

Documenting Universal Calibrator DIGISTANT®

Model 4423

Code:	4423 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	24 months



- Basic accuracy 0.015 % of set point
- Simultaneous sourcing / measurement for transmitter calibration
- Storage of calibration routines for 50 calibration objects (as found / as left)
- Plug & Measure connection for all connected sensors
- 24 V DC power supply for transmitter calibration
- Direct input of Pt 100 coefficients (R0, A, B, C)

4423-E

Description

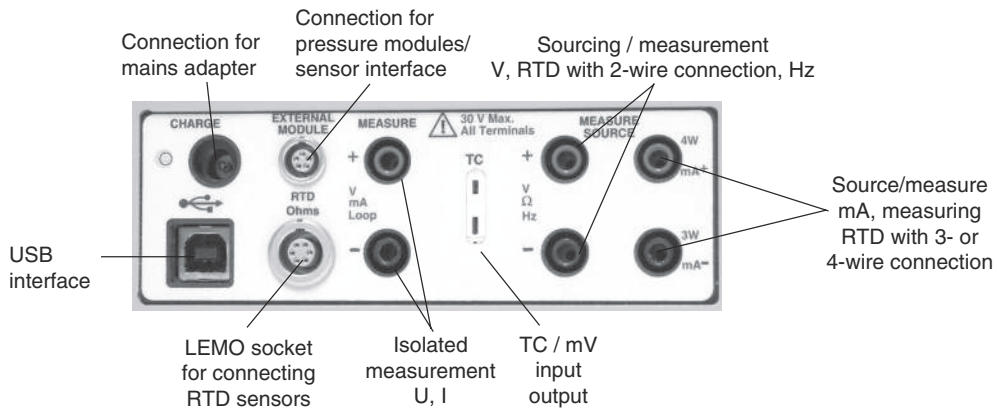
For the first time, the newly developed DIGISTANT® makes it possible to calibrate mechanical magnitudes such as force, torque or displacement using a single calibrator, in addition to the usual electrical and thermal magnitudes.

What makes this versatile calibrator stand out from its class is its capacity to generate the extensive and comprehensive documentation that is necessary nowadays for any calibration. The DIGICAL software allows the calibration results to be downloaded from the DIGISTANT® for the purposes of documentation and logging. Up to 21 measurements per device for up to 50 devices can be stored in non-volatile memory. The tested items can also be classified as „Good/Bad“ according to the error tolerances permitted for the device.

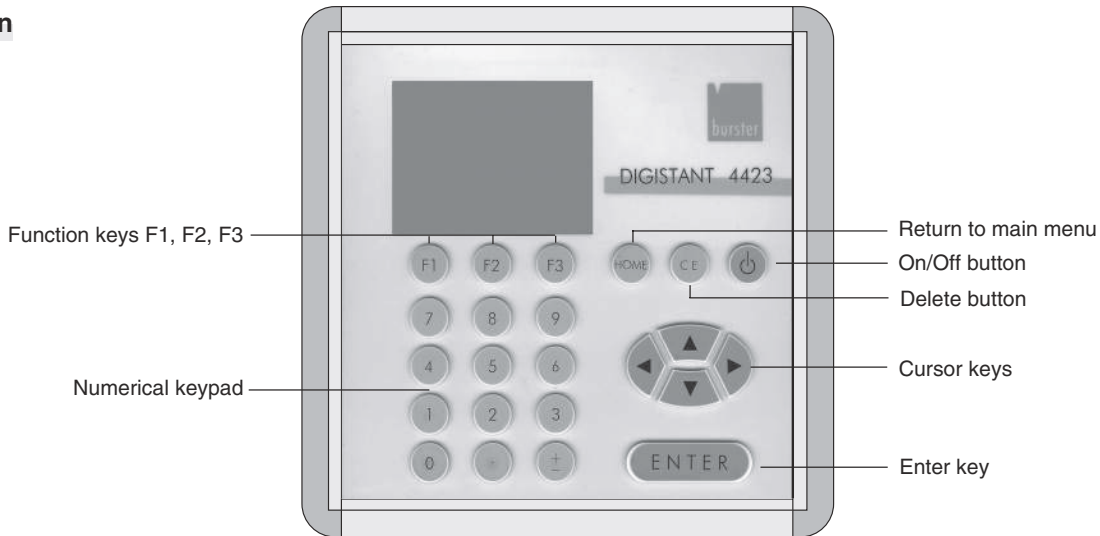
In addition, it is possible to group measurements together according to the initial check (as found) and after adjustment (as left).

