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JUMO Wtrans B

Programmable head transmitter with wireless data transmission

Brief description

The Wtrans B head transmitter with wireless data transmission is used in conjunction with a Wtrans receiver for stationary or mobile acquisition of temperatures with RTD temperature probes or thermocouples. Alternatively, resistances of up to 10 kΩ or voltages of up to 50 mV and up to 20 mA using external shunt currents can be measured. Customer-specific linearization possible.

The measured values are transmitted wirelessly to the receiver of the Wtrans measuring system. The measured values are displayed on the receiver and are available in digital format on the RS485 interface and as analog outputs. Alternatively, different alarms can be signaled with two relay outputs.

This head transmitter, designed for industrial applications, comprises a transmitter with integrated transmission unit and an antenna-battery housing. The transmitter is suitable for mounting in form B terminal heads and has an ambient temperature range of -30 to +85 °C. Installation in customer-specific terminal heads is also possible. The antenna-battery housing is connected to the terminal head with a screw connection (M20 × 1.5).

The radio frequency of the Wtrans measuring system is 868.4 MHz. This frequency is largely impervious to external interference and allows data to be transmitted even in harsh industrial environments. When using the antenna holder for wall mounting with the 3 m antenna cable for the receiver, the open air range is 300 m.

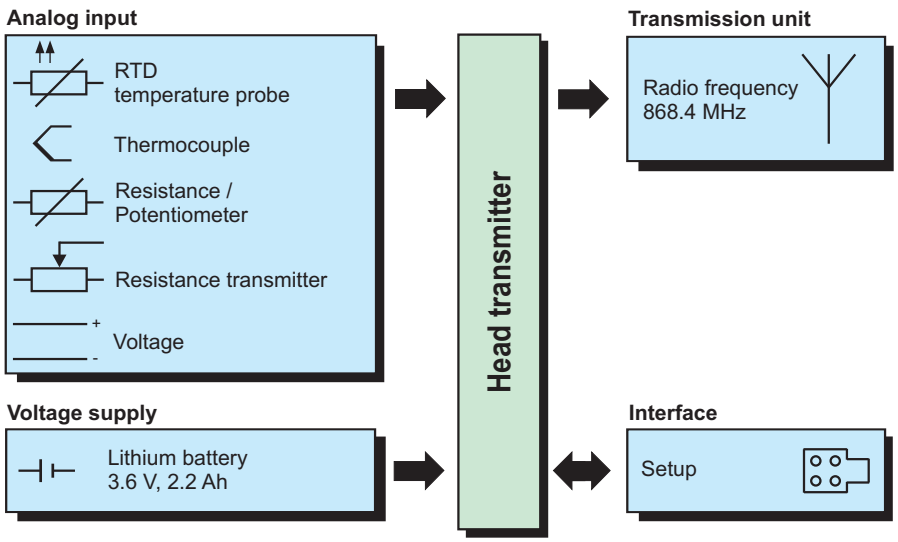
A 3.6 V, 2.2 Ah (size AA) lithium battery is used for the head transmitter voltage supply.

A setup program is available as an accessory for easy configuration and parameterization of the head transmitter and the Wtrans receiver on a laptop/PC. The OnlineChart function can be used optionally to record the measured values on a PC.



Type 707060/...

