

# ELECTROCHEMISTRY

## BOECO PORTABLE PH/ORP/TEMP METER MODEL PT-380

- ▶ Simultaneous displays pH or mV and temperature.
- ▶ Convenient calibration with automatic buffer recognition of European and US buffer sets. Calibration data is stored in memory and is ready for use on power up.
- ▶ Automatic or manual temperature compensation
- ▶ Automatic lock mode and end point sensing are available to lock in stable readings.
- ▶ 50 data set reviewable memory.
- ▶ Automatic shut off function (30 minutes of non-use)
- ▶ Battery life 1000 hours
- ▶ Low battery indicator
- ▶ IP65 waterproof case

The PT-380 will be delivered incl. the following standard accessories:  
1 x ATC probe 6000AST, each 1 x 100 ml BOECO Buffer solution pH 4,01, pH 7,00, 1 x 9 V battery, 1 x operating manual, 1 x carrying case

### Specification:

**pH**  
**Range** -2 to 16,00 pH  
**Resolution** 0,01 pH  
**Accuracy** ± 0,01 ± 1 digit

**mV**  
**Range** -1999 to 1999 mV  
**Resolution** 1 mV  
**Accuracy** ± 0,1 %

**Temperature**  
**Range** -10,0 to 120,0 °C  
**Resolution** 0,1 °C  
**Accuracy** ±0,5 %

pH buffer recognition: US (4,01, 7,00, 10,01)  
NIST (4,00, 6,86, 9.18) user selectable

pH electrode offset Recognition: ±90mV at pH 7,00 or 6.86

pH electrode slope Recognition: ±30% at pH 4,00, 4,01, 9,18 or 10,01

pH temp. compensation: Auto / manual -10,0 to 120 °C

Input Impedance: 10<sup>12</sup> ohms

Temperature sensor: Thermistor, 10K ohms at 25°C

RS 232 interface: no

Power requirement: 9 Volt battery

Dimensions (LxWxH): 198x70x37 mm

Weight: 0,26 kg (1 x 9V Battery included)

Code	Description
BOE 5190380	Portable pH/ORP/Temperature meter, model PT-380 in carrying case with standard accessories without electrode



BOECO PORTABLE PH/  
ORP/TEMP METER  
MODEL PT-380



## BOECO ELECTRODES

The electrodes are not included with the pH meters and have to be ordered separately:

Code	Description
BOE 5190600	Basic pH combination electrode, BA ECO plastic PC shaft, gel electrolyte, 0...14 pH, 0...80°C, with BNC plug, 1m cable, glass sensor
BOE 5095695	Basic pH combination electrode BA 25, Noryl plastic shaft, gel electrolyte, 0...14 pH, -5...80°C, with BNC plug, 1m cable, fibre diaphragm
BOE 5095626	Basic pH combination electrode BA 17, glass shaft, liquid electrolyte, 0...14 pH, 0...100°C, with BNC plug, 1m cable. With leak proof refill opening, platinum diaphragm



BOECO ELECTRODES

## BOECO PH/MV/ION/TEMP BENCH TOP METER MODEL BT-675

- ▶ Large display with backlight
- ▶ Simultaneous display of pH / ORP and temperature readings
- ▶ Dual buffer set selection: (4,01, 7,00 10,01) or 4,00, 6,86, 9,18)
- ▶ Calibration data is stored in memory and is ready for use on power up.
- ▶ Resolution to 0,1 mV for Ion measurement
- ▶ Automatic or manual temperature compensation
- ▶ Automatic lock mode and end point sensing are available to lock in stable readings
- ▶ AC adaptor or battery power (low battery indicator)
- ▶ IP54 waterproof case

The BT-675 will be delivered incl. the following standard accessories:

1 x ATC probe, each 1 x 500 ml Buffer solution pH 4,01, pH 7,00  
1 x AC adaptor, 1 x operating Manual, 1 x flexible electrode holder. 6 x 1,5 V AAA batteries

### Specification:

#### pH

##### Range

0 to 14,00 pH

##### Resolution

0.01 pH

##### Accuracy

± 0,01

#### mV

##### Range

-1999,9 to 1999,9 mV

##### Resolution

0,1 mV

##### Accuracy

± 0,4 mV (-1500,0 -1500,0);  
± 1 mV (-1999,9 - -1500,0  
and 1500,0 - 1999,9)

#### Temperature

##### Range

0,0 to 100,0°C

##### Resolution

0,1°C

##### Accuracy

±0,2°C

pH buffer recognition:

