

GHMsilverline hand-held instruments



Features

System	GHMsilverline hand-held measuring instruments and full sets
Measurands	pH / ORP Conductivity Pressure Temperature

Field of application

- **Laboratory equipment**
 - Food industry
 - Beverage industry
 - Pharmaceutic industry
 - Chemical industry
 - Water analysis
- **Quality control and assurance**
- **Mobile analysis and measuring technology**
- **Monitoring of production processes**

Product information

GHMsilverline hand-held instruments

Features



- Robust and water-proof housing
- Water-proof connections and water-proof probes, sensors or electrodes (depending on meas. set)
- Data logger function *
- Serial interface and analog output *
- Silicone protection cover
- Large double display
- Background illumination *
- Wide spectrum of measurands

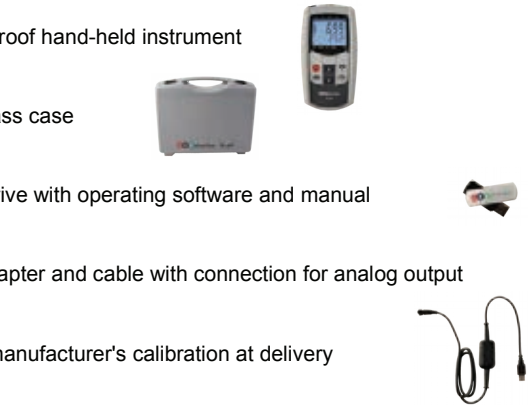


Sets



Each GHMsilverline set includes a complete measuring set containing the following components:

- Water-proof hand-held instrument
- High-class case
- Flash drive with operating software and manual
- USB adapter and cable with connection for analog output
- Gratis manufacturer's calibration at delivery
- Gratis manufacturer's calibration after 1 year with automatic reminding from our calibration laboratory
- Accessories like e.g. water-proof pH electrode and buffer solutions or water-proof temperature probe (depending on set type)



- All essential components in one case with thought-out layout



* except SL-Pt eco
 The temperature device has reduced range of functions (data logger, analog output, etc.).

Product information

GHMsilverline hand-held instruments

Product overview

Type	Measurand	Measuring range	Page
SL-pH-GL SL-pH Set	<ul style="list-style-type: none"> pH ORP temperature rH 	-2.000..+16.000 pH -2000.0..+2000.0 mV -5.0..+150.0 °C / 23.0..302.0 °F 0.0..70.0 rH	4
SL-C-GL SL-C Set	<ul style="list-style-type: none"> conductivity TDS salinity temperature 	0.0...500.0 µS / cm 0...1000 mS / cm with standard electrode SLF 425 -5.0...+100.0 °C 23.0...212 °F	7
SL-P-GL SL-P Set	<ul style="list-style-type: none"> pressure 	-1.999..2.500 mbar till 0..1000 bar depending on pressure sensor	10
SL-Pt eco-GL SL-Pt eco Set	<ul style="list-style-type: none"> temperature 	-200.0..+250.0 °C	14

Errors and misprints excepted. Subject to technical modifications.

Product information

GHMsilverline hand-held instruments

pH ORP
- hand-held instrument
SL-pH-GL
- full set SL-pH Set



- Water-proof and shock resistant instrument
- Water-proof pH electrode and temperature probe
- Buffer solution in dosage bottles (pH 4, pH 7, pH 10)
- Software for operation, configuration, data read-out, etc.
- USB adapter
- High-class case
- Calibration certificate
- Gratis calibration after 1 year with automatic recall from calibration laboratory

Characteristic

The SL-pH measures pH values, ORP, temperature and rH.

The devices feature min-/max- value memory, HOLD, auto range, logger function with cyclic recording (10 000 data sets) or single values (1 000 data sets), analog output and a large illuminated 4 1/2 - digit display.

The device can be optimally adjusted to the specific application via a menu-based configuration. For the calibration one can select between automatic and manual calibration (1-, 2-, and 3- point calibration). Standard or DIN buffers can be chosen for automatic calibration.

The housing, connectors and probes are water-proof.

Specifications

Instrument SL-pH

Measuring range

- pH : -2.000..+16.000 pH
- ORP / mV : -2000.0..+2000.0 mV
- Temperature : -5.0..+150.0 °C / 23.0..302.0 °F
- rH : 0.0..70.0 rH

Accuracy

- pH : ±0.005 pH
- ORP / mV : ±0.05 % FS (mV or mV_H)
- Temperature : ±0.2 °C (in range of -5.0..100.0 °C)
- rH : ±0.1 rH



Connections

- pH / ORP : BNC socket, compatible to standard and water-proof BNC plugs, additional banana socket (4 mm) for separate reference electrode, input resistance: 10¹² Ohm
- Temperature : 2 banana sockets (4 mm) for temperature probe (Pt1000 or NTC10k)
- Interface / supply : 4-pole bayonet socket for serial interface and supply

Display

- : two 4 1/2 - digit 7-segment displays (15 mm and 12 mm)

pH calibration

- perm. electrode specifications : asymmetry: ±55 mV
 slope: -62..-45 mV/pH
 Buffer is automatically detected. Temperature dependency is automatically compensated. Status rating of pH electrode at calibration. 1-, 2- or 3-point calibration with characteristic curve kink for GHM standard buffers or buffer acc. to DIN19266 or manual buffer input.