Measurement and sourcing for 13 thermocouple models, 13 RTD models, resistance, current, voltage, frequency, impulse, pressure, force, torque and displacement make the model 4423 a complete, universal calibrator. Arrow keys, the direct input of numerical values and 3 function keys for operator control, plus generous background illumination and menu operation through a large graphic display create a powerful, self-explanatory user interface. The DIGISTANT® model 4423 has a robust aluminum console housing. The built-in NiMH battery is protected against overcharging and deep discharge. The device can also operate in buffer mode using the mains adapter provided. The universal calibrator is supplied complete with its plug-in mains adapter, test certificate with traceability certification and measuring cable.

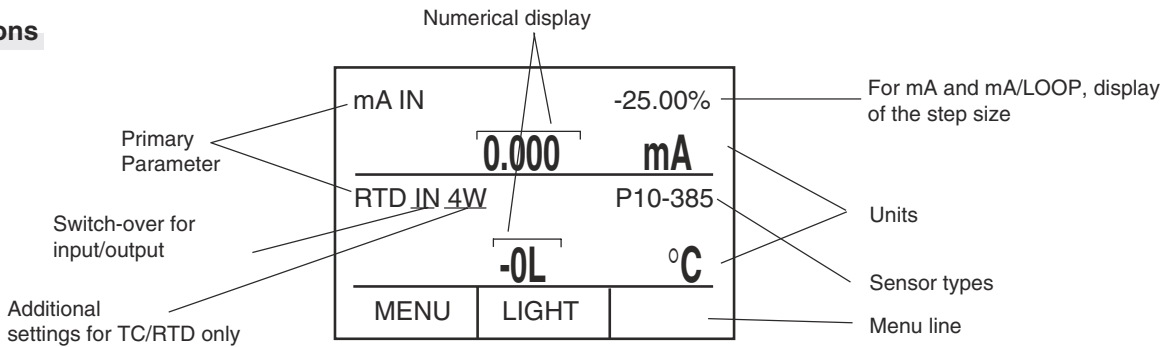
Connections



Operation



Display functions



Temperature measurement and calibration accessories

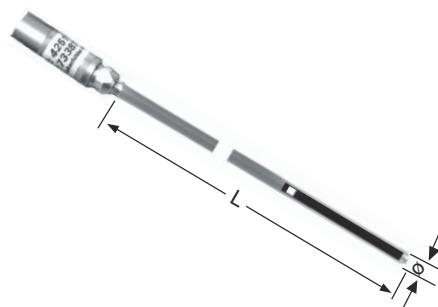
External reference junction model 4485-V001 for thermocouples

- for precision measurement / simulation
- integrated Pt 100 sensor for temperature measurement
- thermally stable, decoupled configuration
- Connection: miniature thermo plug



Pt 100 measurement sensor 42510

- Standard laboratory sensor class A, 1/6 DIN at 0 °C
- Temperature range -50 °C ... 500 °C
- Dimensions $\varnothing \times L$ 6 x 250 [mm]



DIGISTANT® Model 4423

Typical applications

Measurement and simulation of thermocouples:

Temperature simulation

TC

13 of the most common models are available (see technical data)

Reference junction:

