Portable high-precision calibrator and tester

for mechanical and electrical measurements

TRANS CAL 7281

burster

Supported sensors

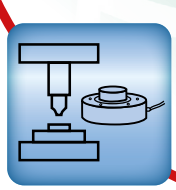
Device test/ Strain gauge simulator

Infinitely adjustable simulation values:
up to ± 50 mV/V, up to 10 VDC
Measurement: U_{supply} up to 10 VDC

BRAND NEW

- Linearity < ± 0.001 % F.S.
- Automatic sensor recognition by burster TEDS
- Practical calibration software
- DAkkS calibration certificate by request

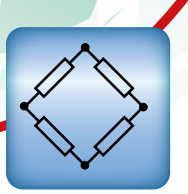
Reference measurement chain



* (combined with a reference sensor)

DAkkS
Deutsche Akkreditierungsstelle
D-K-15141-01-00

Sensor test



R_i, R_a, Shunt, R_{ISO}

Smart, robust, traceable and precise ...

Simply unrivalled!

MTS **Messtechnik Schaffhausen GmbH**
Mühlenstrasse 4, CH-8260 Stein am Rhein, Telefon +41 52-672 50 00, Telefax +41 52-672 50 01, www.mts.ch, e-mail: info@mts.ch
Messen Prüfen Automatisieren www.mts.ch

TRANS CAL 7281

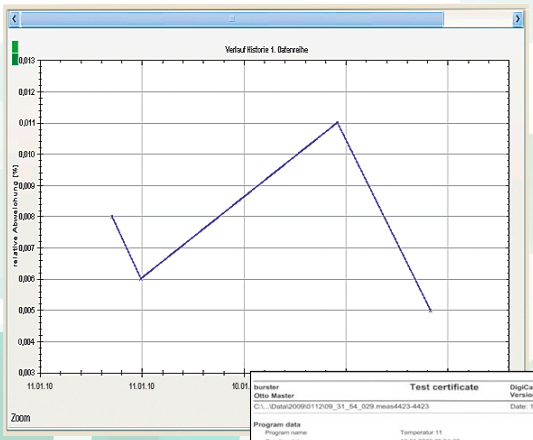
Precision force check of electrical, mechanical or hydraulic presses

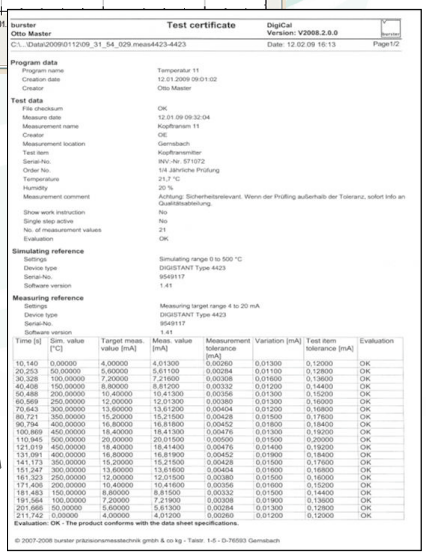
- Maximum precision and traceability even under on-site conditions.
- Designed for industrial use also in harsh environments (excellent display backlighting, rugged case, battery-supplied amongst other features).
- OK/NOK evaluation of measurement values, data readout of actual values and evaluation results from the data logger using DigiCal software.
- Reference load cell in line with the flux of force ensures optimum comparative measurements in difficult-to-access locations. Sensor and device hardware can be checked separately.

DigiCal testing and calibration software: creating a own test certificate

Export in Excel for further processing

Measurement actual values in N	Measurement tolerances in N	Evaluation
0.00	0.0011	OK
1667.10	0.1677	OK
3333.60	0.3345	OK
5000.20	0.5011	OK





Quality testing for torque wrenches

- Regular testing involves measuring the release torque (click wrench). TRANS CAL 7281 also detects the release peak values at a measurement rate of ≤ 1200/s. Multiple measurements/evaluations easily possible for each set release torque.
- Stores logged measurement values or quality-relevant data, which can be read using the optional DigiCal calibration software (statistical analysis MIN/MAX – MEAN VALUE – STANDARD DEVIATION).
- Measurement values from up to four sets of manually recorded data can be displayed in parallel as a table and graph. This can be useful, for instance, as an easy way to compare and document release torques of torque wrenches.