ORP measurement

- : 2 choices:
 „mV“ standard ORP or mV measurement
 „mV_H“ conversion to hydrogen system acc. to DIN38404 part 6

rH measurement

- : Using a ORP measurement and input of pH value the rH value is calculated.

Protection class Housing

- : IP67 (housing and connection)
 : material made of shock-resistant ABS w/ support, incl. silicone protection cover

Supply

- : 2 x AAA battery (incl. in scope of supply)
 current consumption <1.0 mA

Battery operation

- : approx. 1000 hours

Dimensions

- : 160 x 86 x 37 mm (H x W x D)

Weight

- : 250 g incl. battery

continued on next page

Product information

GHMsilverline hand-held instruments

Functions

- **Min- / max- value memory**
Highest and lowest value are saved
- **Hold / Auto-Hold**
Automatic measured value stability detection
- **Automatic-Off function**
Device gets automatically turned off after selected time. (0..120 min., or deactivated)
- **Status rating for pH electrode and battery**
Bargraph display, battery change indicator "BAT" display
- **Background illumination**
Duration selectable (on / off or 5 s ... 2 min)
- **Automatic temperature compensation**
- **Selectable calibration intervals (GLP)**
- **Calibration storage (GLP)**
Latest 16 calibrations are stored.
- **Serial interface**
Connection: 4-pole bayonet socket
- **Analog output**
0..1 V freely scalable, connection: 4-pole bayonet socket
Resolution: 13 bit, accuracy: $\pm 0.05\%$ at nominal temp.
- **Data logger**
With measuring point input, recoding interval: 1 s to 1 h
Recording duration: 416 days at interval 1 h, measuring value memory: cyclic: 10 000 data sets, single: 1000 data sets
- **Real time clock**
- **Min- / max- alarm**
Continuous monitoring of alarm boundaries,
3 alarm conditions:
- off: alarm function inactive
- on: alarm notification via display, integrated buzzer, interface
- no Sound: alarm notification via display and interface

pH electrode and temperature probe SE100

A high-class, robust and water-proof pH electrode with integrated Pt1000 temperature sensor is included to the measuring set.



Specifications:

Measuring range	
pH	: 0..14 pH
Temperature	: -5..+80 °C
Shaft	: diameter 12 mm length 120 mm
Reference system	: Ag/AgCl
Reference electrolyte	: Gel (KCl), low-maintenance, not refillable
Temperature probe	: Pt1000
Connection	: 1 m fixed cable with BNC plug and banana plug

Buffer solution SPHL

Buffer solution for calibration of pH electrodes

SPL 4: pH 4 (red)	: pH 4.01 (25 °C) ± 0.015
SPL 7: pH 7 (green)	: pH 7.00 (25 °C) ± 0.015
SPL 10: pH 10 (blue)	: pH 10.01 (25 °C) ± 0.030



Buffer solutions, each in 250 ml dosage bottles.
Dosage volumes 20 ml and 25 ml.

Deionized water SDW500

Deionized water for cleansing of electrodes after / during calibration or after soiling.

Water in 500 ml dosage bottles. Guarantee seal 28 mm, dosage volume 20 ml and 25 ml.



KCL electrolyte SKCL

100 ml KCL electrolyte (3mol) for refilling of protection cap for pH electrode.



Case SKK 2019

High-quality case made of robust PP incl. rigid foam inlay with cut-outs for equipment.



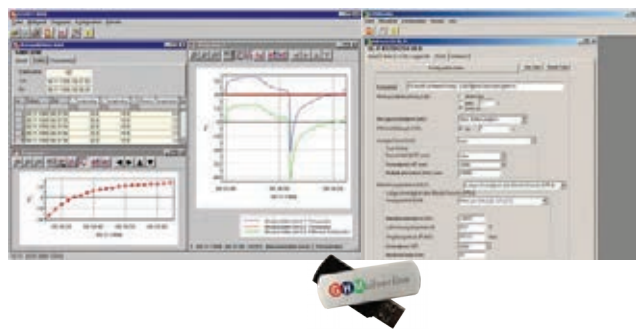
Dimensions : 450 x 360 x 140 mm (H x W x D)

Manufacturer's calibration WSP3 / WSP10

Calibration certificate

WSP3	: included to set and as voucher 3 test values ~4.00 pH, ~6.87 pH, ~9.18 pH
WSP10	: optionally upon surcharge 10 test values from ~1.09 pH till ~12.75 pH

Software GSOF 3050 and GMHKonfig



GSOF 3050

The software allows operation of the logger function of hand-held measuring devices. The logger recording can be started and stopped and the logger data can be read-out and visualized. The multilingual software is executable with Windows 98, Me, NT, 2000, XP, Vista and 7.

The data is read-out via USB interface of a PC by means or an USB adapter and cable (included).

- Display of status information
- Setting of alarm function
- Operation of logger function
- Diagram display of logger data
- Logger data print-out
- Save logger data
- Export of logger data to ASCII (text, usable for MS Excel®)
- Memorizing of window settings
- Display of calibration history (GLP)

GMHKonfig

The software GMHKonfig allows the configuration of hand-held measuring instruments. It automatically detects the connected device type and provides the corresponding functions.

- Device configuration
- Set logger IDs
- Initialization of menu parameters
- etc.

Product information

GHMsilverline hand-held instruments

Adapter and cable SL-USB

Electrically isolated interface converter with power supply via USB incl. connection for analog output.