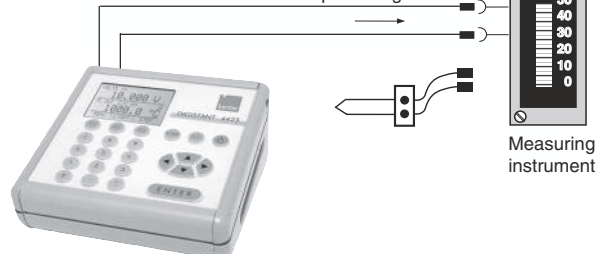
internal reference junction - CJC ON

external reference junction - CJC OFF

The temperature is
referenced to 0 °C

- CJC EXT
automatic recording
of the temperature

Thermoelectric wire or compensating wire



Simulation of resistance thermometers:

PT 100 simulation

RTD

Electronic simulator for Ni 100, Pt 100,
Pt 200, Pt 500 and Pt 1000.

The temperature range for „simulation“ extends
from -200 °C to +800 °C. Any of
the units °C, °F and O can be chosen.

Source Pt 100



Simultaneous simulation and measurement of process magnitudes:

Process control

U/I

The DIGISTANT® model 4423 simulates a temperature sensor at
the transducer input. The voltage or current output signal is
measured and indicated on the calibrator's display.

Source Pt 100

Measuring 0 ... 20 mA or 0 ... 10 V



Force measurement:

Checking a load press

F

Force, torque and displacement sensors can be connected via the
Smart Sensor Interface 7160. Data from the connected sensor is
recognized via the „Plug and Measure“ connection. The
DIGISTANT® model 4423, in conjunction with the interface and,
for instance, a force sensor, provides a universal reference
measurement chain for calibrating press-insertion measurement
chains. Very high precision is achieved with static measurements.
The dynamic measurement function allows peak values to be
recorded.

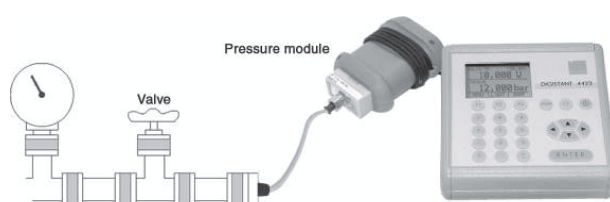


Pressure measurement

Checking a pressure line

P

The Series 7132 pressure module is connected to the 7130
pressure module adapter on the DIGISTANT® model 4423. The
calibrator can measure the pressure on the upper and lower lines.
Select the desired pressure unit. Adjust the zero point. In this way
a pressure line can quickly and economically be checked and
calibrated with high precision for compliance with the necessary
parameters.

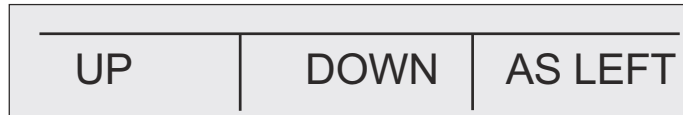


4423-E

Document function

It is very easy to add documentation during the normal course of testing. Before you begin, choose the appropriate document from the menu. Then select the input and output models, e.g. „Source thermocouple“ and „Measure voltage“. Manual input is a useful function. It is possible, for instance, to enter the measured voltage at a device manually without using an interface. This allows you to calibrate and document almost anything.

You can connect the DIGISTANT® model 4423 to the device to be calibrated, and proceed as you normally would for calibration. Press the **“SAVE”** key after each calibration point in order to accept the associated value. When you have worked through these points, press the **“DONE”** key. After entering an identifier (tags) manufacturer, model, serial number, tester, ambient conditions and so forth, save the data. You have now completed the „as found“ part of your calibration. It is possible to first adjust the measured values if they are not within tolerance. If all data is within tolerance, you can save the so-called „as found /as left“ data, thereby documenting the complete data before and after your calibration.



It is possible to scroll through the „As found“ test points.

You can also specify that the calibrator will make a „Good/Bad“ decision on the basis of the device’s permitted error tolerance.

