Toshcon®

MANUAL

BLACKPEARL 27

"Fast Bhi! Smart Bhi!"

ELECTRO CHEMISTRY & WATER

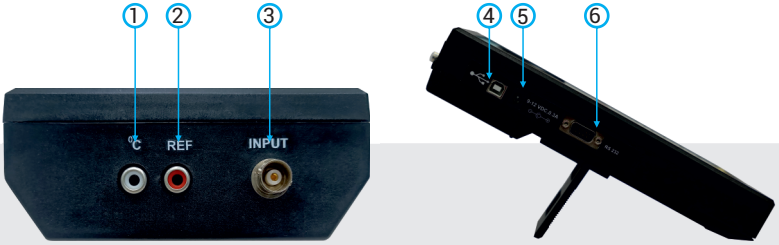
ANALYTICAL INSTRUMENTS

BLACK PEARL 27 SERIES

Portable µP Multi-Parameter
pH/ORP/Cond./TDS/Salinity/Resistivity
/Dissolved Oxygen/Ion/Temperature

INDIA'S FIRST ELECTROCHEMISTRY METER WITH

- **"30 Sec"** measurement
- **"6 Click"** Calibration
- **European** technology



01 | White RC Plug
02 | Red RC Plug Reference Electrode
03 | BNC Plug, 10^{-12} Ω
04 | USB Port connection to a Computer
05 | Power Supply
06 | RS232 interface for connection to a printer

Inputs

Measurement	BNC Plug, 10^{-12} Ω
Temperature	White RC Plug, for Pt1000
Reference	Red RC Plug

Outputs

Port -> USB interface for connection to a computer.

Port -> Rs232 interface for connection to a printer.

Keyboard

MODE
Selects the settings or escapes from error traps, calibration procedures, etc. by returning to the original mode.

↓
Buttons for browsing between the selected modes, for entering a value or for selecting a function.

OK
Proceeds a function.

CAL
Starts a calibration.

STORE
Stores the displayed value or send it to a computer or printer.

HOLD
Holds display when measuring.

⏻ Switches the instrument On or Off.

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INTRODUCTION

This instrument is manufactured with the latest technology and needs no particular maintenance. **TOSHCON** certifies that this instrument was thoroughly inspected and tested at the factory prior to shipment and found to meet all requirements defined by contract under which it is furnished. However, dimensions and other physical characteristics may differ. The normal operating temperature should be between 0° and 40°C. Never use the instrument in a room with high humidity (>95%) or at very low temperatures (condensation water!).

WARRANTY

This instrument (excluding all accessories) is warranted against defective material and workmanship for a period of **2 Years** from the date of shipment ex factory. **TOSHCON** will repair all defective equipment returned to it during the warranty period without charge, provided the equipment has been used under normal laboratory conditions and in accordance with the perating limitations and maintenance procedures in this instruction manual and when not having been subject to accident, alteration, misuse or abuse. A return authorisation must be obtained from **TOSHCON** before returning any product for warranty repair on a freight prepaid basis! **TOSHCON** is not liable for consequential damages arising out of the use or handling of its products.

SERVICING

In the event of this instrument being returned for servicing, the owner is requested to remove the power supply lead and NOT to send the following items unless they are suspect:

Manual
Cables
Accessories.

If serious malfunctioning occurs, stop using the unit immediately and consult your local **TOSHCON** dealer.

BATTERIES

The batteries can be replaced by opening the bottom compartment of the cabinet. Only use NiMH

AC ADAPTOR

Connect the mains adapter to the DC socket. Do not hold the adapter by wet hand.

Installation of the instrument

Inputs

The measuring electrodes should be connected to the coaxial input. Automatic temperature compensation and measurement are possible by connecting a Pt1000 temperature compensator to the RC connectors °C. Without compensator, the manual temperature compensation is automatically switched on.

Output

A standard RS232 output terminal (DP9) is provided for interfacing the instrument with a printer or computer. Data is sent in the ASCII code at a BAUD rate of 300...9600 bps (8 bit, no parity, 1 stop bit).