Torque sensor series 8628

Messtechnik Schaffhausen GmbH
Mühlenstrasse 4, CH-8260 Stein am Rhein, Telefon +41 52-672 50 00, Telefax +41 52-672 50 01, www.mts.ch, e-mail: info@mts.ch

1871-FL7281EN-5170-041519

TRANS CAL 7281

Device test with strain gauge simulator

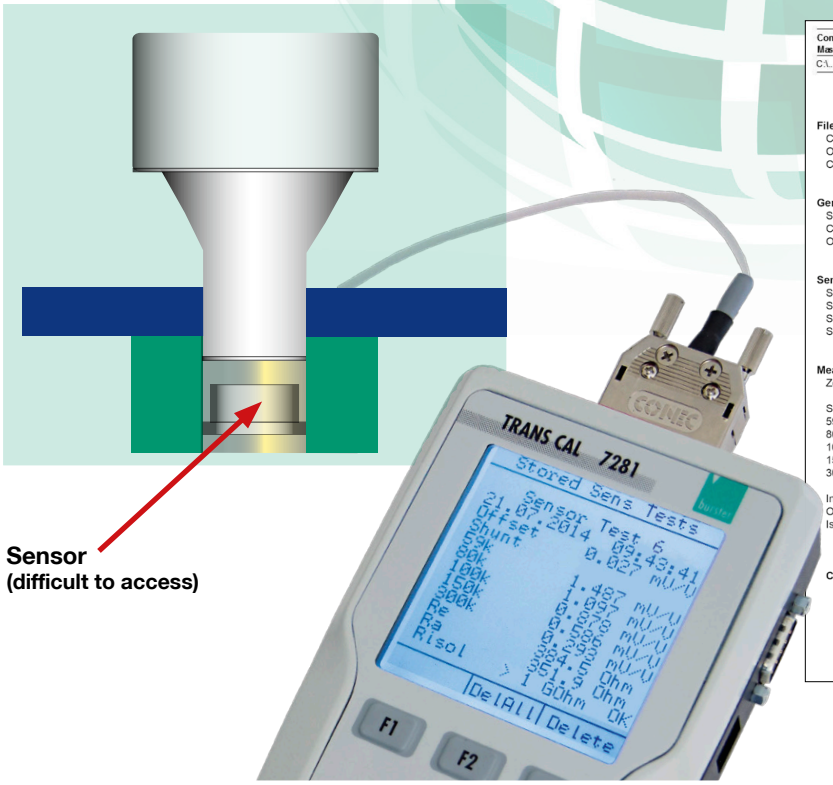
The high-precision calibrator and tester model 7281 is ideal for locating faults in measurement systems. For display devices based on strain gauge sensors, the stored characteristics values can be simulated in an infinitely adjustable range of ± 3 mV/V and ± 50 mV/V. In this case it is also important to measure the excitation voltage for strain gauge sensor in order to rule out any problems here.

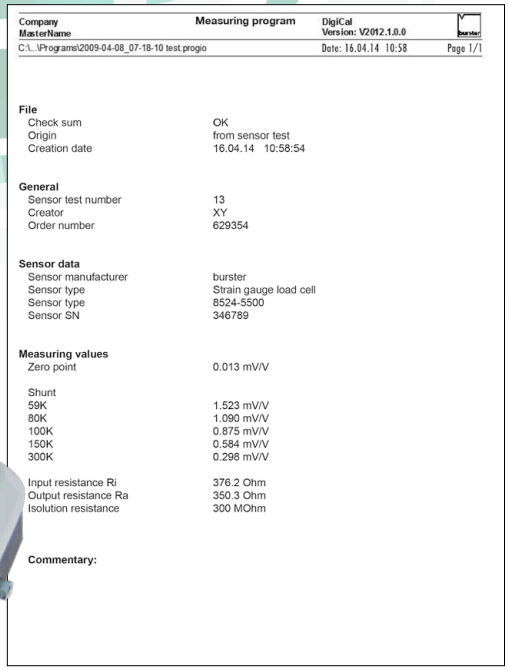
Voltage source

It is also possible to verify the stored sensor data for display devices with an “active” input. Using the voltage source function, up to 10 V (infinitely adjustable) can be supplied to the device being tested.

