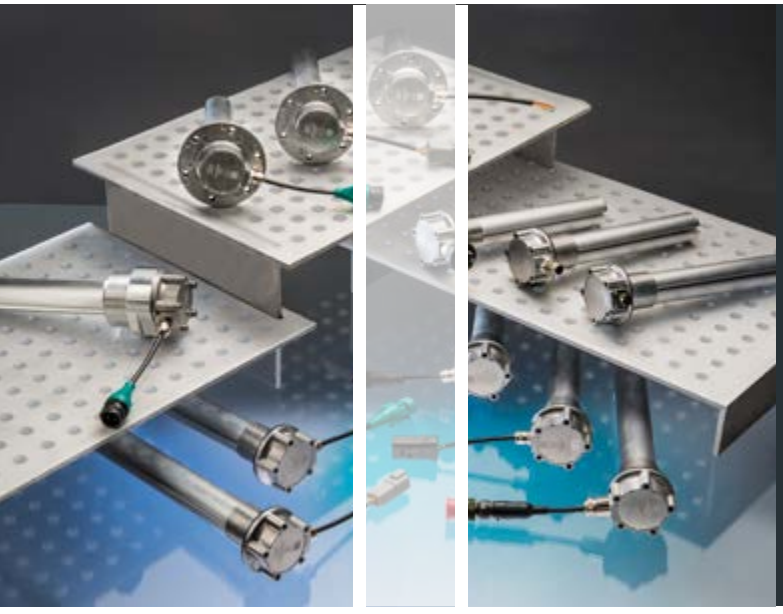
BEDIA®
MOTORENTECHNIK



INTELLIGENT TANKSENSORS

ITS 60 FOR DIESEL FUELS
ITS 65 FOR HYDRAULIC- AND ENGINE OILS

- NO MECHANICAL MOVING PARTS
- ROBUST DESIGN FOR HEAVY DUTY APPLICATIONS
- PRECISE INDICATION OF MEDIUM LEVEL
- PRECISE INDICATION OF THE MEDIUM TEMPERATURE
- LINEAR OUTPUT SIGNAL EVEN WITH NON LINEAR TANK GEOMETRY
- MIN OR MAX SWITCHING POINT INTEGRATED

ISO 14001 TÜV SÜD ISO 9001

THOUGHT-OUT SOLUTIONS AT THE HIGHEST LEVEL

CONTENT

BEDIA

The company

Measuring with system and passion

As a high performance and innovative company BEDIA developes, produces and distributes well thought out solutions for level and temperature monitoring.
We have been concentrating our skills in the domain of measuring filling levels and temperatures under extreme operating conditions. We are able to offer customized solutions to the specific requirements of our clients for small to large series. In doing so we are combining tried and tested technologies with innovative product ideas. Our expertise and flexibility are well demonstrated in the developement of customer specific solutions.

One thing that all our products have in common is the nonexistence of moving or adjustable parts; our parts are not subject to mechanical interference and exhibit exceptional operational reliability.

Since 1986 BEDIA Motorentechnik is a valued partner of numerous manufacturers of agricultural and construction machinery, compressors, engines, power train control systems and utility vehicles.
The high quality requirements of our world wide operating customers are our motivation for the constant improvement of our products and processes. The stable customer relationships of many years standing express the high quality of our products and the satisfaction of our customers.

We hope you will get a comprehensive overview of our products from this catalog. Please feel free to contact us, we will be happy to assist you with our advice and experience.

Company history at a glance

2015 Currently 115 employee

2012 Foundation of BEDIA Sensors USA in Austin, Texas

2009 Relocation of BEDIA Motorentechnik and BEDIA Kabel to the new corporate building in Altdorf in the industrial park near the A6.

2008 Takeover of the production for sensors from the business entit E-T-A in Altdorf

2006 Spin-off of the new BEDIA Kabel business unit from BEDIA Motorentechnik GmbH & Co. KG into BEDIA Kabel GmbH & Co. KG.

2005 Reorganization of BEDIA Motorentechnik GmbH into BEDIA Motorentechnik GmbH & Co. KG, preparation and the transfer of business administration to Holger Schultheis.

2000 Sale of the water treatment business unit to Aqua-Concept GmbH.

1994 Transfer of the Sensor Systems and Water Treatment business unit from BEDIA Maschinenfabrik to BEDIA Motorentechnik.

1986 Foundation of BEDIA Motorentechnik in Leinburg. Core focus business with vehicle wiring cables and delivery of sensor parts for the Bedia Maschinenfabrik in Bonn.

Our products at a glance

- capacitive level sensors for a versatile range of applications:
  - CLS 20/25 for railway applications tested according to DIN EN 50155
  - CLS 40/45 for off- and onroad applications with E1-type approval of the KBA
  - CLS50/55 for maritime applications with approvals of the classification societies
- intelligent, analog tank sensors for fuels and oils
- intelligent, analog hot wire sensors for monitoring oil sump fill levels
- temperature sensors
- mechanical temperature switches
- electronic temperature switches
- electronic temperature sensors
- DC/DC converters

We are certified in accordance with ISO 9001:2008 and ISO 14001:2004.

TOUGH AMBIENT CONDITIONS

Mechanics

The tank sensor ITS 60/ITS 65 is characterized by a particularly stable, but light mechanical system specifically designed for "Heavy Duty Applications".

The mounting flange and measurement tube are constructed from die cast aluminium.

This design permits the insertion of tank sensors up to 1200 mm in length, without additional support on the tank floor.

The flange hole distribution is compatible with commercially used tank sensors. This means that this system can be used without expensive conversions.

The capacitive measurement principle permits measurement of levels without mechanical moving parts. This increases stability and operating safety considerably.

Die cast aluminium

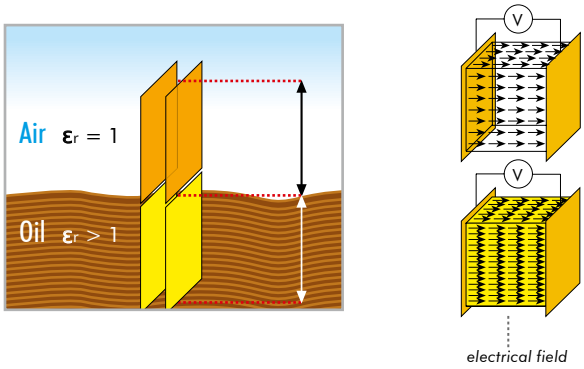
ALL HYDRAULIC AND ENGINE OILS ARE MEASURABLE

Measurement principle

The ITS65 level measuring system is based on a capacitive measurement principle. A capacitor is formed by an electrically conducting plate and an aluminium tube. Depending on the level, the remaining air volume between the measurement electrodes varies. The resulting capacitive change is detected and processed by the microcontroller.

Additionally, the ITS65 offers measurement of the medium temperature through a sensor element positioned at the tip of the sensor.

Capacitance measurement



„Capacitive is not always capacitive!"

With capacitive level measurement, the variation in permittivity of different media is an important aspect. Conventional capacitive sensors can therefore measure only one particular medium type correctly. This can lead to a measurement inaccuracy of up to 50%, e.g. due to aging or change of the medium.

Our sensor is equipped with a proprietary sensor structure. This permits automatic calibration of the medium, which is to be measured. This calibration occurs at levels as low as 50%.

