

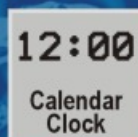


*Quality. Service. Value.*

# *smartCHEM Series Professional Analytical Instruments*



[www.tps.com.au](http://www.tps.com.au)





## Good Laboratory Practices (GLP)

To comply with GLP guidelines, the date, time and results of the last calibration are stored in memory, along with the instrument's serial number. This data can be displayed or sent to the serial port. All readings stored in memory are stamped with the date, time and a log number. Warning of failed calibration is provided.

New for the **smartCHEM** series is the Calibration Alarm. This can be activated for any one or more parameters the user chooses, and can be set to Daily, 1 Weekly, 2 Weekly or 4 Weekly. When calibration is due, the instrument displays a message at turn-on, indicating which parameters need to be calibrated. During normal measurement, the decimal points flash for any parameter that is yet to be calibrated. The message "Cal Now" is also displayed. The Calibration Alarm can be disabled for those users who do not wish to use it.

## Notepad

The **smartCHEM** series is equipped with a Notepad function that can store up to 2730 sets of readings, depending on model. Simply press the "Store" button during normal measurement and all readings plus date and time will be stored into the Notepad memory.

## Automatic Datalogging

In addition to the Notepad function, the **smartCHEM** series can also be programmed to automatically log readings into memory at user-set intervals. Once the Automatic Datalogging function is programmed, simply press the "AutoLog" button to start and stop logging as required. The instrument will stop logging if the memory is filled.

Alternatively, the **smartCHEM** series can be set to log directly to the serial port, which can be connected to a printer or computer. Using a computer to store the readings provides virtually limitless data storage capability.

## Automatic Stability Function

The new Automatic Stability Function (ASF) makes taking readings absolutely simple. While readings are still drifting, the display shows a cross and highlights all unstable parameters. The highlighting is only removed when a parameter stabilises so the user can see at a glance which parameters are still drifting. When ALL the readings have fully stabilised, the ASF system will freeze the display and show a tick. The readings can then be recorded as required.

If ASF is activated before pressing the "Store" button, the instrument will automatically record all readings plus the date and time into memory as soon as all parameters become stable.

If ASF is activated before pressing the "AutoLog" button, the instrument will log readings into memory or to the serial port according to the user-set datalogging program. When all readings are stable, the instrument will stop logging. This is particularly useful where end-point determinations are being made.

To help ensure the most accurate possible results, ASF is set to extra fine sensitivity during calibration.

The user can enable or disable the ASF system as required.

## P.I.N. Code Security Access

Due to popular demand, P.I.N. code security access is being provided by TPS for the first time in a laboratory instrument. This feature prevents unauthorised users from entering the menu system. The instrument can therefore not be re-calibrated, have its memory erased or user settings changed without the P.I.N. code. The one-touch keys are still available during normal measurement to allow all users to carry out day-to-day work.

The Security Access feature can be enabled or disabled as required.

## Multiple Outputs

The capabilities of the **smartCHEM** Series have been expanded with the RS232 Serial port, which is standard equipment (cable sold separately). All readings stored in memory can be downloaded to a Serial printer or a computer. The Serial port also allows the **smartCHEM** Series to log directly to the printer or computer. For those users who do not have a spare Serial port, an additional adaptor is available to plug the instrument into a USB port. **WinTPS** Communication software for Windows 95 or later is available.

An optional analogue recorder output can also be fitted. This provides an interface with pen type recorders or dataloggers with analogue input for any one parameter at a time. The user is able to program which parameter is sent to the recorder output.

A polarisation output makes it possible to use **smartCHEM** units which have a Millivolt mode for moisture measurements using the Karl Fischer titration method.

## Australian Made

The **smartCHEM** Series is proudly designed and manufactured in Australia. Our aim is to provide you with the best quality, service and value for money. The TPS Quality System has been certified in accordance with the AS/NZS ISO 9001 standard. Since 1968, TPS has built a reputation for excellent backup service that is second to none. The **smartCHEM** Series sets the standard for high performance analytical instruments.

## User-friendly

The 240 x 64 dot graphic display features a user-friendly menu system. Full text prompting and error messages are provided. The graphic capabilities of the display allow for 11.1 mm or 7.4 mm digit size, depending on model. The snapshots below are 1:1 scale illustrations of the **smartCHEM** displays. Note that all readings plus date and time are displayed simultaneously for all models.