Sensor test

When sensors are difficult to access and cannot be removed, the sensor test function can be used to measure the input and output resistances of the strain gauge full-bridge, their zero point, the isolation resistance and the shunt calibration factor in mV/V (generated by a built-in shunt resistor). This provides a fast and reliable way of electronically assessing the connected sensor. The optional DigiCal calibration software can be used to create a test certificate after completing the sensor test.





Company MasterName — Measuring program — DigiCal Version: V2012.1.0.0

C:\...\Programs\2009-04-08_07-18-10 test.progio — Date: 16.04.14 10:58 — Page 1/1

File

Check sum	OK
Origin	from sensor test
Creation date	16.04.14 10:58:54

General

Sensor test number	13
Creator	XY
Order number	629354

Sensor data

Sensor manufacturer	burster
Sensor type	Strain gauge load cell
Sensor type	8524-5500
Sensor SN	346789

Measuring values

Zero point	0.013 mV/V
Shunt	
59K	1.523 mV/V
80K	1.090 mV/V
100K	0.875 mV/V
150K	0.584 mV/V
300K	0.298 mV/V
Input resistance Ri	376.2 Ohm
Output resistance Ra	350.3 Ohm
Isolution resistance	300 MOhm

Commentary:

Messtechnik Schaffhausen GmbH
Mühlenstrasse 4, CH-8260 Stein am Rhein, Telefon +41 52-672 50 00, Telefax +41 52-672 50 01, www.mts.ch, e-mail: info@mts.ch

Technical Data

Operation mode: Reference measurement device

Non-linearity:	< ± 0.001 %
Measuring rates:	0.1 ... 1200/s (DC); 0.1 ... 2/s (AC) (reduced accuracy at 50/s)
TC gain:	± 0.001 %/K
TC zero point:	< 0.2 µV/K
Cut-off frequency:	10 kHz (-3db)

Supported sensors

Strain gauge

Error limit:	± 0.02 % F.S.
Bridge resistance (full bridge):	120 Ω ... 10 kΩ
Connection type:	4 / 6 wire technology
Input voltage ranges (DC):	± 15 mV; ± 30 mV; ± 250 mV
Input voltage ranges (AC):	± 15 mV; ± 30 mV
Sensor excitation voltage (DC):	2.5 V; 5 V (at 120 Ω only 2.5 V)
Sensor excitation voltage (AC):	2.5 Veff / 5 Veff (from 350 Ω)
Sensor excitation current:	max. 30 mA
Electronic data sheet:	read from sensor EEPROMs

Potentiometric sensors

Error limit:	± 0.05 % F.S.
Track resistance:	500 Ω ... 10 kΩ
Connection type:	3 / 5 wire technology
Excitation voltage:	5 V DC
Excitation current:	< 30 mA
Measurement range:	± 5 V

Transmitter

Error limit:	± 0.02 % F.S.
Excitation voltage:	12 V DC ± 5 %
Excitation current:	< 100 mA
Input voltage range:	± 10 V
Units:	freely selectable

Sensors and devices with voltage output

Input voltage range:	± 10 V
Error limit:	± 0.02 % F.S.

Operation mode: Device test with strain gauge simulator (model 7281-V0001 only)

Strain gauge simulator

Error limit:	± 0.01 % F.S.
Excitation voltage:	≤ ± 10 V (AC/DC)
Characteristics (infinitely adjustable simulation values):	0 ... ± 3 mV/V to 0 ... ± 50 mV/V
Resolution:	± 16 Bit
Bridge resistance:	350 Ω
TC:	± 0.025 %/K
Cut of frequency:	5 kHz
Measurement of excitation voltage:	0 ... 10 V DC

Voltage source

Error limit:	± 0.02 % F.S.
Infinitely adjustable simulation values:	0 ... +10 V
Resolution:	1 mV
TC:	± 0.002 %/K

Operation mode: Sensor test (model 7281-V0001 only)

TC:	± 0.005 %/K

Shunt calibration step

Error limit:	± 0.25 %
Calibration shunt resistors:	59 kΩ; 80 kΩ; 100 kΩ; 150 kΩ; 300 kΩ

Input and output resistance of sensor

Error limit:	± 0.25 % F.S.
Measurement range:	120 Ω ... 10 kΩ

Insulation resistance

Error limit:	± 5 % Rdg.
Measurement range:	20 MΩ ... 1 GΩ
Resolution:	1 MΩ
TC:	± 0.1 %/K

