

# Precision Calibration Source DIGISTANT®

Type 4405

Code:	4405 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	12 months
Issue:	1.8.2001



- Micro-processor controlled current voltage source
- Voltage range 10  $\mu$ V to 11.000 V
- Current range 2  $\mu$ A to 22.00 mA
- Easy to operate, portable and handy
- NC-battery with overload and low-discharge protection

## Application

The type 4405 universal precision calibration source is ideal for testing and calibrating all measuring instruments and control devices within its range of capacity which operate on the principle of current and voltage.

The portable calibration device is well-suited for operation in the field, as a bench device, at the test stand, in the factory, and in the laboratory. The wide range of applications in the measuring technique includes for example the calibration of pointer and digital instruments or recorders, the simulation of thermocouples; the precise plotting of component characteristics, and many other services.

The calibration source has been developed with special attention paid to the needs of control engineering. The direct input of measuring values through a keyboard, the storage of measuring values that are frequently required, and the possibility of passing through a curved control system, e.g. of 0 - 20 mA, by means of a staircase function - all these features make it very easy to cope with the measuring tasks in this range.

The well-arranged keyboard and display and the automatic input test system allow easy and safe operation of the device. A sturdy and pleasant appearing metal housing enables comfortable and secure input of calibration values and easy reading of the indicated values.

The instrument is in accordance with VDE 0871/B.

## Description

The DIGISTANT® 4405 represents a precision current and voltage source based on micro-processor principles which is suitable for currents ranging from 2  $\mu$ A to 22.00 mA and for voltages from 10  $\mu$ V to 11.000 V. The desired output value is keyed-in. By selecting the desired unit (such as mV, V or mA) it is internally optimized, compared with the range limits and passed on to the output jacks. Indication of the actual value is done by a 4 1/2 digit LCD display. By directly entering the source values, the user quickly and accurately obtains a desired output. The calibration source provides 11 memories where a basic value and a  $\Delta$ -value can be stored. These data pairs are either programmed to fixed standards (see table on the reverse) or, as an option, with predetermined values, according to the user's requirements. Should other values be required to solve specific measuring problems, up to 11 data pairs may be stored (volatile) into the 11 memories. The calibration source is also provided with a manual staircase function.

Starting at any desired point, a stepped curve can be produced by pressing the  $\Delta$ -keys. The output values and the  $\Delta$ -constants can be made available from the memories or keyed-in individually. The calibration source is powered by a built-in NC-battery which is fully protected against overload and low-discharge. Furthermore, the source is designed for stationary buffer operation from a 110/220 VAC voltage power supply.

**Technical Data**

**Voltage Source**

The device incorporates 3 voltage ranges; input via keyboard; automatic selection of optimum range and, consequently, minimum error limit.

Range	Resolution	Output resistance	Zero drift	TC
0.00 ... 99.99 mV	10 µV	< 10 mΩ	2 µV/K	75 ppm/K
100.0 ... 999.9 mV	100 µV	< 10 mΩ	2,5 µV/K	75 ppm/K
1.000 ... 11.000 V	1 mV	< 10 mΩ	10 µV/K	50 ppm/K

Output currents: 20 mA max. at 10 V  
approx. 30 mA at short-circuit

**Current Source**

Range	Resolution	Output resistance	Zero drift	TC
0.000 ... 22.00 mA	2 µA at < 20 mA 10 µA at ≥ 20 mA	> 10 MΩ	30 nA/K	75 ppm/K

Burden voltage at  $I_a = 20$  mA: > 10 V, at open operation: ≤ 15 V  
Overload indication for current and voltage:  
OVER appears on the indication panel

**Accuracy**

Error limit: 0.02 % of the respective ultimate value of the range  
Zero error: Voltage ranges < 50 µV, current range < 5 µA

**Influences**

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

Storage temperature: 0 ... 60 °C (32° C ... 140° F)

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

**Memories:**

11 fixed data pairs (output and Δ-value) programmed by manufacturer either as shown in table below or, as an option, as required by the customer.

