

Simulator KA 7531-1



**Simulator
for Pt100, thermocouples,
mV, V, mA, Hz
Option PC interface**

Technical features

- Universal manual simulator for simulating temperature sensors and process variables when testing measuring instruments, regulators, and other equipment
- Pt100 simulation with 5 fixed resistors in 4-conductor technology
Voltage and thermocouples simulation with 15-bit D/A converter
Current simulation with 15-bit D/A converter
Frequency and pulse generator with quartz-crystal oscillator
Continuity check with settable threshold
- All signals are available at the same time.
- Signals can be set either manually or automatically, in step or ramp form.
- All signals and all the programming can be shown on the illuminated graphics display.
- Connection of peripherals via ALMEMO® clamp connectors, cable with anti-kink protective sleeve and strain relief
- Power supply via battery or mains unit
- Modern, compact housing - also suitable for DIN top-hat rail mounting
- Option of PC-controlled operation via all ALMEMO® data cables.

Technical data

| | | | |
|-------------------|---|---|--|
| Signal Pt100 | 5 discrete resistance values in 4-conductor technology 0 / 50 / 100 / 200 / 300 °C | signal frequency | 1..4000Hz, 0.01..10.00kHz, 0.1..40.0kHz, 1..100kHz |
| Accuracy | ±0.1°C | Pulse width | 1 to 99 % |
| Temperature drift | 0.01°C / K | Accuracy | corresponds to the resolution |
| Signal voltage | 15-bit DAC electr. isolated load > 1 MΩ | Pulse range | Period 2μs...99.999 ms, 2ms...99.999 s |
| -10 to +60.000 mV | load > 100 kΩ | Pulse | 1μs...99.998 ms, 1ms...99.998 s |
| -3 to 10.000 V | ± 0.05% of measured value | Accuracy | 0.01 % |
| Accuracy | ± 0.05% of final value | Continuity | current approx. 1 mA |
| Temperature drift | 20 ppm / K | Threshold | 0 to 1000 mV |
| Time constant | 100 μs | Power supply: | 10..12V DC |
| Thermocouples | type K, N, T, J (ITS90) resolution: 0.1K type S, R, B (ITS90) resolution: 1K | Battery: | 3 Mignon Alkaline |
| Accuracy: | ± 0.05% of measured value ± 0.05% final value | Current consumption | (Battery): approx. 30 mA |
| CJ - temperature: | -30..100°C | Voltage and Current output: with illumination: | approx. 80mA + 4 x IOUT, approx. 40mA additional |
| Signal current | 15-bit DAC electr. isolated load < 500 Ω | Display | graphics 128 x 64 (55 x 30 mm) |
| 0 to 20.0 mA | ± 0.05% of measured value | Illumination | 2 white LEDs |
| Accuracy | ± 0.05% of final value | Keypad | 7 silicone keys (4 soft-keys) |
| Temperature drift | 20 ppm / K | Housing | (LxWxH) 127 x 83 x 42 mm ABS (-10 to +70 °C), 290 g |
| Time constant | 100 μs | Operating range: | |
| | | Operating temperature: | -10 ... +50 °C |
| | | (Storage temperature): | -20 ... +60 °C |
| | | Ambient humidity: | 10 ... 90 % rH (noncondensing) |



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Displays (examples)

```
SIMULATOR KA 7531 U6.01
P0: Pt100      100.0 °C
P1: 0-10 V    5.000 V
P2: 0-20 mA   12.000 mA
P3: 0-4000Hz  1000 Hz
P4: continuity Yes 36 mV
CONFIG *ON
```

Main menu

```
* DEVICE CONFIGURATION *
Device address: 00
Baud rate:      9600Bd
Language:      english
Illumination:  ✓ duration: 20s
contr. 50%    UBat: 4.5V
MENU *ON
```

Device configuration

```
P4: Continuity Yes
Function: steps individually
36 mV
Threshold: 100mV
F1 *ON
```

Continuity tester

```
P0: Output Pt100
Function: steps individually
100.0 °C
F1 S *ON
```

Pt100 resistance values

```
P1: Output TC NiCr-Ni type K
Function steps individually
500.0 °C
Step: 0100.0°C U: 20.644mV
F1 S TC *ON
```

NiCr-Ni step generator

```
P3: Output Frequency 4000Hz
Function: steps individually
1000 Hz
Pulse width: 50%
Step: 01000Hz
F1 S F *ON
```

Frequency pulse generator

```
P1: Output 0 - 10V
Function steps automatically
5.000 V
Step: 01.000 V duration 10s
START F1 S *ON
```

0 to 10 V step generator

```
P3: Output 0-20mA
Function steps automatically
START: 4.000 mA
Stop: 15.000mA duration: 30s
F1 S *ON
```

0 to 20 mA ramp generator



Accessories

| | Order no. |
|--|------------|
| ALMEMO® clamp connector (for Pt100 or universal use) | ZA1000TS |
| ALMEMO® connecting cable with 2 banana plugs and 2 test probes | ZA1000TK |
| Mains adapter 12 V / 1.5 A | ZA1312NA12 |
| USB data cable, electrically isolated | ZA1919DKU |
| V24 data cable, electrically isolated | ZA1909DK5 |
| Fixture for top-hat rail mounting | ZB2490HS |
| Rubber guard, gray | ZB2490GS2 |

Options

| | Order no. |
|--|--------------------|
| Factory calibration certificate for Simulator KA7531: Electrical Calibration compared reference standards that are traceable to national standards. Calibration in 6 ranges: Pt100 (5 points), and (3 points each) voltage 10 V, voltage 50 mV, current 20 mA, thermocouple type K, frequency Hz, Package Offer | KE9006W OA7531I |
| addressable PC interface | |

Included as standard

| | Order no. |
|---|-----------|
| Simulator, 5 sockets for Pt100, thermocouples or -4 to 10 V, 0 to 20 mA, frequency, continuity tester, Graphics display and keypad, sockets DC, A1, batteries, including manufacturer's test certificate, 1 ALMEMO® clamp connector (for Pt100) and ALMEMO® and ALMEMO® connecting cable with 2 banana plugs and 2 test probes | KA7531I |