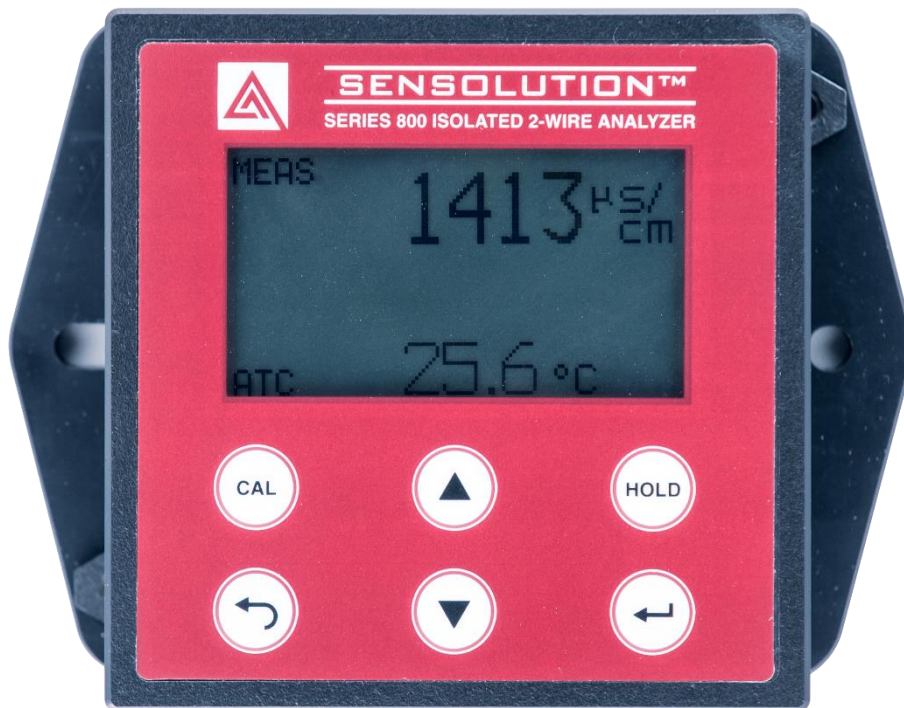


SENSOLUTION™ C800 Analyser Operating Manual



Installation and Operating Instructions

C800 Analyser Operating Manual

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1. Introduction

Thank you for selecting a C800 conductivity Analyser. The analyser converts an input from an electrochemical sensor to a 4-20mA signal for a PLC or chart recorder. The C800 is a microprocessor-based instrument that is designed to be sturdy and user-friendly.

This analyser has many user-friendly features – all of which are completely accessible through the water-resistant membrane keypad.

Please read this manual thoroughly before operating your analyser.

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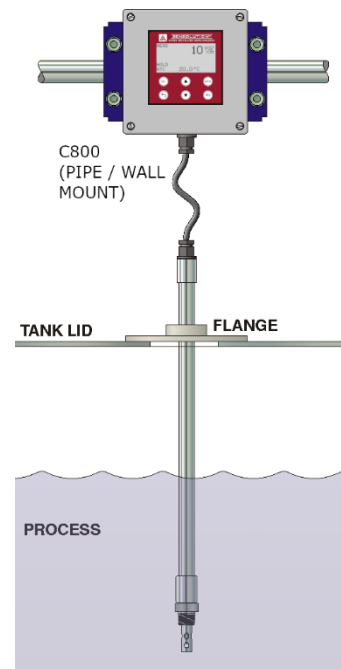
2. Mechanical Installation

The C800 may be supplied in an aluminium enclosure connected to a Model 300 or as a stand-alone unit.

To install the sensor:

- Cut a 75mm diameter hole in the tank lid.
- Insert the Model 300 through the hole and allow the probe to rest on the flange.
- Loosen the grub screw in the flange to adjust the depth of the probe.

There is normally no need to bolt the flange down.



2.1. Open Installation

If the analyser is to be mounted separately, use an Astles Control Systems universal mounting kit (500/9501) to fix it to a pipe or wall. To attach the analyser to the mounting kit use M6 bolts, washers, and nuts.



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2.2. Sighted Enclosure Installation

To install the analyser into a sighted enclosure, the glands must be removed before passing the box through the window. Ensure the screen gasket is in place. Secure the analyser to the front of the enclosure using two screws either side of the analyser, shown below.