A full function keypad with raised, tactile buttons is provided. The Menu and Function keys are used to navigate the menu system. Several One-Touch keys are provided for instant access to often-used functions. The numeric keys are used to enter user settings such as buffers, standards etc and include a decimal point and delete key.

### *Actual size of display characters for smartCHEM - pH, smartCHEM - Ion, smartCHEM - C, smartCHEM - CP and smartCHEM - D*

#### *smartCHEM - pH*

TPS

7.00<sub>P</sub>H      25.0°C  
31/12/02  
12:00:00

*pH - mV - Temperature*

### *Actual size of display characters for smartCHEM - Lab and smartCHEM - Ion3*

#### *smartCHEM - Lab*

TPS

100.0%S      2.76mS  
7.00<sub>P</sub>H1      4.00<sub>P</sub>H2  
25.0 °C      31/12/02  
12:00:00

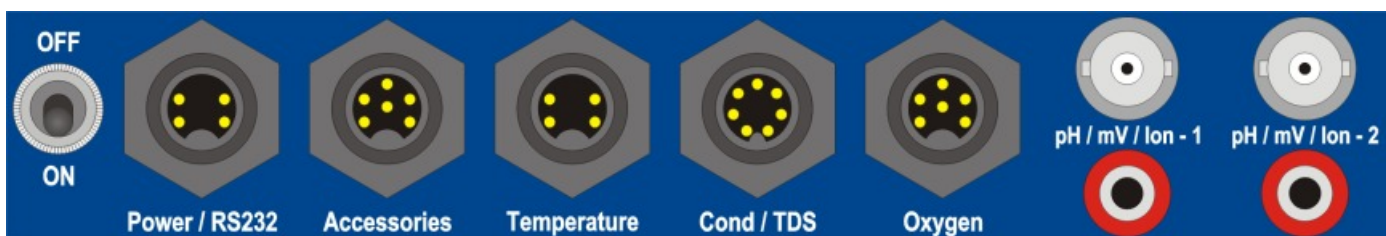
*Laboratory Analyser*

## Waterproof Construction

At TPS we know that working in wet areas is sometimes unavoidable. The **smartCHEM** Series is therefore designed for the harshest of operating conditions. The **smartCHEM** enclosure and connectors are waterproof to IP65. Chemically resistant, plastic connectors with gold plated contacts are used where possible.

TPS uses the latest microprocessor electronics to totally eliminate moving parts in the **smartCHEM** Series. There are no internal or external adjustments, resulting in excellent long term reliability.

### *Waterproof connectors and power switch (smartCHEM-Lab shown)*



# smartCHEM Series General Specifications

## Enclosure

Rugged ABS plastic construction. Case, keypad and connectors waterproof to IP65.

## Display

240 x 64 dot graphic display featuring...

- Simultaneous display of all parameters, plus date and time.
- User-friendly menu and help system.
- Large, bold digits - 11.1 or 7.4 mm depending on model.
- Power efficient EL backlight, which can be set to On, Off or Energy Saver modes.
- Energy Saver mode automatically switches backlight off if a key has not been pressed for 5 minutes.

## Memory

- Up to 2730 sets of readings, depending on model. One set is all parameters plus date and time.

## Datalogging

- Automatic Datalogging can be user-set for 1 reading every 1 to 90 seconds, minutes or hours.
- One-touch Manual Datalogging

## Automatic Stability Function (ASF)

- ASF can be switched on and off as required.
- ASF freezes the display and shows a "✓" tick mark when **ALL** readings are stable.
- ASF is set to extra fine sensitivity during calibration to ensure accurate results.
- ASF can be set to automatically record data into memory when all readings are stable.
- ASF can be set to stop automatic datalogging when all readings become stable (ideal for logging until an end-point is reached).

## Good Laboratory Practices (GLP)

- Date, time and value of last successful calibration for each parameter are stored, along with the unit's serial number. This information can be recalled or sent to the Serial port at any time.
- Calibration alarm can be activated for parameters of user's choice, and can be set to Daily, 1 Weekly, 2 Weekly or 4 Weekly.
- Calibration alarm can be disabled.

