

Characteristics

MEASURING DEVICE -



- Input:	DC voltage/current, resistance, frequency, thermocouple, RTD, continuity test
- Output:	DC voltage/current, simulation transmitter, resistance, thermocouple, RTD, frequency, pulse sequence, pulse switch interval, loop
- Voltage supply:	4x1,5 V AAA batteries
- Accuracy:	see technical details
- Size:	205x95x42 mm
- Weight:	approx. 500 g
- Temperature:	0...+50 °C (ambient)
- Inspection cycle:	1 year

Technical data

Input

DC voltage:	50 mV / 500 mV / 5 V / 50 V
DC current:	50 mA
Resistance:	500 Ω / 5 kΩ
Frequency:	100 Hz / 1 kHz / 10 kHz
Thermocouple:	R / S / K / E / J / T / N / B
RTD:	Pt100 / Pt1000 / Pt200 / Pt500 / Cu10 / Cu50
Contact test:	OPEN / CLOSE
Continuity test:	threshold value 50 Ω

Output

DC voltage:	100 mV / 1 V / 10 V
DC current:	20 mA
Simulation transmitter:	-20 mA
Resistance:	400 Ω / 4 kΩ / 40 kΩ
Thermocouple:	R / S / K / E / J / T / N / B
RTD:	Pt100, Pt1000, Cu50
Frequency:	100 Hz / 1 kHz / 10 kHz / 100 kHz
Pulse sequence:	1...100000 pulses
Pulse switch interval:	100 Hz / 1 kHz / 10 kHz / 100 kHz
Loop supply:	24 V

Ambient conditions

Temperature:	Operating:	0 ... 50 °C at 80% rH maximum
	Storing:	-25 ... 60 °C at 90% rH maximum

Supply

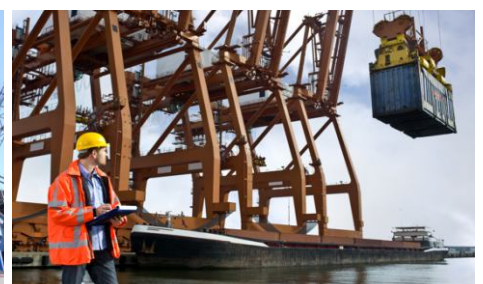
Battery:	4 x 1,5 V AAA
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Mechanics

Dimensions:	205x95x42 mm
Weight:	approx. 500 g

Applications

The Multifunctional Calibrator with its basic accuracy of 0,02% is very suitable in the area of process industry. Nearly all parameter in the processes can be measured or calibrated. The operation of the calibrator is done easily via keys without using any menu technique.



