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Simulators and Calibration Adapters for pH, Redox and Conductivity Measurement

Brief description

Simulators and calibration adapters are used to start up, adjust, monitor and troubleshoot pH, redox and conductivity measuring points.

Simulator for pH/redox, type 202711/10

The pH simulator is used to check that technical pH and redox measuring devices are working correctly. Instead of a conventional pH or redox electrode, the simulator is connected to a measurement amplifier. This allows the laid connecting cable and the measurement amplifier to be checked. The simulation of pH values 0 - 14 allows the measurement amplifier outputs (display values, control contacts or analog/digital outputs) to be checked and optimized when the system is dry. Using the simulator with redox measurements simulates a voltage of ± 414 mV in steps of up to 59 mV.

A switch allows high-resistance checking (1000 MOhm impedance) of the laid connecting cable for shunts or moisture problems. The pH simulator runs on a 9 V battery (included in delivery). There is an integrated test function for checking the battery. Different adapter cables are available as options (see accessories) for connecting to the pH or redox measurement section.



Type 202711/10

Simulator for electrolytic conductivity, type 202711/20

This simulator is used to check measurement amplifiers and connecting cables for electrolytic conductivity. Different conductivity measurement values can also be simulated to test and optimize display and control behavior, as well as the outputs of measurement amplifiers and downstream systems. The device is therefore helpful during dry system startups and when troubleshooting. The simulator can only be used with conductivity measuring devices based on conductive 2-electrode measuring cells. A printed table shows the conductivity values for the different simulation resistances, which are selected by means of a rotary switch. The table includes the assignment to different cell constants ($K = 0.01; 0.1; 1.0; 3.0$ and 10.0). The temperature input of a measuring device can be simulated, as well as the conductivity. To do this, a Pt100 is simulated at temperatures of 25 °C and 75 °C. A 1.1 m long connecting cable is included.



Type 202711/20

Calibration adapter for inductive conductivity measurement, type 202711/21

This adapter allows the adjustment between the measurement amplifier and the inductive conductivity measurement probe to be made during a new installation or when a component has been replaced. The device is designed for use with the measurement amplifier JUMO AQUIS 500 Ci as per data sheet 202566 and inductive conductivity and temperature sensors as per data sheet 202941, 202942, and 202943.



Type 202711/21

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Technical data

Simulator for pH/redox, type 202711/10

Simulation range	0 to 14 pH in 1 pH steps and +414 mV to -414 mV redox voltage in 59 mV steps
Accuracy	± 1 % of the simulation range
Reference temperature	25 °C
Output resistance	1 kΩ or 1000 MΩ, depending on the switch setting
Power supply	ANSI 1604D PP3 (9 V monobloc battery), included in delivery
Battery test	integrated
Connection	BNC socket and socket for reference electrode
Permissible ambient temperature	0 to 50 °C
Housing	Sheet steel, powder-coated
Dimensions	130.5 mm x 73 mm x 59 mm (H x W x D)

Simulator for electrolytic conductivity, type 202711/20

Simulation range for cell constant K=0.01 to 10.0 The conversion table is located on the base of the device housing. K = cell constant [1/cm] R = resistance [ohms]	in steps from 40 nS/cm to approx. 800 mS/cm					
	R/K	0.01	0.1	1.0	3.0	10.0
	12.5 Ω	800 μS	8 mS	80 mS	240 mS	800 mS
	25 Ω	400 μS	4 mS	40 mS	120 mS	400 mS
	50 Ω	200 μS	2 mS	20 mS	60 mS	200 mS
	125 Ω	80 μS	800 μS	8 mS	24 mS	80 mS
	250 Ω	40 μS	400 μS	4 mS	12 mS	40 mS
	500 Ω	20 μS	200 μS	2 mS	6 mS	20 mS
	1.25 kΩ	8 μS	80 μS	800 μS	2.4 mS	8 mS
	2.5 kΩ	4 μS	40 μS	400 μS	1.2 mS	4 mS
	5.0 kΩ	2 μS	20 μS	200 μS	600 μS	2 mS
	12.5 kΩ	800 nS	8 μS	80 μS	240 μS	800 μS
	25 kΩ	400 nS	4 μS	40 μS	120 μS	400 μS
	50 kΩ	200 nS	2 μS	20 μS	60 μS	200 μS
	125 kΩ	80 nS	800 nS	8 μS	24 μS	80 μS
	250 kΩ	40 nS	400 nS	4 μS	12 μS	40 μS
∞ Ω	0	0	0	0	0	
Accuracy	± 1 % of the set resistance value					
Pt100 simulation	25 °C and 75 °C ± 1 °C					
Connection	5-pin diode socket; one open-ended connecting cable (length 1.1 m) is included with the device					
Permissible ambient temperature	0 to 50 °C					
Housing	Sheet steel, powder-coated					
Dimensions	130.5 mm x 73 mm x 59 mm (H x W x D)					