US (4,01, 7,00, 10,01) or  
NIST (4,00, 6,86, 9,18) user selectable  
0 - 60,0 °C

Buffer temp. range

pH calibration

1,2 or 3 point calibration

pH electrode offset

Recognition:

±1,50 pH

pH electrode slope

Recognition:

±30% at pH 4,00, 4,01, 9,18 or 10,01

pH temp. compensation:

Auto / manual 0,0 to 100°C

Input impedance:

10<sup>12</sup> ohms

Temperature sensor:

Thermistor, 10K ohms at 25°C

RS 232 interface:

no

Power requirement:

6 x 1,5 Volt AAA batteries or AC adaptor

Dimensions (LxWxH):

150 x 203 x 72 mm

Weight:

0,54 kg (batteries included)

BT-675

### Code

### Description

BOE 5196750	Bench Top pH/mV/Ion/Temp Meter, Model BT-675, AC adaptor with EURO plug with standard accessories, without electrode
BOE 5196751	Bench Top pH/mV/Ion/Temp Meter, Model BT-675, AC adaptor with US plug with standard accessories, without electrode

# BOECO MULTIPARAMETER PH/ORP/ CONDUCTIVITY/TDS/SALINITY/RESISTIVITY/ TEMP. BENCH TOP METER MODEL MBT-700

- ▶ LCD with backlight showing pH / ORP or Conductivity / TDS / Salinity and temperature readings
- ▶ Two channel measurement allows measuring pH/ORP and Conductivity/TDS/ Salinity simultaneously
- ▶ Up to 5 point calibration for pH and one point calibration for conductivity
- ▶ Automatic or manual temperature compensation
- ▶ Automatic buffer recognition (NIST and USA)
- ▶ Bluetooth function to connect to smartphone, tablets or PC
- ▶ When the unit is connected to a bluetooth device, the user can store data into the device that meets GLP requirements.

The MBT-700 will be delivered incl. the following standard accessories:  
1 x ATC probe, each 1 x 500 ml Buffer solution pH 4,01, pH 7,00  
1 x AC adaptor, 1 x operating manual, 1 x flexible electrode holder

## Specification:

### Conductivity K = 0,475

Range	Resolution	Accuracy
0,0 to 475µS/cm	0,1µS/cm	±1% of reading +2µS/cm
475 to 4750µS/cm	1µS/cm	±1% of reading +5µS/cm
4,75 to 47,50mS/cm	0,01mS/cm	±1% of reading +0,05mS/cm
47,5 to 200,0mS/cm	0,1mS/cm	±2,5% of reading +0,5mS/cm

### Conductivity K = 0,1

Range	Resolution	Accuracy
0.00 to 99,99µS/cm	0,01µS/cm	±1% of reading
100 to 200µS/cm	0,1µS/cm	±1% of reading

### TDS

Range	Resolution	Accuracy
0,001mg/l to 200,0g/l	0,001/0,01/0,1/1mg/l	±0,5% Full Scale 0.01/0,1 g/l

### Salinity

Range	Resolution	Accuracy
0.0 to 80,0 ppt	0,1 ppt	±0,5 % Full Scale

### pH

Range	Resolution	Accuracy
-2,00 to 16,00 pH	0,01 pH	±0,01pH

### mV

Range	Resolution	Accuracy
-1999,9 to 1999,9 mV	0,01 mV	±0,05% Full Scale

### Temperature

Range	Resolution	Accuracy
-10,0 to 120,0°C	0,1°C	±0,4°C

pH buffer recognition:	US (1,68 4,01, 7,00, 10,01, 12,46 or NIST (1,68, 4,00, 6,86, 9,18, 12,46)
mV Offset	±150 mV
pH calibration:	Up to 5 points
Conductivity Calibration:	1 point in each range
ATC :	Auto / manual 0,0 to 120°C
Input impedance:	>3x10 <sup>12</sup> ohms
Temperature sensor:	Thermistor, 10K ohms at 25°C
Memory:	When the unit is connected to a bluetooth device, the user can store data into the device that meets GLP requirements
pH electrode connection:	BNC
Conductivity cell connection:	6 PIN connector
Connectivity:	Bluetooth
Power requirement:	6 x 1,5 Volt AAA Alkaline batteries or AC adaptor
Dimensions (LxWxH):	210 x 150 x 45 mm
Weight (net):	approx. 430 g

## Code

## Description

BOE 5197700	Bench Top pH/mV/Ion/Temp Meter, Model MBT-700, AC adaptor, with standard accessories
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Available Q4/2018 !