Serial port pin out specifications:

- Pin 1: Connected to pin 4 and pin 6
- Pin 2: TxD, transmit data
- Pin 3: RxD, receive data
- Pin 4: Connected to pin 1 and pin 6
- Pin 5: Gnd, signal ground
- Pin 6: Connected to pin 1 and pin 4
- Pin 7: Connected to pin 8
- Pin 8: Connected to pin 7

System

1. Select **[MENU]** by pressing **MODE**.
2. Select **[SYSTEM]** and press **OK.**
3. Follow the instructions on the screen to adjust language, contrast and automatic power-off timer.

Language

1. Press **MODE.**
2. Select **[MENU]** and press **OK.**
3. Select **[SYSTEM]** and press **OK.**
4. Select **[LANGUAGE]** and press **OK.**
5. Select the desired language and press **OK.**

Date and time

1. Press **MODE.**
2. Select **[MENU]** and press **OK.**
3. Select **[SYSTEM]** and press **OK.**
4. Select **[DATE/TIME]** and press **OK.**
5. Select **[MODIFY]** and press **OK.**
6. Adjust date and time and press **OK.**

Password

1. Press **MODE.**
2. Select **[MENU]** and press **OK.**
3. Select **[SYSTEM]** and press **OK.**
4. Select **[PASSWORD]** and press **OK.**
5. A private code can be programmed to avoid undesired access to the instrument. Select **[YES]** and press **OK** to enter your secret sequence of 5 keys.

User standard tables

1. Press **MODE.**
2. Select **[MENU]** and press **OK.**
3. Select **[USER TABLES]** and press **OK.**
4. Select **[pH buffers]** or **[S/cm standards]** and press **OK.**
5. Follow the instructions on the screen to enter the different values. The value for 25°C is obligatory!

pH Calibration Process

STEP 1

Connect to the power supply through Adaptor

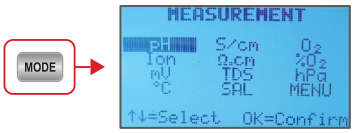
[210...250 VAC, 50/60Hz | Low Voltage 9...15 VDC] Rechargeable Battery 4 x 1.2V, AA, NiMH

STEP 2

Press **[ON/OFF]** Switch

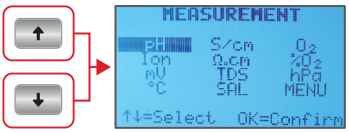
STEP 3

Press **[MODE]** Switch



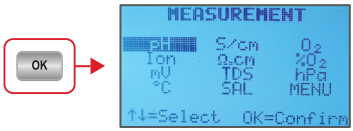
STEP 4

Select **[pH]**



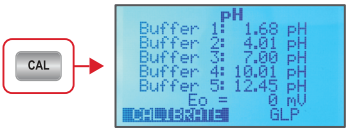
STEP 5

Press **[OK]** Switch



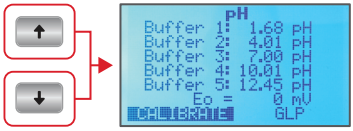
STEP 6

Press **[CAL]** Switch



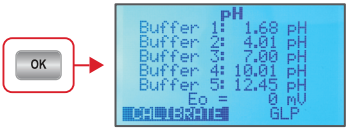
STEP 7

There are 11 pre-programmed feeds; you can select & calibrate any 2, 3, or 5 points as needed.



