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

Knick

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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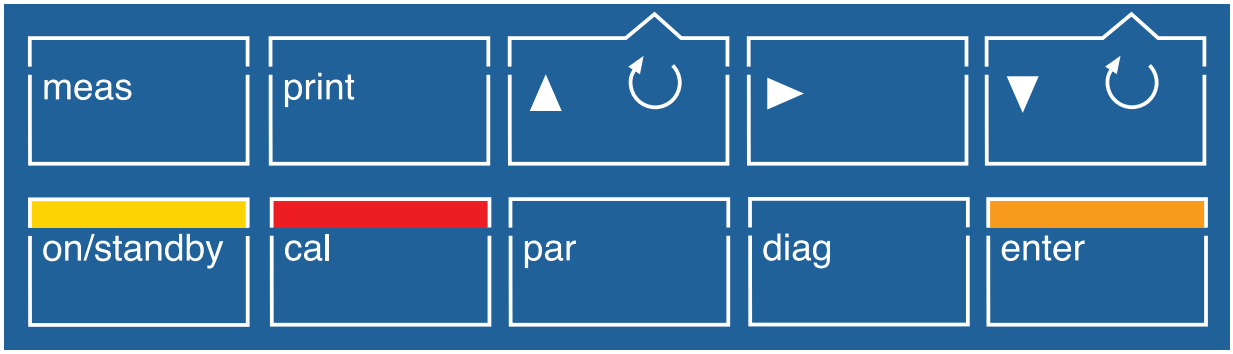
Keypad

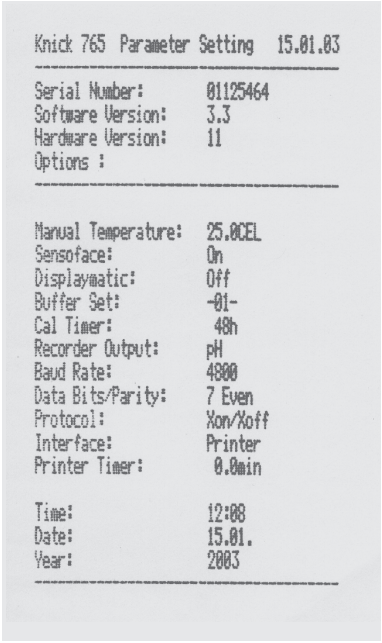
Exit function and return to measuring mode	Print currently measured values or function data	Select line, edit value or select variable	Select parameter or position	Select line, edit value or select variable



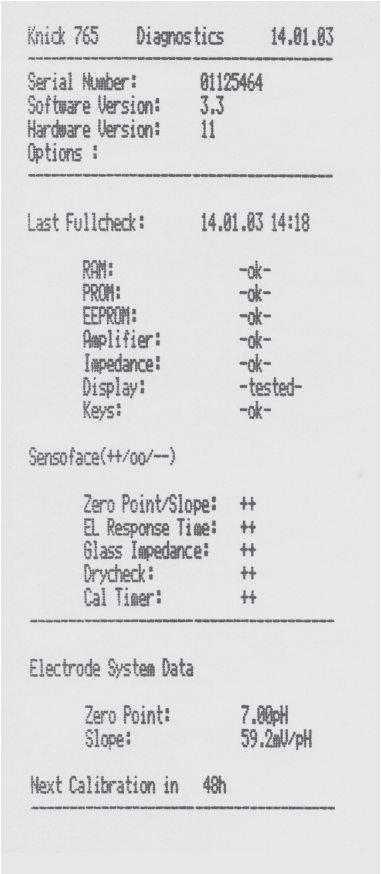
On/off (standby)	Activate calibration	Activate parameter setting	Activate diagnostics	Take over value or entry

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
-------------------------------------
```



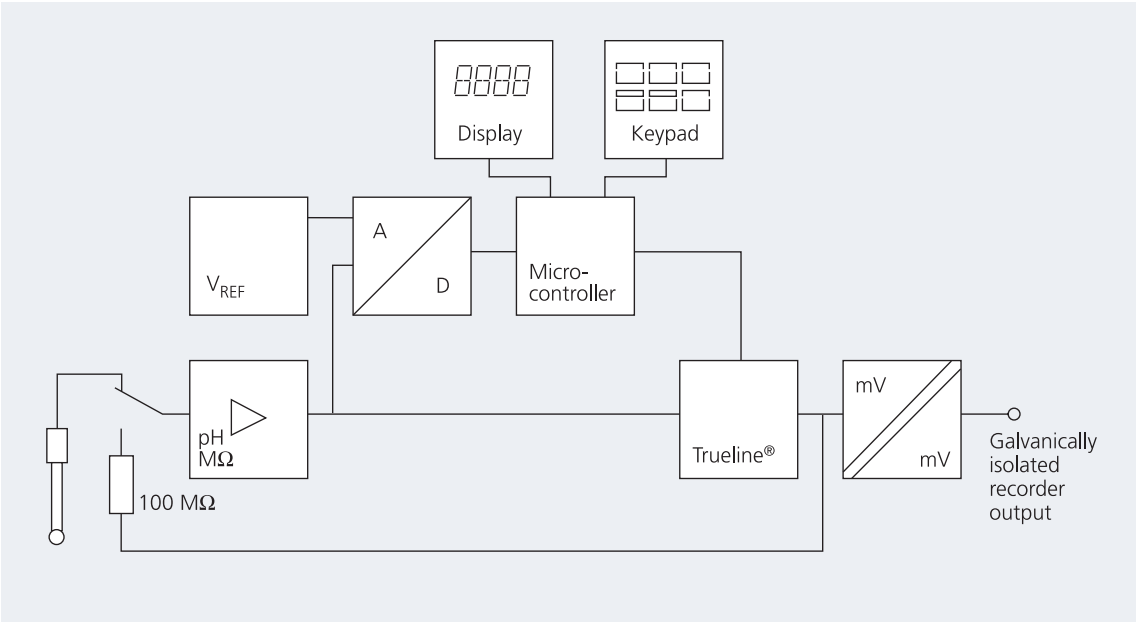
```
Knick 765     Diagnostics      14.01.03
-------------------------------------
Serial Number:        01125464
Software Version:     3.3
Hardware Version:     11
Options :
-------------------------------------

Last Fullcheck:       14.01.03 14:18

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

Sensoface(++/oo/--)

        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.



765 Laboratory pH Meter

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)
(Option 346)	Nominal zero/slope/V_{iso}*) Zero: pH 0 to 14 Slope: 25 ... 61 mV/pH V_{iso}: –500 ... +500 mV
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 Storage and transport temp	0 ... +45 °C –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

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 ±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 Ø 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 Ø 25/12 mm; impeller: Ø 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
Order No.	SE 100 N	SE 101 N	SE 103 N	SE 104 N	SE 106 N

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**

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**
	Knick technical buffers	pH 4.01 (set with 30 bags for one calibration each)	**ZU 0263**
		pH 7.00 (set with 30 bags for one calibration each)	**ZU 0264**
		pH 9.21 (set with 30 bags for one calibration each)	**ZU 0265**
		pH 4.01 (1000 ml)	**ZU 0200**
		pH 7.00 (1000 ml)	**ZU 0201**
		pH 9.21 (1000 ml)	**ZU 0202**