

Laboratory Meters

Knick >

Quality assurance does not stop at your lab door.

765 Laboratory pH Meter



To make reliable pH measurements easier than ever, Knick has equipped the Model 765 Laboratory pH Meter with an exemplary package of safety functions.

Fullcheck

automatically checks the device functions during power-on. Also during operation, a complete instrument check can be carried out at a single keystroke. Here, also display and keypad are checked besides the electrical characteristics.

Record printouts

With record printouts of the device self-test, the calibration, and the parameter settings, it is possible (as part of quality management to ISO 9000 and GLP) to document the serviceability and the regular maintenance and calibration of the unit.

Sensoface

checks the electrode and provides information on the electrode condition. The zero, slope, response time, and glass impedance of the electrode as well as the calibration interval are evaluated.

Calimatic

automatically recognizes the right buffer. It allows calibration at the stroke of a key, providing ease of use and – above all – safety.

You simply immerse the electrode in two buffers of the selected set, no matter which one you take first, and press the cal key. The meter automatically recognizes the buffer and calibrates itself. It does not matter which buffer solution is taken first.

Trueline

delivers a calibrated analog recorder signal, of course electrically isolated. This provides you with a true pH signal, calibrated for the electrode and without disturbing quantizing levels, permitting undistorted recording of pH curves.

Sockets

Robust gold plated sockets are standard equipment.

EMC

EMC design protects the meter from electromagnetic interferences, ensuring reliable measurement results even under unfavorable conditions.

Numerous practical features allow comfortable and safe pH measurement.

Temperature compensation manual or automatic

Temperature compensation is either automatic with Pt 100 or Pt 1000 temperature probes or manual, as selected.

Standard RS 232 interface

Via the standard RS 232 interface your data can be immediately processed by a computer. Even direct output to a printer is no problem.

Displaymatic for easier reading

Displaymatic facilitates readout. If the measured signal changes rapidly, the running characters are blanked in order to allow easy reading. This allows you to read the currently measured value without problems.

Easy-to read LED display for two measured values

The large, bright LED display allows simultaneous readout of two measured values, such as pH and temperature. LED display for alphanumeric characters allows.

Double insulation provides electrical safety in wet locations

The well-designed enclosure has proved successful in practical use. A waterproof membrane keyboard and drain grooves protect the meter from moisture. The robust, stainless steel covered enclosure resists even strong mechanical stress.



pH/ORP measurement

- Isolation Amplifiers Transmitters
- Indicators
- Process Analytics
- Portable Meters
- Laboratory Meters**
- Sensors
- Fittings



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■ The facts

Fullcheck automatic device test

Records for QM documentation to ISO 9000 and GLP

Trueline calibrated analog recorder output, galvanically isolated

Electrode monitoring with Sensoface icons

Automatic calibration with patented Calimatic

EMC to NAMUR

Electrode statistics

RS 232 interface for computer and printer

Displaymatic

Two user-defined measured value displays, simultaneous

Dead-stop operation

Self-contained clock

Liquid-proof membrane keypad

Robust enclosure

IP 54 protection

3-year warranty



Warranty
3 years!

Defects occurring within 3 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender).
Sensors and accessories: 1 year