The conductivity of the medium due to the existence of traces of water is compensated over a wide range by an integrated microprocessor by means of several plausibility checks.

FLEXIBILITY AND COMPATIBILITY

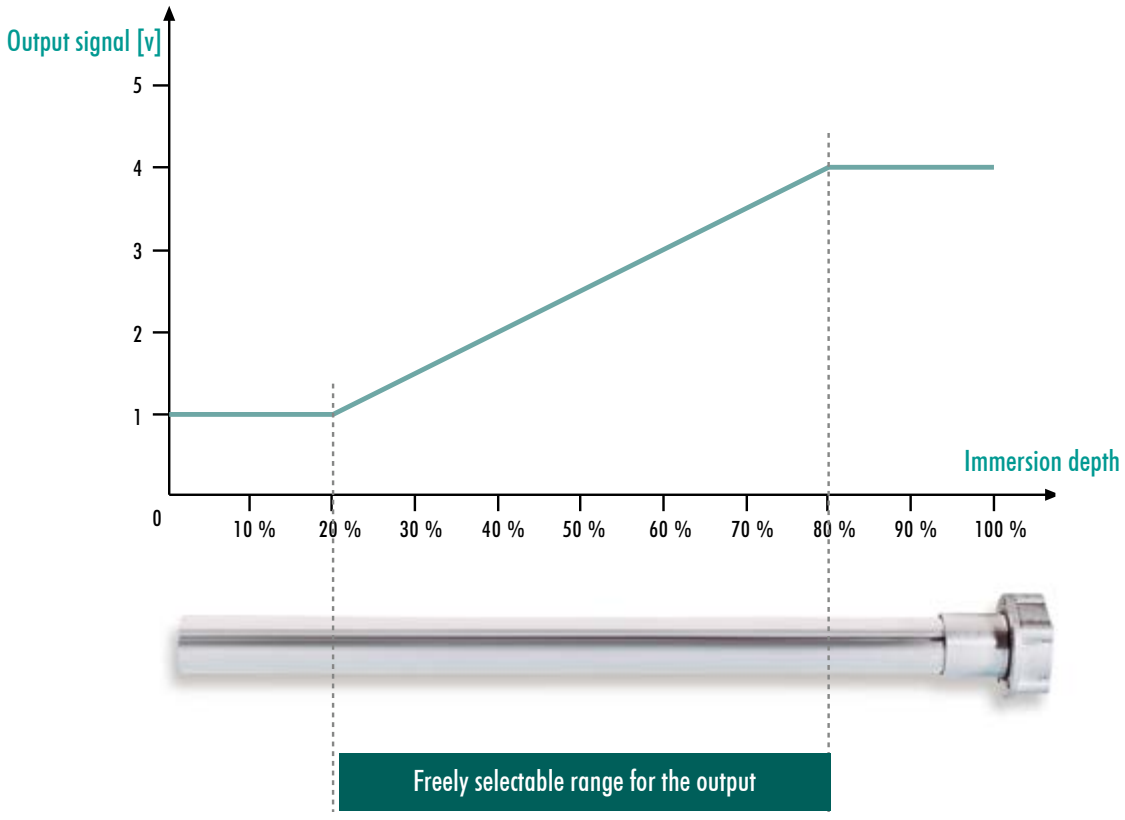
Evaluation and signal processing

The **intelligent electronic** integrated in the tank sensors offers a variety of processing and output options such as e.g.:

- **PWM SIGNALS (DIGITAL OR RESISTANCE EMULATION FOR COMMERCIAL ANALOG MEASUREMENT INSTRUMENTS)**
- **VOLTAGE OUTPUT**
- **CURRENT LOOP**
- **CAN INTERFACE (ON REQUEST)**

The measurement range, which can be programmed according to customer requirements, lies between 20 mm below the seal edge and 10 mm from the sensor end.

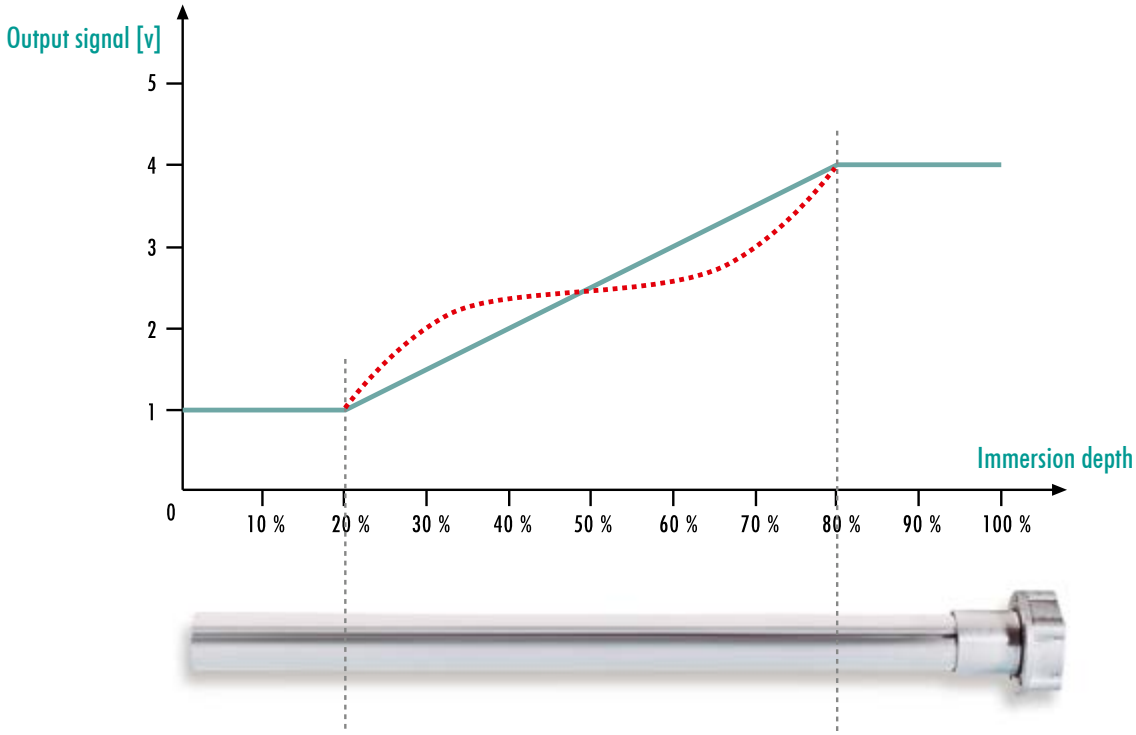
Example of use

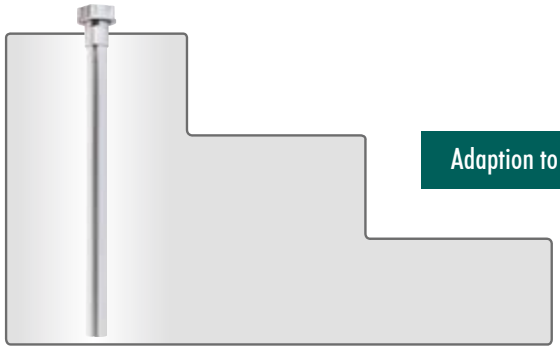


TANK GEOMETRY ADAPTION

Using a microcontroller not only permits linear tank geometries to be taken into account with the ITS 60 / ITS 65 tank sensor, but a variety of tank geometries to be correctly evaluated by programming up to 15 reference points.