Consumables

SE100	: pH electrode with temperature probe
SPHL4	: buffer solution pH 4, 250 ml
SPHL7	: buffer solution pH 7, 250 ml
SPHL10	: buffer solution pH 10, 250 ml
SDW500	: deionized water, 500 ml
SKCL	: KCl electrolyte, 100 ml
WSP3	: calibration certificate, 3 test values
WSP10	: calibration certificate, 10 test values

Other set parts upon request.

Scope of supply SL-pH-GL

Device bulk:

- SL-pH (pH / ORP hand-held measuring device),
- Operating manual,
- Short manual,
- Battery 2 x AAA

Scope of supply SL-pH Set

Set:

- SL-pH (pH / ORP hand-held measuring device),
- SE100 (pH electrode with integrated Pt1000 temperature probe),
- SKK 2019 (case incl. inlay),
- SL-USB (adapter and cable),
- Flash drive with GSOFT 3050 (software),
- SPHL (buffer solution pH 4, pH 7, pH 10; each 250 ml),
- SKCL (KCl electrolyte; 100 ml),
- SDW500 (deionized water),
- WSP3 (calibration certificate),
- Voucher for 1x WSP3,
- Operating manual,
- Short manual,
- Battery 2 x AAA

Product key

SL-pH-GL (device bulk)

SL-pH-Set

Accessories

GEH 1

Electrode holder
suitable for electrodes with plastic handle



Product information

GHMsilverline hand-held instruments

Conductivity
- hand-held instrument
SL-C-GL
- full set SL-C Set



- Water-proof and shock resistant instrument
- Water-proof conductivity electrode with temperature sensor
- Control solution 1413 µS/cm
- Software for operation, configuration, data read-out, etc.
- USB adapter
- High-class case
- High resolution (5000 digit per measuring range)
- Calibration certificate
- Gratis calibration after 1 year with automatic recall from calibration laboratory

Characteristic

The SL-C measures conductivity over a wide range (subdivided in 5 measuring ranges), or alternatively salinity, TDS (TDS (total dissolved solids) or conductivity in liquids .

The devices feature min-/max- value memory, HOLD, auto range, logger function with cyclic recording (10 000 data sets) or single values (1 000 data sets), analog output and a large illuminated 4 1/2- digit display.

The device can be optimally adjusted to the specific application via a menu-based configuration. A fully temperature compensated automatic calibration for different standard solutions is supported, alternatively a adjustment by trimming via keys is possible, too. The calibration data is stored in the GLP memory.

The housing, connectors and probes are water-proof.

Specifications

Instrument SL-C



Sensor connection : 7-pole bayonet socket
Output : 4-pole socket for serial interface and supply, analog output 0..1 V
Suitable measuring cells: 4-pole or 2-pole measuring cells with Pt1000 or NTC 10k temperature sensor (without temperature sensor: manual temperature input)

Measuring ranges

Number	5	
Cell constant	0.4.. 1.5	0.04..0.15
Conductivity 1 *)	0.0..500.0 µS/cm	0.00..50.00 µS/cm
" 2 *)	0..5000 µS/cm	0.0..500.0 µS/cm
" 3 *)	0.00..50.00 mS/cm	0..5000 µS/cm
" 4 *)	0.0..500.0 mS/cm	0.00..50.00 mS/cm
" 5 *)	0..1000 mS/cm	---
Specific resistance	0.0010..500.0 kOhm*cm	0.010..5000 kOhm*cm
TDS	0.0..5000 mg/l	0.00..5000 mg/l
Salinity	0.0..70.0 g/kg (PSU)	
Temperature	-5.0.. +100.0 °C, Pt1000 or NTC 10k 23.0..212.0 °F	

Supported cell constants : 4.000..15.000 / cm;
 0.4000..1.5000 / cm;
 0.04000..0.15000 / cm;
 0.004000..0.015000 / cm
 Cell constant manually or automatically via selectable reference solution

Accuracy
Conductivity : ±0.5 % of m.v. ±0.1 % FS (system accuracy depends on electrode)
Temperature : ±0.2 K

Interface / ext. supply : 4-pole bayonet connection for serial interface and supply (USB adapter SL-USB)

Analog output : 0..1 V, adjustable
Display : two 4 1/2 - digit 7-segment displays (15 mm and 12 mm), illuminated (white)

Protection class : IP65 / IP67 (housing and connection)
Housing : material made of shock-resistant ABS w/ support, incl. silicone protection cover

Supply : 2 x AAA battery (incl. in scope of supply) current consumption <6.5 mA (without illumination)

Battery operation : approx. 150 hours
Dimensions : 160 x 86 x 37 mm
Weight : 250 g incl. battery

Product information

GHMsilverline hand-held instruments

Functions

- **Min- / max- value memory**
Highest and lowest value are saved
- **Hold**
Freezing at keystroke
- **Automatic temperature compensation (diverse)**
- **Automatic measuring range switch-over (Auto Range)**
- **Automatic-Off function**
Device gets automatically turned off after selected time. (0..120 min., or deactivated)
- **Status indicator for battery**
Bargraph display, battery change indicator "BAT" display
- **Background illumination**
Duration selectable (on / off or 5 s ... 2 min)
- **GLP**
selectable calibration intervals (1 till 730 days, CAL-warning when due), storage: latest 16 calibrations
- **Analog output**
0..1 V freely scalable, connection: 4-pole bayonet socket
Resolution: 12 bit
- **Data logger**
Measuring value memory:
Cyclic: 10 000 data sets, multiple recordings
Single: 1 000 data sets (with measuring with measuring point input, 40 selectable measuring point texts or numbers)
- **Min- / max- alarm**
Continuous monitoring of alarm boundaries,
3 alarm conditions:
- off: alarm function inactive
- on: alarm notification via display, integrated buzzer and interface
- no Sound: alarm notification via display and interface

