



Quality. Service. Value.

# 90 Series Field Loggers



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



Waterproof



User Friendly



Calendar Clock



GLP



Notepad Function



Automatic Logging



RS232 Port



Multiple Power

## Waterproof Construction

At TPS we know that working in wet areas is sometimes unavoidable. The 90 series is designed for rugged field applications in wet environments. The enclosure, keypad and connectors are rated 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 90 Series. There are no internal or external adjustments, resulting in excellent long term reliability.

## User-friendly

All measurements are shown simultaneously on the 80 character display. There is no need to change modes to check any of your vital data. The user-friendly menu system guides the operator through all operations such as calibration, setup etc. Full text help and error messages are provided along the way. There are no obscure codes to interpret like some other brands.

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 decimal point and delete keys.

## Notepad Function

A standard feature of the 90 series is the Notepad function. Up to 2720 readings (depending on model) can be recorded for later review. These can be downloaded to a printer or computer via the RS232 port. For added functionality, the user is able to enter up to two additional items to be tagged on to the reading. Many operators use this function as a site identifier, depth or readings from other instruments.

## Automatic Datalogging

Automatic datalogging provides the capability to automatically record up to 2720 readings (depending on model) at user-set intervals. This is equivalent to a reading every half hour, continuously for over 50 days. The unit remains dormant between readings and only wakes up for 40 seconds whenever a reading is due. Battery life is considerably improved with this facility.

## Automatic Calibration

All 90 Series measurement parameters feature Automatic Calibration. Calibration is accessed via the user-friendly menu, which then leads the user through each step using plain text messages.

Sensor condition is displayed after calibration has been completed, allowing for preventative maintenance. This information can be recalled on the display at any time.

All calibration information is stored in memory when the 90 Series is switched off, even if the battery is replaced..

## Good Laboratory Practices

To comply with GLP guidelines, the date, time and results of the last calibration are stored in memory, along with the unit's serial number. This data can be displayed or sent directly to the RS232 port. Warning of failed calibration is provided. All readings stored in memory are stamped with the date and time.

## Serial Interface Port

All recorded data can be sent directly to a Printer or PC with the standard RS232 port (cable sold separately). The optional **WinTPS** software allows many of the instrument's functions to be controlled from a PC, making the units ideal for remote monitoring.

## Multiple Power Options

The 90 Series is supplied with a 7.2V NiCad rechargeable battery pack and charger to suit country of destination as standard. For extended field trips or long term datalogging, a solar panel or clip lead adaptor for an external 12V battery are also available. The 90 Series battery can be recharged from any 12V DC power source.

## Australian Made

The 90 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 90 Series sets the standard for Quality, Service and Value for field logging instruments.

# 90 Series Specifications

## Good Laboratory Practices

Date, Time and Value of last calibration for each parameter are stored. This information can be recalled or sent to the RS232 port at any time.

Warning of failed calibration is provided.

All readings stored in memory are stamped with the date and time.

## Datalogging

### Memory Capacity

90-FL / T . . . : 1808 readings (1488 with extra data input active).  
 90-FL / mV . . . : 1808 readings (1488 with extra data input active).  
 90-FL . . . . . : 2032 readings (1632 with extra data input active).  
 90-D . . . . . : 2336 readings (1808 with extra data input active).  
 90-C . . . . . : 2720 readings (2032 with extra data input active).  
 90-P . . . . . : 2336 readings (1808 with extra data input active).

### Extra Data Input

2 extra items of data can be input when using the Notepad function.

Each item can be a maximum of 4 characters, including a decimal point.

Extra Data items are labeled A and B.

### Automatic Datalogging

All 6 models can be programmed to...

- Automatically log from 1 to 288 readings per day.
- Automatically log at up to 12 specific times of the day.
- Automatically log readings at a preset interval for a preset duration.

## RS232 Port

8 Bits, No Parity, 1 Stop Bit, XON/OFF Protocol.  
 300, 9600 & 19200 baud available.

## Enclosure

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

## Display

2 line x 40 Character alphanumeric LCD shows all readings simultaneously and features a user-friendly menu system.