DIGICAL documentation and calibration software

- Creating automatic calibration procedures
- DIN ISO 9000 compliant calibration
- Save measurements in Excel
- Measurements can be displayed graphically or tabulated
- Device settings and/or program procedures can be printed out
- Processing the saved data
- Printing out measurement logs
- Password protection for various levels
- Total control ability of the DIGISTANT® 4423 over USB
- Calibration procedure is stored in the device

DIGISTANT® model 4423 and DIGICAL for use in the field or in the laboratory

Industrial quality requirements specify that measuring instruments, regulators, transmitters and so forth used for process control are regularly recalibrated. This routine work is made much simpler by creating calibration procedures with the DIGICAL PC software. They can then be used for calibration procedures in the field or in the laboratory.

Remote control

The DIGISTANT® model 4423 can be remotely controlled from a PC with a USB interface. Control can take place through the DIGICAL software, or a user program can be linked in. A LabView driver is supplied with the device free of charge. The connection is made through a standard USB Type B connector. There are three operating modes: Local, Remote and Remote with interlock. The Local operating mode is the standard setting. In the Remote mode, the keyboard is locked, and the device can only be controlled through the interface. The keys can be reactivated through the GO TO LOCAL function at the DIGISTANT®.

All interface commands are detailed in the manual.

Program description

Calibration and documentation present significant challenges to quality assurance. Software has been developed for the DIGISTANT® with which the calibrator can be fully controlled. The software can be used to generate calibration procedures, and is particularly helpful for the simultaneous measuring and sourcing function. Device settings can be saved to a file as backup, reloaded and edited. The measurements can be saved as an Excel file or as plain text.

The measurement log can be printed out. Printer settings are itemized in a list. The DIGISTANT® model 4423 can be fully parameterized via the USB interface.

Once a password has been set, the security settings are activated, which means that there is then a master and a user. Only the master, after entering the password, still has full access to all the software’s functions.

A check is made, over the Internet, to see whether the latest version of the software is being used.

The configuration software runs on the following operating systems:

- Windows 98/98SE
- Windows ME
- Windows 2000
- Windows XP
- Windows 2003
- Windows Vista

Technical data for the DIGISTANT® model 4423

Electrical data

Range	Resolution	Tolerance from measured or set value
Voltage source		
0.000 to 20.000 VDC	0.001 V	± 0.015 % ± 2 digits
Voltage measurement		
isolated - 0.100 to + 30.000 VDC	0.001 V	± 0.015 % ± 2 digits
not isolated - 0.100 to + 20.000 VDC	0.001 V	± 0.015 % ± 2 digits
Thermocouple mV		
Source -10.000 to + 75.000 mV	0.001 mV	± 0.02 % ± 10 µV
Measure -10.000 to + 75.000 mV	0.001 mV	± 0.02 % ± 10 µV
Current source		
0.000 to 24.000 mA / 1kΩ Last	0.001 mA	± 0.015 % ± 2 digits
Current measurement		
isolated - 0.100 ... 24.000 mA	0.001 mA	± 0.015 % ± 2 digits
not isolated - 0.100 ... 24.000 mA	0.001 mA	± 0.015 % ± 2 digits
Resistance simulation (works with all pulsed instrumentation transducers ≥ 5 ms)		
5.0 to 400 Ω/lmeas 0.1 -0.5 mA	0.1 Ω	± 0.015 % ± 0.1 Ω
5.0 to 400 Ω/lmeas 0.5 -3.0 mA	0.1 Ω	± 0.015 % ± 0.03 Ω
400 to 1500 Ω/lmeas 0.05-0.8 mA	1 Ω	± 0.015 % ± 0.3 Ω
1500 to 4000 Ω/lmeas 0.05-0.4 mA	1 Ω	± 0.015 % ± 0.3 Ω
Resistance measurement		
0.00 to 400.00 Ω	0.01 Ω	± 0.015 % ± 0.03 Ω
400.1 to 4000.0 Ω	0.1 Ω	± 0.015 % ± 0.3 Ω