Measuring cells:

SLF 425



4-pole standard measuring cell

Features : wide measuring range,
high linearity over all measuring ranges,
laboratory and universal usage,
Ø 16 mm

In contact with fluid : graphite and plastic

Cell constant : 0.42 1/cm

Measuring range : 0-1000 mS/cm

Temperature sensor: Pt1000

SLF 200 RW



2-pole pure / ultra pure water measuring cells

Features : electrode for increased resolution in pure
and ultra pure water measuring ranges
Ø 12 mm

In contact with fluid : stainless steel and Peek

Cell constant : 0.1 1/cm

Measuring range : 0..100.0 µS/cm

Temperature sensor: NTC 10k

SLF 210



2-pole glass/platinum measuring cell

Features : special measuring cell with increase
durability for use in oil, diesel, alcohol,
patrol, acid, etc.
Ø 12 mm

In contact with fluid : platinum and glass

Cell constant : 1 1/cm

Measuring range : 0..1000 µS/cm

Temperature sensor: NTC 10k

Case SKK 0400

High-quality case made of robust PP incl. rigid foam inlay with cut-outs for equipment

Dimensions : 450 x 360 x 110 mm (H x W x D)

Manufacturer's calibration WSC3 / WSC10

Calibration certificate

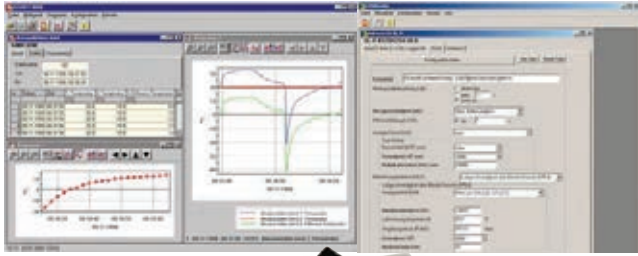
WSC3 : included to set and as voucher
3 test values: ~147 µS/cm,
~1413 µS/cm, ~12.90 mS/cm

WSC10 : optionally upon surcharge
10 test values from 0.9 µS/cm
till ~192 mS/cm

Product information

GHMsilverline hand-held instruments

Software GSOF 3050 and GMHKonfig



GSOF 3050

The software allows operation of the logger function of hand-held measuring devices. The logger recording can be started and stopped and the logger data can be read-out and visualized. The multilingual software is executable with Windows 98, Me, NT, 2000, XP, Vista and 7.

The data is read-out via USB interface of a PC by means of a USB adapter and cable (included).

- Display of status information
- Setting of alarm function
- Operation of logger function
- Diagram display of logger data
- Logger data print-out
- Save logger data
- Export of logger data to ASCII (text, usable for MS Excel®)
- Memorizing of window settings

GMHKonfig

The software GMHKonfig allows the configuration of hand-held measuring instruments. It automatically detects the connected device type and provides the corresponding functions.

- Device configuration
- Set logger IDs
- Initialization of menu parameters
- etc.

Adapter and cable SL-USB

Electrically isolated interface converter with power supply via USB incl. connection for analog output



Consumables

WSC3 : included to set and as voucher
 3 test values: ~147 µS/cm, ~1413 µS/cm, ~12.90 mS/cm
 WSC10 : optional upon surcharge
 10 test values from 0.9 µS/cm till ~192 mS/cm
 Control solution 1413 µS/cm
 Control solution 50 mS/cm

Scope of supply SL-C-GL

Device bulk:

- SL-C (conductivity hand-held measuring device),
- Operating manual,
- Short manual,
- Battery 2 x AAA

Scope of supply SL-C Set

Set:

- SL-C (conductivity hand-held measuring device),
- 1 measuring cell (4-pole graphite, 2-pole stainless steel, or 2-pole glass/platinum)
- SKK0400 (case incl. inlay),
- SL-USB (adapter and cable)
- Flash drive with GSOF 3050 (software)
- WSC3 (calibration certificate)
- Control solution 1413 µS/cm
- Voucher for 1 x WSC3,
- Operating manual
- Short manual
- Battery 2 x AAA

Optional:

Second measuring cell

Measuring cells:

SLF 425: 4-pole measuring cell
 SLF 200 RW: 2-pole pure / ultra pure water measuring cell
 SLF 210: 2-pole glass/platinum measuring cell
 Standard length: each 1 m (lengths up to 10 m available)

Product key

SL-C-GL (device bulk)

SL-C Set - -

1. Measuring cell 1		
425	0-1000 mS/cm	4-pole standard meas. cell
200	0-100 µS/cm	2-pole pure / ultra pure water measuring cell
210	0-1000 µS/cm	2-pole glass/platinum measuring cell

2. Optional measuring cell 2		
425	0-1000 mS/cm	4-pole standard meas. cell
200	0-100 µS/cm	2-pole pure / ultra pure water measuring cell
210	0-1000 µS/cm	2-pole glass/platinum measuring cell

Accessories

GEH 1

Electrode holder suitable for electrodes with plastic handle



Product information

GHMsilverline hand-held instruments

Pressure
- hand-held instrument
SL-P-GL
- full set SL-P Set



- **Water-proof and shock resistant instrument**
- **Pressure sensors**
- **Software for operation, configuration, data read-out, etc.**
- **USB adapter**
- **High-class case**
- **Calibration certificate**
- **Gratis calibration after 1 year with automatic recall from calibration laboratory**

Characteristic

The SL-P measures pressure with external changeable probes. The devices feature min-/max- value memory, HOLD, auto range, logger function with cyclic recording (10 000 data sets) or single values (1 000 data sets), analog output and a large illuminated 4 1/2- digit display.