## P.I.N. Code Access

- P.I.N. code of 1 to 4 numbers can be programmed.
- P.I.N. code locks unauthorised users out of the menu system.
- One-touch keys are still functional to enable normal day-to-day work.
- P.I.N. code access can be enabled or disabled.

## Automatic Calibration

- Automatic calibration is provided for all parameters.
- Where possible, automatic recognition of buffers or standards is provided to simplify calibration.
- Buffers, standards or calibration points can be entered by the user to their requirements.
- Readout of sensor condition is provided during calibration for instant troubleshooting and preventative maintenance.

## RS232 Serial Port

- The RS232 Serial Port is fitted as standard equipment. The Serial interface cable must be purchased separately. Please see the ordering information sections for details.
- WinTPS Communication software is available to handle all interfacing requirements for computers running Microsoft Windows 95 or later.
- 1200, 9600, 19200 or 38400 baud
- 8 Bits, No Parity, 1 Stop Bit, XON / XOFF

## Recorder Output (Optional)

- Max 0 to 2000 mV output for any one parameter at one time.
- Output impedance approx 1000 Ohms.
- Resolution is approx 2 mV.

## Dissolved Oxygen Stirrer Output

A 4.5V DC output is provided on models with Dissolved Oxygen readout. This is compatible with the YSI self-stirring BOD sensor. The output can be activated as required by the user, or automatically during Automatic Datalogging.

## Clock

Calendar clock displays date, month, year, hours, minutes and seconds.

## Power

- 12V DC via AC/DC adaptor.
- 90mA with backlight off or 130mA with backlight on.
- AC/DC Adaptor to suit specified country is supplied.

## Dimensions

240 x 190 x 105 mm

## Mass

Instrument only . . . . . Approx 1.0 kg  
Full Kit . . . . . Up to 4.0 kg,  
depending on model

## Environment

Temperature . . . . . 0 to 45 °C  
Humidity . . . . . 0 to 95% R.H.

# smartCHEM - pH

## • Measures...

- pH
- Millivolts
- Relative Millivolts
- Temperature

## • 2730 Reading Memory

## Ordering Information

### smartCHEM - pH. . . 121103

#### Kit Includes

pH Sensor with Porous Teflon . 121207  
Double Junction Reference  
Temperature/ATC Sensor . . . . 121248  
pH6.88 Buffer, 200mL . . . . . 121306  
pH4.00 Buffer, 200mL . . . . . 121381  
AC/DC Power Adaptor . . . . . 130037  
smartCHEM-pH Handbook . . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
RS232 Serial Interface Cable . 130041  
Serial to USB Adaptor. . . . . 130087  
(must also use 130041 Serial Cable)  
Analogue Recorder Port . . . . 130028  
(includes cable)  
WinTPS Communication Software 130086  
(for Windows 95 and later)

#### Optional Sensors

Intermediate Junction pH . . . 121234  
ORP Sensor with Porous Teflon. 121262  
Double Junction Reference  
Intermediate Junction ORP . . 121263  
Double Platinum Sensor . . . . 122209  
for Karl Fischer Titrations



## smartCHEM - C

- **Measures...**
  - **Conductivity**
  - **TDS**
  - **Resistivity**
  - **Ratio**
  - **Temperature**
- **Electrode re-platinising output**
- **2730 Reading Memory**

### Ordering Information

**smartCHEM - C . . . 122105**

#### Kit Includes

Glass k=1/Temp Sensor . . . . 122230  
 Temperature Sensor . . . . . 121248  
 2.76mS/cm Cond Std, 200mL . . 122306  
 2ppK TDS Standard, 200mL . . . 122307  
 AC/DC Power Adaptor . . . . . 130037  
 smartCHEM-C Handbook . . . . . 130050

#### Options

Flexible Arm Electrode Holder 130088  
 RS232 Serial Interface Cable . 130041  
 Serial to USB Adaptor. . . . . 130087  
 (must also use 130041 Serial Cable)  
 Analogue Recorder Port . . . . 130028  
 (includes cable)  
 WinTPS Communication Software 130086  
 (for Windows 95 and later)  
 Platinising Solution, 20mL . . 122300