Frequency

Range	Tolerance
Resistance simulation (Amplitude adjustable 1 ... 20 V) rectangular	
CPM source 2.0 to 600.0 CPM	± 0.05 %
Hz source 1.0 to 1000.0 Hz	± 0.05 %
kHz source 1.0 to 10.0 kHz	± 0.125 %
Measure 2.0 to 600.0 CPM	± 0.05 % ± 0.1 CPM
Hz measure 1.0 to 1000.0 Hz	± 0.05 % ± 0.1 Hz
kHz measure 1.00 to 10.0 kHz	± 0.05 % ± 0.01 kHz
Pulse (Amplitude adjustable 1 ... 20V) source only	
Pulse 1 to 30.00	
2 CPM to 10.0 kHz	

Thermocouple models

Thermocouples	Range	Tolerance
Source/measure		
J EN 60584-1/ITS90	-200.0 to 0.0 °C	0.4 °C
	0.0 to 800.0 °C	0.2 °C
	800.1 to 1200.0 °C	0.3 °C
K EN 60584-1/ITS90	-200.0 to 0.0 °C	0.6 °C
	0.0 to 1000.0 °C	0.3 °C
	1000.1 to 1372.0 °C	0.5 °C
T EN 60584-1/ITS90	-200.0 to 0.0 °C	0.6 °C
	0.0 to 400.0 °C	0.2 °C
E EN 60584-1/ITS90	-200.0 to - 100.0 °C	0.6 °C
	-100.0 to 950.0 °C	0. °C
R EN 60584-1/ITS90	0.0 to 1750.0 °C	1.2 °C
S EN 60584-1/ITS90	0.0 to 1750.0 °C	1.2 °C
B EN 60584-1/ITS90	600.0 to 800.0 °C	1.2 °C
	800.1 to 1000.0 °C	1.3 °C
	1000.1 to 1820.0 °C	1.5 °C
C Hoskins E 988	0.0 to 1000.0 °C	0.6 °C
	1000.1 to 2316.0 °C	2.3 °C
XK GOST	-200.0 to 800.0 °C	0.2 °C
BP NIST	0.0 to 2500.0 °C	0.9 °C
L DIN 43710/IPTS68	-200.0 to 0.0 °C	0.25 °C
	0.0 to 900.0 °C	0.2 °C
U DIN 43710/IPTS68	-200.0 to 0.0 °C	0.5 °C
	0.0 to 400.0 °C	0.25 °C
N EN 60584-1/ITS90	-200.0 to 0.0 °C	0.8 °C
	0.0 to 1300.0 °C	0.4 °C

All tolerances are quoted without error at the reference junction.
The reference junction error outside 23 °C ± 5 °C is 0.05 °C / °C.
Additional reference junction error 0.2 °C.

