Waterproof handheld measuring device for pH / Redox with external probe

WATER-PROOF DEVICE AND PLUG CONNECTIONS

- **Serial Interface**
- **analog output (GMH 5550)**
- **Data logger- and alarm function (GMH 5550)**
- **GLP-features (Good Laboratory Practice)**
- **Robust silicone protection cover**
- **Big dual display with background illumination**
- **High resolution (0.001pH / 0.1 mV)**
- **Incl. calibration protocol**

GMH 5530

Waterproof handheld measuring device without electrode

GMH 5550

Waterproof handheld measuring device with analog output and data logger, without electrode

Application:

- Waters measuring, fishkeeping, aquafarming
- Drinking water monitoring, process control, soil measuring
- Food production and monitoring
- Laboratory: Medicine, pharmaceutics, chemistry
- Quality management

Specification:

Measuring ranges:	
pH:	-2.000 ... 16.000 pH
Redox / mV:	-2000.0 ... 2000.0 mV (for hydrogen system DIN38404: -1792 ... +2207 mV$_H$)
Temperature:	-5.0 ... +150.0 °C 23.0 ... 302.0 °F
rH:	0.0 ... 70.0 rH
Accuracy:	
pH:	±0.005 pH
Redox / mV:	±0.05 % FS (mV or mV$_H$)
Temperature:	±0.2 °C (in the range of -5,0 ... 100,0 °C)
rH:	±0.1 rH
Connections:	
pH, Redox:	BNC-female connector, compatible to standard BNC-plugs and waterproof BNC-plugs, additional banana-jack (4 mm) for separate reference electrode, input resistance: 10^{12} Ohm
Temperature:	2 banana-jacks (4 mm) for temperature probes (Pt1000 or NTC 10K)
Interface / Supply:	4-pole bayonet connector for serial interface and supply (with accessory USB 5100)
Working conditions:	-25 ... 50 °C; 0 ... 95 % RH (non condensing)
Display:	two 4½ - digit seven-segment display (15 mm and 12 mm)
pH-Calibration:	
Automatically:	1-, 2- or 3- point calibration, GREISINGER-Standard-Buffer or Puffer to DIN19266 (A,C,D,F,G)
Manually:	1-, 2- or 3- point calibration
Housing:	impact resistant ABS housing with pop-up clip
Protection class:	IP65 / IP67
Dimensions:	160 x 86 x 37 mm (H x W x D) incl. protection cover
Weight:	250 g incl. battery and protection cover
Power supply:	2 x AAA-battery (incl. in scope of supply) power consumption: <1.0 mA
Battery life time:	1000 hours

Functions:

Min / Max Value Memory: highest and lowest measured value is saved

Hold: displayed value gets frozen by keypress

Auto-Hold: automatic freezing of a constant measuring value

Auto Power Off: device is automatically switched off after a selectable period if unused (0 to 120 min, or deactivated)

Additional Display for pH-Electrode and Battery: Bar graph display

Low Battery Display „BAT“

Background illumination: duration adjustable (off, 5 s ... 2 min)

Automatic Temperature Compensation:
There is an automatic temperature compensation (ATC) in the range of 0-105 °C for operation mode “pH” and if a temperature probe is connected. Without connected probe the temperature can be input manually.

pH-Calibration:
The used buffer is detected automatically. The temperature dependency of the buffer is automatically compensated.
Permissible electrodes' data: Asymmetry: ±55 mV / Slope: 45 ... 62 mV/pH
The condition of pH-Electrode is checked at each calibration.
1-, 2- or 3- point calibration with characteristics bend for GREISINGER-Standard-Buffer, buffer to DIN 19266 or manual buffer input

Redox-Measurement (ORP): 2 choices:
“mV” Standard-redox-, ORP or mV- measurement
„mV$_H$” Conversion to hydrogen systems according to DIN38404 Teil 6

rH-Measurement: The rH-value is calculated from a measured Redox-value and a manually input pH-value.

