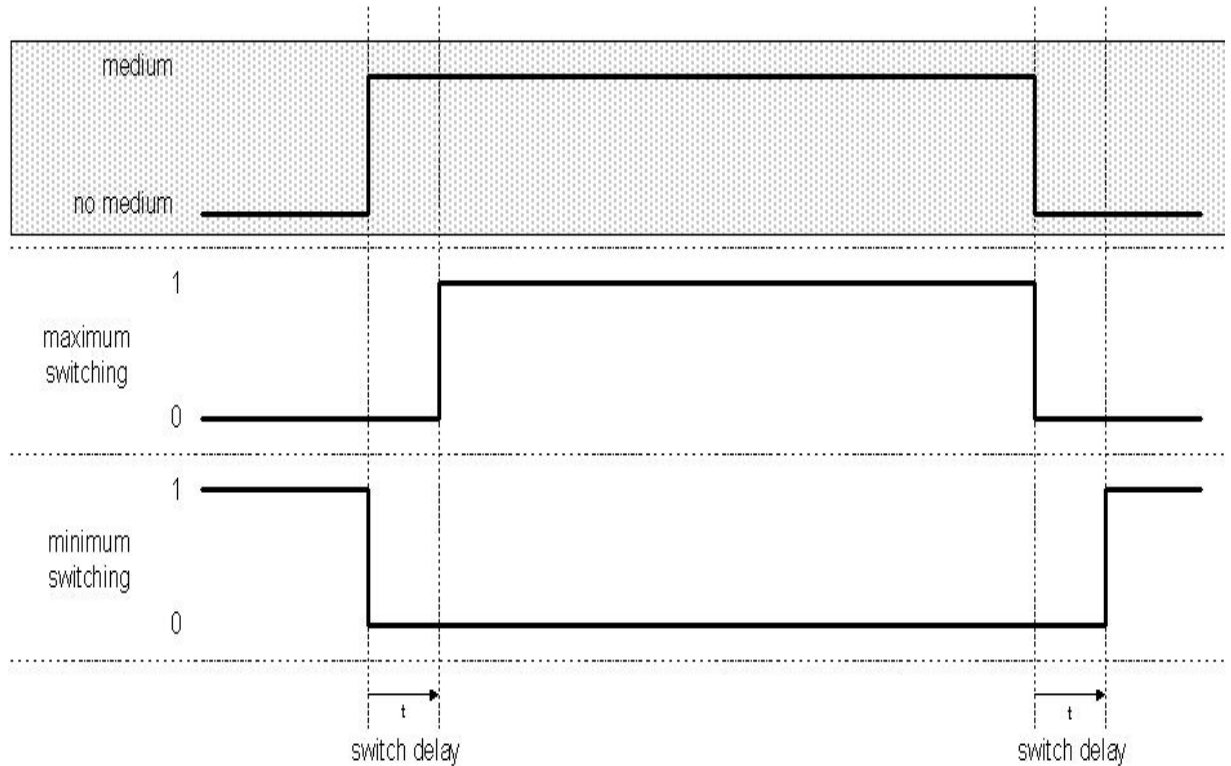
**Output 1 as level switch**

2.0	Switching point	Switching point range <b>See dimensioned drawing</b> Switching point in [mm]	The sensor is equipped with <b>one switching output</b> . When actuated, a minus potential is switched through the output. The distance of the switching point is measured from the seal edge and is freely selectable within the switching point range (see drawing).
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*A switching point of 400 mm was selected for the example sensor*

2.0.1	Function of switching point	Function: Minimum	The switching output is optional and can be set as a minimum switch (e.g. as a low fuel warning) or as a maximum switch (e.g. to switch off a filling system).
		Function: Maximum	