Block diagram



Special features

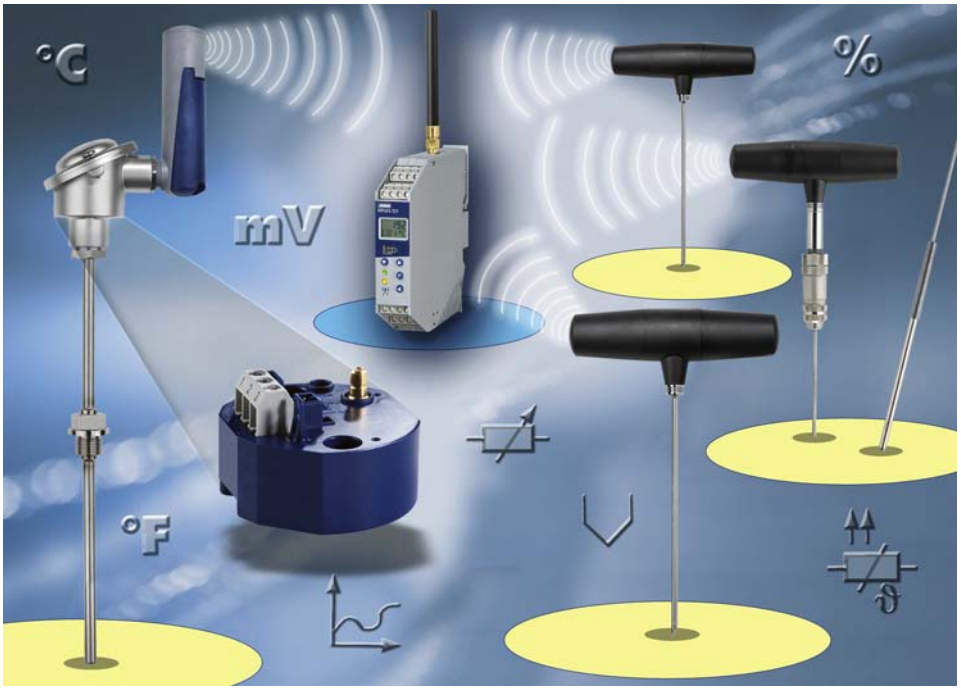
- Radio frequency 868.4 MHz
- Measurement input for RTD temperature probe, thermocouple, resistor/potentiometer, resistance transmitter, and voltage
- Configurable transmitter detection
- Battery status monitoring
- Easy battery change
- Configurable via setup program
- Customer-specific linearization (value pairs in tabular form or polynomials of the fourth order), can be configured on the receiver
- OnlineChart of the measured values via setup program and receiver

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JUMO Wtrans



As well as the programmable head transmitter 707060, the JUMO Wtrans series also includes receivers 902931/..., transmitters 402060/..., 902928/... and 902930/...

JUMO Wtrans series

Type	Description	Data sheet
JUMO Wtrans receiver	Universal receiver for JUMO wireless measuring probes (Voltage supply AC 110 to 240 V or AC/DC 20 to 30 V)	902931
JUMO Wtrans T	Transmitter RTD temperature probe with wireless data transmission (for universal receivers as of software version 01.01) • as insertion or mineral-insulated RTD temperature probe • for various ambient and operating temperatures • with fixed and flexible protection tubes • with plug connector M12 × 1 for RTD temperature probes • with plug connector M12 × 1 for RTD temperature probes with connecting cable • with ATEX approval	902930
JUMO Wtrans E01	Transmitter Measuring probe for humidity, temperature, and CO_2 with wireless data transmission (for universal receivers as of software version 05.01)	902928
JUMO Wtrans B	Transmitter Programmable head transmitter with wireless data transmission (for universal receivers as of software version 03.01)	707060
JUMO Wtrans p	Transmitter Pressure transmitter with wireless data transmission (for universal receivers as of software version 04.01)	402060

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Technical data

Analog input

RTD temperature probe

Designation	Standard	Measuring range	Measuring accuracy
Pt100 (TK value = 3.85 × 10^{-3} 1/K)	DIN EN 60751	-100 to +200 °C -200 to +600 °C	±0.1 K ±0.2 K
Pt500 (TK value = 3.85 × 10^{-3} 1/K)	DIN EN 60751	-100 to +200 °C -200 to +600 °C	±0.1 K ±0.2 K
Pt1000 (TK value = 3.85 × 10^{-3} 1/K)	DIN EN 60751	-100 to +200 °C -200 to +600 °C	±0.1 K ±0.2 K
Ni100 (TK value = 6.18 × 10^{-3} 1/K)	DIN 43760	-60 to +250 °C	±0.2 K
Ni500 (TK value = 6.18 × 10^{-3} 1/K)	DIN 43760	-60 to +150 °C	±0.2 K
Ni1000 (TK value = 6.18 × 10^{-3} 1/K)	DIN 43760	-60 to +150 °C	±0.2 K
Pt100 (TK value = 3.917 × 10^{-3} 1/K)	JIS 1604	-100 to +200 °C -200 to +600 °C	±0.1 K ±0.2 K
Pt50 (TK value = 3.91 × 10^{-3} 1/K)	ST RGW 1057 1985	-200 to +600 °C	±0.2 K
Pt100 (TK value = 3.91 × 10^{-3} 1/K)	GOST 6651-94 A.1	-100 to +200 °C -200 to +600 °C	±0.1 K ±0.2 K
Cu50 (TK value = 4.26 × 10^{-3} 1/K)	GOST 6651-94 A.4	-50 to +200 °C	±0.2 K
Cu100 (TK value = 4.26 × 10^{-3} 1/K)	GOST 6651-94 A.4	-50 to +200 °C	±0.2 K
Connection type		2-wire or 3-wire circuit	
Sensor current		< 0.5 mA	
Lead compensation		Not required for 3-wire circuit (max. admissible 11 Ω per line), max. adjustable line resistance for 2-wire circuit: 22 Ω	