STEP 8

Select Calibration option press **[OK]** switch



STEP 9

Rinse electrode and temp. probe, immerse it into **Buffer 1 : 1.68 pH**
Press **[OK]**

STEP 10

Rinse electrode and temp. probe, immerse it into **Buffer 2 : 4.01 pH**
Press **[OK]**

STEP 11

Rinse electrode and temp. probe, immerse it into **Buffer 3 : 7.00 pH**
Press **[OK]**

STEP 12

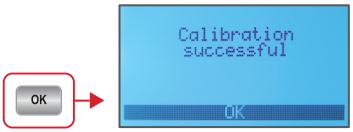
Rinse electrode and temp. probe, immerse it into **Buffer 4 : 10.01 pH**
Press **[OK]**

STEP 13

Rinse electrode and temp. probe, immerse it into **Buffer 5 : 12.45** pH Press **[OK]**

STEP 14

pH 5 point calibration successful press **[OK]** switch.



Now you can check measurement sample

pH/ORP/temperature Measurement

pH measurement

1. Select the desired mode (pH) by pressing **MODE**. The display will immediately show the measured value according to the previous calibration. Should you want to re-calibrate, press **CAL.**
2. The instrument permits to choose between the buffers in memory (1.68, 2.00, 4.00, 4.01, 6.87, 7.00, 9.18, 9.21, 10.01, 12.00, 12.45 + up to 5 user tables). Select the proper values and press **OK.** The unused buffers should be switched **OFF.**
3. Rinse the electrodes with distilled water and then immerse them in the first buffer solution. Select **[CALIBRATE]**, press **OK** and follow the instructions on the screen until the calibration is finished.
4. After rinsing the electrodes with distilled water, immerse them in the samples and read the display.
5. Rinse the electrodes always with distilled water after use and store them in a 3...4 M KCI solution.

   A blinking decimal point warns you for unstable measurements.

   Wait to read the display!

   - Stirring the solution during the measurements promotes the homogeneity and is obligatory!
   - The instrument will refuse automatic calibration when the electrode is unstable. Insufficient stirring or a worn electrode may be the cause.

Using pH electrodes with an abnormal zero point

1. Press **CAL.**
2. Select [Eo = x mV] and press **OK.**
3. Enter the zero point of the electrode and press **OK.**

   • Hold **MODE** pressed and press ↓ to change the resolution from 0.1 to 0.001 pH.

ORP measurement

1. Select the desired mode (mV) by pressing **MODE**. The display wil immediately show the measured value according to the previous calibration. Should you want to re-calibrate, press **CAL.**
2. Immerse the electrodes in a standard solution of known potential. Select **[CALIBRATE]** & press **OK.**

   Adjust to the proper value and press **OK.**

   • Select **[RESET]** and press **OK** to reset the calibration.

   • Hold **MODE** pressed and press ↑↓ to change the resolution from 1 to 0.1 mV.

Temperature measurement

1. Select the desired mode (°C) by pressing MODE. Should you want to recalibrate, press **CAL.**
2. Immerse the Pt1000 in a solution of known temperature. Select **[CALIBRATE]** and press **OK.** Adjust to the proper value and press **OK.**

   • Select **[RESET]** and press **OK** to reset the calibration.

   • Without Pt1000, press **CAL,** adjust the manual temperature compensation & proceed by pressing **OK.**

Maintenance of electrodes

pH electrodes

A pH electrode is active and stable only after wetting ! For this purpose it must be immersed for at least ten hours in a 3...4 M KCl solution. During short interruptions (e.g. storage) the electrode should be immersed in a 3...4 M KCl solution. In doing this it is always kept ready for use. When the interruption is longer than a month, refill the closing cap with 3...4 M KCl and plug it on the electrode tip in order to protect the glass bulb. Before use, ensure that the reference part of the electrode is topped up with a 3...4 M KCl solution.

Avoid a low pressure inside the electrode ! Therefore always remove the closure from the refilling aperture during the measurements as well as during the calibration. This allows the saltbridge solution to flow through the ceramic liquid junction and prevents contamination of the electrolyte. For the same reason, the inside level should always be higher than the outside level of the measuring solution. Close the refilling aperture again when storing the electrode.