*A minimum switch was selected for the example sensor*



2.0.2	Switching delay	<p>Switching delay range 0 s to 240 s</p> <p>Delay in [seconds]</p>	<p>A switching delay can be selected for the switch output. The switching output is then switched with the specified time (t) delay. For a low fuel indicator, a delay time of 7 s prevents the indicator from constantly triggering when the medium sloshes around. A delay time of 0 s is recommended for overfilling (MAX- switching point) as this will ensure a prompt switch-off. Depending on the system, <b>extremely</b> fast level changes (fuelling up) can still occur and therefore the switching output may switch with appr. 2 s delay.</p>
<b><i>A switching delay of 7 s was selected for the example sensor (typical MIN)</i></b>			
2.0.3	Reset hysteresis	<p>The switch-off point must lie within the switching point range.</p> <p>Switch-off point in [mm]</p>	<p>The medium must under/overshoot a specific switch-off point before the switching output is reseted to its output condition. The position of the switch-off point is given to the switching point.</p>
<b><i>A reset hysteresis of 0 mm was selected for the example sensor</i></b>			

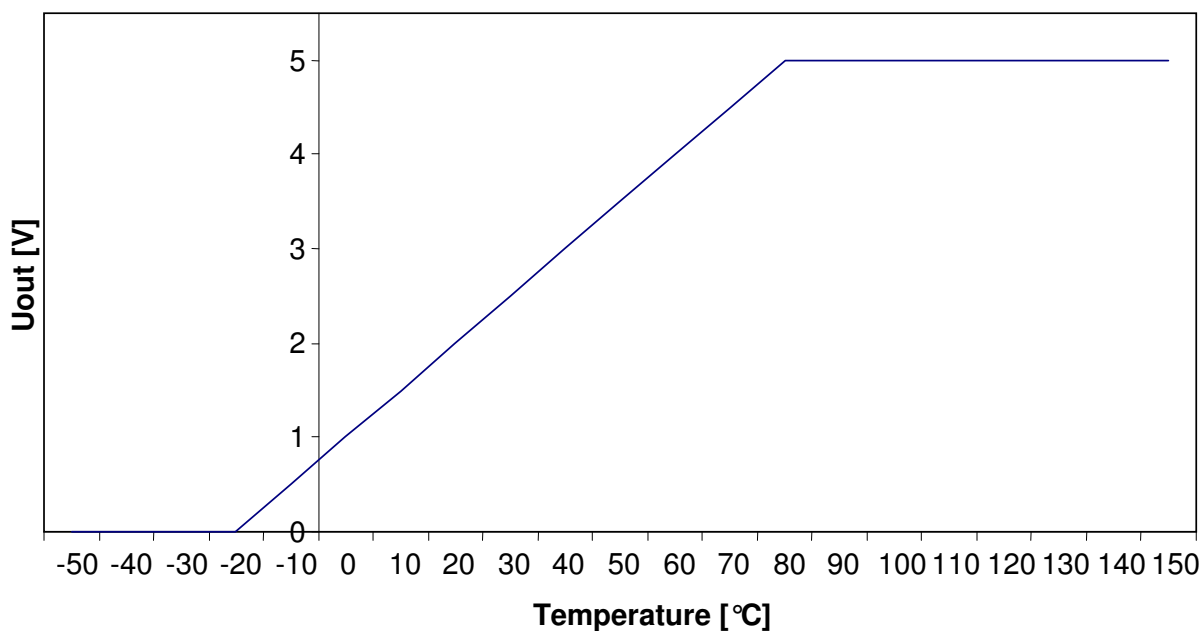
**Output 1 as thermo switch**

2.1	Thermo switch	Temperature switching range -50° ... +150°C	The thermo switch can be freely selected for recording the medium's temperature in the range from -50°C to +150°C. When actuated, a minus potential is switched through the output
2.1.1	Thermo switch function	Function: make contact Function: break contact	The switching output is optional and can be set as a make or break contact.
2.1.2	Reset hysteresis	The switch-off point must lie below the given temperature switching point  Switch-off point in [°C]	