	GMH 5530	GMH 5550
Adjustable calibration intervals (GLP)	x	x
Calibration memory (GLP)	-	x (last 16 Calibrations)
Real-time clock	-	x
Analog output	-	0 - 1 V, freely adjustable, connection with 4-pole bayonet connector, Resolution 13 bit, accuracy 0.05 % at nominal temperature
Data logger	-	With measuring point input Recording interval: 1 s … 1 h Recording period: 416 days at interval 1 h Value memory: cyclic: 10000 data sets; manual: 1000 data sets
Min-/max-alarm	-	Permanent monitoring of alarm boundaries (pH / mV and temperature) 3 alarm conditions - off: Alarm function inactive - on: Alarm report via display, integrated buzzer and interface - no Sound: Alarm report only via display and interface

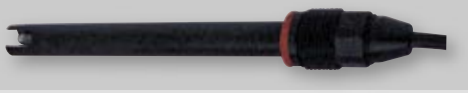
pH / Redox accessories

Accessories and spare parts:

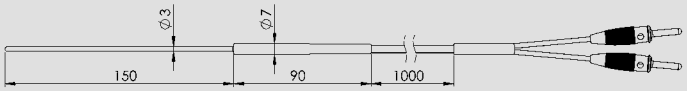
GMH 55 ES
Supplementary set, including pH-electrode (GE 100 BNC), temperature probe (GTF 55 B), case (GKK 3500), working and calibration set (GAK 1400)

GE 125-BNC
waterproof pH-electrode with integrated Pt1000 temperature sensor incl. waterproof BNC-plug and two banana plugs (p.r.t. page 40)

GE 117-BNC
pH-electrode with integrated Pt1000 temperature sensor (p.r.t. page 40)



GTF 55 B
Pt1000 temperature immersion sensor for liquids
1 m PVC-cable with two banana plugs



GE 100-BNC
pH-electrode (p.r.t. page 40)

GE 105-BNC
Redox-electrode (p.r.t. p. 40)

GAK 1400
Working and calibration set

PHL 4
ready-to-use buffer solution (pH 4.01 / 25 °C) 250 ml

PHL 7
ready-to-use buffer solution (pH 7.00 / 25 °C) 250 ml

PHL 10
ready-to-use buffer solution (pH 10.01 / 25 °C) 250 ml

KCL 3 M
3 mol KCl electrolyte for refill or storage (filled in the protective cap) of electrodes with 3 mol KCl electrolyte. 100 ml plastic vial.

CaCl
1000 ml, solution for measuring the pH value of soil

GRL 100
Pepsin cleansing solution, 100 ml

GRP 100
ORP buffer solution (220 mV at 25 °C), 100 ml

EBS 20M
Software for long-term monitoring (p.r.t. page 66)

GSOFT 3050
Software for operation of logger devices (p.r.t. p. 66)

USB 5100
Electrically isolated interface converter with supply of device via USB

GNG 5 / 5000
Plug-in power supply 5 V DC, suitable for GMH 5000 - series (p.r.t. page 65)

GKK 3500
Device case (394 x 294 x 106 mm) with eggcrate foam and cut-outs for 1 device (p.r.t. page 64)

digital pH-Meter

GPH 014

Device ready for use incl. pH-electrode type GE 014 and battery.
(no buffer solutions)

Specification:	
Measuring range (device):	0.00 ... 14.00 pH
Resolution:	0.01 pH
Accuracy (device):	0.02 pH ± 1 digit (at nominal temperature = 25 °C)
Input resistance:	10^{12} Ohm
pH-electrode:	combined measuring and reference electrode type GE 014 with refillable 3 mol-KCl electrolyte, 2-12 pH, 0 ... 60 °C
Calibration:	3 turning knobs for: - temperature compensation 0 ... 90 °C - pH7 value - pH x-value (e.g. 4,0, 10,0, 12,0)
Working temperature:	0 ... 45 °C
Display:	3½-digit LCD display, 13 mm high
Power supply:	9 V battery type JEC 6F22 (incl.)
Battery service life:	approx. 200 operating h
Low battery warning:	automatic; “BAT” displayed in case of low voltage
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D) Impact resistant ABS housing
Weight:	approx. 200 g (incl. battery and electrode)

GAK 1400

Working and calibration set

General:

Working and calibration set consisting of:
5 buffer capsules each GPH4.0, GPH7.0 and GPH10.0, 3 x 100ml-plastic bottle GPF100, 1 x 3 mol KCL-electrolyte KCL3M and 1 x Pepsin-cleaning agent GRL100.
GAK1400 is required if no buffer solutions are existing.

Accessories and spare parts:

GE 014-Cinch
Spare electrode

GPH 014 GL
Loose device (without accessories)

GE 100-Cinch
Better electrode (0-14 pH, 0-80 °C)

GE 101-Cinch
Injection electrode (2-11 pH, 0-60 °C)

GE 104-Cinch
pH-electrode for low-ion water (as of 25 µS/cm)

GKK 252
Case (235 x 185 x 48 mm) with foam lining

GKK 1100
Case (340 x 275 x 83 mm) with foam lining

GB 9 V
Spare battery

additional accessories p.r.t. p. S. 41