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■ Keypad

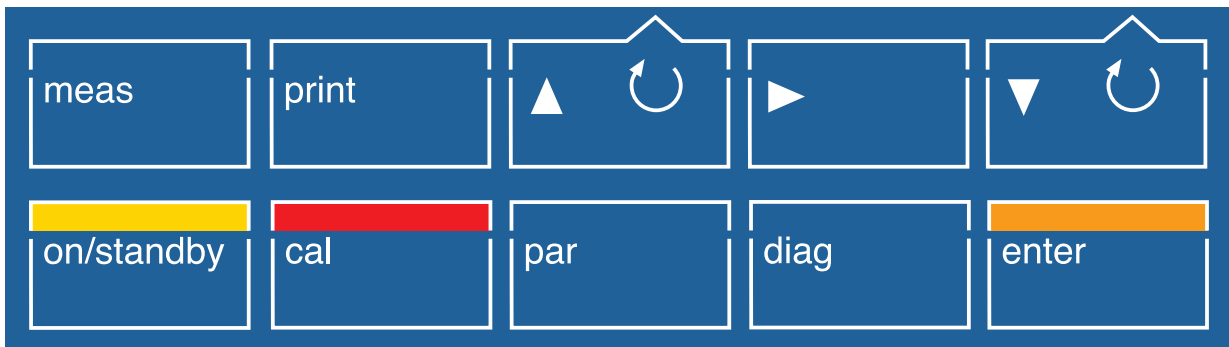
Exit function and return to measuring mode

Print currently measured values or function data

Select line, edit value or select variable

Select parameter or position

Select line, edit value or select variable



On/off (standby)

Activate calibration

Activate parameter setting

Activate diagnostics

Take over value or entry

■ Record printouts

Records of parameter setting, calibration, and diagnostics are particularly helpful for QM documentation to ISO 9000 and GLP.

The records can be printed out directly to any commercially available printer with a serial port at the press of a key.

```
Knick 765 Parameter Setting 15.01.03
-----
Serial Number: 01125464
Software Version: 3.3
Hardware Version: 11
Options :
-----
Manual Temperature: 25.0CEL
Sensoface: On
Displaymatic: Off
Buffer Set: -01-
Cal Timer: 48h
Recorder Output: pH
Baud Rate: 4800
Data Bits/Parity: 7 Even
Protocol: Xon/Xoff
Interface: Printer
Printer Timer: 0.0min

Time: 12:08
Date: 15.01.
Year: 2003
-----
```

```
Knick 765 Diagnostics 14.01.03
-----
Serial Number: 01125464
Software Version: 3.3
Hardware Version: 11
Options :
-----
Last Fullcheck: 14.01.03 14:18

ROM: -ok-
PRAM: -ok-
EEPROM: -ok-
Amplifier: -ok-
Impedance: -ok-
Display: -tested-
Keys: -ok-

Sensoface(++/00/--)

Zero Point/Slope: ++
EL Response Time: ++
Glass Impedance: ++
Drycheck: ++
Cal Timer: ++
-----

Electrode System Data

Zero Point: 7.00pH
Slope: 59.2mV/pH

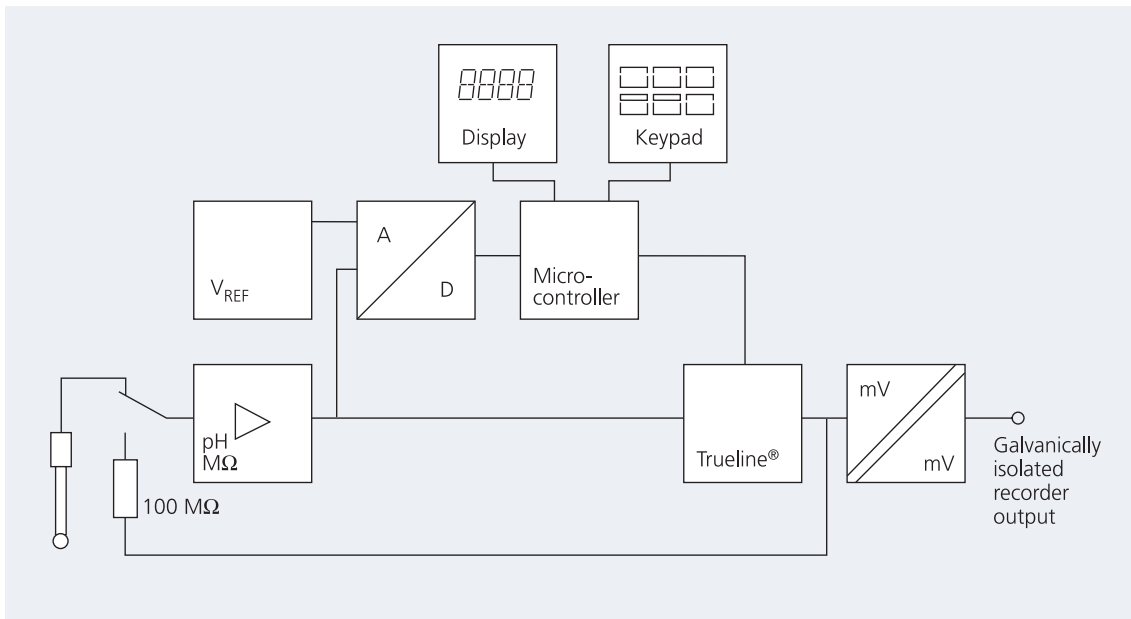
Next Calibration in 48h
-----
```