Example of use





Adaption to tank geometry using 15 reference points.

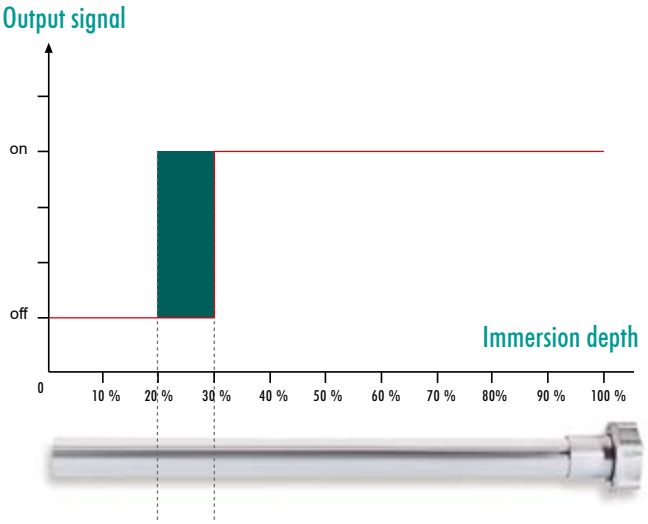
INTEGRATED SECOND OUTPUT

An additional feature of the ITS is its freely configurable second output.

1. This output can be individually configured as either minimum or maximum switching point of the medium level. Furthermore, the switching point, the delay action and the switching hysteresis are programmable. A typical application of the switching point would be a refuelling facility with an automatic pump deactivation

2. On the ITS 65 the second output can alternatively be used as an analogue temperature output to determine the medium temperature within a range from –50 to +150 °C. The output type (analogue output voltage, current loop or PWM signal) in that case is of the same type as the level output

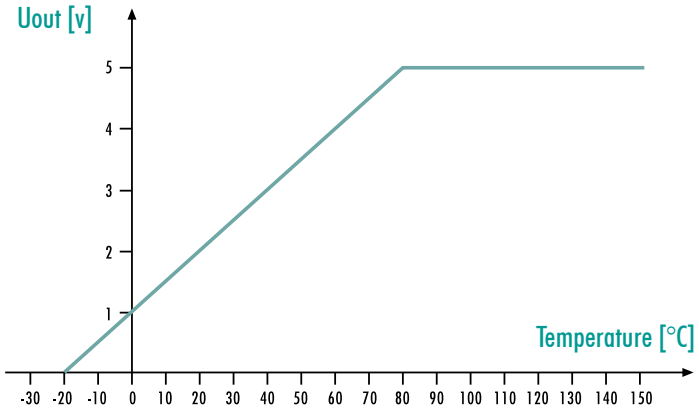
Level switch



Freely selectable switchpoint as MIN or MAX version, plus selectable switch hysteresis and switch lag

analogue temperature output

(ITS 65 only)



Free selectable range for the analogue temperature output

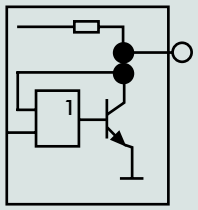
OUTPUT

Analogue outputs

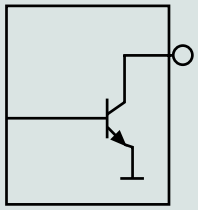
The analogue outputs are available as voltage output, as PWM output or as current loop.

Output types

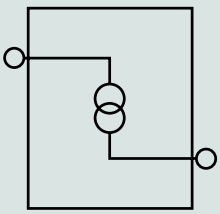
Voltage output:



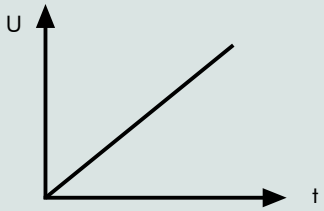
PWM signal:

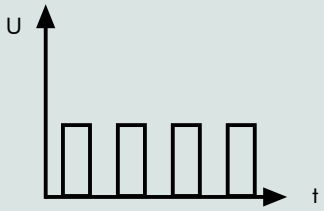


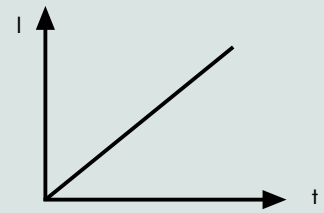
Current output:



Signal types

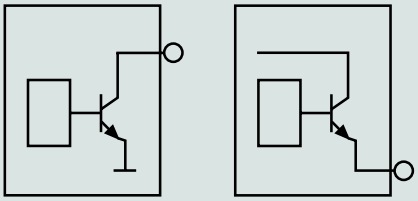






Other signal types available on request.

Switching output



The switching output is available as a lowside switch or a highside switch.

The switching output is short-circuit protected and suitable for 500 mA.

With inductive loads, a freewheeling diode must be connected in parallel to the load.

TECHNICAL DATA

Technical data

Measure principle:	ε_r – compensated level measurement
	medium temperature measurement from –50 °C to 150 °C (ITS 65 only)
Supply voltage:	12 V DC/24 V DC (–25%/+50%)
Reverse connection protection:	Between supply voltage plus and minus
Measurable mediums:	ITS 60: all diesel fuels
	ITS 65: Oil mediums with an ε_r 1,8 ... 6
Sensor outputs:	Voltage output, PWM, Current loop, CAN
	All outputs are short circuit protected
Signal Characteristics::	Range as per customer requirements
	Tank geometry: Linear or as per customer requirements
Level switch- or Temperature output requirement:	Switching point as defined by the customer
	(within the measuring range)
	MIN or MAX function
	Hysteresis as defined by the customer
	Delay time as defined by the customer
	Low side switching upto 500mA and short circuit proof
	Temperature output (analogue) –50 °C to 150 °C
Measurement deviation:	+/– 3% referenced to the measurement range and value
	Temperature: +/– 2 °C
Installation position:	Vertical without support +/– 15° or ask for details
Pressure resistance:	5 bar
Environmental protection of flange:	IP 69K according to DIN 40050
Environmental protection of connector:	Depending on version, up to IP69K according to DIN 40050
Operating temperature:	ITS 60: –40 °C to 85 °C ITS 65: –40 °C to 125 °C
Medium temperature:	ITS 60: –40 °C to 85 °C ITS 65: –50 °C to 150 °C
Storage temperature:	ITS 60: –50 °C to 85 °C ITS 65: –50 °C to 125 °C
El. connection:	3- or 4-wire cable; plug as per customer requirement
	(standard: bayonet according to ISO 15170)

TECHNICAL DATA

Technical data

Mechanical connection:	5-hole flange (standard)
	6-hole flange
	G 2“ screw-in flange
Marking:	Laser inscription
	(manufacturer, manufacturer number, customer part number,
	serial number, date: week/year)
Sensor length:	As per customer requirements from 200 mm to 2300 mm
EMC*:	Conducted emissions test according to CISPR 25
	Measurement of radiated field strength according to CISPR 25
	ESD test according to EN 61000-4-2 and ISO TR 10605
	Immunity test according to ISO 11 452
	Immunity test according to ISO EN 61000-4-6
	Immunity test according to ISO EN 61000-4-5
	Transient immunity test with test pulse 5 (load dump) according to ISO 7637-2
	Voltage variations according to IEC 60092-504
	Voltage interruptions according to IEC 60092-504
Vibratory resistance*:	Sine-Vibration according to DIN IEC 68-2-6/ -27
Shock resistance*:	Shock test according to DIN IEC 68-2-6/ -27
Environmental test*:	Thermal shock test according to EN 60068-2
	Temperature cycling examination according to EN 60068-2
	Salt spray examination according to EN 60068-2
	Type of protection examination IP 67 and IP 69K according DIN 40050 part 9
Flange material:	GD-AlSi10Mg (Nr. 239) DIN 1725
Profile material:	AlMgSi0, 5 F22 DIN 1725

* These tests were performed according to the standards of construction machinery and commercial vehicle industry

A complete test report is available on request.