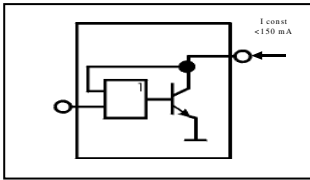
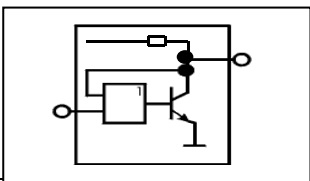
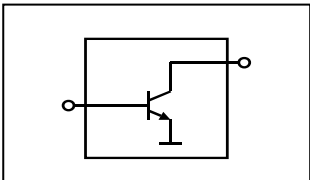
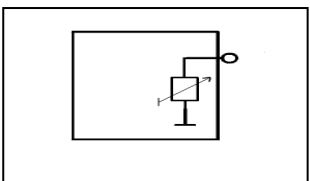
**Output 1 as analog temperature output**

2.2	Analog temperature output	Analog temperature output 0V -5V  0V-10V (with 24V supply only)  Temperature measuring range -50°C ... 150°C	For measuring the medium's temperature, a range within the threshold values can be freely selected. An analog output voltage can be generated for this temperature range.
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**Analog temperature output**

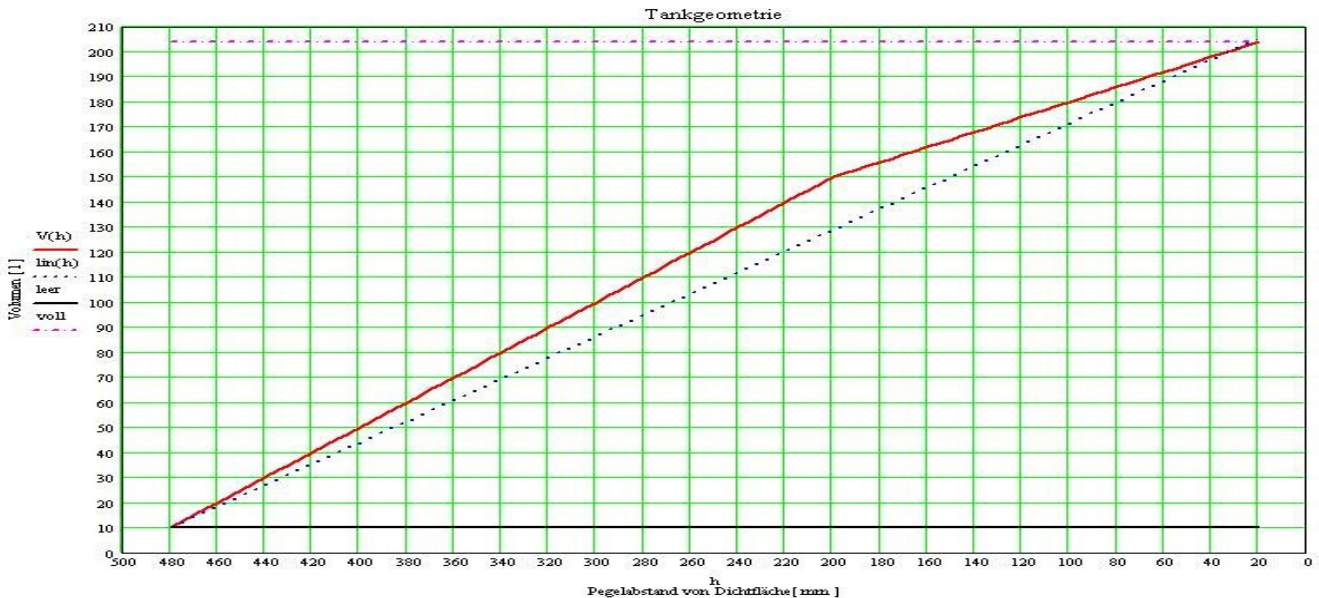




2.5	Output type	Voltage sink:		The voltage sink can be used to replace resistance sensors on digital controls/displays that measure voltage drops across resistors. To do this, the ITS-60 must be operated with a Pull Up resistor or with a constant current source on the output.
		Voltage output:		The voltage output actively outputs the level/volume applicable voltage. A Pull Up / constant current is not required. The output can be loaded with 5mA.
		PWM output:		The frequency of the PWM output must be $\leq 200\text{Hz}$ . A modulation range of 20% to 80% is possible.
		Resistance emulation:		Resistance emulation is necessary for general analogue level displays from various manufacturers. Please provide a suitable instrument as a sample.
<b>Output selected for this example: voltage output</b>				

2.6	Measurement range / Geometry adaptation	Position from seal edge	Output value	This parameter is used to specify the positions of the <b>measurement range start</b> and <b>measurement range end</b> . Where necessary, several geometry points can also be specified ( <b>see example</b> ). In total, 15 connection points can be defined. At least two points must be defined to specify the measurement range. If the analogue output should be proportional to the tank volume, the connection points can be given in [l]. Optionally, the required output voltage can be given in [V] or in [%] of the analogue start and analogue end values.
		Data in [mm]	Data in [V] or [l] or [%]	

Diagram for the example tank:

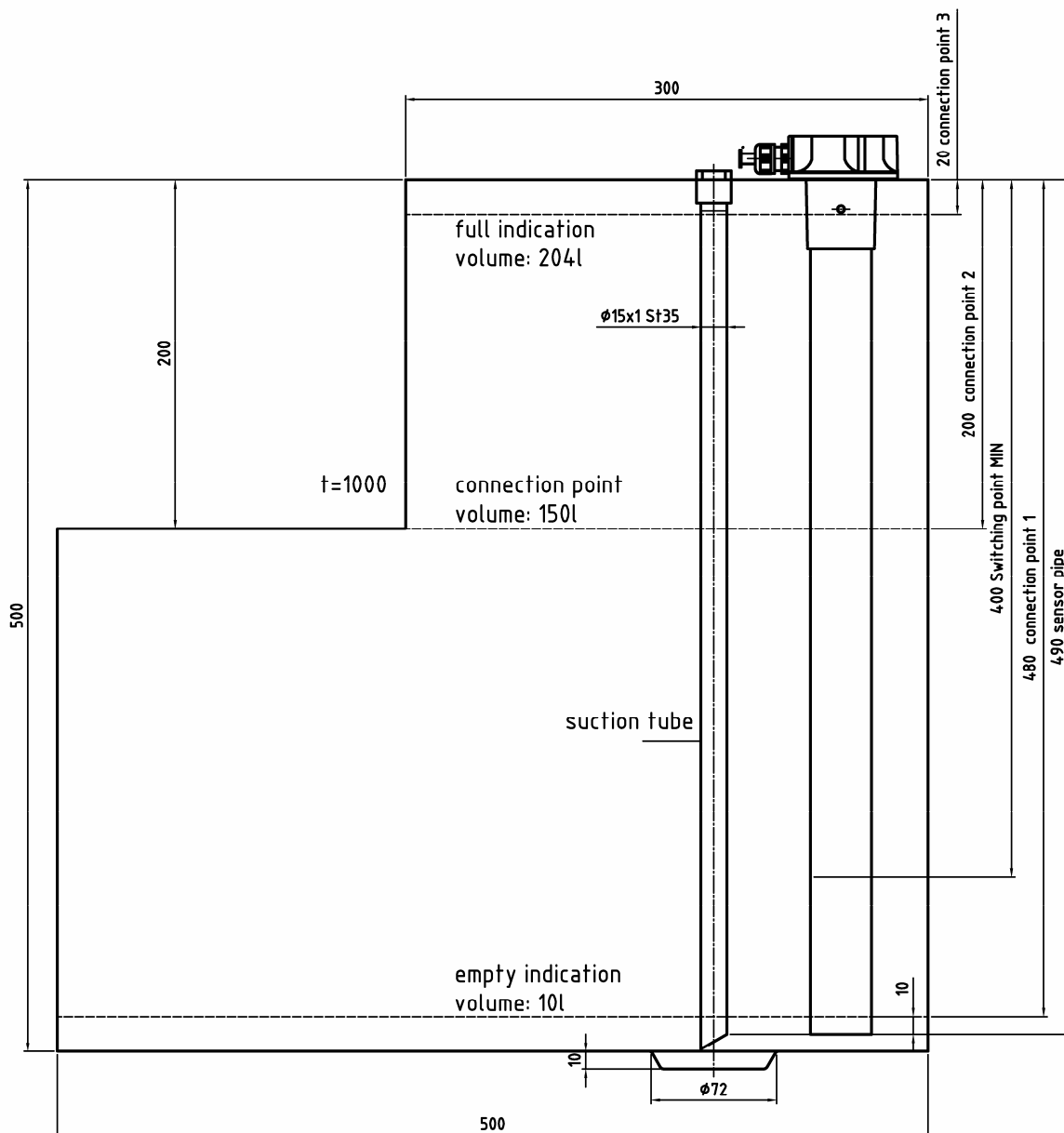


As the output signal of the example sensor is to be **proportional to the contents of the tank** the following connection points are defined:

Connection point	Position from seal edge	Output value
1	480 mm	10 l
2	200 mm	150 l
3	20 mm	204 l

The output value “analogue start” is always given with the first connection point and the “analogue end” value is always given with the last connection point. If the signal is not to be given in proportion to the level but e.g. proportional to the actual content, additional connection points must be provided. Up to 15 connection points can be given.

Example tank:



**Instructions for determining parameters for the tank sensor ITS-65**  
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Please send the following table with your data to:  
BEDIA Motorentechnik GmbH & Co. KG  
Fax 0049 (0) 9187 / 9509 50

No.	Designation	Customer requirements			
<b>Mechanical parameters</b>					
1.0	Mounting flange	<input type="checkbox"/> 5-hole flange $\Phi$ 54mm <input type="checkbox"/> 6-hole flange $\Phi$ 80mm			
1.1	Sensor pipe length	mm			
1.2	Electrical connection	<input type="checkbox"/> Bayonet DIN 72585 (standard) <input type="checkbox"/> Cable open			
1.3	Cable length	mm			
<b>Output 1 (optionally as a level switch, thermo switch, or analog temperature output)</b>					
<b>Output 1 – Level switch</b>					