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3. Electrical Installation

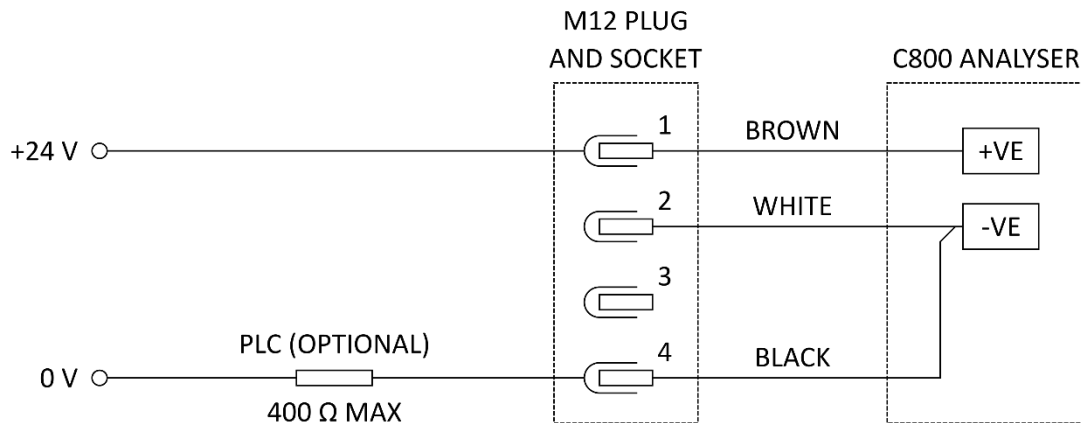
3.1. Power supply Requirements

The C800 requires a 24V \pm 10% dc supply. Other devices such as chart recorders and PLCs may be connected in series. Use screened cable if the 4-20mA conductivity signal is required.

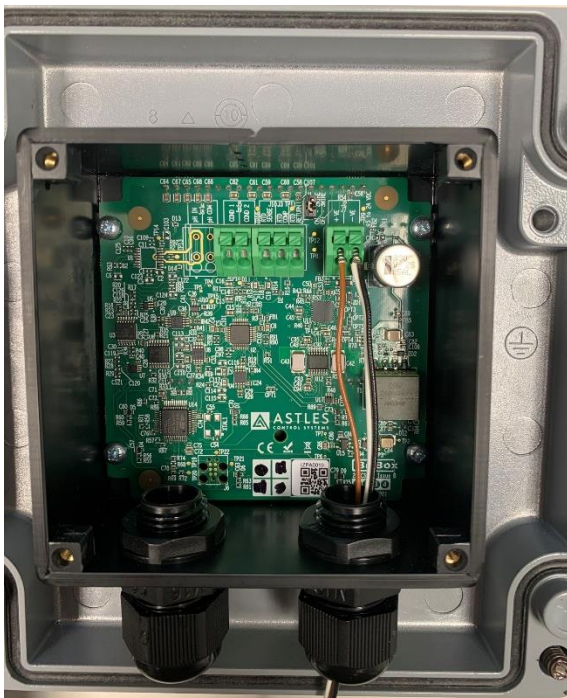
3.2. 24V Supply Wiring

3.2.1. Connection via an M12 Socket

To connect the analyser via an M12 socket, wire it as shown:



All three wires from the M12 socket must pass through a gland in the bottom of the analyser.



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3.2.3. Direct Connection to Analyser

To wire directly to an external power source, wire +24V into the **+ve** terminal and 0V to the **-ve** terminal. Use 2-core screened cable, such as Belden 8760, through a gland in the bottom of the analyser. Only connect the cable screen at the power source, not in the analyser.

3.3. Sensor Wiring

Connect a Model 300 conductivity sensor through a gland in the bottom of the analyser.

Connection	Terminal	Model 300 Wire Colour
Conductivity Signal	COND 1	Red
Conductivity Signal	COND 2	Black
Pt100 Temperature Signal	RTD SENSE	Green
Pt100 Temperature Reference	RTD RETURN	White
Pt100 Wire Compensation (Optional)	RTD COMP	N/A

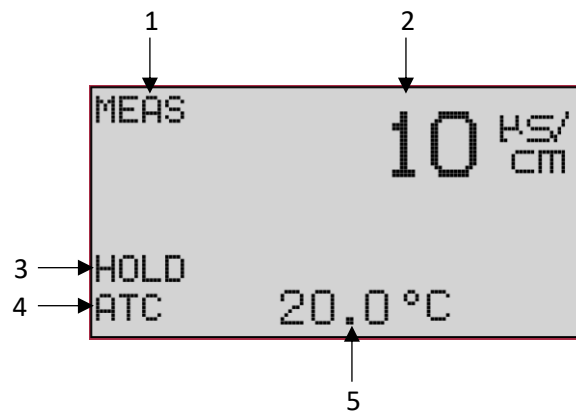
If you are using a 3-wire temperature compensator, connect the cable compensation wire to **RTD COMP** and remove jumper **J1**.