INSTRUCTIONS FOR DETERMINING PARAMETERS

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 parameters listed.

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

Please enter your data on page 35, 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.

INSTRUCTIONS FOR DETERMINING PARAMETERS

Structure of the parameter sheet

Section	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.
	Example for the parameterisation of a sensor for the tank and description depicted on page 9.		

Mechanic

Section	Parameter designation	Possible values	Note
1	Mounting flange	» 5-hole flange (standard), diameter of pitch circle = 54 mm » 6-hole flange, diameter of pitch circle = 80 mm » G 2“ screw-in flange	The screw-in flange consists of a sensor with a 5-hole flange and an adapter. The sensor and adapter are supplied pre-mounted (see drawing).
	A 5-hole flange was selected for the example tank.		
2	Standard sensor pipe length	» Minimum length : 200 mm » Maximum length : 2300 mm	The sensor pipe, which is open to the bottom needs no guidance 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 condensation water.
	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.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

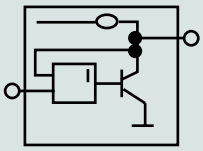
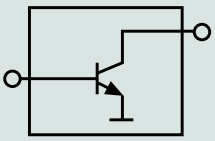
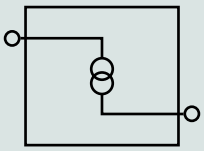
Section	Parameter designation	Possible values	Note
3	Electrical connection	» Bayonet cap ISO 15170 (standard) » Cable with open end » Customer specified connector	The electrical connection of the sensor is preferably implemented via a 4-wire cable with a bayonet connector ISO 15170 of protection class IP 69K. Other connectors can be installed on request.
	A bayonet cap ISO 15170 was selected for the example sensor.		
	Cable length	» Minimum length : 100 mm » Standard length 800 mm » Other lengths on request.	
	A length of 800 mm was selected for the example sensor.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

Level output

Section	Parameter designation	Possible values	Note
4	Analogue output signal	Sensor not immersed/ measurement start * Voltage 0 - 5 V * Voltage 0 - 10 V (only with 24 V supply) * Current 4 - 20 mA * PWM 0 - 100% Sensor immersed / measurement end * Voltage 0 - 5 V * Voltage 0 - 10 V (only with 24 V supply) * Current 4 - 20 mA * PWM 0 - 100%	The output signal consists of an analogue start and analogue end. If the given start value is smaller than the end value, the sensor is programmed normally. If the start value is large than the end value, then the signal is automatically inverted. If an analogue instrument is used, the output values can be given in % of the desired display value on the scale. In this case, a suitable display instrument must be provided as a sample.
	The following output signal was selected for the example sensor: Analogue start: 0.5 V Analogue end: 4.5 V This signal is not inverted.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

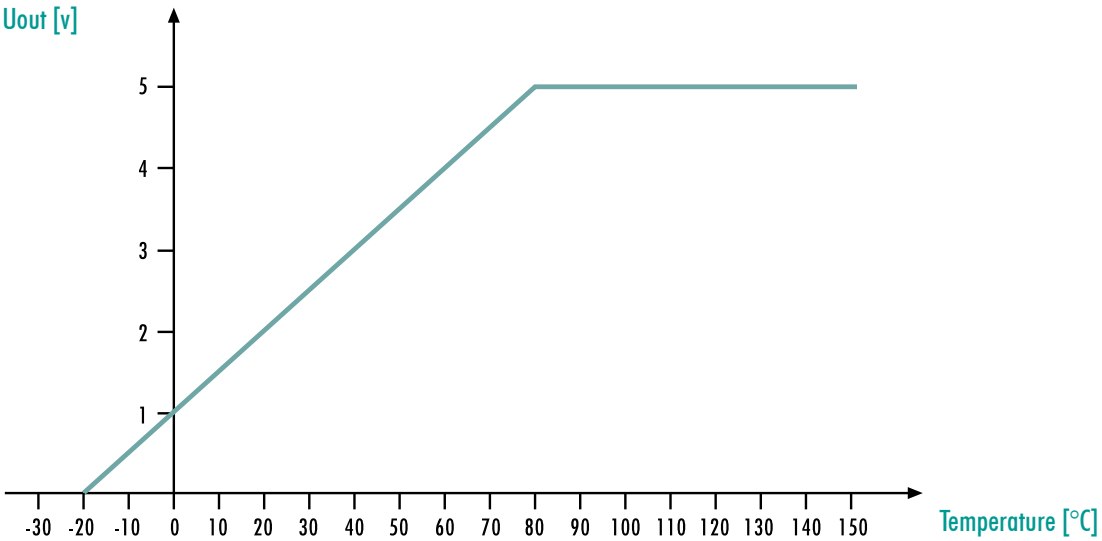
Section	Parameter designation	Possible values	Note
4	Output type	» Voltage output: 	The voltage output actively outputs the level/volume applicable voltage. A Pull Up/constant current is not required. The output can be loaded with 2 mA.
		» PWM output: 	The frequency of the PWM output is 1000 Hz. A modulation range of 0 % to 100 % is possible.
		» Current output: 	The analog current output supplies current equivalent to the measured level. The current range is from 4 - 20 mA.
	Output selected for this example: voltage output.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

Analogue temperature output (ITS 65 only)

Section	Parameter designation	Possible values	Note
5	Analogue temperature output	Analogue temperature output * Voltage 0 - 5 V * Voltage 0 - 10 V (only with 24 V supply) * Current 4 - 20 mA * PWM 0 - 100% Temperature measuring range –50 °C ... 150 °C	For measuring the medium's temperature, a range within the threshold values can be freely selected. An analogue output voltage can be generated for this temperature range. The type of output (analogue voltage, current loop or PWM) is then always the same as for the level output.

Analogue temperature output

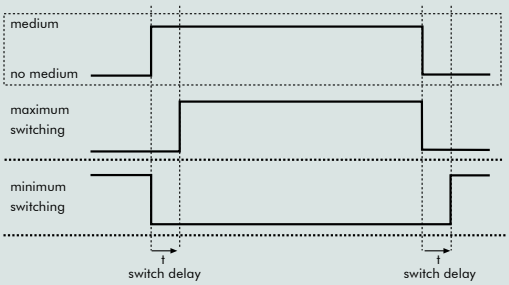


INSTRUCTIONS FOR DETERMINING PARAMETERS

Level switch output

Section	Parameter designation	Possible values	Note
6	Switching point	» Switching point range » See dimensioned drawing » Switching point in [mm]	The sensor is equipped with one **switching output.** 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).
	A switching point of 400 mm was selected for the example sensor.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

Section	Parameter designation	Possible values	Note
	Function of switching point	» Function: Minimum » Function: Maximum	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).
			