Pressure probes made of plastic and stainless steel for absolute and relative pressure are suitable changeable probes. The housing, connectors and probes are water-proof.

Specifications

Instrument SL-P



- Sensor connections** : 2
- Sensor : 7-pole bayonet socket
- Output : 4-pole socket for serial interface and supply, analog output 0..1 V
- Suitable measuring cells: stainless steel or plastic sensors
- Measuring ranges : from -1.999..2.500 mbar (0.001 mbar) (Resolution) till 0..1000 bar (1 bar)
- Displayed units** : depends on measuring range selection (depending on sensor) mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH₂O, or freely selectable "user"-unit
- Measuring frequency** : 4 measurements / s or 1000 measurements / s
- Accuracy** : ± 0.1 % FS ± 1 digit
- Display** : two 4 1/2 -digit 7-segment display (15 mm and 12 mm)
- Protection class** : IP65 / IP67 (housing and connections)
- Housing** : material made of shock-resistant ABS w/ support, incl. silicone protection cover
- Supply** : 2 x AAA battery (incl. in scope of supply) current consumption <2.0 mA
- Battery operation** : approx. 500 hours
- Dimensions** : 160 x 86 x 37 mm (H x W x D)
- Weight** : 250 g incl. battery

Functions

- **Min- / max- value memory**
Highest and lowest value are saved
- **Hold**
Freezing at keystroke
- **Automatic-Off function**
Device gets automatically turned off after selected time. (0..120 min., or deactivated)
- **Status indicator for battery**
Bargraph display, battery change indicator "BAT" display
- **Background illumination**
Duration selectable (on / off or 5 s ... 2 min)
- **User-defined display unit**
Conversion to arbitrary unit by linear factor
- **Average value filter** selectable: 1 ... 120 s
- **Leakage-test**
Display of pressure change rate (/s, /min, /h)
- **Air velocity / flow rate**
Measurement via pitot tube (accessories)
- **Analog output**
0.1 V freely scalable, connection: 4-pole bayonet socket
Resolution: 12 bit
- **Data logger**
Measuring value memory:
Cyclic: 8 000 data sets, multiple recordings
Single: 1 000 data sets (with measuring with measuring point input, 40 selectable measuring point texts or numbers)
- **Min- / max- alarm**
Continuous monitoring of alarm boundaries, 3 alarm conditions:
- off: alarm function inactive
- on: alarm notification via display, integrated buzzer, interface
- no Sound: alarm notification via display and interface

continued on next page

Product information

GHMsilverline hand-held instruments

Pressure sensors

The set can be provided with 1 or 2 sensors depending on customers requirements.
 Possible sensors:

Plastic pressure sensors: (with connection cable)



	measuring range	(max.) overload	resolution
Relative pressure sensors			
SL-K01R	-1.999..+2.500 mbar rel.	200 mbar	0.001 mbar
SL-K02R	-19.99..+25.00 mbar rel.	300 mbar	0.01 mbar
SL-K03R	-199.9..+350.0 mbar rel.	1 bar	0.1 mbar
SL-K04R	-1000..+2000 mbar rel.	4 bar	1 mbar
SL-K05R	-1.00..+10.00 bar rel.	10,34 bar	10 mbar
Absolute pressure sensors			
SL-K01A	0..1300 mbar abs.	4 bar	1 mbar
SL-K02A	0..2000 mbar abs.	4 bar	1 mbar
SL-K03A	0.00..7.00 bar abs.	10.34 bar	10 mbar

Specifications

Sensor : piezoresistive pressure sensor
 Pressure connection : 2 connection pin made of nylon for tube 6 x 1 mm (6 mm outer-Ø and 4 mm inner-Ø)
 Electronics : amplifier and data memory for sensor data (measuring range, calibration, etc.)

Accuracy (typ.)

Relative pressure sensor: hysteresis / linearity: ± 0.15 % FS
 temp.influence (0..50 °C) : ± 1.0 % FS
 Absolute press. sensor : hysteresis / linearity: ± 0.15 % FS
 temp.influence (0..50 °C) : ± 0.4 % FS

Working temperature : 0..50 °C
 Relative humidity : 0..95 % RH (non condensing)
 Storage temperature : -40..+85 °C
 Housing : made of ABS with attachment eye
 Dimensions : without connection pins:
 68 x 32.5 x 15 mm (L x W x D),
 with connection pins:
 68 x 32.5 x 27.5 mm(L x W x D)

Weight : 75 g
Device connection : 1 m PVC connection cable, screened,
 permanently fixed with 7-pole bayonet
 plug

Stainless steel pressure sensors: (without connection cable)