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4. Display and Keypad Functions

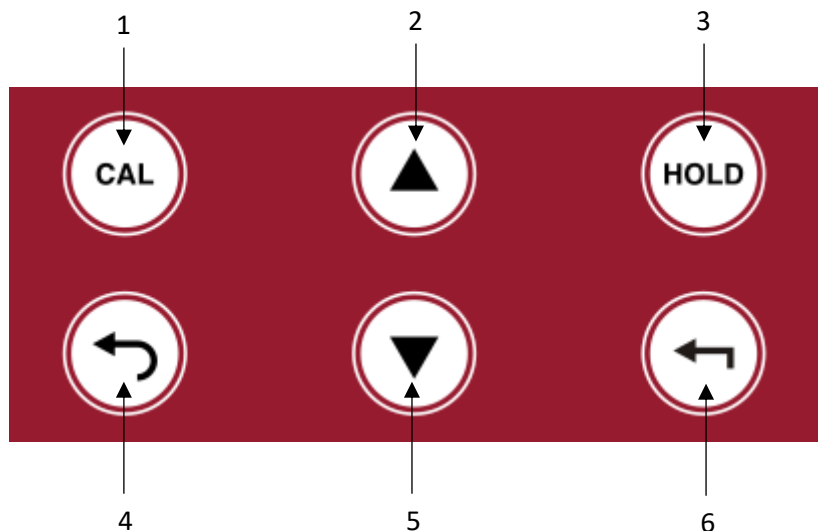
4.1. Display



1. Measurement mode indicator
2. Measurement reading
3. Hold mode indicator
4. Automatic Temperature Compensator indicator
5. Temperature Reading

4.2. Keypad Description

The C800 analyser has 6 buttons on the keypad allowing for easy and quick operation of the analyser.



1. **CAL**: Takes you directly to the calibration menu. See [section 8](#).
2. **▲ (Up-Arrow)**: Allows you to scroll through various menus or increment calibration values.
3. **HOLD**: Will enable the hold function. See [section 6](#).

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4. ↶ (**Back**): Navigates to the previous screen. Hold the button for 2 seconds to return to the primary display.
5. ▼ (**Down-Arrow**): Allows you to scroll through various menus or decrease calibration values.
6. ↵ (**Enter**): Will confirm selections in menus and calibration values. Pressing this button when on the primary display will navigate to the main menu.

5. Pin Code

The C800 analyser pin code is “2000”. This code is required to access the instrument functions.



6. Hold Mode

The hold mode on the C800 analyser will fix the output current at the level it was at when the button was pressed.

To initiate the hold mode either press the **HOLD** button or navigate to the **HOLD** menu and enable it there. There is a 20 minute timer which can be restarted by pressing the **HOLD** button twice.

The displayed measurement will be unaffected by the hold mode.

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7. Basic Setup

7.1. Range Setup

Navigate to the **RANGE** menu to set an appropriate conductivity range for the solution you are measuring.

```
CELL CONST
CAL.FACTOR
> RANGE
DSL-DSH
ATC
```

```
RANGE
  0.00-20.00  µS/cm
  0.0-200.0   µS/cm
> 0-2000     µS/cm
  0-5000     µS/cm
                                     ↑↓
```

Navigate to the **DSL-DSH** menu to specify a custom range for the 4-20 mA current output.

```
CAL.FACTOR
RANGE
> DSL-DSH
ATC
TEMP COMPENSATION
```

```
DSL
      0      2000
      4 mA   20 mA
                                     ↑↓
```

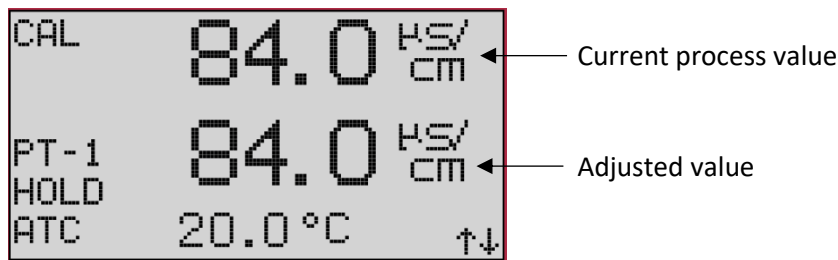
On an aluminium beverage can line, the typical ranges for stages 3 & 5 are **0 – 2000 µS/cm**, and for stages 6 & 7 are **0.0 – 200.0 µS/cm**.

