

# Universal Calibrator DIGISTANT® Built to use in the field

Model 4420

Code:	4420 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	12 months
Issue:	1.4.2002



4420-E

- Calibration and measurement unit for voltages, currents, temperatures and resistances
- Simultaneous transmission and measurement
- Automatic ramp function
- Simple menu assistance via display
- Voltage range  $\pm 1 \mu\text{V}$  to  $\pm 11.000 \text{ V}$
- Current range  $\pm 200 \text{ nA}$  to  $\pm 22.000 \text{ mA}$

## Application

The DIGISTANT® model 4420 universal calibrator, built to use in the field, is ideal for checking and calibrating temperature measurement and control devices, and documenting the measurement results. The versatile functions of this portable unit allow to be used on-site or at a fixed location, on the test floor or in the laboratory.

The unit allows the measurement of voltages, currents, temperatures and resistances.

Simultaneous transmission and measurement allow, for example, controllers to be checked precisely.

The automatic ramp function is used for controlling processes. The universal calibrator measures and simulates 8 types of thermocouples and Pt 100. In addition, resistances can be measured from 10 m $\Omega$  to 2 k $\Omega$  and simulated from 10  $\Omega$  to 2 k $\Omega$ . The reference junction temperature can be entered manually via keypad; if required, however, an automatic reference to an internal or external point is also possible.

Basic values and the corresponding  $\Delta$ -values can be stored with 10 freely programmable memories each for voltage, current, temperature and resistance. Relevant values can be added and subtracted by operating the  $\Delta+$  and  $\Delta-$  keys respectively.

## Description

The microprocessor controlled universal calibration source is operated via a clearly arranged membrane keyboard. The value entry keys have a different color to the function and memory keys, thus allowing clear differentiation between measurement and transmission variables.

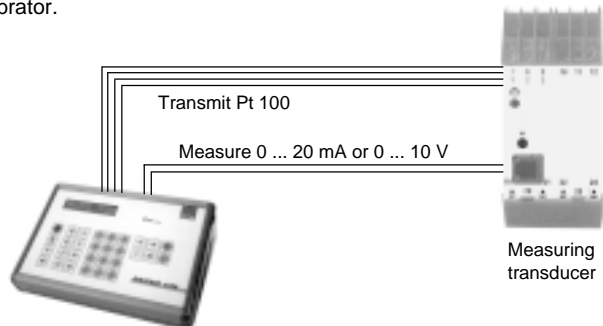
Measurement and transmission values are indicated on a high-contrast, alphanumeric, supertwist LCD in two lines of 20 characters each. Transmission values are shown with the appropriate units. For the "simulate thermocouple" function, the thermocouple is displayed together with its standard symbol and the type of reference junction. When the unit is turned off, the values entered last are retained in memory. In the "measure thermocouple" mode, the selected thermocouple, type of reference junction compensation, and measurement value are displayed. An internal reference junction was included especially for measuring and simulating thermocouples, to allow compensation of even large fluctuations in the ambient temperature.

The integrated NC accumulator is protected against overload and total discharge. The accompanying plug-in power supply allows the unit to be charged in the buffer mode as well.

## Sample Application

### Simultaneous simulation and measurement of process variables: process control

The DIGISTANT® model 4420 simulates a temperature sensor at the input of the measurement transducer. The voltage or current output signal is measured and converted for display by the calibrator.