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Thermocouples

Designation	Standard	Measuring range	Measuring accuracy[a]
Fe-CuNi "L"	DIN 43710	-200 to +900 °C	±0.1 %
Fe-CuNi "J"	DIN EN 60584	-210 to +1200 °C	±0.1 % from -100 °C
Cu-CuNi "U"	DIN 43710	-200 to +600 °C	±0.1 % from -100 °C
Cu-CuNi "T"	DIN EN 60584	-270 to +400 °C	±0.1 % from -150 °C
NiCr-Ni "K"	DIN EN 60584	-270 to +1372 °C	±0.1 % from -80 °C
NiCr-CuNi "E"	DIN EN 60584	-270 to +1000 °C	±0.1 % from -80 °C
NiCrSi-NiSi "N"	DIN EN 60584	-270 to +1300 °C	±0.1 % from -80 °C
Pt10Rh-Pt "S"	DIN EN 60584	-50 to +1768 °C	±0.15 % from 20 °C
Pt13Rh-Pt "R"	DIN EN 60584	-50 to +1768 °C	±0.15 % from 50 °C
Pt30Rh-Pt6Rh "B"	DIN EN 60584	0 to 1820 °C	±0.15 % from 400 °C
W5Re-W26Re "C"		0 to 2320 °C	±0.15 %
W3Re-W25Re "D"		0 to 2495 °C	±0.25 %
W3Re-W26Re		0 to 2400 °C	±0.15 %
Chromel®-Copel®		-200 to +800 °C	±0.1 % from -80 °C
Chromel®-Alumel®		-200 to +1372 °C	±0.1 % from -80 °C
PLII (Platinel II)		0 to 1395 °C	±0.15 %
MoRe5-MoRe41		0 to 2000 °C	±0.2 %
Cold junction		Pt1000 internal	
Cold junction accuracy		±1 K	

[a] All accuracy values in % refer to the maximum measuring range.

Resistance/potentiometer

Designation	Measuring range	Measuring accuracy[a]
Resistance/potentiometer Linearization: 0 to 100 %	> 50 to ≤ 400 Ω > 400 to ≤ 4000 Ω > 4000 to ≤ 10000 Ω	±400 mΩ ±4 Ω ±10 Ω
Resistance/potentiometer Linearization: resistance in Ω	> 50 to ≤ 10000 Ω	±0.1 %
Connection type	2-wire or 3-wire circuit	
Lead compensation	Not required for 3-wire circuit (max. admissible 11 Ω per line), max. adjustable line resistance for 2-wire circuit: 22 Ω	

[a] All accuracy values in % refer to the maximum measuring range.

Resistance transmitter

Designation	Measuring range	Measuring accuracy
Resistance transmitter	> 50 to ≤ 400 Ω > 400 to ≤ 4000 Ω > 4000 to ≤ 10000 Ω	±400 mΩ ±4 Ω ±10 Ω
Connection type	3-wire connection	
Condition	$R_e + R_a + R_s \leq 10000\ \Omega$ and $R_e + R_a \leq 1/3\ R_s$	

Voltage

Designation	Measuring range	Measuring accuracy[a]
Voltage	0 to 50 mV	±0.1 %

[a] All accuracy values in % refer to the maximum measuring range.