2.0	Switching point from the seal edge	mm			
2.0.1	Function of switching point	<input type="checkbox"/> Minimum function <input type="checkbox"/> Maximum function			
2.0.2	Switching delay	Seconds			
2.0.3	Reset hysteresis	mm			
<b>Output 1 – Thermo switch</b>					
2.1	Thermo switch can be freely selected in medium – temperature measuring range -50°C ... 150°C	Switching temperature [ °C ]			
2.1.1	Function of thermo switch	<input type="checkbox"/> Make contact <input type="checkbox"/> Break contact			
2.1.2	Reset hysteresis	Switch-back temperature [ °C ]			
<b>Output 1 – Analog temperature output</b>					
2.2	Analog temperature output 0V -5V 0V -10V in medium, temperature measuring range -50°C ... 150°C	Output voltage in [V]  Temperature range [ °C ]			
<b>Output 2 (fluid level output)</b>					
3.0	Analog start value	[V] ; [%]			
	Analog end value	[V] ; [%]			
3.1	Output type	<input type="checkbox"/> Voltage output <input type="checkbox"/> PWM output <input type="checkbox"/> Voltage sink <input type="checkbox"/> Resistance emulation			
3.2	Geometry adaptation				
Connection point	Position from seal surface	Output value	Connection point	Position from seal surface	Output value
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8					

Company: \_\_\_\_\_  
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Signature/Company stamp:

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