A polluted electrode may be cleaned with a soft detergent or 0.1 M HCl. Greasy substances may be removed with acetone or alcohol **(never do this with plastic electrodes !).** If the electrode is polluted by proteinaceous materials (such as blood), it should stand in a cleaning solution overnight and then be cleaned with distilled water before use. The pH electrode wears away by being used. If the electrode tends to respond slower and calibration becomes difficult, even after cleaning, it should be replaced by a new one.

ORP electrodes

Metal electrodes (Pt, Ag, Au) are always ready for use. During short interruptions they are immersed in distilled water. **They should be cleaned regularly :**

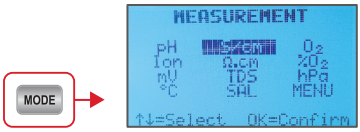
- Silver electrodes are immersed in a concentrated ammonia solution during one hour.
- Platinum or gold electrodes are immersed in concentrated nitric acid during one hour

Conductivity/TDS/Salinity/Resistivity measurement

Conductivity Calibration Process

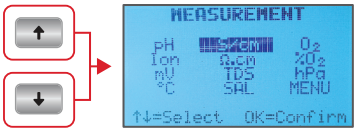
STEP 1

Press **[MODE]** Switch



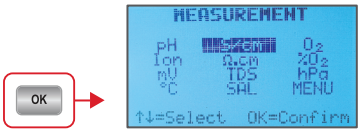
STEP 2

Select **[CONDUCTIVITY]**



STEP 3

Press **[OK]** Switch



STEP 4

Select **[CAL]** Switch

STEP 5

Any can select & calibrate any 1,2 or 3 points as needed

Standard - 1 0.01M KCL 1413 µS/cm

Standard - 2 0.10M KCL 12.88 mS/cm

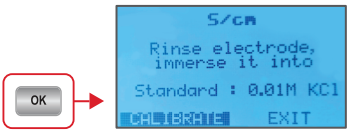
Standard - 3 1.00M KCL 111.8 mS/cm

STEP 6

Rinse the electrode and Temp. Probe emerge in

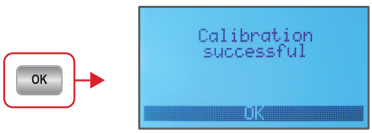
Standard - 1 0.01M KCL 1413 µS/cm

Press **[OK]** Switch



STEP 7

Conductivity 1Point calibration
Successful press **[OK]** switch



Now you can check measurement sample

Conductivity/TDS/ Salinity/Resistivity measurement

Conductivity measurement

1. Select the desired mode (S/cm) by pressing **MODE.** The display will immediately show the measured value according to the previous calibration. Should you want to recalibrate, press **CAL.**
2. The instrument permits to choose between the standards in memory (1413 µS/cm, 12.88 mS/cm, 111.8 mS/cm + up to 3 user tables). Select the proper values and press **OK.** The unused standards should be switched off.
3. After rinsing the electrode several times with the first standard solution, immerse it in that standard. The solution temperature is not so critical but should lie between 0°C and 40°C. When no Pt1000 is used, do not forget to compensate manually first! Select **[CALIBRATE],** press **OK** and follow the instructions on the screen until the calibration is finished.
4. Rinse the electrode several times with the sample, immerse it in that solution and read the display.
5. Rinse the electrode always after use and store it in distilled water (add some detergent to keep the spongy platinum surface in perfect condition).

- A blinking decimal point warns you for unstable measurements. Wait to read the display!
- Stirring the solution during the measurements promotes the homogeneity and is obligatory!
- The instrument will refuse automatic calibration when the electrode is unstable.
- Insufficient stirring or a worn electrode may be the cause.
- When starting a titration, hold **MODE** pressed and press ↓ to lock the actual range and avoid cross-over errors due to differences in the measuring frequency. Hold **MODE** pressed and press ↓ to return again to the normal measuring mode.