■ Fullcheck device self-test

For the self test, the electrode is automatically switched off and the input internally connected to the recorder output over a 100 MOhm resistor.

The microcontroller sends defined voltage steps to the recorder output. These are measured with the input amplifier and the A/D converter and compared with a highly accurate reference voltage. The 100 MOhm resistor at the same time serves as reference for the impedance measuring circuit, which thus is tested as well.

This means, a complete test of the signal path is implemented with a pH meter for the first time. In addition, all memories, the display, and the keypad are tested.



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■ Specifications

Laboratory pH Meter 765

| | |
|-------------------------------------|---|
| Equipment | Meter with power cord, without electrode |
| Ranges | pH: -2.00 ... +16.00 / mV: -1999 ... +1999 / °C: -50.0 ... +150.0 |
| Display | Alphanumeric 2 x 4 digits, 14-segment LED, 13 mm high characters, measurement symbols pH/mV/°C/man, 3 Sensoface status indicators inform on the condition of electrode and equipment (GLP) ³⁾ |
| Measuring cycle | Approx. 1/sec |
| Accuracy ¹⁾ | pH: <0.01 / mV: <0.1 % ±0.3 mV / °C: <0.3 K |
| Input | DIN 19262 |
| Input resistance | >1 x 10 ¹² Ohm |
| Input current (20 °C) ²⁾ | <1 x 10 ⁻¹² A |
| Temperature coefficient | <0.1 count/K |
| Electrode standardization | Calimatic automatic calibration and buffer recognition (German patent 29 37 227) For buffer sets, see Page 65, permitted calibration ranges: Zero: pH 6 ... 8 Slope: 47 ... 61 mV/pH (25 °C) Nominal zero/slope/V _{iso} [*] Zero: pH 0 to 14 Slope: 25 ... 61 mV/pH V _{iso} : -500 ... +500 mV |
| (Option 346) | |
| Electrode monitoring | Sensoface evaluates zero, slope, response time, and glass impedance of the electrode, as well as the calibration interval, electrode condition displayed as good / average / poor, can be disabled Cal timer monitors the calibration interval |
| Fullcheck device self-test | Tests complete measurement electronics incl. analog output, segment and keypad test in diagnostics mode, automatic short-check at power-on |
| Records | Records of parameter setting, calibration, and diagnostics, records for QM documentation to ISO 9000 and GLP ³⁾ , retrievable in diagnostics mode or via interface (printer) |
| Displaymatic | Digit suppression according to signal change, can be disabled |
| Temperature compensation | Pt 100 / Pt 1000, automatic selection / manual: -50.0 ... +150.0 °C [*]) |
| Dead stop current | -10 µA |
| Recorder output ^{*)} | Galvanically isolated mV: 1 mV/mV / pH: 100 mV/pH / °C: 10 mV/°C |
| Interface | RS 232 without control lines, galvanically isolated, can be used either as printer or computer interface, Baud rate: 600 / 1200 / 2400 / 4800 / 9600 ^{*)} Data formats: 7 Bit, even/odd parity ^{*)} 8 Bit, no parity ^{*)} Protocol: none, xon/xoff ^{*)} Stop bits: 1 |