Temperature measurement / temperature simulation RTD

Designation	Range	Tolerance from measured or set value
Measure Source		
Ni120 (672) Minco	- 80.0 to 260.0 °C	± 0.08 °C ± 0.06 °C
Ni100 (618) DIN 43760/IPTS68	- 60.0 to 250.0 °C	± 0.08 °C ± 0.15 °C
Cu10 (427)	- 100.0 to 260.0 °C	± 0.82 °C ± 0.82 °C
Cu50 GOST	- 180.0 to 200.0 °C	± 0.18 °C ± 0.2 °C
Cui100 GOST	- 180.0 to 200.0 °C	± 0.11 °C ± 0.13 °C
YSI 400	15.0 to 50.0 °C	± 0.02 °C ± 0.05 °C
Pt 100 (385)		
DIN EN 60751:1996	- 200.0 to 200.0 °C	± 0.13 °C -
	200.0 to 800.0 °C	± 0.23 °C -
	- 200.0 to 400.0 °C	- ± 0.2 °C
	400.0 to 800.0 °C	- ± 0.29 °C
Pt 200 (385)		
DIN EN 60751:1996	- 200.0 to 100.0 °C	- ± 0.45 °C
	100.0 to 300.0 °C	- ± 0.52 °C
	300.0 to 630.0 °C	- ± 0.66 °C
	- 200.0 to 630.0 °C	± 0.61 °C -
Pt 500 (385)		
DIN EN 60751:1996	- 200.0 to 100.0 °C	- ± 0.21 °C
	100.0 to 300.0 °C	- ± 0.26 °C
	300.0 to 630.0 °C	- ± 0.34 °C
	- 200.0 to 630.0 °C	± 0.31 °C -
Pt 1000 (385)		
DIN EN 60751:1996	- 200.0 to 100.0 °C	- ± 0.14 °C
	100.0 to 300.0 °C	- ± 0.18 °C
	300.0 to 630.0 °C	- ± 0.25 °C
	- 200.0 to 630.0 °C	± 0.21 °C -
Pt 10-385		
	- 200.0 to 100.0 °C	- ± 0.84 °C
	100.0 to 300.0 °C	- ± 0.95 °C
	300.0 to 630.0 °C	- ± 1.09 °C
	630.0 to 800.0 °C	- ± 1.2 °C
	- 200.0 to 800.0 °C	± 1.13 °C -
Pt 50-385		
	- 200.0 to 100.0 °C	- ± 0.25 °C
	100.0 to 300.0 °C	- ± 0.26 °C
	300.0 to 630.0 °C	- ± 0.34 °C
	630.0 to 800.0 °C	- ± 0.4 °C
	- 200.0 to 800.0 °C	± 0.33 °C -
Pt 100(3926) + Pt 100 (3916)		
	- 200.0 to 100.0 °C	- ± 0.13 °C
	100.0 to 300.0 °C	- ± 0.17 °C
	300.0 to 630.0 °C	- ± 0.25 °C
	- 200.0 to 200.0 °C	± 1.13 °C -
	200.0 to 630.0 °C	± 0.2 °C -

RTD: works with all pulsed instrumentation transducers = 5 ms.

The measuring precision is based on the use of 4-wire technology. If 3-wire technology is used, ± 0.05 Ω must be added. All values are applicable at 23 °C ± 5 °C.

Outside this temperature range, the measurement is accurate to ± 50 ppm/K.

Operating temperature range: -10 °C to 50 °C

Storage temperature: -20 °C to 70 °C

Auxiliary supply:

- Ni-MH inbuilt battery, operating time > 16 h (10 mA into 1 kΩ)
- 230 V AC mains adapter, mains-buffered operation is possible

Interface: USB version 1.1

Housing: Aluminum console with plastic side pieces

Dimensions (W x H x D): 160 x 85 x 175 mm

Weight: approx. 1 kg

Order code**Device order code**

Universal calibrator DIGISTANT® Model 4423 including mains adapter, test certificate with proof of traceability, USB cable and one pair of measuring cables, model 4490

Model 4423

DIGICAL PC software for DIGISTANT® model 4423

Model 4423-P001**Temperature accessories**

Measuring cable for resistance and Pt 100 measurements, length 1 m, with banana plugs (4-wire measurement), LEMO connector (6-pin, 1B)

Model 4499

One pair of measuring cables, length 1 m, with two banana plugs, two probes and two test clamps (included with device)

Model 4490

External reference junction for Universal calibrator model 4423

Model 4485-V001

Connector for Pt 100 input

Model 4291-0

Pt 100 measuring sensor

Model 42510

Connecting line for laboratory sensor model 42510, length 2 m

Model 4281-0**Pressure accessories**

Interface adapter

Model 7130

Pneumatic manual pump, -850 mbar ... 7 bar

Models 7106-V0007

Pressure manual pump -960 mbar ... 34 bar

Models 7106-V0034

Hydraulic manual pump 0 bar ... 690 bar

Models 7106-V0690

Pressure hose up to 250 bar can be used, adapter at both ends with 1/8" NPT external thread, 1.5 m long