#### Optional Sensors

Glass k=0.1/Temp Sensor . . . 122232  
 Glass k=10/Temp Sensor . . . . 122234  
 Flow-through k=0.1/Temp Sensor 122244  
 Flow-through k=1/Temp Sensor . 122240  
 Flow-through k=10/Temp Sensor 122242

## smartCHEM - CP

- **Measures...**
  - **pH**
  - **Millivolts**
  - **Relative Millivolts**
  - **Conductivity**
  - **TDS**
  - **Temperature**
- **2340 Reading Memory**

### Ordering Information

**smartCHEM - CP. . . 126127**

#### Kit Includes

Glass k=1/ATC/Temp Sensor . . 122230  
 pH Sensor with Porous Teflon . 121207  
 Double Junction Reference  
 Temperature Sensor . . . . . 121248  
 pH6.88 Buffer, 200mL . . . . . 121306  
 pH4.00 Buffer, 200mL . . . . . 121381  
 2.76mS/cm Cond Std, 200mL . . 122306  
 2ppK TDS Standard, 200mL . . . 122307  
 AC/DC Power Adaptor . . . . . 130037  
 smartCHEM-CP Handbook . . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
 RS232 Serial Interface Cable . 130041  
 Serial to USB Adaptor. . . . . 130087  
 (must also use 130041 Serial Cable)  
 Analogue Recorder Port . . . . 130028  
 (includes cable)  
 WinTPS Communication Software 130086  
 (for Windows 95 and later)

#### Optional Sensors

Glass k=0.1/ATC/Temp Sensor . 122232  
 Glass k=10/ATC/Temp Sensor . . 122234  
 Flow-through k=0.1/Temp Sensor 122244  
 Flow-through k=1/Temp Sensor . 122240  
 Flow-through k=10/Temp Sensor 122242  
 Intermediate Junction pH . . . 121234  
 ORP Sensor with Porous Teflon. 121262  
 Double Junction Reference  
 Intermediate Junction ORP . . 121263  
 Double Platinum Sensor . . . . 122209  
 for Karl Fischer Titrations

## smartCHEM - Ion

- **Measures...**
  - **Specific Ion Concentration**
  - **pH**
  - **Millivolts**
  - **Relative Millivolts**
  - **Temperature**
- **2520 Reading Memory**

### Ordering Information

**smartCHEM - Ion . . 121163**

#### Kit Includes

Temperature Sensor . . . . . 121248  
 AC/DC Power Adaptor . . . . . 130037  
 smartCHEM-Ion Handbook . . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
 RS232 Serial Interface Cable . 130041  
 Serial to USB Adaptor. . . . . 130087  
 (must also use 130041 Serial Cable)  
 Analogue Recorder Port . . . . 130028  
 (includes cable)  
 WinTPS Communication Software 130086  
 (for Windows 95 and later)

#### Optional Sensors

pH Sensor with Porous Teflon . 121207  
 Double Junction Reference  
 Intermediate Junction pH . . . 121234  
 ORP Sensor with Porous Teflon. 121262  
 Double Junction Reference  
 Intermediate Junction ORP . . 121263  
 Double Platinum Sensor . . . . 122209  
 for Karl Fischer Titrations

**Ordering information for the TPS range of Ion Selective Electrodes is too extensive to list here.**

**Please refer to the separate ISE brochure.**

## The smartCHEM Series at a glance...

Model	pH	mV	Specific Ions	Conductivity	TDS	Resistivity & Ratio	Dissolved Oxygen	Temperature	Notes
smartCHEM-P	●	●						●	Superior performance and value
smartCHEM-CP	●	●		●	●			●	Conductivity / TDS / pH / mV in one
smartCHEM-I	●	●	●					●	Programmable for any ISE
smartCHEM-I3	●	●	●					●	3 channel Specific Ion / pH / mV
smartCHEM-C				●	●	●		●	Auto sensor replatinising output
smartCHEM-D				●	●		●	●	DO <sub>2</sub> / Conductivity / TDS in one
smartCHEM-Lab	●	●	●	●	●		●	●	Complete water quality lab

## smartCHEM - Ion3

- **Measures...**
  - **3 Channels of Specific Ion Concentration, pH, Millivolts or Relative Millivolts**
  - **Temperature**
- **1489 Reading Memory**