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Measuring circuit monitoring

Measuring probe	Out of range detection	Probe/cable short circuit detection	Wire break detection
Thermocouple	Yes/Yes	No	Yes
RTD temperature probe	Yes/Yes	Yes	Yes
Resistance/potentiometer	Yes/Yes	Yes	Yes
Resistance transmitter	No/No	No	No
Voltage	Yes/Yes	No	Yes

Output (radio transmission)

Transmitter detection (transmitter ID)	Max. five-digit ID, default setting, customer-specific configuration possible
Transmission interval	Adjustable from 1 to 3600 s (default setting 15 s)
Radio frequency	868.4 MHz (Europe)
Transmission power	< +10 dBm
Open air range	Max. 300 m when using the receiver antenna holder for wall mounting, and 3 m antenna cable; when installing the antenna directly on the receiver, the user must take approx. 40 % less range into consideration
Output signal	
Thermocouple	Voltage (mV)
RTD temperature probe	Resistance (Ω)
Resistance/potentiometer	Percent (%) or resistance (Ω)
Resistance transmitter	Percent (%)
Voltage	Voltage (mV)
Configuration	With setup program
Configurable parameters	Transmitter ID (max. 5-digit ID) and transmission interval

Electrical data

Voltage supply	
Lithium battery	Rated voltage: 3.6 V, rated capacity: 2.2 Ah; size AA
Operating life	Approx. 1 year with the factory-set values (transmission interval = 15 s) and at room temperature; shorter transmission interval and high or low ambient temperature reduce the battery operating life.
Battery change	Only use the lithium battery that is available as an accessory

Environmental influences

Transmitter in the terminal head, form B with antenna-battery housing

Ambient temperature range	-30 to +85 °C
Storage temperature range; storage humidity	-40 to +85 °C; rel. humidity ≤ 95 %
Temperature influence[a]	
Thermocouple	≤ ±0.005 %/K deviation 22 °C plus accuracy of the cold junction
RTD temperature probe	≤ ±0.005 %/K deviation from 22 °C
Resistance/potentiometer	≤ ±0.01 %/K deviation from 22 °C
Resistance transmitter	≤ ±0.01 %/K deviation from 22 °C
Voltage	≤ ±0.005 %/K deviation from 22 °C
Climate class	10 cycles at 10 °C / 80 °C, according to IEC 68-2-30, rel. humidity 95 %, during operation
Vibration resistance	According to GL characteristic line 2
Admissible mechanical shock resistance	10 g for 6 ms, DIN IEC 68-2.29
Electromagnetic compatibility (EMC)	DIN EN 61326-1

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Interference emission	Class B - household and small businesses -
Interference immunity	Industrial requirements
Radio frequency spectrum	ETSI EN 300 220-1 and ETSI EN 300 220-2

[a] All accuracy values in % refer to the maximum measuring range.

Housing

Transmitters

Type	Plastic housing to be installed in terminal head, form B
Material	Polycarbonate
Flammability class	UL 94 V2
Dimensions	
Diameter	44 mm
Height with/without connectors	31 mm / 27 mm
Protection type	IP00: With open installation IP65: With installation in suitable terminal head, form B
Connections	
Sensor	3-pin connection terminal RM 5 mm, conductor cross-section 1.5 mm²
Antenna	SMB connector
Voltage supply	2-pin multi-pin connector RM 2.54 mm
Setup	4-pin connector
Weight	Approx. 35 g