## Keypad

5 Function keys, Menu key, Enter key, 3 One-Touch keys, 12 data entry keys, OFF, ON.

## Dimensions

230 x 140 x 100 mm

## Mass

Instrument only . . . . : Approx 1.5 kg

Full kit . . . . . : Approx 4.5 to 10 kg, depending on model and accessories purchased.

## Environment

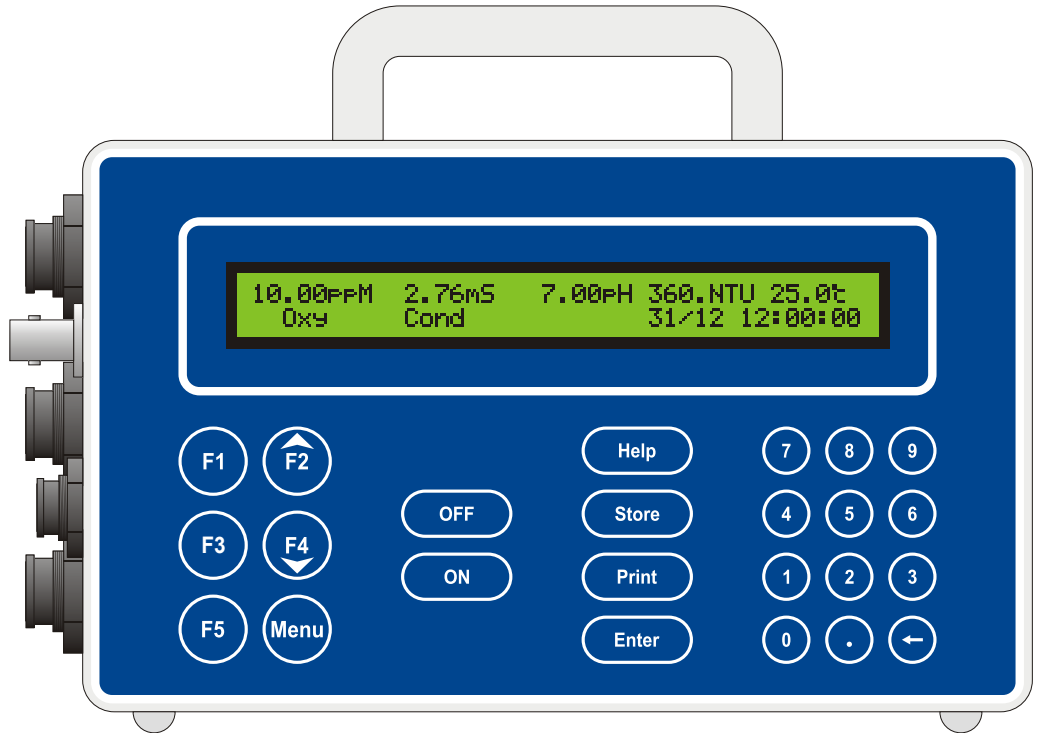
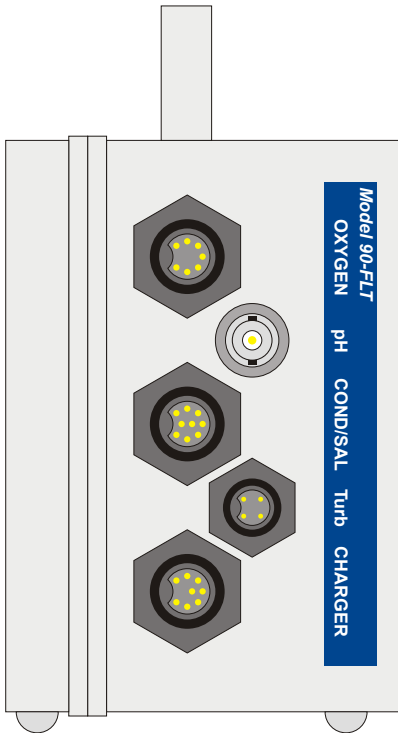
Temperature . . . . . : 0 to 45 °C

Humidity . . . . . : 0 to 90% R.H.

## Power

7.2V Rechargeable NiCad Battery.

Any 12V DC supply will re-charge the battery.