PH/TEMP. TESTER PT-70 WITH REPLACEABLE ELECTRODE

ELECTRODE MODULE

**PH/TEMP. POCKET TESTER PT-70**

with replaceable electrode

- ▶ Large display screen - displays pH and temperature at the same time
- ▶ 1, 2 or 3 point calibration, with automatic buffer recognition of US and NIST buffer sets
- ▶ Readings are automatically compensated for temperature (ATC)
- ▶ Electrode efficiency display
- ▶ Replaceable electrode module ensures extended usefulness
- ▶ IP67 water-tight housing
- ▶ Auto power off after 10 minutes of inactivity
- ▶ Battery life over 200 hours

**Specification:**

Modes:		pH, °C
Ranges:	pH	0 to 14 pH
	Temp.	-9,9...99,9 °C
Resolution:	pH	0,01 pH
	Temp.	0,1 °C
Accuracy:	pH	± 0,02 pH ± 1 digit
	Temp.	± 0,3 °C ± 1 digit
Temperature compensation:		Auto from -9,9 to 99,9°C
pH buffer recognition:		US (pH 4.01, 7,00 10,01) NIST (pH 4,00, 6,86, 9,18)
Buffer temp range:		0,0 - 60 °C
Input impedance:		> 10 <sup>12</sup> ohms
pH calibration:		1, 2 or 3 point calibration
pH electrode offset recognition:		±90mV at pH 7,00 ±98,3mV to -81,7mV at pH 6,86
pH electrode slope recognition:		±30% at pH 4,00; 4,01; 9,18 and 10,01
Power:		4 x LR44 bottom cell batteries
Dimensions :		193 x 44 x 25 mm
Weight :		105 grams (incl. batteries)

**Code****Description**

BOE 5190070	PH/Temp. Tester PT-70
BOE 5190071	Spare pH electrode module PT-70-1 for PT-70

**TECHNICAL BUFFER SOLUTIONS**

In square plastic bottles, PE, 500 ml, labeled with an individual batch no. on the bottles, traceable to SRM of NIST

**Code****Description**

BOE 104000	pH 4,00 (20°C), 500 ml
BOE 107000	pH 7,00 (20°C), 500 ml
BOE 110000	pH 10,00 (20°C), 500 ml
BOE 104004	pH 4,00 (20°C), 500 ml, red colour coded
BOE 107006	pH 7,00 (20°C), 500 ml, green colour coded
BOE 110008	pH 10,00 (20°C), 500 ml, blue colour coded

**CONDUCTIVITY CALIBRATION SOLUTIONS**

In square plastic bottles, PE, 250 ml, labeled with an individual batch no. on the bottles, traceable to PTB and NIST

**Code****Description**

BOE 300141	1,413 mS/cm KCL 0,01 mol/l (25°C), 250 ml
BOE 301288	12,88 mS/cm KCL 0,1 mol/l (25°C), 250 ml
BOE 311180	111,8 mS/cm KCL 1 mol/l (25°C), 250 ml

**ELECTROLYTE SOLUTION**

In square plastic bottles, PE, 500 ml, labeled with an individual batch no. on the bottles

**Code****Description**

BOE 400300	Potassium chloride 3 mol/l, 500 ml
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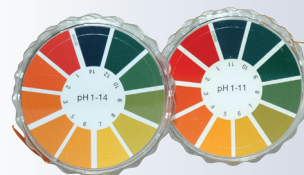
## PH INDICATORS

pH-Fix is the most popular indicator stick for all purposes. The indicator dyes are chemically bound to the cellulose fibres, avoiding bleeding even in strong alkaline samples. Presentation: Box of 100 sticks 6 x 85 mm

Code	Description
M-N 92110	pH-Fix 0-14, pH Graduation 1,0

The budget priced universal indicator papers can be used for most standard applications. For each pH-value these papers show a single colour which can be matched with the colour scale at an interval of 1 pH-unit. Presentation: Reel of 5 m length and 7 mm width

Code	Description
M-N 90201	pH-Universal Indicator Paper, pH 1-11, pH Graduation 1,0
M-N 90204	pH-Universal Indicator Paper, pH 1-14, pH Graduation 1,0/2,0



