Series 4 Portable Ion Meter Manual

ION1 - 2pt Calibrated
Nitrate NO3

100.0ppm

Press READ to measure sample.
Press CAL to clear points.
Press ▶ to enter Setup.
Press MODE to ESCAPE.

EDT directION
ELECTROCHEMISTRY PRODUCTS

Navigate the Menu

Mode/Escape

Calibrate

Power (On/Off)

Set-Up Menu

Read/Accept

Logging & Printing

Contrast/Backlight

QP459

EDT directION
ELECTROCHEMISTRY PRODUCTS
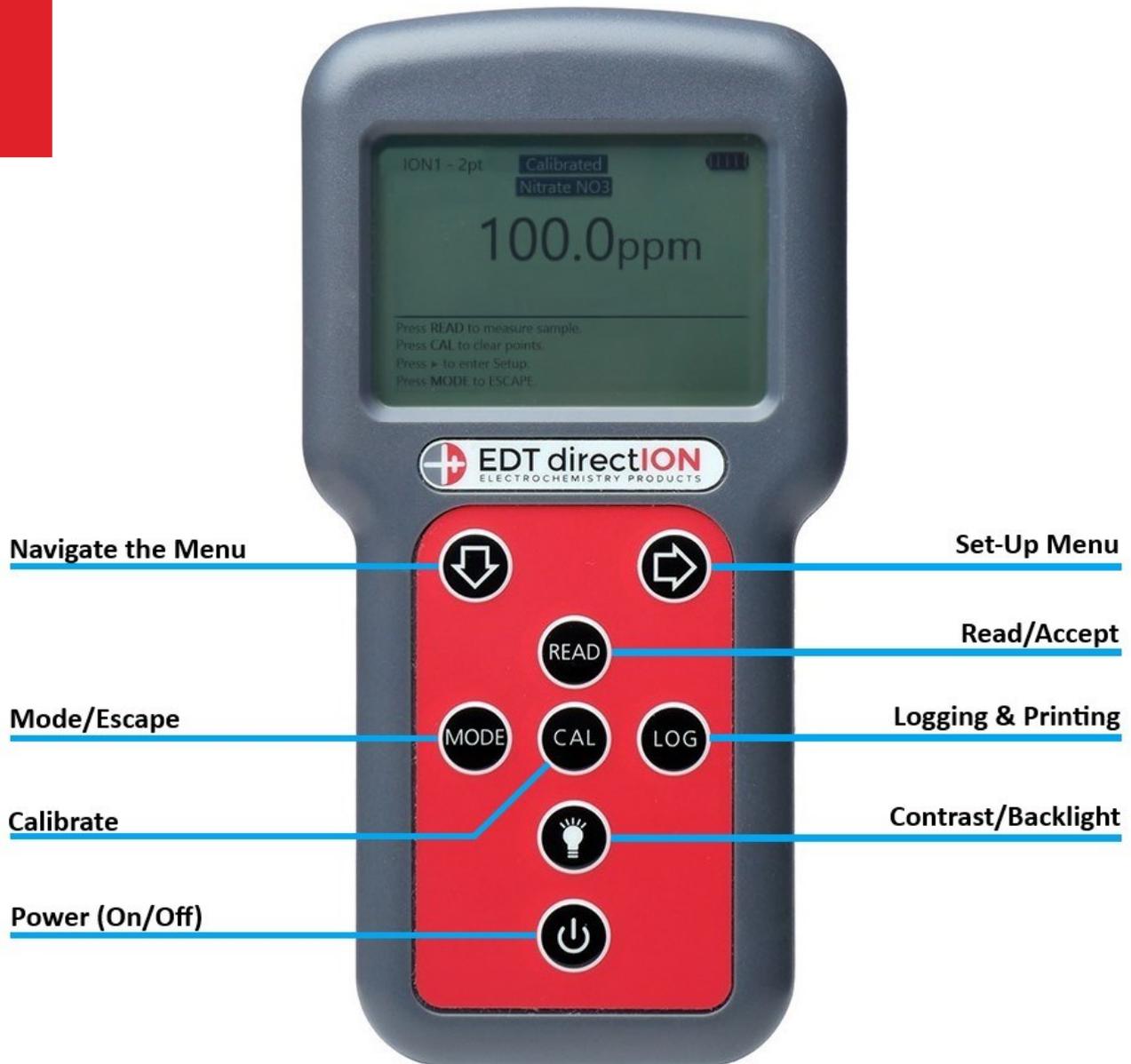
ION CONCENTRATION MODE