Temperature compensation

1. Press **CAL.**
2. Select **[REF.]** and press **OK.**
3. Select temperature to which all future measurements will be referred to (25°C or 20°C) & press **OK.**

Capacitive compensation

1. Capacitive compensation increases accuracy in the very low conductivity ranges (<10 µS/cm). Select whether or not this compensation should be applied. Verify if the attached electrode is completely dry and press **CAL.**
2. Select **[CAP. COMP.]** and press **OK.**
3. Select **[YES]** or **[NO]** and press **OK.** Follow the instructions on the screen.

TDS measurement

1. Select the desired mode (mg/l) (TDS) by pressing **MODE**. The display will immediately show the measured value.

Salinity measurement

Select the desired mode (SAL) by pressing **MODE.** The display will immediately show the measured value.

Resistivity measurement

Select the desired mode (Ω.cm) by pressing **MODE**. The display will immediately show the measured value.

- To browse between conductivity, resistivity, salinity or TDS, hold **MODE** pressed & press sequentially.

Maintenance of electrodes

Conductivity electrodes

A conductivity cell is active and stable only after wetting ! For this purpose it must be Immersed for at least one hour in distilled water. Rinse the cell always after use and store it in distilled water (add some detergent to keep the spongy platinum surface in perfect condition).

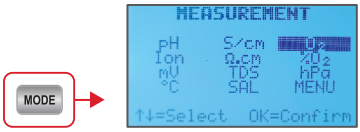
A polluted cell may be cleaned with a soft detergent or diluted nitric acid. Greasy substances may be removed with acetone or alcohol (never do this with plastic electrodes!).

Dissolved Oxygen measurement

Dissolved Oxygen Calibration Process

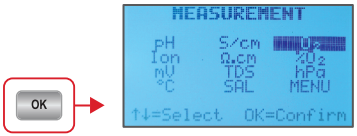
STEP 1

Select **[O_2 / %O_2]** by ressing **MODE.**



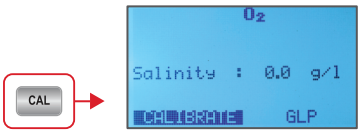
STEP 2

Press **[OK]** Switch



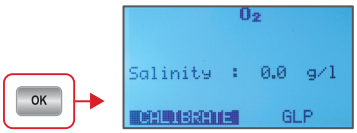
STEP 3

Select **[CALIBRATE],** press **CAL**



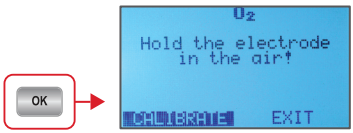
STEP 4

Select salinity value correction as desired with ↓↑Key if needed
Press **[OK]** Switch



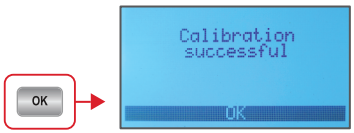
STEP 5

Hold the Electrode in the air
Press **[OK]** Switch



STEP 6

Dissolved Oxygen **1 point** calibration successful press **[OK]** switch.



Now you can check measurement sample

Dissolved Oxygen/ Air Pressure Measurement

Dissolved oxygen measurement

1. Select the desired mode (ppm) or (%O^2) by pressing **MODE**. The display will immediately show the measured value according to the previous calibration. Should you want to re-calibrate, press **CAL.**
2. The display shows the salinity correction. Select the proper value and press **OK**. Leave salinity correction to zero unless you are going to measure in heavily salted solutions such as e.g. sea-water (35 g/l). Select **[CALIBRATE],** press **OK** and follow the instructions on the screen until the calibration is finished.
3. The electrode exposed to the air reaches an equilibrium corresponding to the partial pressure of oxygen and thus to saturation in water at the given temperature. The instrument shows the measured saturation, current, temperature, and will calibrate automatically when readings are stable.
4. After rinsing the electrodes with distilled water, immerse them in the samples and read the display. Stirring the solution during the measurements promotes the homogeneity and is ! The advection rate must be at least 10 cm/s.
5. Rinse the electrode always after use and store it in distilled water.

- A blinking decimal point warns you for unstable measurements. Wait to read the display !
- Stirring the solution during the measurements promotes the homogeneity and is therefore always recommended.
- Hold **MODE** pressed and press ↓ to change the resolution from 0.1 to 0.01 ppm or from 1 to 0.1%.