● **Specification inputs (measuring)**

Input	Range	Input Range	Resolution	Accuracy	Notes
Direct voltage	50 mV	-5,000...55,000 mV	1 μ V	0,02% +10 μ V	Input resistance ca. 100 M Ω
	500 mV	-10,00...550,00 mV	10 μ V	0,02% +50 μ V	
	5 V	-0,1000...5,5000 V	0,1 mV	0,02% +0,5 mV	Input resistance: 1 M Ω
	50 V	-5,000...55,000 V	1 mV	0,03% +5 mV	
DC current	50 mA	-5,000...50,000 mA	1 μ A	0,02% +5 μ A	Input resistance: 10 Ω
Resistance	500 Ω *	0,00...550,00 Ω	0,01 Ω	0,02% +0,1 Ω ***	U = 2,5 V with open circuit
	5 k Ω **	0,0000...5,5000 k Ω	0,1 Ω	0,02% +1 Ω ***	
Frequency	100 Hz	2,00...110,0 Hz	0,1 Hz	\pm 2 digits	Input resistance: 100 k Ω Square wave: 1 V _{ss} min. Duty factor: 50%
	1 kHz	0,100...1,100 kHz	1 Hz		
	10 kHz	0,10...11,0 kHz	100 Hz		
Thermo- couple	Type R	0...1767 $^{\circ}$ C	1 $^{\circ}$ C	0...500 $^{\circ}$ C: 1,8 $^{\circ}$ C 500...1767 $^{\circ}$ C: 1,5 $^{\circ}$ C	Valid for ITS90 temperature scale The accuracy of the internal temperature compensation is not included
	Type S	0...767 $^{\circ}$ C		600...800 $^{\circ}$ C: 2,2 $^{\circ}$ C 800...1000 $^{\circ}$ C: 1,8 $^{\circ}$ C 1000...1800 $^{\circ}$ C: 1,4 $^{\circ}$ C	
	Type B	600...1820 $^{\circ}$ C			
	Type E	-50,0...1000,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-50...0 $^{\circ}$ C: 0,9 $^{\circ}$ C 0...1000 $^{\circ}$ C: 1,5 $^{\circ}$ C	
	Type K	-100,0...1372,0 $^{\circ}$ C		-100...0 $^{\circ}$ C: 1,2 $^{\circ}$ C 0...1372 $^{\circ}$ C: 0,8 $^{\circ}$ C	
	Type J	-60,0...1200,0 $^{\circ}$ C		-60...0 $^{\circ}$ C: 1 $^{\circ}$ C 0...1200 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Type T	-100,0...400,0 $^{\circ}$ C		-100...0 $^{\circ}$ C: 1 $^{\circ}$ C 0...400 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Type N	-200,0...1300,0 $^{\circ}$ C		-200...0 $^{\circ}$ C: 1,5 $^{\circ}$ C 0...1300 $^{\circ}$ C: 0,9 $^{\circ}$ C	
RTD	Pt100	-200,0...800,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...0 $^{\circ}$ C: 0,5 $^{\circ}$ C 0...400 $^{\circ}$ C: 0,7 $^{\circ}$ C 400...850 $^{\circ}$ C: 0,8 $^{\circ}$ C	Valid for Pt100-385 Lead resistance is not included
	Pt1000	-200,0...630,0 $^{\circ}$ C		-200...100 $^{\circ}$ C: 0,22 $^{\circ}$ C 100...300 $^{\circ}$ C: 0,3 $^{\circ}$ C 300...630 $^{\circ}$ C: 0,4 $^{\circ}$ C	
	Pt200	-200,0...630,0 $^{\circ}$ C		-200...100 $^{\circ}$ C: 0,8 $^{\circ}$ C 100...300 $^{\circ}$ C: 0,9 $^{\circ}$ C 300...630 $^{\circ}$ C: 1 $^{\circ}$ C	
	Pt500	-200,0...630,0 $^{\circ}$ C		-200...100 $^{\circ}$ C: 0,4 $^{\circ}$ C 100...300 $^{\circ}$ C: 0,5 $^{\circ}$ C -300...630 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Cu10	-100,0...260,0 $^{\circ}$ C		-100...260 $^{\circ}$ C: 1,8 $^{\circ}$ C	
	Cu50	-50,0...150,0 $^{\circ}$ C		-50...150 $^{\circ}$ C: 0,7 $^{\circ}$ C	
Contact test		OPEN CLOSE			Test current ca. 1 mA Limit value ca. 200...300 Ω
Continuity test		Signal at < 50 Ω			Test current ca. 1 mA