The Measurement of Ion concentration is very similar to the measurement of pH. You will need to calibrate the Ion Selective Electrode (ISE). For approximate indications of concentration, you can perform a 1-Point calibration. In this case the QP459 will automatically apply the theoretical slope for that ION and enable analysis across the entire range.

For greater accuracy you can perform a 2-point calibration which should ideally span the expected sample concentration. In this case the QP459 will apply the actual slope of the ISE.

Finally, if you have a wide variety of sample concentrations and require good accuracy across the range you can perform a three point calibration. The QP459 will apply the actual slope to each segment of the calibration curve.
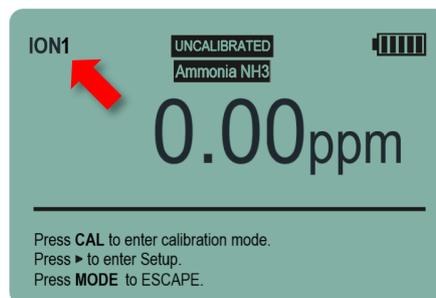
There are two identical Ion concentration Modes. When you switch modes to analyse a different species the calibration of the first mode is retained meaning that, once reconnected, the first ISE will still be calibrated. You can therefore rapidly analyse two different species and pH in the same sample without the need for further calibration.
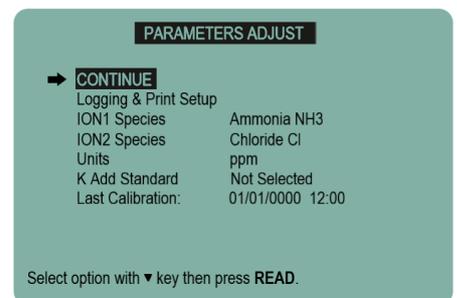
CALIBRATION:

The QP459 has a dynamic screen with full instructions provide on the display. Below is a guide to performing a simple calibration.
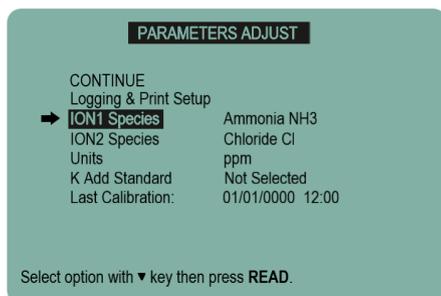
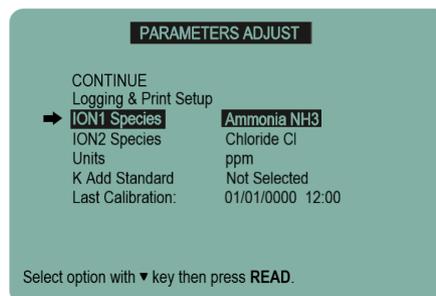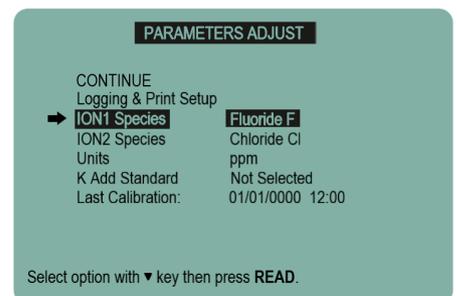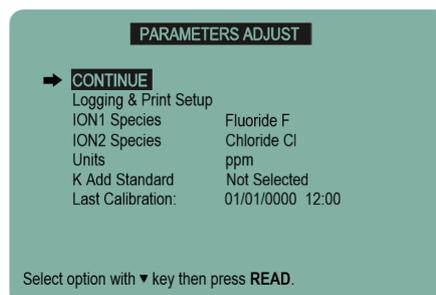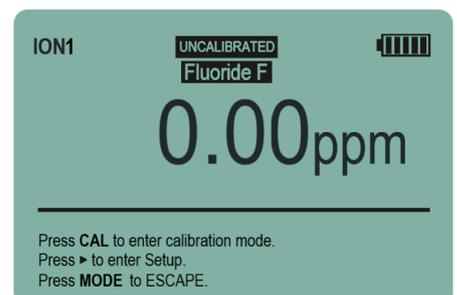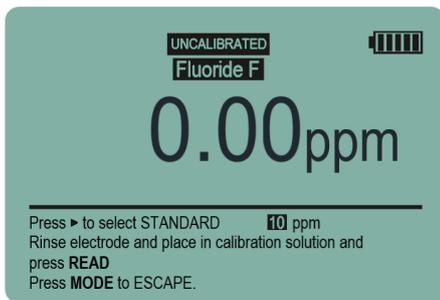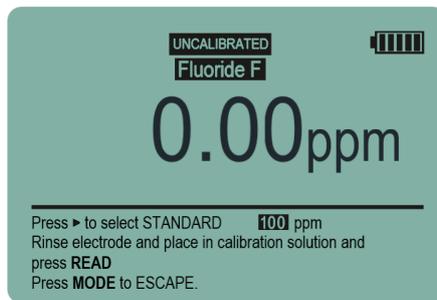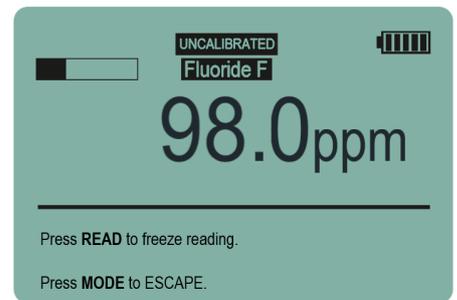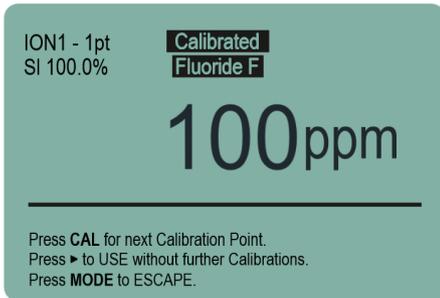|		
Switch on the unit using the **power button**.	Press **MODE** until ION1 is displayed in the top-left hand corner of the display.	Press the **right arrow** to enter 'set up'.
Press the **down arrow** and select the ION1 Species tab.	Press **READ** to highlight the individual ION species.	Press the **down arrow** until you reach the species required and press **READ.**
Press the **down arrow** to select 'Units' and press **READ** to select either ppm or mol/l.	Press the **down arrow** until CONTINUE is highlighted then press **READ**.	You are now in ION1 mode with your ISE displayed in the correct unit e.g.
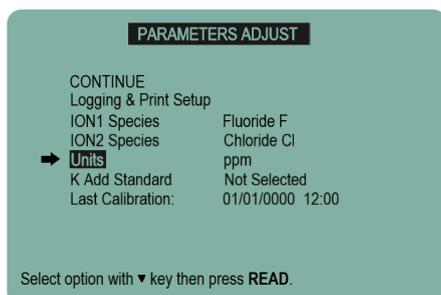
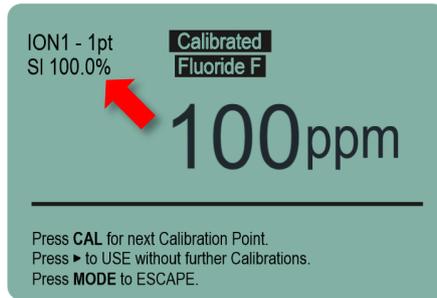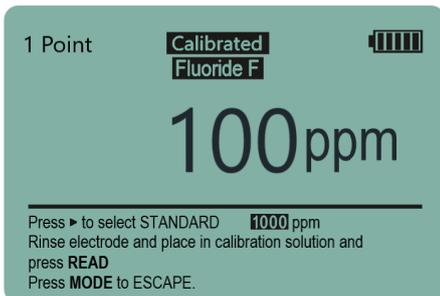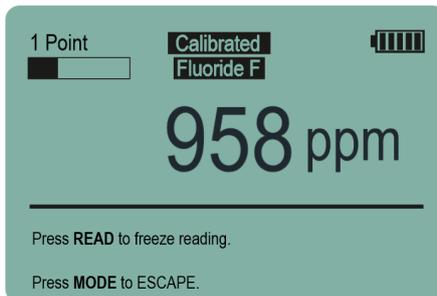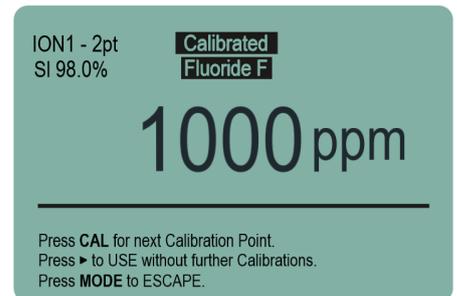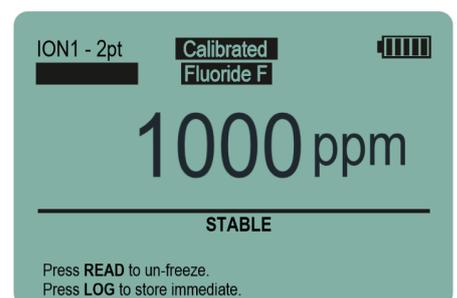|		
UNCALIBRATED / Fluoride F / **0.00**ppm / Press ▶ to select STANDARD 10 ppm / Rinse electrode and place in calibration solution and press **READ** / Press **MODE** to ESCAPE.	UNCALIBRATED / Fluoride F / **0.00**ppm / Press ▶ to select STANDARD 100 ppm / Rinse electrode and place in calibration solution and press **READ** / Press **MODE** to ESCAPE.	UNCALIBRATED / Fluoride F / **98.0**ppm / Press **READ** to freeze reading. / Press **MODE** to ESCAPE.