■ Specifications

continued – Laboratory pH Meter 765

| | |
|-------------------------------------|---|
| Software | Control of the Model 765 pH Meter is integrated in the automation software for lab meters "labworldsoft" (Fisher Scientific) for display and control of device functions for Version 4.0 or higher. |
| Printer control | For standard printer with serial port, printing at keystroke, via print interval timer 0.1 ... 999.9 min ^{*)} , or external floating contact |
| Clock | Real-time clock with date, self-contained |
| Calibration data storage | Automatic storage of calibration data, self-contained |
| Data retention | Parameters, statistics, and factory settings: >10 years (EEPROM) Clock: reserve power >1 year (battery-backed) |
| Electrode statistics | Storage of zero and slope of first calibration, as well as data of last 3 calibrations with time and date stamp, self-contained, output via interface to printer or computer |
| Protection against electrical shock | Protective separation as defined in DIN 57100 / VDE 0100 Part 410 and DIN VDE 0106 Part 101, power supply against all other inputs and outputs, in accordance with the NAMUR recommendation "Extra-low voltage circuits with protective separation" |
| EMC directive | 89/336/EEC |
| Standards | EN 61326 / VDE 0843 Part 20: 2002-3 |
| Ambient temperature | 0 ... +45 °C |
| Storage and transport temp | -20 ... +70 °C |
| Power supply | 230 V -15 % +10 %, 48 ... 62 Hz, <10 VA, Option 363: 115 V AC |
| Protection class | II |
| Sensor connection | The meter allows connection of any commercial electrodes with DIN plug or banana plug |
| Enclosure | Glass-reinforced polyamide 12, stainless steel cover, IP 54 protection, prepared for connecting ZU 6954 attachable stand |
| Dimensions (W x H x D) | 244 x 95 x 255 mm |
| Weight | Approx. 2 kg |

^{*)} User defined ¹⁾ ±1 count ²⁾ 45 °C: factor 10 ³⁾ Good Laboratory Practice

Buffer sets

| | |
|-------------------|--|
| Buffer set – 00 – | Knick technical buffers, nominals 25 °C: 2.00/4.01/7.00/9.21 |
| Buffer set – 01 – | Mettler-Toledo (Ingold) technical buffers, nominal values 25 °C: 2.00/4.01/7.00/9.21 |
| Buffer set – 02 – | Merck, Riedel, nominal values 20 °C: 2.00/4.00/7.00/9.00/12.00 |
| Buffer set – 03 – | Technical buffer solutions to DIN 19 267, nominal values 25 °C: 1.09/3.06/4.65/6.79/9.23/12.75 |
| Buffer set – 04 – | DIN 19 266 and NIST (NBS), nominal values 25 °C: 1.679/4.006/6.865/9.180/12.454 |
| Buffer set – 05 – | Merck, Riedel, nominal values 20 °C: 1.00/3.00/6.00/8.00/10.00/13.00 |
| Buffer set – 06 – | Merck, nominal values 20 °C: 4.66/6.88/9.22 |
| Buffer set – 07 – | Ciba (94), nominal values: 2.06/4.00/7.00/10.00 |
| Buffer set – 10 – | Mettler-Toledo (USA), nominal values 25 °C: 4.00/7.00/10.01 |