### Ordering Information

**smartCHEM - Ion3 . . 121164**

#### Kit Includes

Temperature Sensor . . . . . 121248  
AC/DC Power Adaptor . . . . . 130037  
smartCHEM-Ion3 Handbook . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
RS232 Serial Interface Cable . 130041  
Serial to USB Adaptor. . . . . 130087  
(must also have 130041 Serial Cable)  
Analogue Recorder Port . . . . 130028  
(includes cable)  
WinTPS Communication Software 130086  
(for Windows 95 and later)

#### Optional Sensors

pH Sensor with Porous Teflon . 121207  
Double Junction Reference  
Intermediate Junction pH . . . 121234  
ORP Sensor with Porous Teflon. 121262  
Double Junction Reference  
Intermediate Junction ORP . . 121263  
Double Platinum Sensor . . . . 122209  
for Karl Fischer Titrations

**Ordering information for the TPS range of Ion Selective Electrodes is too extensive to list here.**

**Please refer to the separate ISE brochure.**

## smartCHEM - D

- **Measures...**
  - **Dissolved Oxygen**
  - **Conductivity**
  - **TDS**
  - **Temperature**
- **2340 Reading Memory**

### Ordering Information

**smartCHEM - D . . . 123104**

#### Kit Includes

Glass k=1/ATC/Temp Sensor . . 122230  
Temperature Sensor . . . . . 121248  
2.76mS/cm Cond Std, 200mL. . . 122306  
2ppK TDS Standard, 200mL . . . 122307  
AC/DC Power Adaptor . . . . . 130037  
smartCHEM-D Handbook . . . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
Adaptor for 4.5V Output for. . 123311  
Dissolved Oxygen stirrers  
RS232 Serial Interface Cable . 130041  
Serial to USB Adaptor. . . . . 130087  
(must also have 130041 Serial Cable)  
Analogue Recorder Port . . . . 130028  
(includes cable)  
WinTPS Communication Software 130086  
(for Windows 95 and later)  
BOD bottle adaptor for ED1 . . 123201

#### Optional Sensors

ED1 Dissolved Oxygen Sensor. . 123400  
1m Cable for ED1 DO<sub>2</sub> Sensor. . 123228  
YSI Non-stirring BOD Sensor . 123214  
YSI Self-stirring DO<sub>2</sub> Sensor . 123213  
YSI Field type DO<sub>2</sub> Sensor. . . 123204  
1m Cable for YSI Field Sensor 123212  
Glass k=0.1/ATC/Temp Sensor . 122232  
Glass k=10/ATC/Temp Sensor . . 122234  
Flow-through k=0.1/Temp Sensor 122244  
Flow-through k=1/Temp Sensor . 122240  
Flow-through k=10/Temp Sensor 122242

## smartCHEM - Lab

- **Measures...**
  - **Dissolved Oxygen**
  - **Conductivity**
  - **TDS**
  - **2 Channels of Specific Ion Concentration, pH, Millivolts or Relative Millivolts**
  - **Temperature**
- **1489 Reading Memory**

### Ordering Information

**smartCHEM - Lab . . 126124**

#### Kit Includes

Glass k=1/ATC/Temp Sensor . . 122230  
pH Sensor with Porous Teflon . 121207  
Double Junction Reference  
Temperature Sensor . . . . . 121248  
pH6.88 Buffer, 200mL . . . . . 121306  
pH4.00 Buffer, 200mL . . . . . 121381  
2.76mS/cm Cond Std, 200mL. . . 122306  
2ppK TDS Standard, 200mL . . . 122307  
AC/DC Power Adaptor . . . . . 130037  
smartCHEM-Lab Handbook . . . . 130050

#### Options

Flexible Arm Electrode Holder. 130088  
Adaptor for 4.5V Output for. . 123311  
Dissolved Oxygen stirrers  
RS232 Serial Interface Cable . 130041  
Serial to USB Adaptor. . . . . 130087  
(must also have 130041 Serial Cable)  
Analogue Recorder Port . . . . 130028  
(includes cable)  
WinTPS Communication Software 130086  
(for Windows 95 and later)  
BOD bottle adaptor for ED1 . . 123201