* Test current ca. 1 mA

** Test current ca. 0,1 mA

*** Lead resistance is not included

● **Specification outputs (source)**

Output	Range	Range output	Resolution	Accuracy	Note
Direct voltage	100 mV	-10,000...110,000 mV	1 μ V	0,02% +10 μ V	Current: max. 0,5 mA
	1 V	-0,10000...1,1000 V	10 μ V	0,02% +0,1 mV	Current: max. 2 mA
	10 V	-1,0000...11,0000 V	0,1 mV	0,02% +1 mV	Current: max.5mA
DC current	20 mA	0,000...22,000 mA	1 μ A	0,02% +4 μ A	1 k Ω at 20 mA
Simulation transmitter	-20 mA	-0,000...-22,000 mA	1 μ A	0,02% +4 μ A	external 5...28 V 1 k Ω at 20 mA
Resistance	400 Ω	0,00...400,00 Ω	0,01 Ω	0,02% +0,08 Ω^*	Input current: 0,5...3 mA at 0,1...0,5 mA: +0,1 Ω
	4 k Ω	0,0000...4,0000 k Ω	0,1 Ω	0,05% +1 Ω^*	Input current: 0,05...0,3 mA
	40 k Ω	0,000...40,000 k Ω	1 Ω	0,1% +40 Ω^*	Input current: 0,01 mA
Thermo-couple	Type R	0...1767 $^{\circ}$ C	1 $^{\circ}$ C	0...100 $^{\circ}$ C: 1,5 $^{\circ}$ C 100...1767 $^{\circ}$ C: 1,2 $^{\circ}$ C	Valid for ITS90 temperature scale (The accuracy of the internal temperature compensation is not included)
	Type S				
	Type B	400...1820 $^{\circ}$ C	1 $^{\circ}$ C	400...600 $^{\circ}$ C: 2,0 $^{\circ}$ C 600...800 $^{\circ}$ C: 1,5 $^{\circ}$ C 800...1820 $^{\circ}$ C: 1,1 $^{\circ}$ C	
	Type E	-200,0...1000,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...-100 $^{\circ}$ C: 0,6 $^{\circ}$ C -100...600 $^{\circ}$ C: 0,5 $^{\circ}$ C 600...1000 $^{\circ}$ C: 0,4 $^{\circ}$ C	
	Type K	-200,0...1372,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...-100 $^{\circ}$ C: 0,6 $^{\circ}$ C -100...400 $^{\circ}$ C: 0,5 $^{\circ}$ C 400...1200 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Type J	-200,0...1200,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...-100 $^{\circ}$ C: 0,6 $^{\circ}$ C -100...800 $^{\circ}$ C: 0,5 $^{\circ}$ C 800...1200 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Type T	-250,0...400,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-250...400 $^{\circ}$ C: 0,6 $^{\circ}$ C	
	Type N	-200,0...1300,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...-100 $^{\circ}$ C: 1,0 $^{\circ}$ C -100...900 $^{\circ}$ C: 0,7 $^{\circ}$ C 900...1300 $^{\circ}$ C: 0,8 $^{\circ}$ C	
RTD	Pt100	-200,0...800,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...0 $^{\circ}$ C: 0,3 $^{\circ}$ C 0...400 $^{\circ}$ C: 0,5 $^{\circ}$ C 400...800 $^{\circ}$ C: 0,8 $^{\circ}$ C	Valid for Pt100-385 Input current: Pt100, Cu50: 0,5...3 mA Pt1000: 0,05...0,3 mA (Lead resistance is not included)
	Pt1000	-200,0...630,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-200...100 $^{\circ}$ C: 0,2 $^{\circ}$ C 100...300 $^{\circ}$ C: 0,5 $^{\circ}$ C 300...630 $^{\circ}$ C: 0,7 $^{\circ}$ C	
	Cu50	-50,0...150,0 $^{\circ}$ C	0,1 $^{\circ}$ C	-50...150 $^{\circ}$ C: 0,6 $^{\circ}$ C	

* The accuracy does not include the lead resistance

● **Specification output (source) (continued)**

Output	Range	Range Output	Resolution	Accuracy	Note
Frequency	100 Hz	1,00...110,00 Hz	0,1 Hz	±2 counts	Square wave: 1...11 V _{SS} Accuracy: ±10% Duty factor: 50% Load: >100kΩ
	1 kHz	0,100...1,100 kHz	1 Hz		
	10 kHz	1,0...11,0 kHz	0,1 kHz		
	100 kHz	10...110 kHz	1 kHz		
Pulse sequence	100 Hz	10...100000 cycles	1 cycle	±2 counts	Square wave: 1...11 V _{SS} Accuracy: ±10% Duty factor: 50% Load: > 100 kΩ
	1 kHz				
	10 kHz				
Pulse switch interval	100 Hz	1,00...110,00 Hz	0,1 Hz	±2 counts	Switching voltage and switching current: max. +28 V / 50 mA
	1 kHz	0,100...1,100 kHz	1 Hz		
	10 kHz	1,0...11,0 kHz	0,1 kHz		
	100 kHz	10...110 kHz	2 kHz		
Loop supply	24 V			±10%	Max. output current ca. 25 mA short circuit-proof