Laboratory Meters

■ Specifications Accessories

| | |
|---|--|
| Printer | Order No.: ZU 0244 |
| Type | Matrix printer |
| Interface | Serial RS 232 port |
| Paper | Standard paper, width: 57.5 mm (2.25 inches) |
| Baud rate | 4800 bauds |
| Data bits | 7, 1 stop bit |
| Parity | Even |
| Protocol | No |
| Power supply | 230 V AC $\pm 10\%$ |
| Dimensions (W x H x D) | 197 x 73 x 153 mm |
| Weight | Approx. 1.2 kg (incl. power pack) |
| Stand | Order No.: ZU 6954 |
| Material | Pillar: anodized aluminum; carriage and base: polyamide 12 glass reinforced; Beaker stop, vertical stop, and electrode clasp: stainless steel |
| Carriage stroke | 190 mm |
| Clamping possibilities Stop for sample beakers | 2 x 12 ± 0.5 mm; 1 x 4 ... 14 mm; 1 x 6 ... 16 mm from \varnothing 30 ... 150 mm |
| Beaker height | Up to 130 mm |
| Dimensions (W x H x D) | 130 x 300 x 145 mm |
| Weight | Approx. 410 g |
| Plug-in power pack for immersion stirrer | Order No.: ZU 6956 |
| Power supply | 230 V AC -15% $+6\%$ <8 VA |
| Cable length | 2 m |
| Weight | Approx. 380 g |
| Immersion stirrer | Order No.: ZU 6955 |
| Material | Enclosure: PVC; impeller and shaft: stainless steel |
| Dimensions | Unit: 250 x \varnothing 25/12 mm; impeller: \varnothing 12 mm; immersion depth: approx. 90 mm |
| Weight | Approx. 140 g |



Combination pH electrodes for lab and field units

The SE 100 N and SE 103 N electrodes with a glass body are combination electrodes for standard applications in the lab. The Model SE 100 N has an integrated Pt 1000 temperature probe. The Model SE 103 N with its high-temperature dissipation system is suitable for measurements in media up to 100 °C.

For use in rougher environments, Knick offers the SE 101 N electrode with plastic body. It is also equipped with an integrated Pt 1000 temperature probe. In addition, Knick also offers the SE 104 N puncture electrode. This thin, gel-filled combination electrode is particularly robust and insensitive to pollution. Therefore, it is suited especially for measurements in semi-solid substances such as meat or cheese.

A special feature of the SE 106 N electrode is its ground diaphragm, which achieves a comparatively large, continuous electrolyte flow. The electrode is a good choice when it comes to prevent junction blocking by solids or proteins, minimize charge effects caused by surfactants or dispersions, for example, or measuring in low-ion solutions. The electrode can also be used in high-temperature and/or high-pH solutions.








■ Specifications Combination pH electrodes

| Combination pH Electrodes | SE 100 N | SE 101 N | SE 103 N | SE 104 N | SE 106 N |
|-------------------------------|-------------------------|---------------------|-------------------------------------|---------------------|-------------------------------------|
| Temperature probe | Pt 1000 | Pt 1000 | – | – | Pt 1000 |
| Body material | Glass | Plastic (Noryl/PPO) | Glass | Plastic (Noryl/PPO) | Glass |
| Body length | 170 mm | 120 mm | 170 mm | 65 / 25 mm | 165 mm |
| Body diameter | 12 mm | 12 mm | 12 mm | 15 / 5 mm | 12 mm |
| Junction | Ceramic | Fibre junction | Ceramic | Open junction | Ground joint |
| Electrolyte | 3 mol/l KCl, refillable | Gel | 3 mol/l KCl, refillable | Polymer | 3 mol/l KCl, refillable |
| pH measurement range | 0 ... 14 | 0 ... 14 | 0 ... 14 | 2 ... 13 | 0 ... 14 |
| Temperature range | –5 ... 100 °C | –5 ... 80 °C | –5 ... 100 °C | –5 ... 80 °C | 0 ... 100 °C |
| Recommended temperature probe | Integrated | Integrated | ZU 6959 | ZU 0156 | Integrated |
| Remarks | – | – | High-temperature dissipation system | Puncture electrode | High-temperature dissipation system |