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Calibration adapter for inductive conductivity measurement, type 202711/21

Simulation range	Cell constant K	
	4 to 5.9 [1/cm]	6 to 8 [1/cm]
	R [ohms]	R [ohms]
1000 µS/cm	20 k	25 k
10.00 mS/cm	2 k	2.5 k
100.0 mS/cm	200	250
1000 mS/cm	20	25
2000 mS/cm	10	12.5
Accuracy	1000 µS/cm to 100.0 mS/cm ± 1 %	
	1000 µS/cm to 2000 mS/cm ± 1.5 %	
Connection	Measuring lead with 2 mm plug, approx. 36 cm long	
	Measuring lead with 2 mm socket, approx. 18 cm long	
Conductivity simulation	Loop measuring lead with 2 mm plug through the probe twice, and plug it into the measuring lead with 2 mm socket.	
Conductivity calculation	Lf = $K \cdot N^2 / R$	
	Lf = conductivity value	
	K = cell constant	
	N = number of conductor loops through the probe	
	R = resistance	
Housing	PC polycarbonate	
Dimensions	103 mm x 52 mm x 59 mm (H x W x D)	

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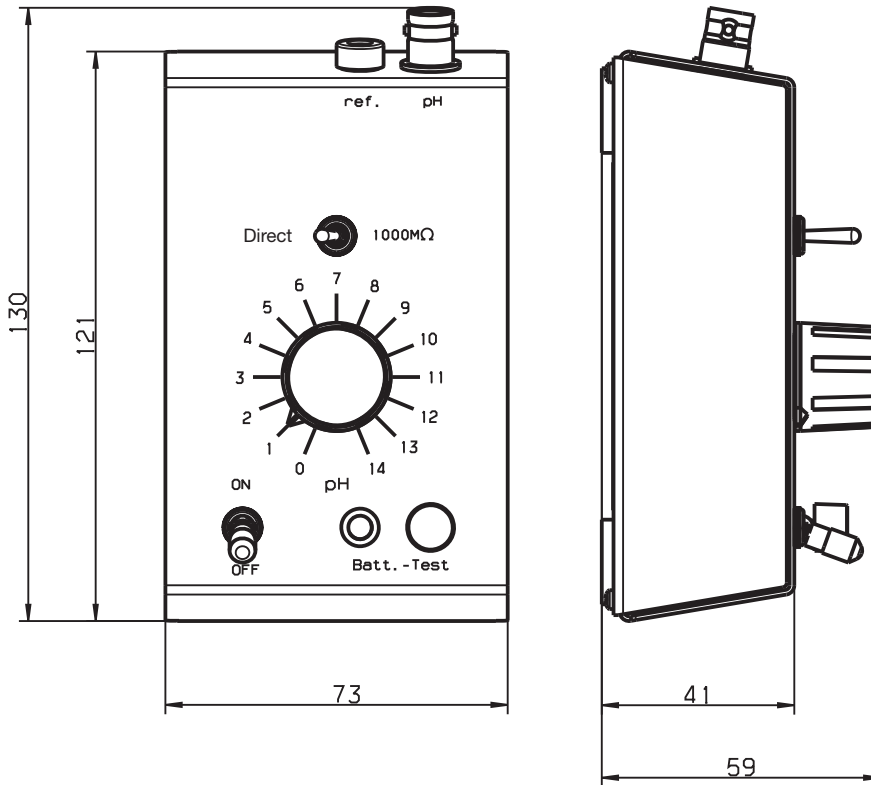
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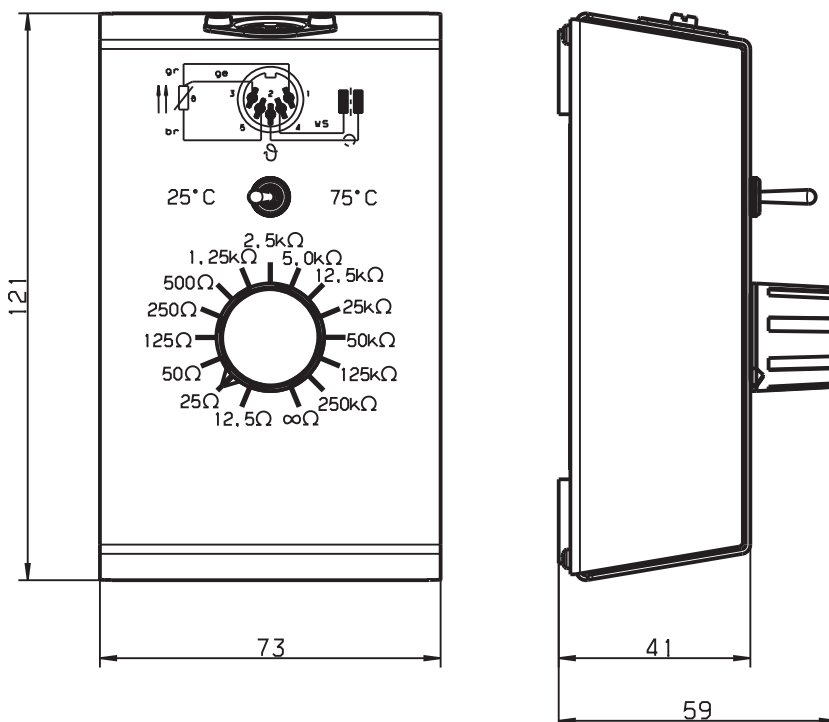