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8. Calibration

Before starting calibration ensure the analyser is set up correctly by referring to [section 7](#). To perform calibration you will require conductivity standards. Standards are available in 84 μ S and 1413 μ S and can be purchased by emailing sales@astles.co.uk.

When calibration has started the analyser will go into a temporary hold mode until the calibration is complete.



8.1. Conductivity Calibration

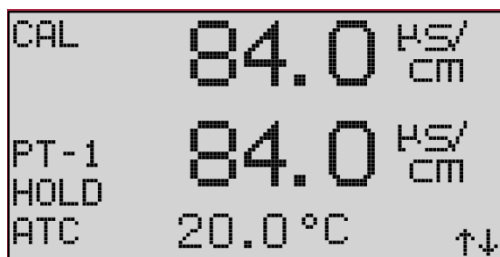
Different ranges require different conductivity standards for calibration. For 0.0-200.0 range use 84 μ S and for 0-2000 range use 1413 μ S. The calibration standard must be within 10% – 90% of the maximum conductivity.

To calibrate the analyser perform a calibration using conductivity standards. The calibration will fail either if the calibration factor is above 2.

To start a calibration press the **CAL** button.



Dry the sensor and hold it in air. Check the process value reads 0 μ S.



Place the sensor in the standard, wait for the value to settle. Adjust the lower value to match the conductivity standard and press the ← button.

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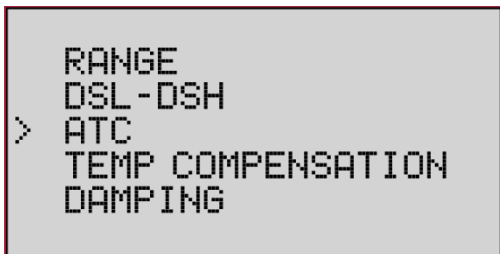
Press \leftarrow again to confirm the slope and the offset. The analyser will then ask if you would like to reset the runtime, select **NO** for this.

The sensor is now calibrated.

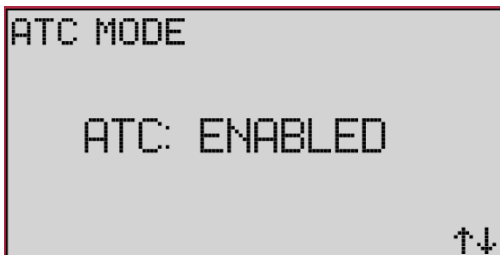
8.2. Temperature Calibration

By default ATC mode is enabled.

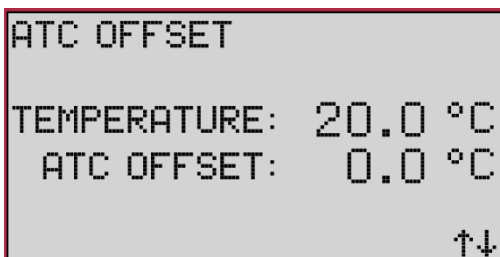
Temperature calibration is only possible when an ATC probe is fitted. The ATC calibration offset is limited to ± 10 °C.



To calibrate the temperature, navigate to **ATC** in the main menu.



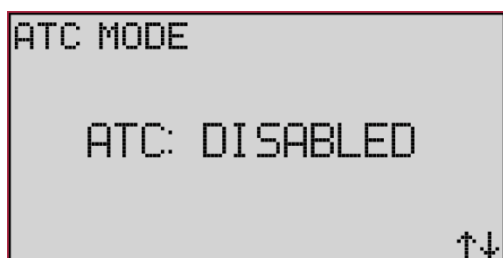
ATC must be enabled.



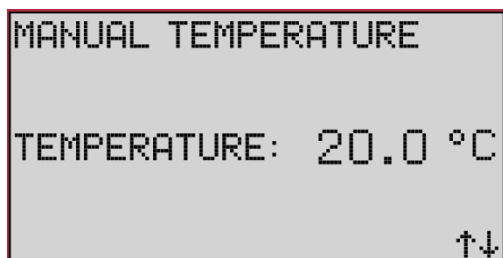
Place the sensor into a solution of stable temperature. Adjust the offset, with the arrows, so that the temperature reads the correct value and press \leftarrow to confirm.


The analyser is now calibrated for automatic temperature readings.

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If there is no ATC available, disable ATC mode and manually set the process temperature.