Laboratory Meters

■ Product line Laboratory pH meters and combination pH electrodes



| | | |
|---|--|-----------------|
| 765 Laboratory pH Meter Order No. | | |
|  | Unit with power cord, without electrode | 765 |
| Set | | |
|  | 765 Laboratory pH Meter, SE 100 pH/Pt 1000 combination electrode, ZU 6954 attachable stand and ZU 6928 buffer set (no further optional equipment possible) | 765-Set |
| Options | | |
| Power supply | 115 V AC | 363 |
| Electrode zero point | nominal electrode zero point and slope user defined | 346 |
|  | pH/Pt 1000 combination electrode (Glass body, length 170 mm) | SE 100 N |
|  | pH/Pt 1000 combination electrode (Plastic body, length 120 mm) | SE 101 N |
|  | Combination pH electrode (Glass body, length 170 mm) | SE 103 N |
|  | Combination pH puncture electrode (Plastic body, length 65 / 25 mm) | SE 104 N |
|  | pH/Pt 1000-combination electrode (Glass body, ground diaphragm, length 165 mm) | SE 106 N |

■ Product line Accessories

| | | | Order No. |
|---|--------------------|--|----------------|
|  | Attachable stand | Besides the immersion stirrer, the attachable stand can hold three sensors of any kind. The adjustable stops prevent damage of sensor and beaker glass. Time-consuming adjustment during sample changes has been eliminated. An integrated cable duct does away with the "spaghetti cables" on your benchtop. For ZU 6955 immersion stirrer and three sensors, directly connected to the meter. | ZU 6954 |
|  | Immersion stirrer | The immersion stirrer reduces electrode response time for measurement and calibration. Precision measurements to DIN 19268 even require stirring. To prevent splattering of test liquid, the stirrer automatically stops as the carriage moves up. The stirrer is supplied via the ZU 6956 plug-in power pack. | ZU 6955 |
|  | Plug-in power pack | For immersion stirrer | ZU 6956 |
|  | Interface cable | For meter – computer connection (special EMC cable) | ZU 0152 |
|  | Lab printer | With the Lab Printer, you can document your measured values either at the press of a key or timer-controlled. Also records for QM documentation to ISO 9000 and GLP can be printed out with a single keystroke. The printer is equipped with a replaceable ribbon cartridge and prints on standard paper. It is connected to the 765 Laboratory pH Meter or the 703 Laboratory Conductivity Meter via ZU 0245 interface cable. | ZU 0244 |
|  | Interface cable | For meter – printer connection | ZU 0245 |

Laboratory Meters

continued – **Product line** Accessories

| | | | Order No. |
|---|---------------|------------------------------------|----------------|
|  | Printer paper | For ZU 0244 Lab Printer, 5 rolls | ZU 0249 |
|  | Ink ribbon | For ZU 0244 Lab Printer, 5 ribbons | ZU 0250 |

pH/ORP measurement

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick

■ Product line Sensors and buffer solutions

| | | | Order No. |
|---|---------------------------|--|----------------|
|  | Pt 1000 temperature probe | For fast response temperature measurements: Monel 2.4360, -10 ... +100 °C, accuracy class A to IEC 751 | ZU 6959 |
|  | Pt 1000 temperature probe | For fast response temperature measurements, with tilted tip for puncture measurements in semi-solid substances: Monel 2.4360, -10 ... 100 °C, pH 0 ... 14, accuracy class A to IEC 751 | ZU 0156 |
|  | Calibration buffer set | With Knick technical buffer solutions, 250 ml each of pH 4.01, pH 7.00, pH 9.21, and KCl solution | ZU 0261 |
|  | Calibration buffer set | With standard buffer solutions to DIN 19266 and NIST (NBS), 250 ml each of pH 4, pH 7, and KCl solution | ZU 6941 |
|  | KCl solution | 250 ml bottle | ZU 0062 |

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Астана +7(7172)727-132
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Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Эл. почта kci@nt-rt.ru || Сайт: <http://knick.nt-rt.ru>