Air pressure measurement

1. Select the desired mode (hPa) by pressing **MODE**. Should you want to recalibrate, press **CAL.**
2. Select **[CALIBRATE]**, press **CAL**, adjust to the real air pressure and press **OK.**

- Select [RESET] and press **OK** to reset the calibration.

Principle

The oxygen meter and its electrode function according to the Clark principle with silver as cathode and lead as anode in an electrolyte cell. Oxygen gas present in the electrolyte is reduced to OH ions at the cathode. The resulting current is diffusion limited and therefore proportional to the oxygen concentration in the sample solution. This current is amplified, corrected, and displayed in mg/l, ppm or % dissolved oxygen.

Interferences

All substances which can diffuse through the membrane and for which 800 mV potential suffices for polarographic reduction, will be reduced in the electrode. This will give a corresponding current contribution, if they are present. Interference can be caused by ions entering the electrode through porous or mechanically damaged membranes and by diffusion of other reactive gases apart from oxygen, e.g. CO_2, Cl_2, SO_2, and H_2S. These substances react in undesired manner with the electrode. Acidic or basic gases change the pH value of the electrolyte solution and thus disturb the reading, particularly when measuring small oxygen concentrations. High salt concentrations in the sample solution can falsify readings too.

Maintenance of electrodes

Dissolved oxygen electrodes

A dissolved oxygen electrode is active and stable only when polarised ! The electrode body has almost unlimited life and requires no maintenance. After prolonged use of the electrode, it may become deactivated. An indication is that the electrode no longer responds correctly to calibration. In this case:

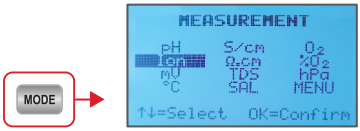
1. Carefully screw off the measuring head.
2. Cautiously remove the precipitated deposits with the aid of filter paper. **Do not use grinding paper or a glass fibre !**
3. Rinse several times with distilled water and shake carefully off the water drops.
4. Take the measuring head, fill it with new electrolyte solution and very slowly screw it onto the electrode while holding it vertically.
5. Let the electrode rest for a few hours! The electrode is now ready for use again.
    - Replace the membrane only when damaged, **NOT** when calibration is no longer possible !

Ion Measurement Process

Ion Calibration Process

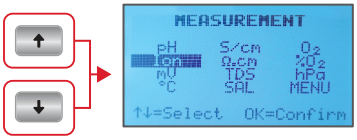
STEP 1

Press **[MODE]** Switch



STEP 2

Select **[ION]** Switch



STEP 3

Step Press **[OK]** Switch

STEP 4

Press **[CAL]** Switch

STEP 5

Select required Ion

STEP 6

You can select & calibrate
any 2, 3, or 5 points as needed.

STEP 7

Select Calibration option
Press **[OK]** Switch

STEP 8

Rinse electrode and temp. probe,
immerse it into **Standard 1 : 100 µg/l**
Press **[OK]**

STEP 1

Step Rinse electrode and temp. probe, immerse it into **Buffer 2: 1mg/l,** Press **[OK]**

STEP 2

Step Rinse electrode and temp. probe, immerse it into **Buffer 3: 10mg/l,** Press **[OK]**

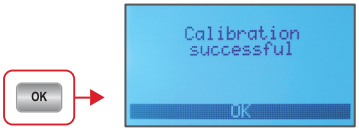
STEP 3

Step Rinse electrode and temp. probe, immerse it into **Buffer 4: 100mg/l,** Press **[OK]**

STEP 4

Step Rinse electrode and temp. probe, immerse it into **Buffer 5: 1g/l,** Press **[OK]**

Ion 5 point calibration Successful press **[OK]** switch.