Press **CAL** to enter calibration mode.	Press **right arrow** to select the standard concentration.	Insert the ISE into the standard and press **READ**.
ION1 - 1pt / SI 100.0% / Calibrated / Fluoride F / **100**ppm / Press **CAL** for next Calibration Point. / Press ▶ to USE without further Calibrations. / Press **MODE** to ESCAPE.	ION1 - 1pt / SI 100.0% / Calibrated / Fluoride F / **100**ppm / Press **CAL** for next Calibration Point. / Press ▶ to USE without further Calibrations. / Press **MODE** to ESCAPE.	ION1 - 1pt / SI 100.0% / Calibrated / Fluoride F / **100**ppm / Press **READ** to measure sample. / Press **CAL** to clear points. / Press ▶ to enter Setup. / Press **MODE** to ESCAPE.
Once stabilised, the concentration will be set to the standard value.	The instrument is now calibrated. The slope will be indicated and be 100%.	Press the **right arrow** if you would like to accept a 1-point calibration.
1 Point / Calibrated / Fluoride F / **100**ppm / Press ▶ to select STANDARD 1000 ppm / Rinse electrode and place in calibration solution and press **READ** / Press **MODE** to ESCAPE.	1 Point / Calibrated / Fluoride F / **958** ppm / Press **READ** to freeze reading. / Press **MODE** to ESCAPE.	ION1 - 2pt / SI 98.0% / Calibrated / Fluoride F / **1000**ppm / Press **CAL** for next Calibration Point. / Press ▶ to USE without further Calibrations. / Press **MODE** to ESCAPE.
For a 2-point calibration press **CAL** and then select the second standard.	Then insert the ISE into the standard and press **READ.**	Press the **right arrow** to accept the 2-point calibration.
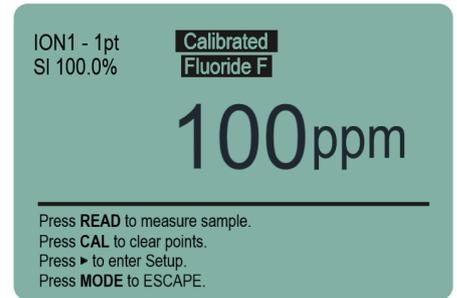
For a 3-point calibration select 10ppm as the first standard and 100ppm for the second standard. Then repeat the above three steps with the 1000ppm standard selected.