	A minimum switch was selected for the example sensor.		
	Switching delay	» Switching delay range 0 sec to 240 sec » Delay in [sec]	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 sec prevents the indicator from constantly triggering when the medium sloshes around. A delay time of 0 sec is recommended for overfilling (MAX- switching point) as this will ensure a prompt switch-off. Depending on the system, extremely fast level changes (fuelling up) can still occur and therefore the switching output may switch with appr. 2 sec delay.
	A switching delay of 7 sec was selected for the example sensor (typical MIN).		

INSTRUCTIONS FOR DETERMINING PARAMETERS

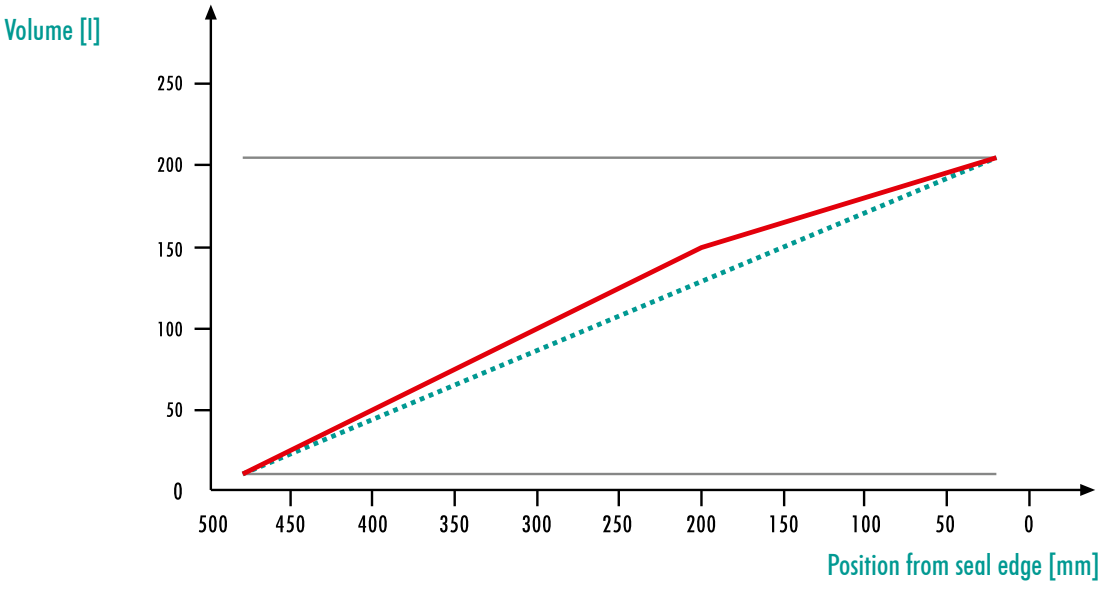
Section	Parameter designation	Possible values	Note
	Reset hysteresis	» The switch-off point must lie within the switching point range. » Switch-off point in [mm]	The medium must under/overshoot a specific switch-off point before the switching output is reseted to its output condition. The position of the switch-off point is given to the switching point.
	A reset hysteresis of 0 mm was selected for the example sensor.		

INSTRUCTIONS FOR DETERMINING PARAMETERS

Geometry adaption

Section	Parameter designation	Possible values	Note
7	Measurement range/Geometry adaptation	» Position from seal edge Data in [mm]	This parameter is used to specify the positions of the **measurement range start and measurement range end**. Where necessary, several geometry points can also be specified (see example). In total, 15 connection points can be defined. At least two points must be defined to specify the measurement range. If the analogue output shall be proportional to the tank volume, the setting points can be given in [V], [mA] or in [% PWM].

Diagram for the example tank



INSTRUCTIONS FOR DETERMINING PARAMETERS

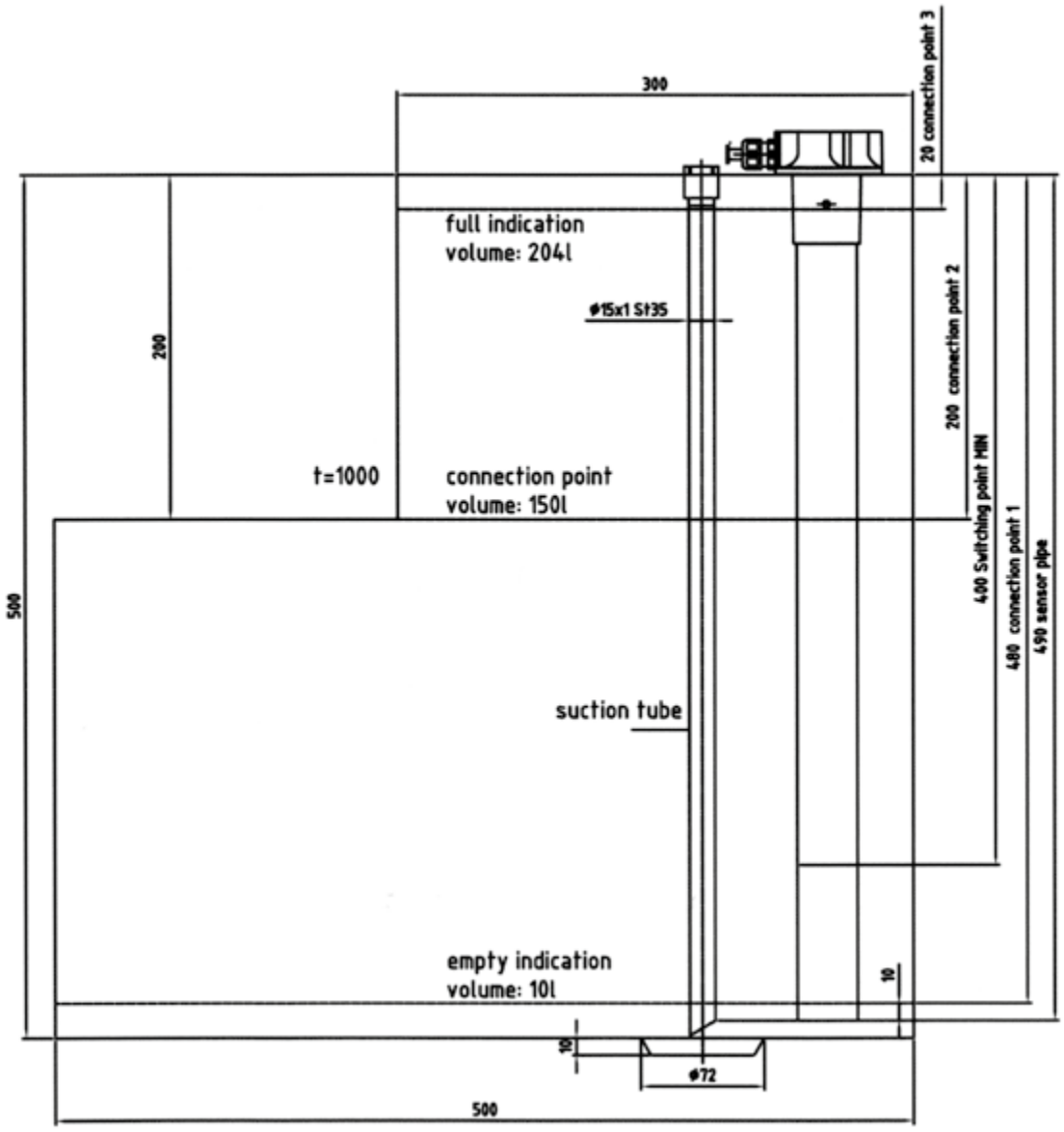
As the output signal of the example sensor is to be proportional to the contents of the tank the following connection points are defined:

Connection point	Position from seal edge	Output value
1	480 mm	0,50 V
2	200 mm	3,59 V
3	20 mm	4,50 V

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

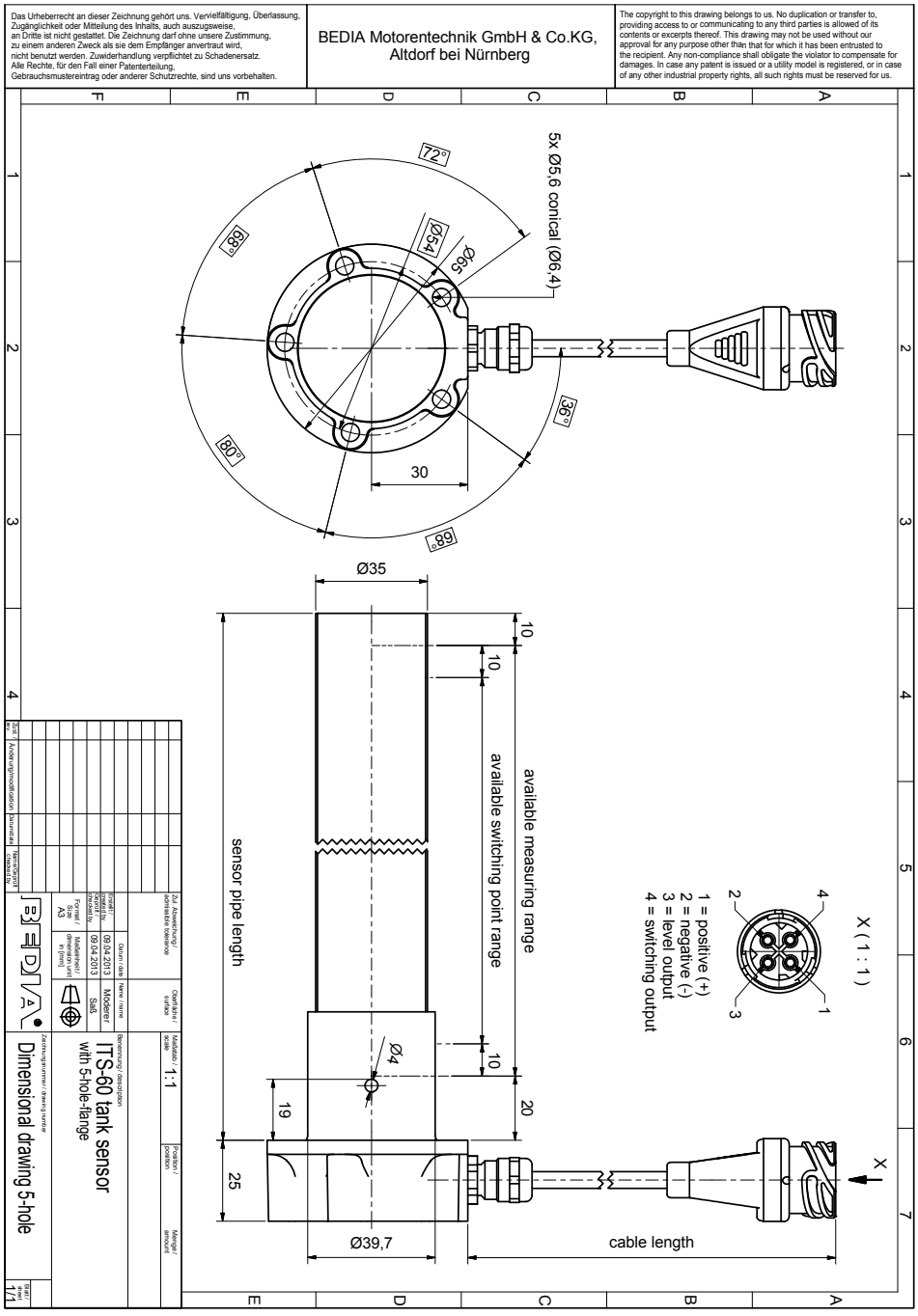
INSTRUCTIONS FOR DETERMINING PARAMETERS

Example tank



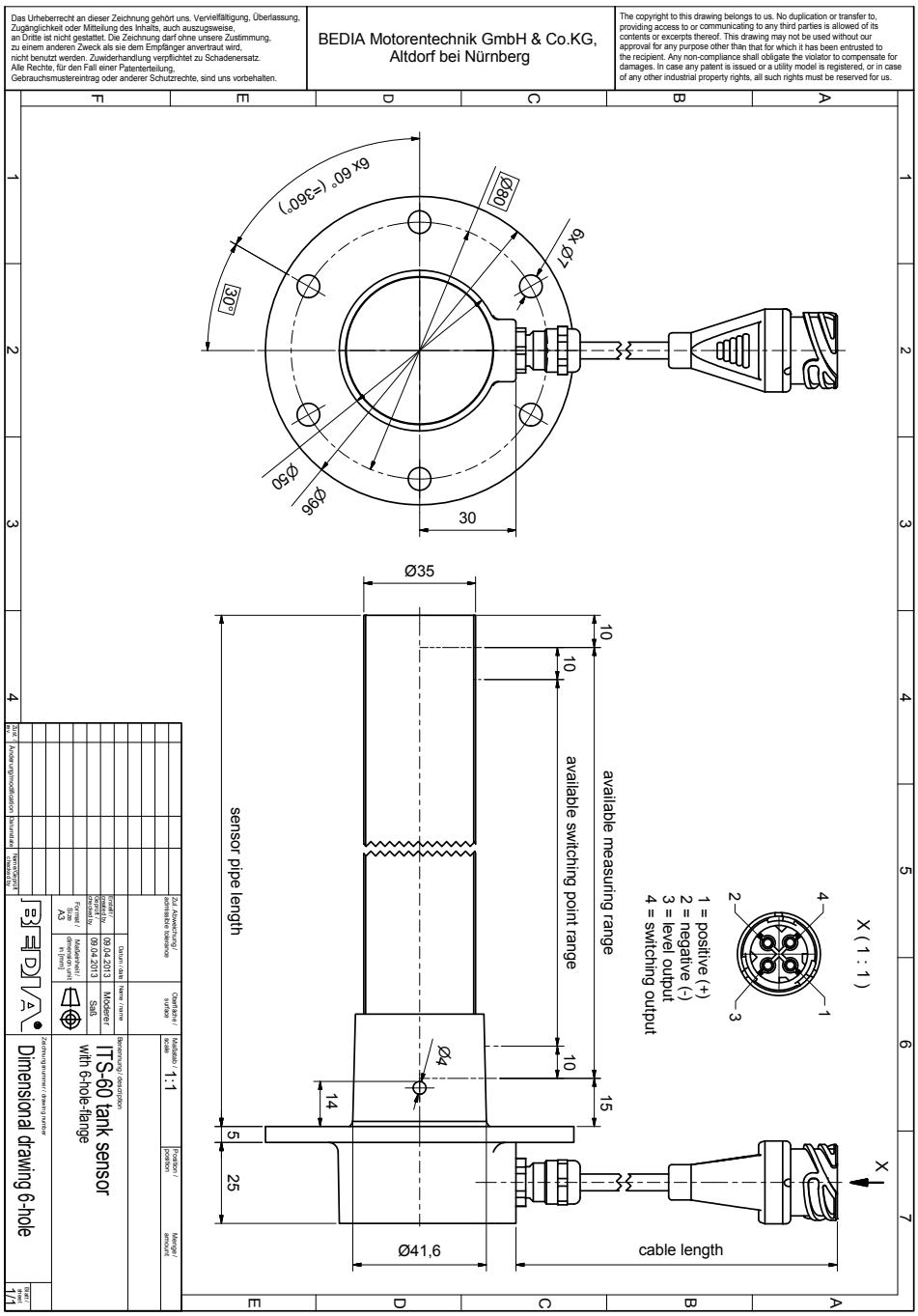
INSTRUCTIONS FOR DETERMINING PARAMETERS

Example



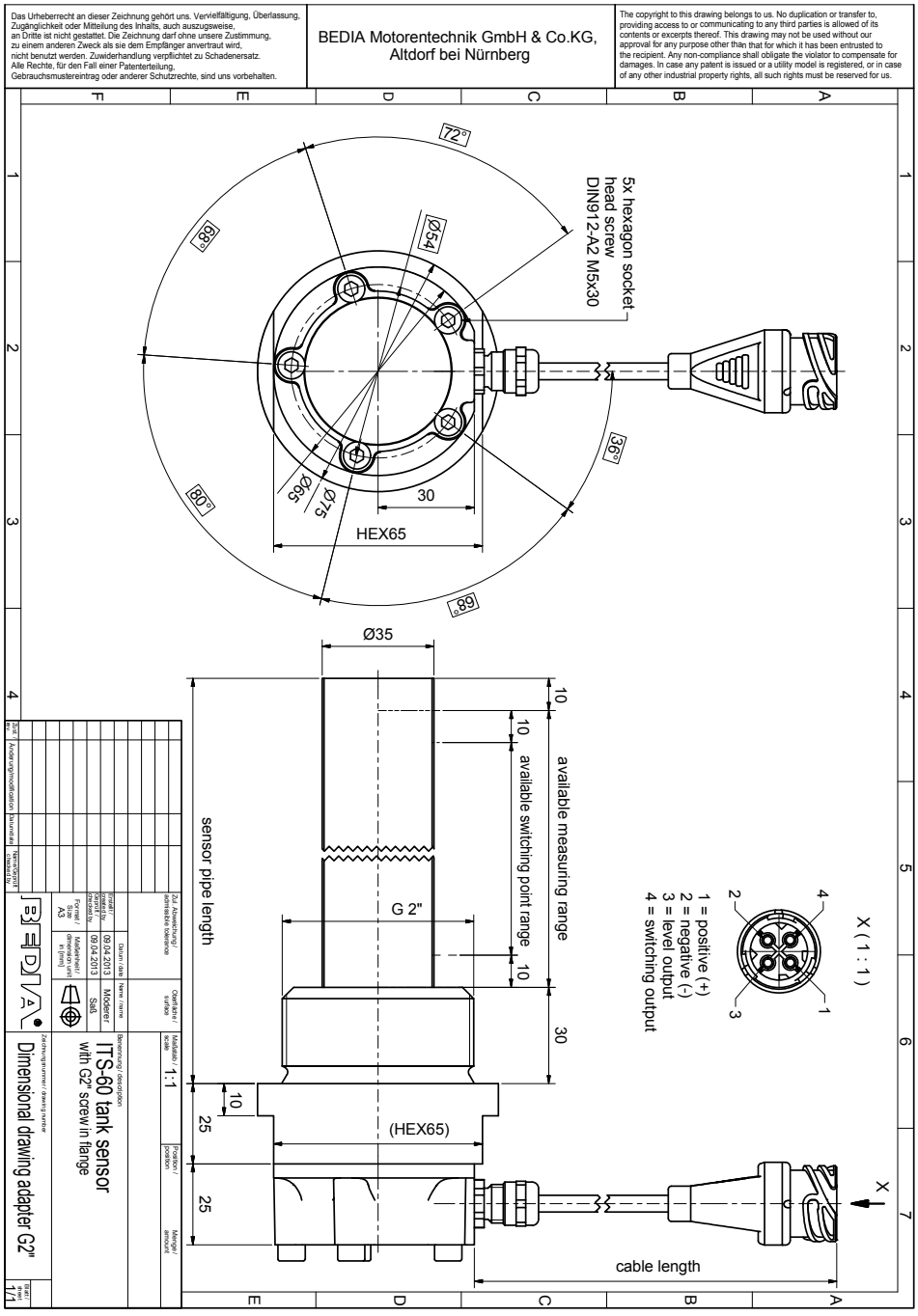
INSTRUCTIONS FOR DETERMINING PARAMETERS

Example



INSTRUCTIONS FOR DETERMINING PARAMETERS

Example



CONNECTORS AND DESIGNS

5/6-hole flange protection class IP69K according to DIN 40050

■ 5-hole flange
cable with bayonet according ISO 15170 overmolded

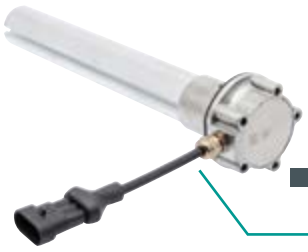
» Order number overview at page 32

■ 5-hole flange
cable with DEUTSCH DT04-4P

» Order number overview at page 32

■ 5-hole flange
cable with connector AMPSEAL 16 4-pole

■ 5-hole flange
cable with SUPERSEAL



■ 5-hole flange
cable with SUPERSEAL

■ 5-hole flange
cable with Packard overmolded

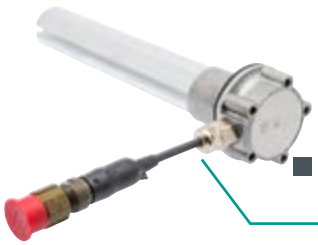
CONNECTORS AND DESIGNS

5/6-hole flange protection class IP69K according to DIN 40050

■ 5-hole flange
cable with connection M12x1

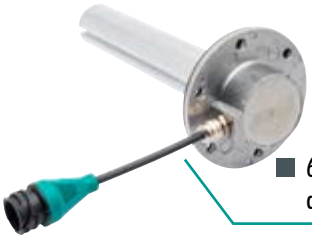
» Order number overview at page 32

■ 5-hole flange
cable with connector Sure-Seal-Stecker 4-pole



■ 5-hole flange
cable with connector MIL-DTL-38999

■ G2"-adapter
cable with bayonet according ISO 15170 overmolded



■ 6-hole flange
cable with bayonet ISO 15170 overmolded

» Order number overview at page 32

■ 6-hole flange
cable with flying leads

» Order number overview at page 32

CONNECTORS AND DESIGNS

5/6-hole flange protection class IP69K according to DIN 40050

■ 5-hole flange
with connector DIN EN 175 301-803-A

■ 5-hole flange
with connector M12x1

■ 5-hole flange
with connector MIL-C-26482 series 2 - 4-pole

ORDER NUMBER OVERVIEW

ITS 60 with voltage output

Sensor pipe length mm	Level output	Function of switching point	Switching point from the seal edge	Cable length mm	Cable connection type	Order number
200	0.0V-5.0V			800	2*	600 502
240	0V-5V			6000	1*	600 430
250	0V-5V			800	2*	600 183
250	0.45V-5V			500	1*	600 257
250	0V-5V			2000	1*	600 437
265	0.5V-3.3V			900	1*	600 422
270	0V-5V			800	2*	600 471
285	0.5V-4.5V	MIN	250	300	1*	600 115
290	0.5V-4.5V			200	2*	600 255
300	0V-5V			800	2*	600 240
300	0.5V-4.5V	MIN	250	800	1*	600 306
340	0.5V-10V	MIN	279	800	2*	600 291
350	0.5V-10V	MIN	288	800	2*	600 292
350	0V-10V	MIN	250	2000	1*	600 372
357	0.5V-4.5V	MIN	180	300	1*	600 227
360	0.5V-10V	MIN	297	800	2*	600 293
370	0V-5V	MAX	30	800	2*	600 057