Antenna battery housing

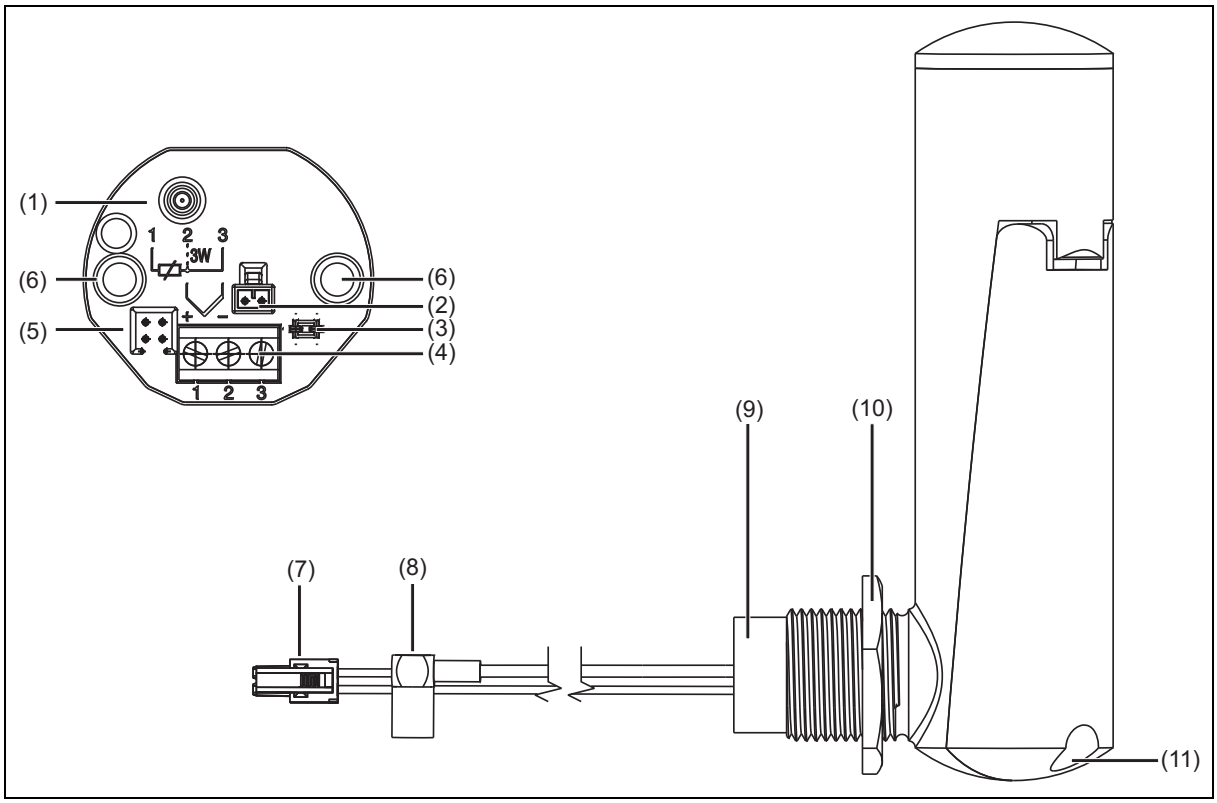
Type	Plastic housing with M20 × 1.5 thread for terminal head, form B
Material	Polyetherimide
Flammability class	UL 94 HB or UL 94 V-0
Dimensions	
Diameter	30 mm
Height	115 mm
Protection type	IP65, according to DIN EN 60529
Connection	
Antenna	SMB inlet, 50 Ω
Battery connection	2-pin connector RM 2.54 mm
Installation position	Preferably vertical (optimum alignment to the receiver antenna)
Weight (including battery)	Approx. 80 g

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Connection elements and connectors



(1) SMB antenna connector (antenna connection)
(2) Voltage supply connector (battery connection)
(3) Cable guide for antenna cable and voltage supply
(4) Sensor connection
(5) Setup connector
(6) Fastening holes for installation in the terminal head, form B
(7) Voltage supply socket (battery connection)
(8) SMB antenna socket (antenna connection)
(9) Seal
(10) Locknut
(11) Battery lid screw

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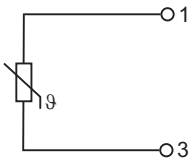
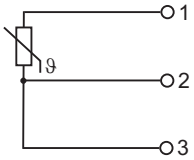
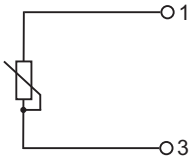
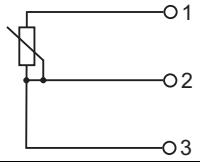
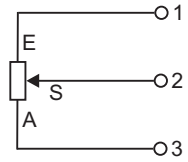
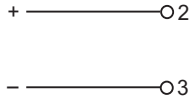
Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical compliance with the safety information and warnings contained in these documents are mandatory for mounting, electrical connection, and startup as well as for safety during operation.