**Memory address	Output value	Δ-value
A**	0 mV	2 mV
0	0 mV	20 mV
1	0 mV	200 mV
2	0 mV	500 mV
3	0 mV	1 V
4	0 mV	2 V
5	0 mA	2 mA
6	0 mA	4 mA
7	4 mA	2 mA
8	4 mA	3.2 mA
9	4 mA	4 mA

Optional programming (special arrangement at an additional price).  
The desired 11 output values and Δ-values should be specified when ordering.

\* "A" appears when the device is switched on.

\*\* "A" after switching off and on the memories are always busy with these data.

**Staircase function:**

Starting from any desired value, a staircase function can be initiated by pressing either the Δ + or the Δ - key. These values can be either taken from the memory or entered individually.

Power supply: a) internal NC-battery  
b) 110 V ± 10 % or 230 V +6 %, -10 %, 50 - 60 Hz  
(plug power-pack), power consumption 10 VA max.

Operating period of battery: 4-6 hrs. depending on current requested

Charging period: approx. 7 hrs.

Charging control: red LED indication

Low-discharge protection: approx. 4 weeks when unit is switched on

Overload protection: prevents overloading of battery at permanent operation from power supply

Housing: aluminium housing, desk-shaped, side parts made of plastic material

Dimensions: W 230 x H 105 x D 85 [mm] (9" x 4" x 3 1/2")

Weight: approx. 1.7 kg (3.7 lbs.)

**Order Information**

Precision calibration source DIGISTANT® **type 4405**

Large leather case with carrying strap for 4405 incl. external power pack **type 4491**

Small leather case with carrying strap for 4405 **type 4492**

**Accessories**

- 1 external plug-in power supply type 4496, 110 V/50 - 60 Hz (part of delivery)
- 1 pair of measuring cables, length 1 m, with 2 banana plugs and 2 miniature terminal probes, type 4490 (not part of delivery)
- 1 set of accus, type 4494 (for repair)

**Options**

- 1 memory programming according to customer's wishes  
Order code 4405-5001  
each additional programming with identical data(when ordering at same time)

For the precision calibration source DIGISTANT® type 4405 we are offering a DKD Calibration Certificate. The instrument is calibrated for each range at 30 %, 60 % and 90 % full scale.

**Order code 44DKD-4405**

DKD stands for "Deutscher Kalibrierdienst" = German Calibration Service.

**Proprietary Calibration Certificate**

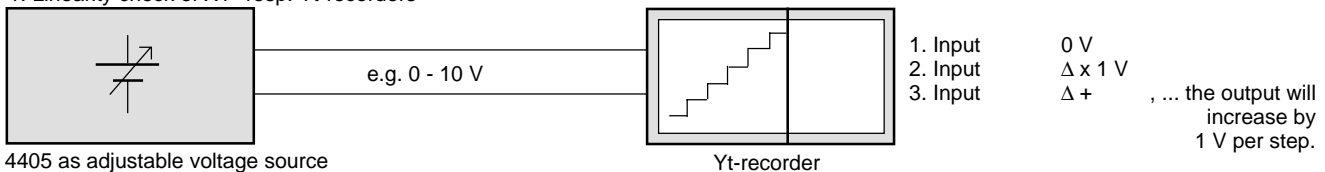
Please refer to DKD Calibration, but the accuracy is reduced.

**Order code 44WKS-4405**



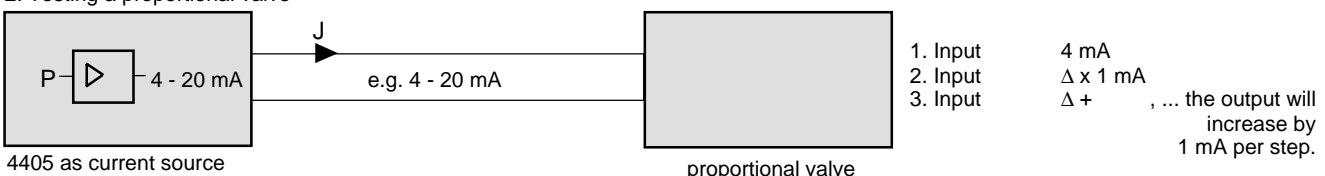
**Application Examples**

1. Linearity check of XY- resp. Yt-recorders



4405 as adjustable voltage source

2. Testing a proportional valve



4405 as current source

proportional valve