TAKING A SAMPLE READING:

Remove the ISE from the standard. Rinse with de-ionised water, blot dry and place the ISE in the sample. Stir briefly and then press **READ**. When stable the result will be displayed.

ION1 - 2pt / SI 98.0% / Calibrated / Fluoride F / **1000**ppm / Press **READ** to measure sample. / Press **CAL** to clear points. / Press ▶ to enter Setup. / Press **MODE** to ESCAPE.	ION1 - 2pt / Calibrated / Fluoride F / **1000**ppm / Press **READ** to freeze reading. / Press **MODE** to ESCAPE.	ION1 - 2pt / Calibrated / Fluoride F / **1000**ppm / STABLE / Press **READ** to un-freeze. / Press **LOG** to store immediate.
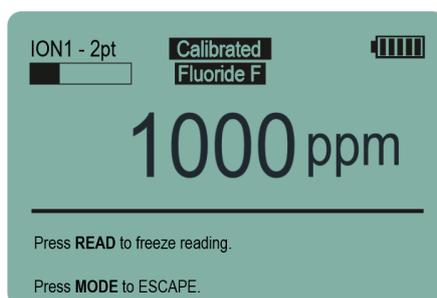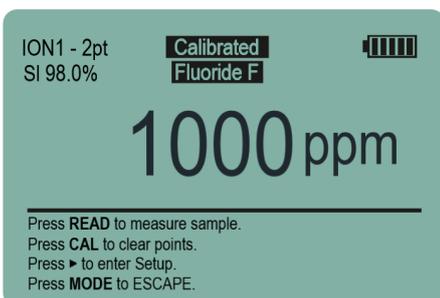
KNOWN ADDITION MODE

This as a technique used where the sample matrix is different to the standards or where a quick result is required without a direct calibration.