	Measuring range	(max.) overload	resolution
Relative pressure sensors			
SL-E01R	-1000..+1500 mbar rel.	10 bar	1 mbar
SL-E02R	-1000..+3000 mbar rel.	17 bar	1 mbar
SL-E03R	0.0..100.0 mbar rel.	1 bar	0.1 mbar
SL-E04R	0.0..250.0 mbar rel.	2 bar	0.1 mbar
SL-E05R	0.0..400.0 mbar rel.	2 bar	0.1 mbar
SL-E06R	0..1000 mbar rel.	5 bar	1 mbar
SL-E07R	0..2500 mbar rel.	10 bar	1 mbar
SL-E08R	0..4000 mbar rel.	17 bar	1 mbar
SL-E09R	0..6000 mbar rel.	35 bar	1 mbar
SL-E10R	0.00..10.00 bar rel.	35 bar	10 mbar
SL-E11R	0.00..25.00 bar rel.	50 bar	10 mbar
SL-E12R	0.00..40.00 bar rel.	80 bar	10 mbar
SL-E13R	0.00..60.00 bar rel.	120 bar	10 mbar
SL-E14R	0.0..100.0 bar rel.	200 bar	0.1 bar
SL-E15R	0.0..160.0 bar rel.	320 bar	0.1 bar
SL-E16R	0.0..250.0 bar rel.	500 bar	0.1 bar
SL-E17R	0.0..400.0 bar rel.	800 bar	0.1 bar
SL-E18R	0.0..600.0 bar rel.	1200 bar	0.1 bar
SL-E19R	0..1000 bar rel.	1500 bar	1 bar
Absolute pressure sensors			
SL-E01A	0..1000 mbar abs.	5 bar	1 mbar
SL-E02A	0..2500 mbar abs.	10 bar	1 mbar
SL-E03A	0..4000 mbar abs.	17 bar	10 mbar
SL-E04A	0..6000 mbar abs.	35 bar	10 mbar
SL-E05A	0.00..10.00 bar abs.	35 bar	10 mbar
SL-E06A	0.00..16.00 bar abs.	80 bar	10 mbar
SL-E07A	0.00..25.00 bar abs.	50 bar	10 mbar

Specifications

Sensor : pressure sensor made of stainless steel (parts in contact with media), suitable for aggressive media, water, etc.
 Pressure connection : connection thread G 1/8
 Electronics : amplifier and data memory for sensor data (measuring range, calibration, etc.), electronics encapsulated

Accuracy (typ.)

Hysteresis / linearity : ± 0.15 % FS
 TK zero point / slope : ± 0.02 % FS / K
 Measuring media temp. : -25..+100 °C
 (compensated range: 0..70 °C)

Working temperature : -20..+80 °C
 Storage temperature : -40..+80 °C
 Housing : made of CrNi-steel or Elgiloy (parts in contact with media)

Dimensions : 88.5 mm, Ø 27 mm
 Weight : ca. 220 g
 Protection class : IP67 (sensor)
Cable connection : M16-panel plug

Connection cable for steel pressure sensors SL-EK01

PVC connection cable, screened with 7-pole bayonet plug and M16-socket, cable and bayonet plug water-proof acc. to IP 67.
 Standard length: 1 m (lengths up to 10 m possible)

Product information

Case SKK2020

High-quality case made of robust PP incl. rigid foam inlay with cut-outs for equipment.

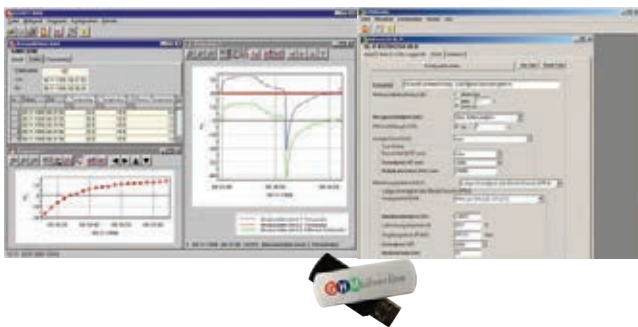
Dimensions:
 450 x 360 x 140 mm (H x W x D)



Manufacturer's calibration WSD5 / WSD10

- Calibration certificate
- WSD5** : included to set and as voucher
 5 test values raising, 5 falling
 - WSD10** : optionally upon surcharge
 10 test values raising, 10 falling

Software GSOFT 3050 and GMHKonfig



GSOFT 3050

The software allows operation of the logger function of hand-held measuring devices. The logger recording can be started and stopped and the logger data can be read-out and visualized. The multilingual software is executable with Windows 98, Me, NT, 2000, XP, Vista and 7.

The data is read-out via USB interface of a PC by means of an USB adapter and cable (included).

- Display of status information
- Setting of alarm function
- Operation of logger function
- Diagram display of logger data
- Logger data print-out
- Save logger data
- Export of logger data to ASCII (text, usable for MS Excel®)
- Memorizing of window settings

GMHKonfig

The software GMHKonfig allows the configuration of hand-held measuring instruments. It automatically detects the connected device type and provides the corresponding functions.

- Device configuration
 - Set logger IDs
 - Initialization of menu parameters
- etc.