PH INDICATORS

## BOECO PORTABLE DO/TEMP. METER MODEL DO-580

- ▶ Simultaneous display of dissolved oxygen and temperature measurements
- ▶ Automatic temperature compensated (ATC) dissolved oxygen readings
- ▶ User selectable salinity and pressure compensated dissolved oxygen readings
- ▶ Works with accurate and reliable galvanic dissolved oxygen probes
- ▶ 50 data set reviewable memory
- ▶ Automatic shut off function (30 minutes of non-use)
- ▶ Battery life approx. 200-500 hours
- ▶ Low battery indicator
- ▶ IP65 waterproof case

### Specification:

#### Dissolved Oxygen (ppm)

Ranges	0,00 to 20,00 ppm (mg/L)
Resolution	0,01 ppm (mg/L)
Accuracy	±2 % of the reading or ±0,2 ppm

#### Dissolved Oxygen (%)

Ranges	0,0 to 200,0 %
Resolution	0,1 %
Accuracy	±2 % of the reading or ±0,2 air saturation

#### Temperature

Ranges	-6 to 46,0 °C
Resolution	0,1°C
Accuracy	±0,3 °C ±1 digit

Pressure compensation: 600 to 1100 mBar (450 to 825 mmHg)

Salinity compensation: From 0,0 to 40,0 ppt

Electrode type: Galvanic

Temperature sensor: Thermistor, 10K ohms, at 25 °C

Calibration backup: Yes

Automatic temp. comp: Yes

Power: 9 Volt battery

Size (LxWxD): 198x70x37 mm

Weight: 0,26 kg (1 x 9V Battery included)

The DO-580 will be delivered incl. the following standard accessories:  
1 x Watertight dissolved oxygen probe LD-900G-1, 1 x 30 ml Galvanic O<sub>2</sub> Fill Solution, 1 x 9 V battery, 1 x Operating manual, 1 x carrying case

Code	Description
BOE 5190580	Portable DO/Temperature Meter, Model DO-580 in carrying case with dissolved oxygen probe LD-900G-1



BOECO PORTABLE DO/TEMP METER MODEL DO-580





BOECO PORTABLE CONDUCTIVITY/  
TDS/SALINITY/TEMP METER  
MODEL CT-480



## BOECO PORTABLE CONDUCTIVITY/TDS SALINITY/TEMP. METER MODEL CT-480

- ▶ Simultaneous displays of conductivity, salinity or TDS with temperature measurements.
- ▶ Convenient one point calibration. Calibration data is stored in memory and is ready for use on power up.
- ▶ Adjustable TDS coefficient, reference temperature and temperature coefficient
- ▶ Uses one conductivity cell for conductivity, salinity and TDS measurement
- ▶ Accepts 4-wire conductivity cells with  $k=0,475$  cell constant and 2-wire  $K=0,1$  cell constant for improved flexibility and accuracy
- ▶ 50 data set reviewable memory
- ▶ Automatic shut off function (30 minutes of non-use)
- ▶ Battery life approx. 200 -500 hours
- ▶ Low battery indicator
- ▶ IP65 waterproof case

### Specification:

#### Conductivity K = 0,475

Range	Resolution	Accuracy
0,0 to 475 $\mu$ S/cm	0,1 $\mu$ S/cm	$\pm 1\%$ of reading +2 $\mu$ S/cm
475 to 4750 $\mu$ S/cm	1 $\mu$ S/cm	$\pm 1\%$ of reading +5 $\mu$ S/cm
4,75 to 47,50mS/cm	0,01mS/cm	$\pm 1\%$ of reading +0,05mS/cm
47,5 to 200,0mS/cm	0,1mS/cm	$\pm 2,5\%$ of reading +0,5mS/cm

#### Conductivity K = 0,1

Range	Resolution	Accuracy
0,00 to 99,99 $\mu$ S/cm	0,01 $\mu$ S/cm	$\pm 1\%$ of reading
100 to 200 $\mu$ S/cm	0,1 $\mu$ S/cm	$\pm 1\%$ of reading

#### Salinity

Range	Resolution	Accuracy
0,0 to 70,0 ppt	0,1 ppt	$\pm 0,2\%$ Full Scale

#### Temperature

Range	Resolution	Accuracy
-10,0 to 90,0 °C	0,1 °C	$\pm 0,2\%$ or $\pm 4\%$ Full Scale whichever is greater