Model	pH	Millivolts	Conductivity	TDS	Dissolved Oxygen	Turbidity	Temperature
90-FL / T	●		●	●	●	●	●
90-FL / mV	●	●	●	●	●		●
90-FL	●		●	●	●		●
90-D					●		●
90-C			●	●			●
90-P	●	●					●

# 90 Series Specifications

Model	Range(s)	Resolution	Accuracy	General Specifications										
pH	0 to 14.00 pH	0.01 pH	±0.01 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 range</li> <li>▶ 85.0% to 105.0% Slope 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	0 to ±1999 mV	1 mV	±1 mV	<ul style="list-style-type: none"> <li>▶ Factory-set calibration</li> <li>▶ Temperature compensation not applicable</li> </ul>										
Conductivity	k=10 Sensor 0 to 200.0 uS/cm 0 to 2000 uS/cm 0 to 20.00 mS/cm 0 to 200.0 mS/cm k=1.0 Sensor 0 to 20.00 uS/cm 0 to 200.0 uS/cm 0 to 2000 uS/cm 0 to 20.00 mS/cm	0.1 uS/cm 1 uS/cm 0.01 mS/cm 0.1 mS/cm 0.01 uS/cm 0.1 uS/cm 1 uS/cm 0.01 mS/cm	±0.5 % of full scale of selected range at 25.0 °C	<ul style="list-style-type: none"> <li>▶ Any calibration standard value from 20 uS/cm to 200 mS/cm can be user set.</li> <li>▶ Span calibration range 75% to 133% of nominal k factor</li> <li>▶ Automatic temperature compensation, 0 to 100 °C</li> </ul>										
TDS	k=10 Sensor 0 to 100.0 ppM 0 to 1000 ppM 0 to 10.00 ppK 0 to 100.0 ppK k=1.0 Sensor 0 to 10.00 ppM 0 to 100.0 ppM 0 to 1000 ppM 0 to 10.00 ppK	0.1 ppM 1 ppM 0.01 ppK 0.1 ppK 0.01 ppM 0.1 ppM 1 ppM 0.01 ppK	±0.5 % of full scale of selected range at 25.0 °C	<ul style="list-style-type: none"> <li>▶ Any calibration standard value from 20 ppM to 200 ppK can be user-set.</li> <li>▶ Span calibration range 75% to 133% of nominal k factor.</li> <li>▶ Automatic temperature compensation, 0 to 100 °C.</li> </ul>										
Dissolved Oxygen	0 to 30.00 ppM (mg/L) 0 to 300.0 % Saturation	0.01 ppM (mg/L) 0.1 % Saturation	±0.02 ppM (mg/L) ±0.2 % Saturation	<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>										
Turbidity	0 to 1000 NTU	1 NTU	3% Linearity	<ul style="list-style-type: none"> <li>▶ Automatic Zero and Span calibration.</li> <li>▶ Any calibration standard value from 50 NTU to 800 NTU can be user-set.</li> <li>▶ 90° measurement technique as per ISO7027.</li> </ul>										
Temperature	-10.0 to 110.0 °C	0.1 °C	±0.2 °C	<ul style="list-style-type: none"> <li>▶ Calibration against reference thermometer.</li> <li>▶ Sensor Offset range -10.0 to +10.0 °C</li> <li>▶ The following temperature limits apply to sensors...               <table style="margin-left: 20px; border: none;"> <tr> <td>Temperature probe</td> <td>: 120 °C</td> </tr> <tr> <td>pH, ORP or Ion Sensor</td> <td>: 60 °C</td> </tr> <tr> <td>Conductivity/TDS sensor</td> <td>: 60 °C</td> </tr> <tr> <td>Dissolved Oxygen sensor</td> <td>: 45 °C</td> </tr> <tr> <td>Turbidity Sensor</td> <td>: 40 °C</td> </tr> </table> </li> </ul>	Temperature probe	: 120 °C	pH, ORP or Ion Sensor	: 60 °C	Conductivity/TDS sensor	: 60 °C	Dissolved Oxygen sensor	: 45 °C	Turbidity Sensor	: 40 °C
Temperature probe	: 120 °C													
pH, ORP or Ion Sensor	: 60 °C													
Conductivity/TDS sensor	: 60 °C													
Dissolved Oxygen sensor	: 45 °C													
Turbidity Sensor	: 40 °C													

# Ordering Information

## 90-FL / T

### pH, Conductivity, TDS, Dissolved Oxygen, Turbidity, Temperature

**90-FL / T Kit** ..... **126105**

#### **Kit Includes...**

pH6.88 Buffer, 200mL	121306
pH4.00 Buffer, 200mL	121381
2.76mS/cm Conductivity Standard, 1 Litre	122305
Battery Charger	130009
Handbook	130050
(1 Litre Salinity or TDS standard to suit k=10 or k=1 salinity sensor is also supplied.)	