Adapter and cable SL-USB

Electrically isolated interface converter with power supply via USB incl. connection for analog output



GHMsilverline hand-held instruments

Consumables

- WSD5 : calibration certificate for 5 test points raising, 5 falling
- WSD10 : calibration certificate for 10 test points raising, 10 falling
- Pressure sensors : all pressure sensors (plastic or stainless steel) according to table at page 11
- SL-EK01 : PVC connection cable for stainless steel sensors, standard length: 1m (lengths up to 10 m possible)

Scope of supply SL-P-GL

- Device bulk:**
- SL-P (pressure hand-held measuring device),
 - Operating manual,
 - Short manual,
 - Battery 2 x AAA

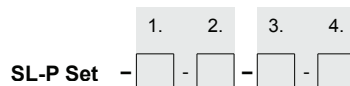
Scope of supply SL-P Set

- Set:**
- SL-P (pressure hand-held measuring device),
 - 1 pressure sensor (plastic or stainless steel),
 - SKK (case incl. inlay),
 - SL-USB (adapter and cable),
 - Flash drive with GSOFT 3050 (software),
 - WSD5 (calibration certificate),
 - Voucher for 1x WSD5,
 - Operating manual,
 - Short manual,
 - Battery 2 x AAA

- Optional:**
 Second pressure sensor (plastic or stainless steel)

Product key

SL-P-GL (device bulk)



1. Pressure sensor 1		
K01R	-1.999..+2.500 mbar rel.	plastic sensor
K02R	-19.99..+25.00 mbar rel.	plastic sensor
K03R	-199.9..+350.0 mbar rel.	plastic sensor
K04R	-1000..+2000 mbar rel.	plastic sensor
K05R	-1.00..+10.00 bar rel.	plastic sensor
K01A	0..1300 mbar abs.	plastic sensor
K02A	0..2000 mbar abs.	plastic sensor
K03A	0.00..7.00 bar abs.	plastic sensor
E01R	-1000..+1500 mbar rel.	st. steel sensor
E02R	-1000..+3000 mbar rel.	st. steel sensor
E03R	0.0..100.0 mbar rel.	st. steel sensor
E04R	0.0..250.0 mbar rel.	st. steel sensor
E05R	0.0..400.0 mbar rel.	st. steel sensor
E06R	0..1000 mbar rel.	st. steel sensor
E07R	0..2500 mbar rel.	st. steel sensor
E08R	0..4000 mbar rel.	st. steel sensor
E09R	0..6000 mbar rel.	st. steel sensor
E10R	0.00..10.00 bar rel.	st. steel sensor
E11R	0.00..25.00 bar rel.	st. steel sensor

Product information

GHMsilverline hand-held instruments

E12R	0.00..40.00 bar rel.	st. steel sensor
E13R	0.00..60.00 bar rel.	st. steel sensor
E14R	0.0..100.0 bar rel.	st. steel sensor
E15R	0.0..160.0 bar rel.	st. steel sensor
E16R	0.0..250.0 bar rel.	st. steel sensor
E17R	0.0..400.0 bar rel.	st. steel sensor
E18R	0.0..600.0 bar rel.	st. steel sensor
E19R	0..1000 bar rel.	st. steel sensor
E01A	0..1000 mbar abs.	st. steel sensor
E02A	0..2500 mbar abs.	st. steel sensor
E03A	0..4000 mbar abs.	st. steel sensor
E04A	0..6000 mbar abs.	st. steel sensor
E05A	0.00..10.00 bar abs.	st. steel sensor
E06A	0.00..16.00 bar abs.	st. steel sensor
E07A	0.00..25.00 bar abs.	st. steel sensor
2. Connection cable for stainless steel pressure sensor 1		
0	no connection cable (plastic sensors)	
EK01	1 connection cable with 1m length	
EKxx	1 connection cable with xx m length (02..10 m length possible)	

Pressure sensor 2 (optional) incl. calibration certificate		
3. Pressure sensor 2		
0	no second pressure sensor	
K01R	-1.999..+2.500 mbar rel.	plastic sensor
K02R	-19.99..+25.00 mbar rel.	plastic sensor
K03R	-199.9..+350.0 mbar rel.	plastic sensor
K04R	-1000..+2000 mbar rel.	plastic sensor
K05R	-1.00..10.00 bar rel.	plastic sensor
K01A	0..1300 mbar abs.	plastic sensor
K02A	0..2000 mbar abs.	plastic sensor
K03A	0.00..7,00 bar abs.	plastic sensor
E01R	-1000..+1500 mbar rel.	st. steel sensor
E02R	-1000..+3000 mbar rel.	st. steel sensor
E03R	0.0..100.0 mbar rel.	st. steel sensor
E04R	0.0..250.0 mbar rel.	st. steel sensor
E05R	0.0..400.0 mbar rel.	st. steel sensor
E06R	0..1000 mbar rel.	st. steel sensor
E07R	0..2500 mbar rel.	st. steel sensor
E08R	0..4000 mbar rel.	st. steel sensor
E09R	0..6000 mbar rel.	st. steel sensor
E10R	0.00..10.00 bar rel.	st. steel sensor
E11R	0.00..25.00 bar rel.	st. steel sensor
E12R	0.00..40.00 bar rel.	st. steel sensor
E13R	0.00..60.00 bar rel.	st. steel sensor
E14R	0.0..100.0 bar rel.	st. steel sensor
E15R	0.0..160.0 bar rel.	st. steel sensor
E16R	0.0..250.0 bar rel.	st. steel sensor
E17R	0.0..400.0 bar rel.	st. steel sensor
E18R	0.0..600.0 bar rel.	st. steel sensor
E19R	0..1000 bar rel.	st. steel sensor
E01A	0..1000 mbar abs.	st. steel sensor
E02A	0..2500 mbar abs.	st. steel sensor
E03A	0..4000 mbar abs.	st. steel sensor
E04A	0..6000 mbar abs.	st. steel sensor
E05A	0.00..10.00 bar abs.	st. steel sensor
E06A	0.00..16.00 bar abs.	st. steel sensor
E07A	0.00..25.00 bar abs.	st. steel sensor
4. Connection cable for stainless steel pressure sensor 2		
0	no connection cable (plastic sensors)	
EK01	1 connection cable with 1m length	
EKxx	1 connection cable with xx m length (02..10 m length possible)	