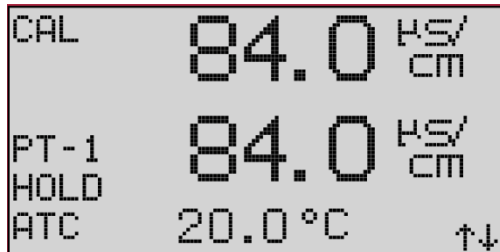
Set the manual temperature to the desired value and press  to confirm. The default value for manual temperature is 20.0 °C but it can be set between 0 – 100 °C.

The analyser is now set up with a manual temperature.

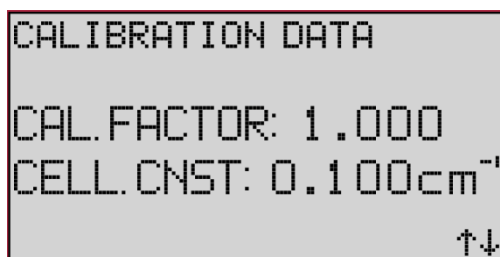
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9. Main Menu

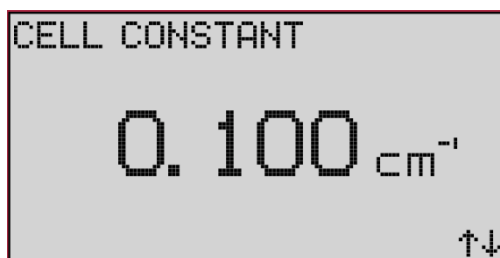
The main menu can be accessed by pressing the  button and contains 13 different options. This section will give an explanation to those options.



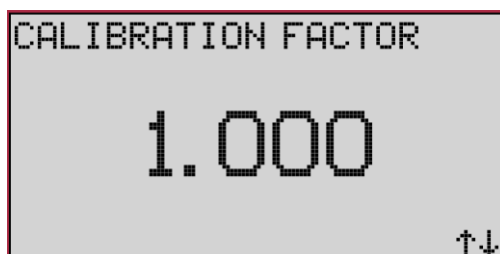
CALIBRATE – This takes you to the calibration screen. This has the same function as pressing the **CAL** button. See [section 4.2](#) for further information.



CAL.DATA – This shows the raw data from the last calibration.



CELL CONSTANT – This shows the cell constant. This value should match the sensor connected.



CAL. FACTOR – This shows the calibration factor calculated from the most recent calibration. This value can be edited here.

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```
RANGE
  0.00-20.00 Ks/cm
> 0.0-200.0 Ks/cm
  0-2000 Ks/cm
  0-5000 Ks/cm
↑↓
```

RANGE – Select the range appropriate for the process. Lower ranges give greater accuracy and higher ranges permit higher readings.

```
DSL
    0      2000
  4 mA    20 mA
↑↓
```

DSL-DSH – This allows the user to set the low and high process values that correspond to 4 and 20mA respectively. Initially the arrows will adjust DSL; to adjust DSH press ←.

```
ATC MODE
      ATC: ENABLED
↑↓
```

ATC – This allows the user to enable or disable the automatic temperature compensator and calibrate the temperature probe. See [section 8.5](#) for further information. By default, ATC is enabled.

```
TEMP COMPENSATION
      2.1 %/°C
↑↓
```

TEMP COMPENSATION – Conductivity values vary with changes in temperature. This value will compensate for the changes of temperature.

```
DAMPING
      0.2 Secs
↑↓
```

DAMPING – This "dampens" the primary value by allowing only half the detected change per time interval (in seconds). Damping is adjustable between 0 and 10 seconds in intervals of 0.1. By default, this is set to 0.2 seconds.

```
RESET RUNTIME
      1000 DAYS
CONFIRM RESET? YES
↑↓
```

RESET RUNTIME – This will display the current runtime and allows the user to reset the runtime of the analyser.

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```
HOLD MODE  
  
HOLD: ENABLED  
  
↑↓
```

HOLD – This allows the user to enable or disable hold mode. This has the same functionality as pressing the **HOLD** button. See [section 6](#).

```
Runtime:      1000dys  
Runtime.Acc:  1000dys  
Serial No: ASCM0001  
FW Version:   2.0.1  
HW Version:   0.0.1  
  
↑↓
```

SYSTEM INFO – This displays system information for the analyser:

- Conductance
- Loop Current
- Runtime
- Runtime accumulated
- ATC resistance
- Serial number
- Firmware version
- Hardware version

```
FACTORY RESET  
  
CONFIRM RESET? NO  
  
↑↓
```

FACTORY RESET – This resets the analyser to its default settings including clearing calibration data.

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