370	0V-10V	MIN	360	3000	1*	600 202
370	1V-9V			100	3*	600 413
380	0.5V-4.5V			200	2*	600 191
382	0.5V-4.5V	MIN	350	300	1*	600 226
390	0V-10V	MIN	350	800	2*	600 223
390	0.5V-4.5V	MIN	304	800	2*	600 417
400	0V-5V			2000	1*	600 213
400	0.5V-10V	MIN	333	800	2*	600 294
400	0V-5V			6000	1*	600 435
410	0V-10V	MIN	370	800	2*	600 224
460	0V-10V	MIN	415	800	2*	600 222
480	0.5V-10V			3000	1*	600 160
480	0V-10V	MIN	430	800	2*	600 221
480	0.5V-10V	MIN	405	800	2*	600 295
500	0.5V-4.5V	MIN	470	200	4*	600 034
500	0.5V-4.5V			600	3*	600 395
500	0V-5V			6000	1*	600 431
530	0V-10V			1000	1*	600 086
536	0.5V-4.5V			300	1*	600 149
540	0.5V-10V	MIN	459	800	2*	600 297
540	0V-10V	MIN	480	10000	1*	600 359
550	0.5V-10V	MIN	468	800	2*	600 296
550	0V-5V			6000	1*	600 432
567	0.5V-4.5V	MIN	354	300	1*	600 228
570	0V-5V			500	2*	600 275
575	0V-10V	MIN	555	3000	1*	600 494

1* Cable with flying leads
2* Cable with bayonet according to ISO 15170 overmoulded
3* Cable with connector M12x1
4* Cable with Deutsch connector DT04-4P

ORDER NUMBER OVERVIEW

ITS 60 with voltage output

Sensor pipe length mm	Level output	Function of switching point	Switching point from the seal edge	Cable length mm	Anschlussausführung	Order number
590	0V-5V			2000	1*	600 214
590	0.5V-10V	MIN	504	800	2*	600 298
590	0V-5V			6000	1*	600 433
625	0V-10V	MIN	605	800	2*	600 283
640	0V-5V			6000	1*	600 434
650	0V-5V			2000	1*	600 215
660	0V-10V	MIN	580	10000	1*	600 396
680	0.5V-4.5V			800	2*	600 157
700	0V-5V			6000	1*	600 436
716	0.5V-4.5V			300	1*	600 246
741	0.5V-4.5V			300	1*	600 180
750	0V-10V	MIN	730	800	2*	600 030
780	0V-5V			2000	1*	600 358
785	5V-0V			300	2*	600 511
800	0.5V-4.5V	MIN	750	500	4*	600 152
830	0.5V-4.5V			500	1*	600 279
850	1V-9V	MIN	800	100	3*	600 336
880	0.5V-4.5V			600	3*	600 406
950	0V-5V	MIN	100	200	4*	600 332
980	0.5V-5V			300	1*	600 331
993	0.5V-4.5V			800	2*	600 112
1000	0.5V-4.5V			800	2*	600 123
1000	0V-5V			2000	1*	600 506
1100	0V-5V			2000	1*	600 445
1100	0V-10V			1000	1*	600 519
1300	0.5V-4.5V	MAX	100	3000	4*	600 402

1* Cable with flying leads
2* Cable with bayonet according to ISO 15170 overmoulded
3* Cable with connector M12x1
4* Cable with Deutsch connector DT04-4P

ORDER NUMBER OVERVIEW

ITS 60 with current loop output 4 mA - 20 mA

Sensor pipe length mm	Level output	Function of switching point	Switching point from the seal edge	Cable length mm	Anschlussausführung	Order number
260	4.0mA-20mA	MIN	180	2000	1*	600 510
340	4.0mA-20mA			500	4*	600 245
400	4.0mA-20mA			500	4*	600 193
400	4.0mA-20mA			150	3*	600 518
450	4.0mA-20mA			100	2*	600 238
900	4.0mA-20mA	MIN	760	2000	1*	600 312