Dimensions

Simulator for pH/redox, type 202711/10



Simulator for electrolytic conductivity, type 202711/20



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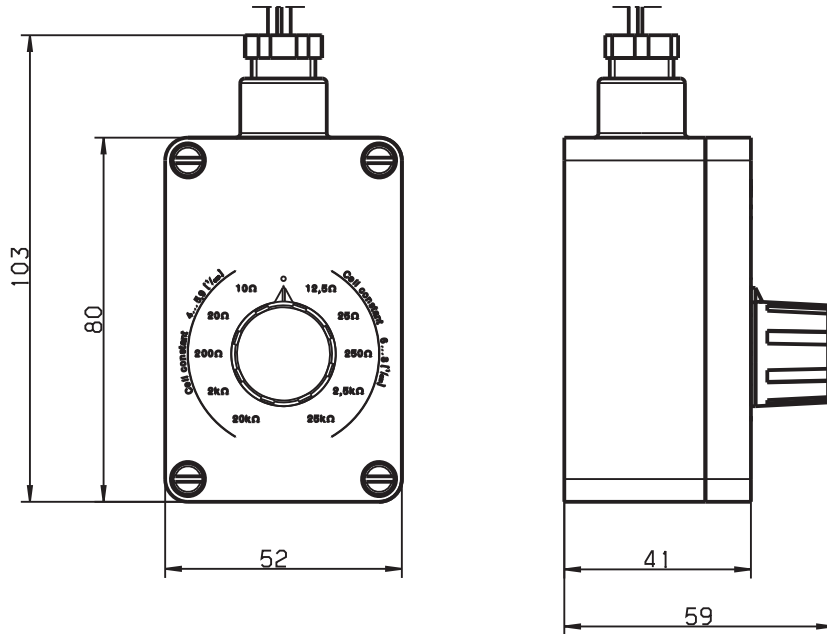
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Dimensions

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Order details

(1) Basic type	
202711	Simulators and calibration adapters
(2) Version	
10	Simulator for pH/redox
20	Simulator for electrolytic conductivity (conductive, 2-electrode measurement)
21	Calibration adapter for inductive conductivity

Order code /
 Order example 202711 / 10

Stock versions (delivery 3 working days after receipt of order)

Order code	Part no.
202711/10	00300477
202711/20	00300478
202711/21	00543395

Accessories (delivery 3 working days after receipt of order)

Article	Part no.
Connecting cable for pH simulator 202711/10 BNC plug to BNC plug, length 1.1 m for testing measuring devices with a BNC socket as the pH input	00082906
Connecting cable for pH simulator 202711/10 BNC plug to N plug, length 1.5 m for testing the pH measurement section from the electrode head (for standard electrodes with an N/S7/S8 plug cap); Not suitable for electrodes with integrated temperature sensors!	00082908
Connecting cable for pH simulator 202711/10 BNC plug to Shield-Kon® (cable with core-end ferrule), length 1.1 m for testing measuring devices with screw terminals as the pH input	00513412