Reference Temp.:	From 15,0 to 25,0°C, default is 25,0°C
Temperature Coefficient:	From 0,00 to 4,00 °C, default is 1,91°C
TDS Constant:	From 0,30 to 1,00, default is 0,65
Cell Constant	4 wire conductivity cell: $K = 0,475$
ATC	Thermistor, 10K ohms, at 25°C
Power	9 Volt battery
Size (LxWxD)	196x70x37 mm
Weight	0,26 kg (1 x 9V Battery included)

The CT-480 will be delivered incl. the following standard accessories:  
1 x 4-wire conductivity cell 3020P with  $k=0,475$   
1 x 9 V battery, 1 x operating manual, 1 x carrying case

Code	Description
BOE 5190480	Portable Conductivity/Salinity/TDS/Temperature Meter, Model CT-480 in carrying case with 4-wire Conductivity Cell 3020P with 6 PIN connector, $K=0,475$ (50 $\mu$ S - 200mS/cm)

#### Optional Conductivity Cell:

BOE 5190109	2-wire Conductivity Cell 109P with 6 PIN connector, $K=0,1$ (0,0 - 200,0 $\mu$ S/cm)
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## BOECO BENCH TOP CONDUCTIVITY/ TDS/ SALINITY/TEMP. METER MODEL CT-676

- ▶ Simultaneous displays of conductivity, salinity or TDS with temperature measurements.
- ▶ Convenient one point calibration. Calibration data is stored in memory and is ready for use on power up.
- ▶ Adjustable TDS coefficient, reference temperature and temperature coefficient
- ▶ Uses one conductivity cell for conductivity, salinity and TDS measurement
- ▶ Accepts 4-wire conductivity cells with  $k=0,475$  cell constant and 2-wire  $K=0,1$  cell constant for improved flexibility and accuracy
- ▶ Low battery indicator
- ▶ IP54 waterproof case

### Specification:

#### Conductivity K = 0,475

Range	Resolution	Accuracy
0,0 to 475 $\mu$ S/cm	0,1 $\mu$ S/cm	$\pm 1\%$ of reading +2 $\mu$ S/cm
475 to 4750 $\mu$ S/cm	1 $\mu$ S/cm	$\pm 1\%$ of reading +5 $\mu$ S/cm
4,75 to 47,50mS/cm	0,01mS/cm	$\pm 1\%$ of reading +0,05mS/cm
47,5 to 200,0mS/cm	0,1mS/cm	$\pm 2,5\%$ of reading +0,5mS/cm

#### Conductivity K = 0,1

Range	Resolution	Accuracy
0.00 to 99,99 $\mu$ S/cm	0,01 $\mu$ S/cm	$\pm 1\%$ of reading
100 to 200 $\mu$ S/cm	0,1 $\mu$ S/cm	$\pm 1\%$ of reading

#### Salinity

Range	Resolution	Accuracy
0,0 to 70,0 ppt	0,1 ppt	$\pm 0,2\%$ Full Scale

#### Temperature

Range	Resolution	Accuracy
-10,0 to 90,0 $^{\circ}$ C	0,1 $^{\circ}$ C	$\pm 0,2\%$ or $\pm 4\%$ Full Scale whichever is greater

Reference Temp.:	From 15,0 to 25,0 $^{\circ}$ C, default is 25,0 $^{\circ}$ C
Temperature Coefficient:	From 0,00 to 4,00 $^{\circ}$ C, default is 1,91 $^{\circ}$ C
TDS Constant:	From 0,30 to 1,00, default is 0,65
Cell Constant	4 wire conductivity cell: K = 0,475
ATC	Thermistor, 10K ohms, at 25 $^{\circ}$ C
Power Requirement:	6 x 1,5 Volt AAA batteries or AC adaptor
Dimensions (LxWxH):	150 x 203 x 72 mm
Weight:	0,54 kg (6 x 1,5 V AAA Batteries included)

The CT-676 will be delivered incl. the following standard accessories:  
 1 x 4-wire conductivity cell 3020P with  $k=0,475$ , 6 x 1,5V AAA batteries,  
 1 x operating manual, 1 x flexible electrode holder

Code	Description
BOE 5196760	Bench Top Conductivity/Salinity/TDS/Temperature Meter, Model CT-676 with 4-wire Conductivity Cell 3020P with 6 PIN connector, $K=0,475$ (50 $\mu$ S - 200mS/cm), with EURO plug
BOE 5196761	Idem, with US plug AC adaptor

#### Optional Conductivity Cell:

BOE 5190109	2-wire Conductivity Cell 109P with 6 PIN connector, $K=0,1$ (0,0 - 200,0 $\mu$ S/cm)
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CT-676