

## AquaCal 2000

### Pure Water Conductivity and Resistivity Portable Kit



## Features

- Conductivity measurement from 0.055 to 99.99  $\mu\text{S}/\text{cm}$
- Resistivity measurement to 18.20  $\text{M}\Omega/\text{cm}$
- Temperature measurement from  $-10$  to  $110^{\circ}\text{C}$
- Calibrated to traceable standards – conforms to ASTM D 5391-99 and current USP Test Method
- Ideal for validation of pure water treatment plants
- Scaleable voltage outputs for conductivity, resistivity or temperature
- Alkaline or NiCad rechargeable batteries or mains adaptor operation
- User selectable security code to protect settings and configuration
- Diagnostics to indicate instrument and sensor faults and incorrect configuration

The AquaCal 2000 hand held system has been developed to provide a method of measuring the conductivity or resistivity of pure water to traceable standards making it suitable to validate pure water treatment plants. Currently it is only possible to calibrate instrumentation on site by using precision resistors, however it is impossible to check the complete measurement system including the cell. The AquaCal 2000 overcomes this problem by providing a portable calibrated system that can be used to check on-line instrumentation by comparison.

The system consists of a precision conductivity cell with a certified cell constant to ASTM D1125-95 and BS60746 and a microprocessor instrument that has been calibrated against 0.1% resistors traceable to National Standards. The AquaCal 2000 instrument has the facility to enter the actual calibrated cell constant value, minimising any errors introduced by the cell.

The AquaCal 2000 measures both non-temperature compensated and temperature compensated conductivity or resistivity to meet the current USP (United States Pharmacopoeia) requirements. Collection of the water sample is critical due to possible contamination from CO<sub>2</sub> or other ionic materials. The cell has been designed for direct insertion into a process line or into a flow chamber for a sample stream. The temperature effects on the conductivity of pure water are large and non – linear.

The AquaCal 2000 incorporates the correct temperature compensation matrix for the ionisation of water as well as the contribution from ion mobility. The temperature compensation is selectable in or out, with a fixed curve compensation for ultra pure water and a selectable slope of 0.0 to 3.9%/°C for the impurity contribution. The AquaCal 2000 can compensate to either a base temperature of 20 or 25°C.

The CMC26/001/PT43 cell incorporates a precision 4 wire Pt1000 RTD for the temperature compensation while the AquaCal 2000 instrument calculates the correct compensation values over the range of 0-100°C for changes in water ionisation and for the ion mobility of neutral salt contaminants. The instrument is powered from either standard AA alkaline or NiCad rechargeable batteries. Alternatively where mains power is available the battery charger can be used to power the instrument. The AquaCal 2000 has isolated voltage outputs, which can be used with a data logger or recorder to provide a permanent record of conductivity, resistivity or temperature. Visual diagnostics indicate instrument and sensor faults and incorrect configuration by a series of error messages.

## Specification

### Range of measurement

Conductivity	Resistivity	Temperature
0-0.9999 $\mu\text{S}/\text{cm}$	0-999.9 $\text{K}\Omega/\text{cm}$	-10.0- + 110°C
0-9.999 $\mu\text{S}/\text{cm}$	0-9.999 $\text{M}\Omega/\text{cm}$	
0-99.99 $\mu\text{S}/\text{cm}$	0-99.99 $\text{M}\Omega/\text{cm}$	

### User selectable or full auto ranging

Temperature compensated system accuracy including linearity and repeatability:

Conductivity	Resistivity	Temperature
0.3% of range	0.3% of range	0.1°C

### Ambient temperature:

0-50°C

### Ambient temperature variation:

0.01% of range

### Temperature compensation:

Selectable in or out fixed curve compensation for ultra pure water. Selectable slope of 0.0 to 3.9%/°C for the impurity contribution

### Temperature compensation base:

Selectable 20 or 25°C

### Display:

16 x 2 character alphanumeric LCD

### Cell constant range:

Adjustable 0.01000  $\pm$ 10%

### Operating frequency:

70Hz

### Voltage outputs:

2 off 0-1v DC isolated into a minimum load of 10K $\Omega$  for conductivity or resistivity and temperature. User scaleable offset and span up to a maximum of 10% of range.

### Battery type:

4 x AA alkaline or NiCad rechargeable

### Battery life:

40 hours continuous with alkaline batteries.

NiCad batteries have typically half this life

### Recharge time:

24 hours from flat

### Low battery warning:

Symbol indication on this display

### Auto power off:

Selectable, 1 minute to 40 hours, or disabled

### Security:

Access code entered on the front panel

### Environmental protection:

IP65

### Electromagnetic compatibility:

2004/1008/EC using BS EN 61326:2006

### Battery charger supply:

105-120v or 200-250v AC (To be specified at time of ordering)

### Battery charger output:

12v DC, 100mA max.

### Cell type:

CMC26/001/PT43

### Cell constant:

Nominal 0.01 supplied with traceable certification

### Cell cable length:

Standard 2 metres, maximum 5 metres

### Temperature sensor:

PT1000

### Dimensions:

Instrument only	Carrying case
195 x 101 x 44mm	325 x 90 x 105mm

### Weight:

Instrument only	Carrying case
0.6kg	Less than 3kg (Complete kit including instrument, cell, flow chamber, battery charger & connection cables)

## Order Codes

AquaCal 2000 Pure water measuring kit		
Type No	Part No	Description
AquaCal 2000	1197	Portable conductivity, resistivity and temperature measuring kit supplied with traceable certification. Kit comprises of: AquaCal 2000 measurement instrument, CMC26/001/PT43 0.5" BSP Male threaded insertion conductivity cell, 2 metre cell connection cable, stainless steel flow cell carrier with 0.25" BSP inlet & outlets, c/w hose connectors & washers. Carrying case, mains adapter / battery charger, 4 x NiCad AA rechargeable batteries

### AquaCal 2000 Individual item

Type No	Part No	Description
AquaCal 2000	1166	AquaCal 2000 portable conductivity, resistivity and temperature instruments with 2 isolated voltage outputs. 4 x AA alkaline batteries and traceable certification.
Charger	1167	AquaCal 2000 mains adapter/battery charger.
CMC26/001/PT43	1466	Insertion conductivity cell, 0.5" BSP fitting, nominal cell constant 0.01, fitted with 0.1°C temperature sensor and terminated with a C16P connector. Supplied with certified cell constant and traceable certification.
Cable & Connector 54G	138/130	2 metre 54G cell connection cable terminated with a C16P connector and 9 pin D type to suit the AquaCal.
Flow Cell	1279	Stainless steel flow cell carrier, 0.25" BSP inlet and outlets.
Hosetail	128/183	Hosetail connector for use with the flow cell carrier.
Washer	470/082	PVC sealing washer.
Case	6053	Portable carrying case for all items in the kit.
Batteries	118/329	High capacity NiCad AA batteries.

### AquaCal 2000 Kit certification

Type No	Part No	Description
	AQCAL	Certificate of calibration to traceable standards.
	AQCALBA	Certificate of calibration with as received and after calibration results.
	TCAL	Certified temperature point, between 5 and 90°C.

Note: Temperature, pressure and solution composition will influence the life expectancy of the measurement sensor.



These products comply with current European Directives