Now you can check measurement sample

Calibration and measurement

1. Select the desired mode by pressing ↓↑ The display will immediately show the measured value according to the previous calibration. Should you want to recalibrate, press **CAL.**
2. The instrument permits to choose between the possible standards (1, 10, 100 ng/l, 1, 10, 100 µg/l, 1, 10, 100 mg/l, 1, 10, 100 g/l). Select the proper values and press **OK.** The unused standards should be switched off.
3. Select **[CALIBRATE]** and press **OK.**
4. After rinsing the electrodes with distilled water, immerse them in the first standard solution. Select the first calibration value and press **OK** when readings are stable. Go on in the same way with the next standard solutions.
5. Decide whether a blank correction should be carried out or not. Follow the instructions on the screen. After rinsing the electrodes with distilled water, immerse them in a blank solution. When readings are stable press **OK.**
6. Rinse the electrodes with distilled water, immerse them in the samples, and read the concentration on the display.

- Maintenance: we refer to the manual supplied with the ion specific electrodes.

Important Features

Adjustable Contrast

This feature gives users control over the clarity and ease of viewing the display, reducing eye strain and improving the visual experience in different environments.

Selectable resolution

Users can select the resolution of **pH/mV to 0.1 / 0.01 / 0.001 pH and 1 / 0.1 mV** by pressing the combination of the keys which suits best their needs.

User standard table

Users can define and select non-standard pH and conductivity buffers for calibration if they cannot find these buffers as standard options for instrument calibration.

Individual (Segmented) Slope

It is preferred over Avg. slope for high precision measurement under controlled conditions.

Factory reset

A factory reset on a pH meter restores all user settings and configurations back to their default factory values. It's often used as a troubleshooting step when the pH meter is not performing as expected.

Time interval – store value

This feature also helps in tracking changes in pH over time, which is critical in processes where pH control is vital. It allows the device to store readings automatically at set time intervals. This is useful for applications where continuous monitoring of pH is required, such as in water treatment plants, fermentation processes, or environmental testing.

Free PC software with Instrument

The software typically enables data logging, real-time monitoring, exporting data (Like CSV, Excel and Pdf) and detailed analysis of pH readings. Users can transfer stored data from the pH meter to a PC for further examination, report generation, or record keeping.

Good laboratory practice

1. Select the desired range by pressing **MODE** and then press **CAL.**
2. Select **[GLP]** and press **OK.**
3. Select **[SHOW REPORT]** and press **OK.** Browse with to show a complete calibration report.
4. Select **[SEND REPORT]** and press **OK** to send the report to a computer.

Calibration reminder

1. Select the desired range by pressing **MODE** and then press **CAL.**
2. Select **[GLP]** and press **OK.** Select **[INTERVAL]** and press **OK.**
3. Select the desired time interval between each automatic warning for a new calibration of the electrodes and press **OK.**

Data storage in the internal memory

1. 1. Press **MODE.**
2. 2. Select **[MENU]** and press **OK.**
3. 3. Select **[DATA]** and press **OK.**

Start the data-logging

1. Select **[ACTIVATE]** and press **OK.**
2. Decide whether data-logging should be carried out or not and press **OK.**
3. Select **[CONTINUOUS]** and press **OK.**
4. Decide whether the oldest data should be overwritten when the memory limit is reached or not and press **OK.**
5. Select **[INTERVAL]** and press **OK.**
6. Select the desired time interval between the data-logging and press **OK.**
7. Return to the measurements by pressing **MODE.**
8. The data-logging starts according to the previous settings while the display shows the logging-number e.g. **[LOG.00027]**.

Process the stored values

1. Select **[PROCESS]** and press **OK.**
2. Select [**TABLE] or [SEND]** to display or send the stored data & press **OK** to continue. Follow the instructions on the screen.