Voltage supply

Connection	Connector	Terminals	Symbol and terminal designation
Lithium battery, DC 3.6 V	2		

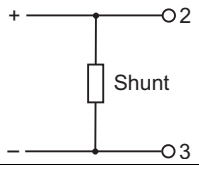
Analog input

Connection	Connector	Terminals	Symbol and terminal designation
RTD temperature probe 2-wire circuit	4	1 and 3	
RTD temperature probe 3-wire circuit	4	1 to 3	
Thermocouple	4	2 and 3	
Resistance/potentiometer 2-wire circuit	4	1 and 3	
Resistance/potentiometer 3-wire circuit	4	1 to 3	
Resistance transmitter A = Start S = Slider E = End	4	1 to 3	
Voltage (0 to 50 mV)	4	2 and 3	

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Connection	Connector	Terminals	Symbol and terminal designation
Current (0 to 20 mA) Measuring range: Voltage (0 to 50 mV) with shunt 2.5 Ω (see accessories)	4	2 and 3	

Output

Connection	Connector	Terminals	Symbol and terminal designation
Antenna connector	1		

Interface

Connection	Connector	Terminals	Symbol and terminal designation
Setup	5		

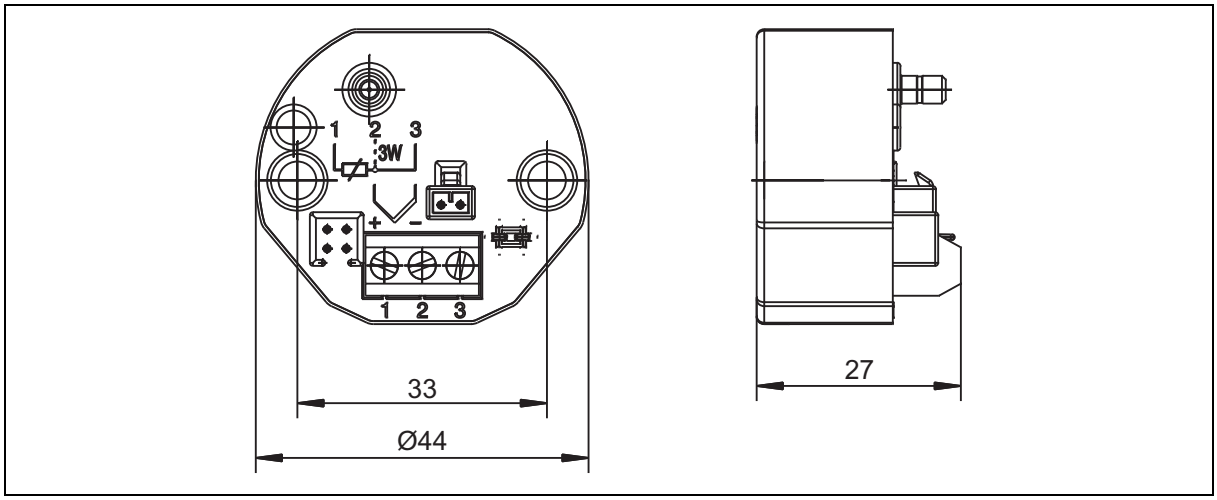
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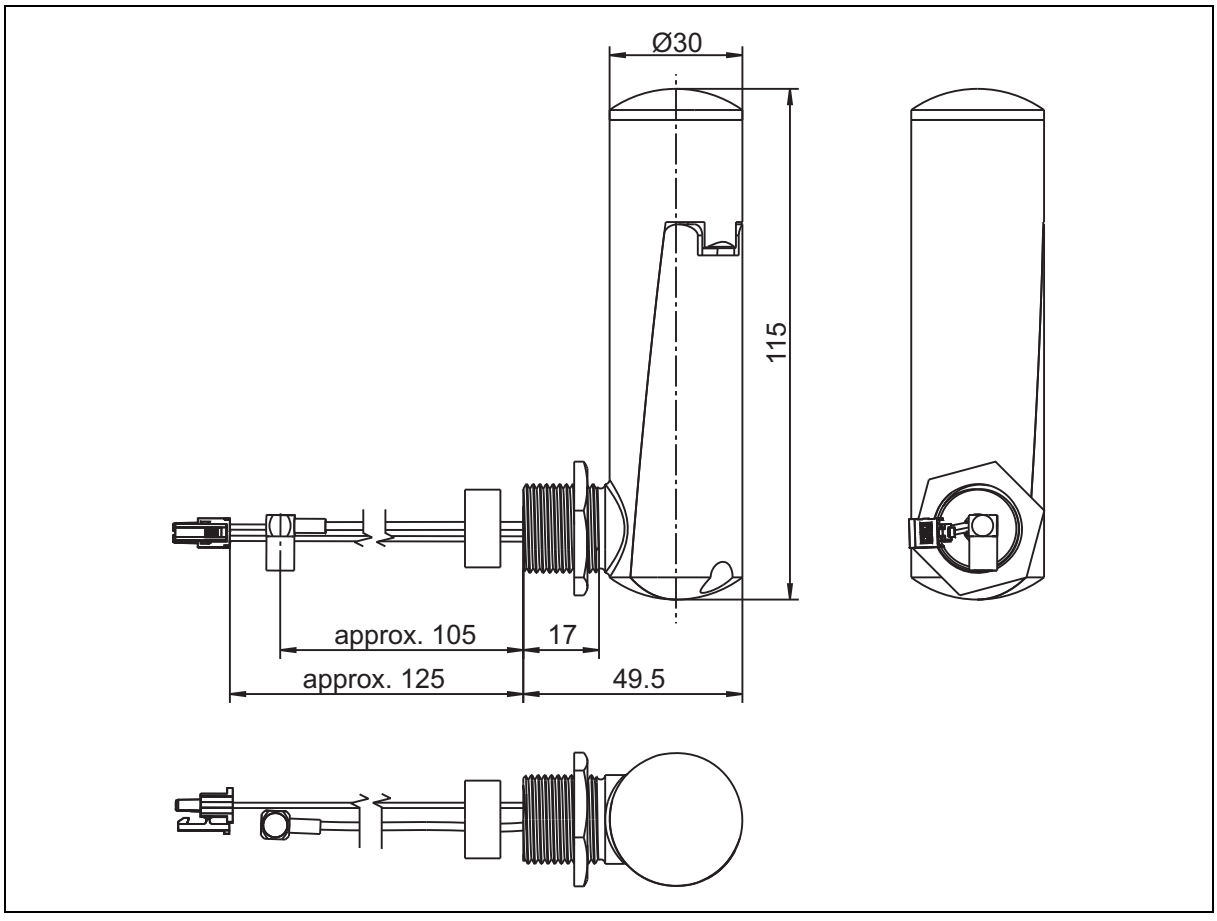
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Dimensions