#### **Sensors and Other Options...**

pH Sensor, Submersible, 5m	111224
Intermediate Junction pH Sensor for difficult solutions, 5m	111227
k=10 Conductivity/TDS/Temperature Sensor, 5m	122218
k=1.0 Conductivity/TDS/Temperature Sensor, 5m	122196
Turbidity Sensor, 5m	125208
180NTU Primary Turbidity Standard, 1L	125200
360NTU Diluted Turbidity Standard, 1L	125204

YSI Dissolved Oxygen Sensor (no cable)	123204
5m cable for YSI Dissolved Oxygen Sensor	123219
Submersible stirrer for DO <sub>2</sub> sensor, 5m	123306
YSI non-stirring BOD Sensor, fixed 1.5m cable	123214
YSI self-stirring BOD Sensor, fixed 1.5m cable	123213
Temperature Sensor, 5m	124210
(required only if Conductivity sensor is not used)	
Extra cable, per metre	130040
Serial cable to connect instrument to computer or printer	130015
Serial to USB adaptor (required in addition to 130015)	130087
<b>WinTPS</b> Communication software (for Windows 95 and later)	130086
12V Solar charging panel	130012
Clip lead for external 12V battery	130013
Hard carry case, waterproof	130058
Probe holder for 90FL-T, 5m	121345

## 90-FL / mV

### pH, mV Conductivity, TDS, Dissolved Oxygen, Temperature

**90-FL / mV Kit** ..... **130018**

#### **Kit Includes...**

pH6.88 Buffer, 200mL	121306
pH4.00 Buffer, 200mL	121381
2.76mS/cm Conductivity Standard, 1 Litre	122305
Battery Charger	130009
Handbook	130050
(1 Litre Salinity or TDS standard to suit k=10 or k=1 salinity sensor is also supplied.)	

#### **Sensors and Other Options...**

pH Sensor, Submersible, 5m	111224
Intermediate Junction pH Sensor for difficult solutions, 5m	111227
ORP Sensor, Submersible, 5m	111259
Intermediate Junction ORP Sensor for difficult solutions, 5m	121267
k=10 Conductivity/TDS/Temperature Sensor, 5m	122218
k=1.0 Conductivity/TDS/Temperature Sensor, 5m	122196

YSI Dissolved Oxygen Sensor (no cable)	123204
5m cable for YSI Dissolved Oxygen Sensor	123219
Submersible stirrer for DO <sub>2</sub> sensor, 5m	123306
YSI non-stirring BOD Sensor, fixed 1.5m cable	123214
YSI self-stirring BOD Sensor, fixed 1.5m cable	123213
Temperature Sensor, 5m	124210
(required only if Conductivity sensor is not used)	
Extra cable, per metre	130040
Serial cable to connect instrument to computer or printer	130015
Serial to USB adaptor (required in addition to 130015)	130087
<b>WinTPS</b> Communication software (for Windows 95 and later)	130086
12V Solar charging panel	130012
Clip lead for external 12V battery	130013
Hard carry case, waterproof	130058
Probe holder for 90FL & 90FL-MV, 5m	121343

## 90-FL

### pH, Conductivity, TDS, Dissolved Oxygen, Temperature

**90-FL Kit** ..... **126103**

#### **Kit Includes...**

pH6.88 Buffer, 200mL	121306
pH4.00 Buffer, 200mL	121381
2.76mS/cm Conductivity Standard, 1 Litre	122305
Battery Charger	130009
Handbook	130050
(1 Litre Salinity or TDS standard to suit k=10 or k=1 salinity sensor is also supplied.)	