## Technical Data

Voltage Measuring Instrument				
Range	Resolution	Zero Error	Tolerance	
± 9.999 mV	1 µV	≤ 7 µV	0.040 % of range	
± 99.99 mV	10 µV	≤ 15 µV	0.035 % of range	
± 999.9 mV	100 µV	≤ 150 µV	0.03 % of range	
± 12.000 V	1 mV	≤ 1.5 mV	0.03 % of range	
Voltage Source				
Range	Resolution	Zero Error	Tolerance	
± 9.999 mV	1 µV	≤ 7 µV	0.03 % of range	
± 99.99 mV	10 µV	≤ 15 µV	0.03 % of range	
± 999.9 mV	100 µV	≤ 150 µV	0.03 % of range	
± 11.000 V	1 mV	≤ 1.5 mV	0.03 % of range	
Current Measuring Instrument				
Range	Resolution	Zero Error	Tolerance	
± 30.000 mA	1 µV	≤ 5 µA	0.03 % of range	
Current Source				
Range	Resolution	Zero Error	Tolerance	
± 1.9999 mA	200 nA	≤ 500 nA	0.03 % of range	
± 22.000 mA	2 µV	≤ 2 µA	0.02 % of range	
Resistance Measuring Instrument				
Range	Resolution	Source	Accuracy	
0.00 Ω to 200.00 Ω	0.01 Ω	0.6 mA	< 0.04 Ω	
200.0 Ω to 2000.0 Ω	0.1 Ω	0.6 mA	< 0.4 Ω	
Resistance Simulator				
Range	Resolution	Zero Error	Tolerance	
0.00 Ω to 399.99 Ω	0.02 Ω	< 40 mΩ	0.025 % of range	
400.0 Ω to 4000.0 Ω	0.2 Ω	< 400 mΩ	0.025 % of range	
I measure max. 2.5 mA				
Temperature Measuring/Thermocouples/Thermocouples Simulator				
Model	Thermocouples	Accuracy		
		Simulating	Measuring	
R	PtRh 13-Pt	1.2 K	1.5 K	(+150 ... 953 °C)
S	PtRh 10-Pt	1.2 K	1.5 K	(+200 ... 1027 °C)
B	PtRh 30-PtRh 6	1.2 K	1.5 K	(+850 ... 1482 °C)
J	Fe-CuNi	0.8 K	1 K	(- 210 ... 1200 °C)
T	Cu-CuNi	0.8 K	1 K	(- 220 ... + 400 °C)
E	NiCr-CuNi	0.8 K	0.9 K	(- 240 ... 1000 °C)
K	NiCr-NiAl	0.6 K	0.7 K	(- 200 ... + 243 °C)
L	Fe-CuNi	0.4 K	0.5 K	(- 100 ... + 181 °C)
Accuracy without deviation. Accuracy is referred to definition of characteristic curve (Valid for RJ-Man 0 °C).				
Temperature Measuring/RTD-Simulator Pt 100 DIN EN 60751, ITS90				
Range	Tolerance			
- 200 ... 2663°C	----- Measuring: 0.08 K			
267 ... 849°C	----- Measuring: 0.8 K			
- 200 ... 849°C	Simulating: 0.3 K -----			

The radio interference suppression class B according to VDE 0871 is only observed in connection with the standard power supply burster model 4495-V001.

Long-term stability: < 25 ppm/month

## Environment

Operating temperature range: 0 ... 23 ... 50 °C, (32 ... 73 ... 122 °F)  
0 ... 70 % humidity, non condensing

Storage temperature: - 10 ... 60 °C (14 ... 140 °F)

Charging temperature: 10 ... 23 ... 35 °C (50 ... 73 ... 95 °F)

Power supply: a) NC-battery, firmly fitted operating period  
b) 230 V + 6 %, - 10 %, 50-60 Hz (115 V upon request)

## Housing

Aluminium housing, desk-shaped, side covers made of plastic material

Dimensions (W x H x D): 235 x 85 x 175 [mm]

Weight: 2.5 kg

## Order Information

Universal Calibrator DIGISTANT® model 4420 incl. manufacturer certificate with traceability, power pack and 1 pair of measuring cables model 4490 **model 4420**

with DKD Calibration Certificate model 44DKD-4420 **model 4420-V002**

with Proprietary Calibration Certificate model 44WKS-4420 **model 4420-V003**

## Accessories

1 power pack (part of delivery) **model 4495-V001**

1 pair of banana plugs with terminal connection **model 4498**

1 cable for resistance and Pt 100 measurements, length 1 m, with banana plugs (4 pole measurement), Lemos connection plug (6 pole, 1 B) **model 4499**

1 pair of measuring cables, length 1 m, with 2 banana plugs and 2 miniature terminal probes **model 4490**

1 connection plug for Pt 100 input **model 4291-0**

1 thermo-plug - R, -S, -B, -J, -T, -E, -K, -L (please add type of thermocouple when ordering) **model 4489**

1 external reference junction for DIGISTANT® model 4420 and model 4422 **model 4485-V001**

1 aluminium carrying case for DIGISTANT® model 4420 and model 4422 **model 4493-V002**



1 platinum resistance thermometer RTD **model 42510**

1 transfer circuit for Pt 100 sensor, length 2 m **model 4281-0**

## Calibration Certificate for Model 4420

### DKD-Calibration

Standard Calibration Certificate with 143 points.

With 4 measuring points  
for each voltage measuring / simulating range  
for each current measuring / simulating range

With 2 measuring points, simulating points for each of the 8 thermocouples temperature of reference junction 0 °C

with 10 measuring / simulating points for Pt 100, Pt 200, Pt 500, Pt 1000, Ni 100 value in Ω and °C

With 1 measuring / simulating point for resistance range **model 44DKD-4420**

### Proprietary Calibration Certificate

Please refer to DKD Calibration, but the accuracy is reduced **model 44WKS-4420**