Transmitter



Antenna-battery housing



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Email: info.us@jumo.net
Internet: www.jumousa.com

Order details

	(1)	Basic type
707060		JUMO Wtrans B Programmable head transmitter with wireless data transmission[a]
	(2)	**Input**
8		Standard with default settings
9		Customer-specific programming according to specifications[b]
	(3)	**Output (transmitter)**
10		Radio frequency 868.4 MHz (Europe)
	(4)	**Extra code**
000		None

[a] The terminal head form B is not included in the scope of delivery.

[b] Please specify the transmitter ID, transmission interval, measuring range and the probe type in plain text.

	(1)		(2)		(3)		(4)
Order code		/		-		/	
Order example	707060	/	8	-	10	/	000

Scope of delivery

1 head transmitter in the version ordered, without terminal head, form B, including fastening material (2 screws and 2 pressure springs)
1 antenna-battery housing with plug connections protected against polarity reversal
1 lithium battery, 3.6 V, 2.2 Ah (size AA), inserted in the antenna-battery housing, ready for use
1 operating manual

Accessories

Description	Part no.
Lithium battery, 3.6 V, 2.2 Ah (size AA)	00547559
PC interface with USB/TTL converter, adapter (socket), and adapter (pins)	00456352
Setup program on CD-ROM, multilingual	00488887
Setup program including OnlineChart on CD-ROM, multilingual	00549067
OnlineChart activation	00549188
Precision resistor, 2.5 Ω / 0.1% (shunt)	00555645