#### **Sensors and Other Options...**

pH Sensor, Submersible, 5m	111224
Intermediate Junction pH Sensor for difficult solutions, 5m	111227
k=10 Conductivity/TDS/Temperature Sensor, 5m	122218
k=1.0 Conductivity/TDS/Temperature Sensor, 5m	122196

YSI Dissolved Oxygen Sensor (no cable)	123204
5m cable for YSI Dissolved Oxygen Sensor	123219
YSI non-stirring BOD Sensor, fixed 1.5m cable	123214
YSI self-stirring BOD Sensor, fixed 1.5m cable	123213
Submersible stirrer for DO <sub>2</sub> sensor, 5m	123306
Temperature Sensor, 5m	124210
(required only if Conductivity sensor is not used)	
Extra cable, per metre	130040
Serial cable to connect instrument to computer or printer	130015
Serial to USB adaptor (required in addition to 130015)	130087
<b>WinTPS</b> Communication software (for Windows 95 and later)	130086
12V Solar charging panel	130012
Clip lead for external 12V battery	130013
Hard carry case, waterproof	130058
Probe holder for 90FL & 90FL-MV, 5m	121343

# Ordering Information

## 90-D

### Dissolved Oxygen, Temperature

90-D ..... 123145

#### Kit Includes...

Battery Charger ..... 130009  
Handbook ..... 130050

#### Sensors and Other Options...

YSI Dissolved Oxygen Sensor (no cable) ..... 123204  
5m cable for YSI Dissolved Oxygen Sensor ..... 123219  
YSI non-stirring BOD Sensor, fixed 1.5m cable ..... 123214  
YSI self-stirring BOD Sensor, fixed 1.5m cable ..... 123213  
Submersible stirrer for DO<sub>2</sub> sensor, 5m ..... 123306

Extra cable, per metre ..... 130040

Serial cable to connect instrument to computer or printer ..... 130015  
Serial to USB adaptor (required in addition to 130015) ..... 130087  
WinTPS Communication software (for Windows 95 and later) .. 130086

12V Solar charging panel ..... 130012  
Clip lead for external 12V battery ..... 130013

Hard carry case, waterproof ..... 130058

## 90-C

### Conductivity, TDS, Temperature

90-C Kit ..... 122145

#### Kit Includes...

2.76mS/cm Conductivity Standard, 1 Litre ..... 122305  
Battery Charger ..... 130009  
Handbook ..... 130050  
(1 Litre Salinity or TDS standard to suit k=10 or k=1 salinity sensor is also supplied.)

#### Sensors and Other Options...

k=10 Conductivity/TDS/Temperature Sensor, 5m ..... 122218  
k=1.0 Conductivity/TDS/Temperature Sensor, 5m ..... 122196

Temperature Sensor, 5m ..... 124210  
(required only if Conductivity sensor is not used)

Extra cable, per metre ..... 130040

Serial cable to connect instrument to computer or printer ..... 130015  
Serial to USB adaptor (required in addition to 130015) ..... 130087  
WinTPS Communication software (for Windows 95 and later) .. 130086

12V Solar charging panel ..... 130012  
Clip lead for external 12V battery ..... 130013

Hard carry case, waterproof ..... 130058

## 90-P

### Dual Channel pH/mV plus Temperature

90-P Kit ..... 121145

#### Kit Includes...

pH6.88 Buffer, 200mL ..... 121306  
pH4.00 Buffer, 200mL ..... 121381  
Battery Charger ..... 130009  
Handbook ..... 130050

#### Sensors and Other Options...

pH Sensor, Submersible, 5m ..... 111224  
Intermediate Junction pH Sensor for difficult solutions, 5m ..... 111227  
ORP Sensor, Submersible, 5m ..... 111259  
Intermediate Junction ORP Sensor for difficult solutions, 5m ..... 121267

Temperature Sensor, 5m ..... 124210

Extra cable, per metre ..... 130040

Serial cable to connect instrument to computer or printer ..... 130015  
Serial to USB adaptor (required in addition to 130015) ..... 130087  
WinTPS Communication software (for Windows 95 and later) .. 130086

12V Solar charging panel ..... 130012  
Clip lead for external 12V battery ..... 130013

Hard carry case, waterproof ..... 130058



A.B.N. 30 009 773 371  
TPS reserves the right to  
change this specification  
without notice.  
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