1* Cable with flying leads
2* Cable with bayonet according to ISO 15170 overmoulded
3* Cable with connector M12x1
4* Cable with Deutsch connector DT04-4P

Please send the following table completed with your data to:

BEDIA Motorentechnik GmbH & Co. KG, **Fax +49 (0) 9187 9509 1611**

Please enter your data on table.
To receive a quote or request a sample, please send this page to the fax number provided.

If you require any assistance with the completion of this form, please contact us.

	ITS 60 ☐ ITS 65 ☐		
1	Mounting flange	5-hole ☐ 6-hole ☐ G 2" ☐	
2	Sensor tube length	..... mm	
3	Electrical connection	cable	flange mounted connector
		cable length ..... mm ☐ without connector ☐ connector ISO 15170 ☐	☐ DIN EN 175301 ☐ M12 ☐ AB05-2100-08
4	Level output (only one selection possible)	☐ voltage output measurement start.....V at ..... mm from seal edge measurement end .....V at .....mm from seal edge	
		☐ current loop output measurement start ..... mA at ..... mm from seal edge measurement end ..... mA at ..... mm from seal edge	
		☐ PWM output (to be processed by ECU) measurement start ..... %PWM at ..... mm from seal edge measurement end ..... %PWM at ..... mm from seal edge	
		☐ PWM output adapted to gauge instrument type:	
		☐ CAN-bus output according to J1939 standard	
5	Temperature output (ITS 65 only) (freely selectable between -50°C and + 150 °C) Has to be of the same type as under section 4.	☐ voltage output measurement start ..... V at ..... °C measurement end ..... V at ..... °C	
		☐ current loop output measurement start ..... mA at ..... °C measurement end ..... mA at ..... °C	
		☐ PWM output measurement start ..... %PWM at ..... °C measurement end ..... %PWM at ..... °C	
6	Switch point level (for ITS 65 only, if no temperature output is selected)	Switch point from seal edge ..... mm ☐ min. function ☐ max. function ☐ high side switch ☐ low side switch ☐ normally open ☐ normally closed switching delay ..... s reset hysteresis ..... mm	
7	Geometry adaption of level output	☐ Linear	

reference point	position from seal edge	output signal V / mA / %PWM	reference point	position from seal edge	output signal V / mA / %PWM
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8					

Additional data:

» In what equipment is the sensor to be installed in? _____

» Which sensor must be replaced? _____

» What fuel is normally used? _____

» How many sensors are required per year? _____

Your address:

Company: _____ Name: _____

Telephon: _____ Fax: _____

E-Mail: _____

Signature/company stamp: _____

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