Erase the stored values

1. Select **[PROCESS]** and press **OK.**
2. Select **[ERASE]** and press **OK.** Follow the instructions on the screen.

External storage in a computer using USB

1. Press **MODE.** Select **[MENU]** and press **OK.**
2. Select **[USB]** and press **OK.** Select **[INTERVAL]** and press **OK.**
3. Select the desired interval between the transmitted data and press **OK.** Preset to zero if no automatic transmitting is required.
4. Select **[BAUD]** and press **OK.**
5. Select the desired transmission rate and press **OK.**

Rs232 interface for connection to a printer

1. Select **[MENU]** by pressing **MODE.** Select **[RS232]** and press **OK.**
2. Select **[BAUDRATE]** and press **OK.** Select the desired baudrate and press **OK.**
3. Select **[INTERVAL]** and press **OK.**
4. Select the desired interval between the transmitted data and press **OK** Presetto zero if no automatic transmitting is required.
5. Select **[IDENTIF. No.]** and press **OK.** Enter an identification number for the transmitted data and press **OK.**

Specifications

pH	
Range	-2...+20 pH
Resolution	0.001 pH
Accuracy	0.1% ± 1 Digit
Calibration	1...5 Points
Buffers	11 Pre-programmed
Temperature Compensation	-5...+105°c
ISO-PH	6...8 pH
Slope	80...120%
ORP	
Range	±2000 mV
Resolution	0.1 mV
Accuracy	0.1% ± 1 Digit
Calibration	1 Point
CONDUCTIVITY	
Range	0...2000 mS/cm
Resolution	0.001 µs/cm
Accuracy	0.5% F.S. Of Range
Calibration	1...3 Point
Standards	0.01/0.1/1M KCL, 3 User Specified
Cell Constant	0.1/1/10 cm^{-1} ± 30%
Temperature Compensation	-5...+105°c
Reference Temperature	20° Or 25°c
Temperature Coefficient	Natural Waters (En27888)
Range Lock	✓
Capacitive Compensation	✓
RESISTIVITY	
Range	0...200 MΩcm
Resolution	1 Ω.cm
SALINITY	
Range	0...70 ppt
Resolution	0.1 ppt
TDS	
Range	0 ... 100 g/l
Resolution	0.01 mg/l
DISSOLVED OXYGEN	
Range	0...60 mg/l (0...600%)
Resolution	0.01 mg/l (0.1%)
Accuracy	1% ± 1 Digit
Calibration	1 Point
Temperature Compensation	0...50°c
Salinity Compensation	0...40 ppt
AIR PRESSURE COMPENSATION	
Range	600...1300 hpa
Calibration	1 Point

Specifications

ION	
Range	0.01 ng/l...100 g/l
Resolution	3 digits
Accuracy	0.5% ± 1 digit
Calibration	2...5 points + blank
TEMPERATURE	
Range	-5...+105°C
Resolution	0.1°C
Accuracy	0.3°C
Calibration	1 point
INPUTS	
pH/mV/ Conductivity/ Dissolved Oxygen/Ion	BNC, 10^{12} Ω
Temperature	White RC Plug, for Pt1000
CALIBRATION	
Reminder	0...999 h
GLP	✓
DISPLAY	
LCD	240x64 pixels each
White Backlight	✓
Hold Function	✓
Selectable Resolution	✓
Real Time Clock	✓
USB Port	✓
Interface with computer	✓
RS232 Printer Port	
Baud Rate	1200...115200 b/s
DATA-LOGGING	
Values	12,000 + °C/date/time
Manul or Timed	✓
Interval	1...9999 s
SECURITY	
Identification number	✓
Password protection	✓
AMBIENT CONDITIONS	
Temperature	0...40°C
Humidity	0...95%, non-condensing
POWER SUPPLY	
Mains	210...250 VAC, 50/60 Hz
Low Voltage	9...15 VDC
BATTERY RECHARGEABLE	4 x 1.2V, AA, NiMH
DIMENSIONS (WxDxH)	25x12x5 cm
WEIGHT Meter	635 gm

NOTES

Toshcon®

BLACKPEARL 27

"Fast Bhi! Smart Bhi!"

Welcome to the BLACKPEARL family!

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to unlock your exclusive
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