General device data

A/D converter:	24 Bit
Real-time clock/date	
Interface:	USB 2.0, downwards compatible, opto-isolated
Nominal temperature range:	0 ... 40 °C
Storage temperature range:	- 20 ... 60 °C
Display:	LCD with white LED backlighting
Baud rate:	115200
Supply voltage:	4 x Mignon or 10 ... 28 VDC, integrated battery charging circuit

Terminals

Measuring, device test, sensor test:	SUB-D female connector, 9 pin
Strain gauge simulator:	SUB-D male connector, 9 pin
USB interface:	type B male connector

Housing

Material:	Aluminium (light gray, black)
Dimension (L x W x H):	220 x 100 x 52 [mm] with tilting foot and rubber feet
Weight:	approx. 850 g
Protection class:	IP40

Order Information

High-precision calibrator
for mechanical measurements TRANS CAL
- reference measurement device **Model 7281-V0000**

High-precision calibrator and testing device
for mechanical and electrical measurements TRANS CAL
- reference measurement device-sensor test-device test/DMS simulator **Model 7281-V0001**

Order Example

High-precision force measuring chain 100 kN with DAkkS calibration certificate:

High-precision load cell, 100 kN **Model 8527-6100**
Testing device for force, torque, displacement and pressure **Model 7281-V0000**
Connector **Model 9900-V209**
Connector fitting **Model 99004**
Adjustment of a measurement chain comprising sensor and display device **Model 72ABG**
DAkkS Calibration Certificate
for force measurement chains in the range 0 ... 100 kN **Model 85DKD-D-6100**

Accessories

TRANS CAL 7281 PC software, Plus version:
- functions include editing device parameters, setting parameters via the configuration interface, recording and documenting data-logger values and sensor test data, data export, handling metadata **Model 7281-P100**

TRANS CAL 7281 PC software, Basis version:
- functions include editing device parameters, setting parameters via the configuration interface, recording and documenting data-logger values, data export, handling metadata **Model 7281-P101**

Power pack, 100 - 240 VAC / 50/60 Hz / 12 VDC, 1.5 A **Model 7281-Z001**
Battery set 4 x Mignon AA **Model 7281-Z002**
Sub-D male connector, 9 pin **Model 9900-V209**
USB connector cable **Model 9900-K349**
Adapter cable, length 1 m for TRANS CAL 7281 and sensors with 12 pin male connector, model 9941 **Model 99209-540A-0110010**
Adapter cable (e.g. for device test 7281), length 1 m, 6 wire, one site 9 pin female connector model 9900-V609, other side open end **Model 99609-000E-0150010**
Six-core connection cable, for 7281 device test and strain gauge simulation, length 2 m, for indicator with 9 pin Min-D male connector, e.g. for DIGIFORCE® 9310/9310 **Model 99209-609E-0150020**
Adapter cabel, length 0.2 m for TRANS CAL 7281 and Sensors with 15 pin SUB-D male connector model 9900-V280 **Model 99209-580A-0110002**
Aluminium case for TRANS CAL 7281 and accessories **Model 7200-Case**

burster TEDS

9 pin male SUB-D connector and memory chip for the electronic sensor datasheet, for connecting strain-gauge load cells to the TRANS CAL 7281 **Model 9900-V229**
Fitting connector 9900-V229 (7281) to a strain-gauge sensor and programming the electronic sensor datasheet **Model 99011**

DAkkS Calibration Certificate

The DAkkS calibration certificate per guideline DKD-R 6-1 contains a minimum of three measuring cycles, each with 21 measuring points in 10 % steps for rising and falling loads across the entire measuring range.

Manufacturer Calibration Certificate

The standard factory calibration certificate for a reference measurement chain consisting of the TRANS CAL 7281 instrument in conjunction with, for example, a force or pressure sensor, contains 11 points, starting at zero in 20 % steps across the entire measuring range for rising and falling loads.

1871-FL7281EN-5170-041519

Messtechnik Schaffhausen GmbH
Mühlenstrasse 4, CH-8260 Stein am Rhein, Telefon +41 52-672 50 00, Telefax +41 52-672 50 01, www.mts.ch, e-mail: info@mts.ch