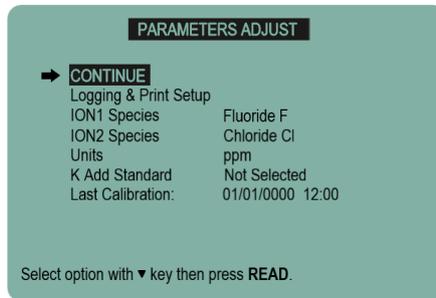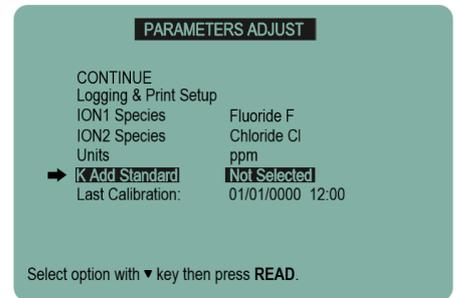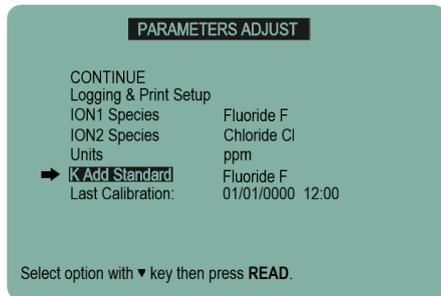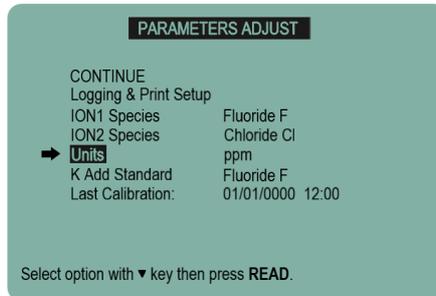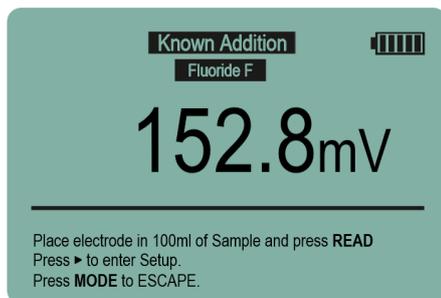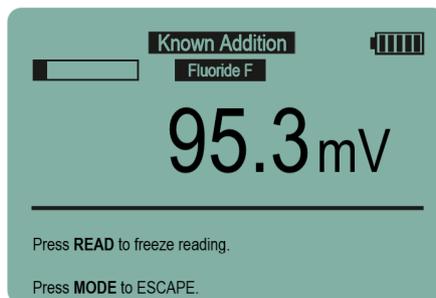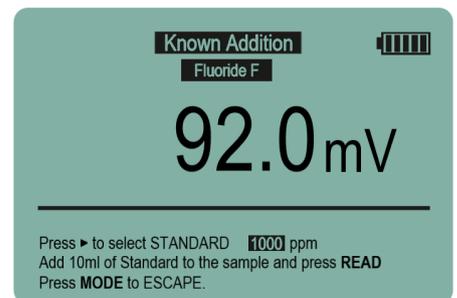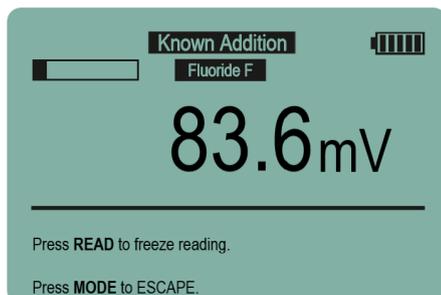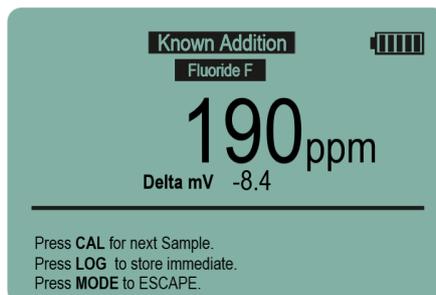|		
Known Addition (battery) Not Selected **152.8**mV Place electrode in 100ml of Sample and press **READ** Press ▶ to enter Setup. Press **MODE** to ESCAPE.	PARAMETERS ADJUST ➡ CONTINUE Logging & Print Setup ION1 Species Fluoride F ION2 Species Chloride Cl Units ppm K Add Standard Not Selected Last Calibration: 01/01/0000 12:00 Select option with ▼ key then press **READ**.	PARAMETERS ADJUST CONTINUE Logging & Print Setup ION1 Species Fluoride F ION2 Species Chloride Cl Units ppm ➡ K Add Standard Not Selected Last Calibration: 01/01/0000 12:00 Select option with ▼ key then press **READ**.
Press **MODE** until Known Addition mode is displayed.	Press the **right arrow** to enter 'set up'.	Press the **down arrow** and select the 'K Add Standard' tab and press **READ.**
PARAMETERS ADJUST CONTINUE Logging & Print Setup ION1 Species Fluoride F ION2 Species Chloride Cl Units ppm ➡ K Add Standard Fluoride F Last Calibration: 01/01/0000 12:00 Select option with ▼ key then press **READ**.	PARAMETERS ADJUST CONTINUE Logging & Print Setup ION1 Species Fluoride F ION2 Species Chloride Cl ➡ Units ppm K Add Standard Fluoride F Last Calibration: 01/01/0000 12:00 Select option with ▼ key then press **READ**.	PARAMETERS ADJUST ➡ CONTINUE Logging & Print Setup ION1 Species Fluoride F ION2 Species Chloride Cl Units ppm K Add Standard Fluoride F Last Calibration: 01/01/0000 12:00 Select option with ▼ key then press **READ**.
Press the **down arrow** until you reach the species required and press **READ.**	Press the **down arrow** to select 'Units' and press **READ** to select ppm or mol/l	Press the **down arrow** until CONTINUE is highlighted and then press **READ.**