#### Optional Sensors

ED1 Dissolved Oxygen Sensor. . 123400  
1m Cable for ED1 DO<sub>2</sub> Sensor. . 123228  
YSI Non-stirring BOD Sensor . 123214  
YSI Self-stirring BOD Sensor . 123213  
YSI Field type DO<sub>2</sub> Sensor. . . 123204  
1m Cable for YSI Field Sensor 123212  
Glass k=0.1/ATC/Temp Sensor . 122232  
Glass k=10/ATC/Temp Sensor . . 122234  
Flow-through k=0.1/Temp Sensor 122244  
Flow-through k=1/Temp Sensor . 122240  
Flow-through k=10/Temp Sensor 122242  
Intermediate Junction pH . . . 121234  
ORP Sensor with Porous Teflon. 121262  
Double Junction Reference  
Intermediate Junction ORP . . 121263  
Double Platinum Sensor . . . . 122209  
for Karl Fischer Titrations

**Ordering information for the TPS range of Ion Selective Electrodes is too extensive to list here.**

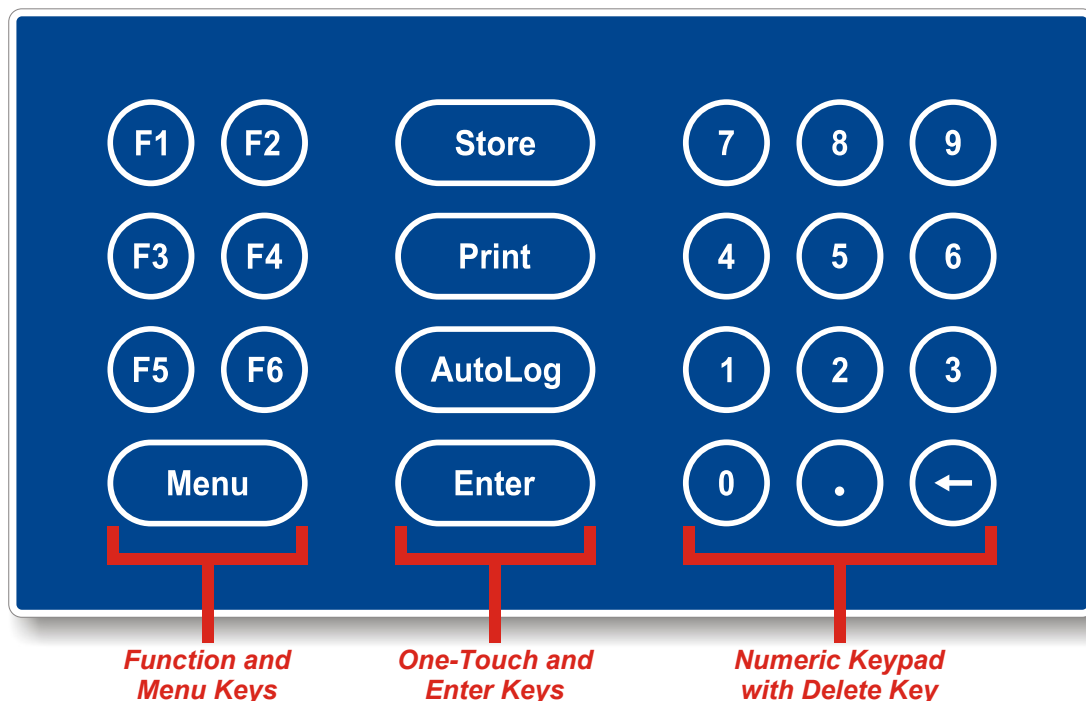
**Please refer to the separate ISE brochure.**