Models 7131-Z001**Pressure modules**

Range	Accuracy	Overload	Model
Against atmospheric pressure			
0 to 20 mbar	± 0.1 %	400 %	7132-4020
0 to 67 mbar	± 0.05 %	400 %	7132-4067
0 to 350 mbar	± 0.025 %	400 %	7132-4350
0 to 500 mbar	± 0.035 %	300 %	7132-4500
0 to 700 mbar	± 0.025 %	300 %	7132-4700
0 to 2 bar	± 0.025 %	300 %	7132-5002
0 to 3.5 bar	± 0.03 %	300 %	7132-50035
0 to 7 bar	± 0.025 %	300 %	7132-5007
0 to 10 bar	± 0.035 %	200 %	7132-5010
0 to 20 bar	± 0.025 %	200 %	7132-5020
0 to 34 bar	± 0.025 %	200 %	7132-5034
0 to 70 bar	± 0.025 %	200 %	7132-5070
0 to 100 bar	± 0.035 %	200 %	7132-5100
0 to 200 bar	± 0.05 %	200 %	7132-5200
0 to 340 bar	± 0.05 %	200 %	7132-5340
0 to 700 bar	± 0.1 %	120 %	7132-5700
Vacuum			
0 to -350 mbar	± 0.025 %	400 %	7132-4350-V001
0 to -1 bar	± 0.025 %	300 %	7132-5001-V001
Absolute			
0 to 1 bar	± 0.025 %	300 %	7132-5001-V002
0 to 2 bar	± 0.025 %	300 %	7132-5002-V002
0 to 3.5 bar	± 0.03 %	300 %	7132-50035-V002
0 to 7 bar	± 0.025 %	300 %	7132-5007-V002
0 to 20 bar	± 0.025 %	200 %	7132-5020-V002
Dual pressure / Compound			
-1 to 1 bar	± 0.025 %	300 %	7132-5001-V003
-1 to 2 bar	± 0.025 %	300 %	7132-5002-V003
Difference			
0 to 350 mbar	± 0.025 %	400 %	7132-4350-V004
0 to 2 bar	± 0.025 %	300 %	7132-5002-V004
0 to 3.5 bar	± 0.03 %	300 %	7132-50035-V004

For further, comprehensive information, please see data sheet 7132 in product group 7.

Accessories for measuring force, torque, displacement

Interface adapter

Model 7130

1 Smart Sensor Interface for connecting force, displacement and torque sensors

Model 7160

Compatible sensors for force, torque and displacement can be found in the „Sensors and Process Instruments“ catalog.

Other accessories

Ever-ready case made of artificial leather for model 4423 with strap

Model 4493

Aluminum case for Universal Calibrator model 4423

Model 4493-V002

Mains adapter (included with instrument)

Model 4495-V001

One pair of banana plugs with clamped connection

Model 4498

USB interface cable 1.5 m ST(A) - ST(B)

Model 9900-K349**Calibration certificate for DIGISTANT® model 4423****DKD (German Calibration Service) calibration or factory calibration**

Standard calibration certificate with 173 DC calibration points:

- 7 measuring points for each voltage measurement and sourcing range
- 9 measurement points for each thermocouple measurement and sourcing range „mV“
- 8 measuring points for each current measurement and sourcing range
- 6 measuring points for each resistance measurement and sourcing range
- 2 measurement points each for thermocouple types in the „Measure“ and „Source“ operating modes, reference junction temperature 0 °C, measurements in mV and calculated values in °C
- 56 measuring points for Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni 100, Ni 120, Cu 10, Cu 50, Cu 100, YSI 400

Model 44DKD-4423 / Model 44WKS-4423**DKD pressure calibration**

DKD pressure calibration certificate for series 7132 pressure modules (complete measuring chain)

Model 71DKD-7132**Factory pressure calibration**

For 11 points in 20 % steps across the full range of measurements for rising and falling pressure (complete measuring chain)

Model 71WKS-7132**DKD force calibration**

DKD force calibration for force sensors with the Smart Sensor Interface (complete measuring chain).

Calibration to EN ISO 376.

Model 71DKD-7160**Factory force calibration**

Factory force calibration for force sensors with the Smart Sensor Interface (complete measuring chain). In 20 % steps, rising and falling, 1 mounting position.

Model 71WKS-7160

You are also very welcome, in addition to the data sheet, to request our color brochure about DIGISTANT® model 4423 „Documented calibration - the complete range“.