Known Addition Fluoride F **152.8**mV Place electrode in 100ml of Sample and press **READ** Press ▶ to enter Setup. Press **MODE** to ESCAPE.	**Known Addition** Fluoride F **95.3**mV Press **READ** to freeze reading. Press **MODE** to ESCAPE.	**Known Addition** Fluoride F **92.0**mV Press ▶ to select STANDARD 1000 ppm Add 10ml of Standard to the sample and press **READ** Press **MODE** to ESCAPE.
Press **MODE** until you are in the 'Known Addition' mode.	Place the ISE in 100ml of sample and press **READ.**	Press the **right arrow** to select the standard you are using and press **READ.**
Known Addition Fluoride F **83.6**mV Press **READ** to freeze reading. Press **MODE** to ESCAPE.	**Known Addition** Fluoride F **190**ppm **Delta mV** -8.4 Press **CAL** for next Sample. Press **LOG** to store immediate. Press **MODE** to ESCAPE.	Note: This should be at least 10 times stronger than the expected sample concentration.
Add 10ml of the standard solution to the same beaker, stir and press **READ.**	The QP459 will measure the solution and display the result, when stable, in direct concentration units.	
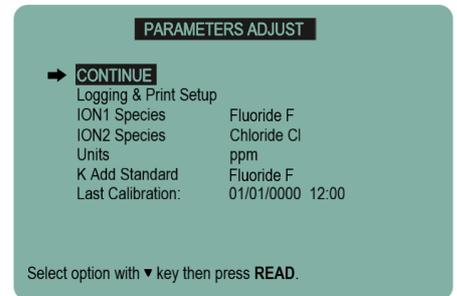
Specification

Accuracy	Resolves to +/-0.01 pH units
mV Accuracy	+/- 0.1 mV over the entire range
Battery Life	250 hours continuous use - auto switch off and power saving options
Commodity Code	90278011
Connection	BNC (pH & ISE) - 3.5mm Jack (ATC)
Data Output	Mini USB - outputs CSV - 38,400 Baud
Data Storage	Storage of up to 64 files - Logging max 10,000 data points
Dimensions	175x88x48mm
pH & Ion Calibration	1,2 or 3 point automatic calibration with auto endpoint
Power Requirement	4 x AA Batteries
mV Range	+/- 1999.9 mV
pH & Ion Range	-2 to 16.00 pH units - refer to ISE spec for Ion range
Temperature Accuracy	+/- 0.1°C over the -5 to 105 °C range
Temperature Compensation	Fully automatic for pH only
Warranty	2 year warranty - Excludes electrodes, accessories, consumables and misuse
Weight	350g - Meter only

Related Products

EDT Combination ISEs

EDT Standard Solutions

EDT ISABs

www.edt.co.uk/product/series-4-portable-ion-meter

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