**smartCHEM Display Angle**

**28°**

Model	Range(s)	Resolution	Accuracy	General Specifications
pH	0 to 14.00 pH 0 to 14.000 pH	0.01 pH 0.001 pH	±0.01 pH ±0.002 pH	<ul style="list-style-type: none"> <li>➤ Auto-recognition of pH4.00, pH6.88, pH7.00, pH9.23 and pH10.06 Buffers. Any other buffer values can be entered during calibration.</li> <li>➤ -1.00 to +1.00 pH Asymmetry calibration range</li> <li>➤ 85.0% to 105.0% Slope calibration range</li> <li>➤ &gt;3 x 10<sup>12</sup> Ohms input impedance</li> <li>➤ Automatic or manual temperature compensation, 0 to 100 °C</li> </ul>
Millivolts & Relative mV	0 to ±600.0 & 0 to ±1500 mV (auto-ranging)	0.1 & 1 mV	±0.15 & ±1 mV	<ul style="list-style-type: none"> <li>➤ Absolute and Relative Millivolts modes</li> <li>➤ -60 to +60 mV Offset calibration range</li> <li>➤ Temperature compensation not applicable</li> </ul>
Specific Ions	Auto-ranging in units of ppM, ppK, % and Exponential Notation.  Actual range of measurement is determined by detection limits of Ion Selective Electrode being used.	User selectable for... 3 significant digits, 2 significant digits, or Auto-rounding	±Least significant digit	<ul style="list-style-type: none"> <li>➤ Any two calibration standard values can be user set. The Secondary standard must be at least 2 to 100 times higher or lower than the Primary standard.</li> <li>➤ Auto detection of Offset at calibration</li> <li>➤ 50.0% to 110.0% Slope calibration range</li> <li>➤ &gt;3 x 10<sup>12</sup> Ohms input impedance</li> <li>➤ Automatic or manual temperature compensation, 0 to 100 °C</li> </ul>
Dissolved Oxygen	ED1 Sensor    0.00 to 20.00 ppM 20.0 to 40.0 ppM 0.0 to 250.0 % Sat 250 to 450 % Sat 0.0 to 50.0 % Gas 50 to 100 % Gas  YSI Sensor    0.00 to 25.00 ppM 25.0 to 40.0 ppM 0.0 to 300.0 % Sat 300 to 450 % Sat 0.0 to 60.0 % Gas 60 to 100 % Gas	0.01 & 1 ppM 0.1 & 1 % Sat 0.1 % 1 % Gas	±0.2 % of full scale of selected ppM range ±0.3 % Saturation ±0.1 % Gaseous	<ul style="list-style-type: none"> <li>➤ Automatic calibration at Zero and in Air</li> <li>➤ Measured calibration value (e.g. Winkler titration) can be entered during ppM calibration</li> <li>➤ 0% to 7% Zero calibration range</li> <li>➤ 65% to 200% Span calibration range</li> <li>➤ Automatic Salinity correction using Conductivity/TDS reading</li> <li>➤ Clark type polarographic sensor with inbuilt ATC</li> <li>➤ Automatic temperature compensation for...               <ol style="list-style-type: none"> <li>1. Membrane permeability</li> <li>2. Oxygen solubility in ppM mode</li> </ol> </li> </ul>
Temperature	-10.0 to 120.0 °C (maximum limit varies with which sensor is used for measuring Temperature.)	0.1 °C	±0.2 °C	<ul style="list-style-type: none"> <li>➤ Calibration against reference thermometer.</li> <li>➤ -10.0 to +10.0 °C Offset calibration range</li> <li>➤ The following temperature limits apply to sensors...</li> <li>➤ Temperature probe : 120 °C</li> <li>➤ pH Sensor : 60 °C</li> <li>➤ Conductivity/TDS sensor : 60 °C</li> <li>➤ Dissolved Oxygen sensor : 50 °C</li> </ul>