Ordering example:

SL-P Set – K05R-0 – E07A-EK02

Set with two sensors (1x plastic sensor, 1x stainless steel sensor with 2 m connection cable)

Accessories

Prandtl-tube

for measuring of air velocity / flow rate

GDZ-01

PVC tube 6/4 (6 mm outer-Ø, 4 mm inner-Ø)
(5 bar at 23 °C)

GDZ-05

Screw connection for tube 6/4 with outside thread G ¼

GDZ-07

Adapter reducing tube with 6 mm inner- Ø to tube 6/4

GDZ-14

Screw-in grommet for tube with 6/4 with outside thread G ¼

GDZ-16

Screw-in grommet for tube with 6/4 with outside thread G ¼

GDZ-18

Tube clamp for tube 6/4

GDZ-20

Screw-on connection made of brass for tube 6/4 with inside thread G ¼

GDZ-21

T-piece for tube 6/4

GDZ-23

Adapter G ½ inside to G ¼ outside, made of brass

Product information

GHMsilverline hand-held instruments

Temperature
- hand-held instrument
SL-Pt eco-GL
- full set
SL-Pt eco Set



- **Water-proof and shock resistant instrument (with silicone protection cover)**
- **Water-proof Temperature probe**
- **High-class case**
- **Calibration certificate**
- **Gratis calibration after 1 year with automatic recall from calibration laboratory**

Characteristic

The SL-Pt eco measures temperature with a potential-free Pt1000 probe. Handle and probe cable are made of Teflon and are adequate for applications at high temperatures up to 250 °C. The housing and probe are water-proof.

The device features high accuracy, min-/max- value memory, hold-function, low current consumption and a selectable auto-off function.

The SL-Pt eco can be used for quality management (**HACCP**) and for monitoring of production processes in medical, pharmaceutical or food industries.

Specifications

Instrument SL-Pt eco

Measuring range	: -200.0..+250.0 °C
Resolution	: 0.1 °C
Accuracy	
at -20.0..+100.0 °C	: ±0.1 °C ±1 digit
at -70.0..+200.0 °C	: ±0.1 % of m.v. ±2 digit
Response time T₉₀	: approx. 10 s
Display	: two 4-digit LCD display (12.4 mm and 7 mm)
Supply	: 2 x AAA battery
Battery operation	: > 6000 hours
Protection class	: IP65 / IP67
Dimensions	: 160 x 86 x 37 mm (H x W x D)
Weight	: 220 g incl. battery and probe



Functions

- **Min- / max- value memory**
Highest and lowest value are saved
- **Hold / Auto-Hold**
Automatic measured value stability detection
- **Automatic-Off function**
Device gets automatically turned off after selected time. (0..120 min., or deactivated)
- **Battery change indicator "BAT"**
- **Calibration (zero point and slope)**

Temperature probe



A robust and water-proof Pt1000 temperature sensor (permanently fixed to device) is included to measuring set.

Specifications:

Sensor element	: Pt1000, 2-wire, potential free, water- and steam-proof, permanently fixed to device, Ø 3 mm / length: 100 mm
Handle	: handle made of Teflon with 1 m Teflon cable w/ stainless steel bend protection, adequate for applications at permanent temperatures up to 250 °C

Case SKK 2007

High-quality case made of robust PP incl. rigid foam inlay with cut-outs for equipment.



Dimensions	: 340 x 275 x 83 mm (H x W x D)
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Manufacturer's calibration WST3

Calibration certificate	
WST3	: included to set and as voucher 3 test values -20 °C, 0 °C, +70 °C

continued on next page

Product information

GHMsilverline hand-held instruments

Consumables

WST3 : calibration certificate, 3 test values

Scope of supply SL-Pt eco-GL

Device bulk:

- SL-Pt eco (temperature hand-held measuring device incl. probe),
- Operating manual,
- Short manual,
- Battery 2 x AAA

Scope of supply SL-Pt eco Set

Set:

- SL-Pt eco (temperature hand-held measuring device incl. probe),
- SKK 2007 (case incl. inlay),
- WST3 (calibration certificate),
- Voucher for 1x WST3,
- Operating manual,
- Short manual,
- Battery 2 x AAA

Product key

SL-Pt eco-GL (device bulk)

SL-Pt eco Set

Product information

GHMsilverline hand-held instruments

Product Overview

„Industrial Sensors and Instrumentation“

- Temperature
- Flow
- Level / Filling Height
- Analysis
- Humidity
- Pressure
- Weighing Instruments



„Process Instrumentation “Hygienic Design“

- GHMadapt
- Temperature
- Flow
- Level / Filling Height
- Analysis



“Laboratory Instrumentation“



„Industrial Electronics“

- Displays / Controller
- Transmitter / Signal conditioning
- Isolating converters
- Safety and Monitoring Devices
- Power Electronics
- Calibration and Testing



“Measuring Data Acquisition“

- Data Logging and Monitoring
- Test Bench Measurement Technology
- Renewable Energies