### Full Function Tactile Keypad (shown full size)



Model	Range(s)	Resolution	Accuracy	General Specifications
<b>Conductivity</b>	<b>k=0.1 Sensor</b> 0 to 2.000 uS/cm 0 to 20.00 uS/cm 0 to 200.0 uS/cm 0 to 2000 uS/cm 0 to 20.00 mS/cm * <b>k=1.0 Sensor</b> 0 to 20.00 uS/cm 0 to 200.0 uS/cm 0 to 2000 uS/cm 0 to 20.00 mS/cm 0 to 200.0 mS/cm * <b>k=10 Sensor</b> 0 to 200.0 uS/cm 0 to 2000 uS/cm 0 to 20.00 mS/cm 0 to 200.0 mS/cm 0 to 2000 mS/cm *	0.001 uS/cm 0.01 uS/cm 0.1 uS/cm 1 uS/cm 0.01 mS/cm * 0.01 uS/cm 0.1 uS/cm 1 uS/cm 0.01 mS/cm 0.1 mS/cm * 0.1 uS/cm 1 uS/cm 0.01 mS/cm 0.1 mS/cm 1 mS/cm *	±0.2 % of full scale of selected range at 25.0 °C	➤ Any calibration standard value from 20 uS/cm to 2000 mS/cm can be user set. ➤ 75% to 133% Span calibration range ➤ Automatic temperature compensation (ATC), 0 to 100 °C ➤ ATC co-efficient can be set from 0 to 6.00%/°C individually for standard and sample on smartCHEM - C. ➤ ATC reference temperature is user-selectable for 25.0 or 20.0 °C on smartCHEM - C. ➤ All ranges listed can be displayed in equivalent Siemens/metre units on smartCHEM - C. * These ranges applicable to smartCHEM - C only
<b>TDS</b>	<b>k=0.1 Sensor</b> 0 to 1.000 ppM 0 to 10.00 ppM 0 to 100.0 ppM 0 to 1000 ppM 0 to 10.00 ppK * <b>k=1.0 Sensor</b> 0 to 10.00 ppM 0 to 100.0 ppM 0 to 1000 ppM 0 to 10.00 ppK 0 to 100.0 ppK * <b>k=10 Sensor</b> 0 to 100.0 ppM 0 to 1000 ppM 0 to 10.00 ppK 0 to 100.0 ppK 0 to 1000 ppK *	0.001 ppM 0.01 ppM 0.1 ppM 1 ppM 0.01 ppK * 0.01 ppM 0.1 ppM 1 ppM 0.01 ppK 0.1 ppK * 0.1 ppM 1 ppM 0.01 ppK 0.1 ppK 1 ppK *	±0.5 % of full scale of selected range at 25.0 °C	➤ Any calibration standard value from 20 ppM to 500 ppK can be user set. ➤ 75% to 133% Span calibration range ➤ Automatic temperature compensation (ATC), 0 to 100 °C ➤ ATC co-efficient can be set from 0 to 6.00%/°C individually for standard and sample on smartCHEM - C. ➤ ATC reference temperature is user-selectable for 25.0 or 20.0 °C on smartCHEM - C. * These ranges applicable to smartCHEM - C only
<b>Resistivity</b>	<b>k=0.1 Sensor</b> 0.50 to 99.99 M .cm 50 to 9999 K .cm 5.0 to 999.9 K .cm 0.50 to 99.99 K .cm <b>k=1.0 Sensor</b> 50 to 9999 .cm 50 to 9999 K .cm 5.0 to 999.9 K .cm 0.50 to 99.99 K .cm 50 to 9999 .cm <b>k=10 Sensor</b> 5.00 to 999.9 .cm 5.0 to 999.9 K .cm 0.50 to 99.99 K .cm 50 to 9999 .cm 5.00 to 999.9 .cm 0.50 to 99.99 .cm	0.01 M .cm 1 K .cm 0.1 K .cm 0.01 K .cm 1.0 .cm 1 K .cm 0.1 K .cm 0.01 K .cm 1.0 .cm 0.1 .cm 0.1 K .cm 0.01 K .cm 1.0 .cm 0.1 .cm 0.01 .cm	±0.5 % of full scale of selected range at 25.0 °C	➤ This mode is available on the smartCHEM - C only. ➤ Span range 75% to 133% of nominal k factor ➤ Automatic temperature compensation (ATC), 0 to 100 °C ➤ ATC co-efficient can be set from 0 to 6.00%/°C individually for standard and sample on smartCHEM - C. ➤ ATC reference temperature is user-selectable for 25.0 or 20.0 °C on smartCHEM - C.
<b>Ratio</b>	0.000 to 1.500 1.50 to 15.00 (exact ranges depend on span of sensor)	0.001 0.01	±0.001 ±0.01	➤ This mode is available on the smartCHEM - C only. ➤ Allowable difference of k factors between sensors 50% to 200%, relative to reference sensor. ➤ Actual Conductivity of sample and reference solutions must be within measurement range of the k factor sensor being used. ➤ Automatic temperature compensation, 0 to 100 °C



A.B.N. 30 009 773 371  
TPS reserves the right to change this specification without notice.  
Version 1.0W, 13-May-2003.

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