

## Handi-Lab © Technical Information

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### Introduction

This document describes the operation and specification of the Gwent Group Handi-Lab instrument. The instrument can be used for chronoamperometric measurements; initially it was designed for ammonia and onion pungency testing in combination with the kit provided by Gwent Group but it can be used for any other applications. The Handi-Lab Instrument has been equipped with a temperature controlled oven which will maintain a constant temperature at the sensors surface while working in variable temperature environment.

The instrument is battery powered and can be used as a hand-held device or a desktop device. Electrochemical sensors and biosensors commercialised by Gwent Group shall be used with the Handi-Lab. Electrochemical sensors product codes: BE2030408D7; BE2030801D3; BE2070822D1 are suitable to use with Handi-Lab instrument as well as pyruvate biosensor AE2080918D2 and ammonia biosensor AE2071122D6.

For more information about our range of electrochemical sensors and biosensors please visit our website at [www.gwent.org](http://www.gwent.org) or contact us at [sales@gwent.org](mailto:sales@gwent.org).

### Instrument Specification

Sensor measurement range: 0.00 to 20.0 $\mu$ A in 0.01 $\mu$ A steps, accuracy +/- 1%.

Oven temperature set point range: 20.0 to 55.0 degrees Celsius in 0.1 degree steps, accuracy +/- 1%.

Oven preheating time setting range: 10 to 120 seconds, in 1 second steps.

Incubation time setting range: 0 to 250 seconds, in 1 second steps. (Potential not applied)

Stabilising time setting range: 10 to 250 seconds, in 1 second steps. (Potential applied)

System idle timeout setting range: 1 to 20 minutes, in 1 minute steps.

Display backlight timeout setting range: 20 to 240 seconds, in 1 second steps.

Sensor bias voltage setting range: 1 to 100mV, in 1mV steps, accuracy +/- 1mV.

Sensor bias voltage polarity options: true or inverted

### Precautions

Powerful magnets are present in the oven assembly; please keep mechanically and magnetically sensitive items such as wrist watches and floppy disks away from the instrument.

A potential burn hazard exists if a high temperature setpoint is selected.

Usual precautions associated with mains powered equipment should be employed when the Handi-Lab charger is connected.

## Quick Start Guide

Handi-Lab can be switched-on by pressing any key.

After the welcome screens the user is prompted to enter the A parameter, the displayed value can be accepted by pressing Enter or a new value can be entered using the Up and Down arrows. Press Enter when completed.

Next the B parameter is displayed, accept this or edit this as above. Do the same for the Z and Dilution Factor parameters.

The A, B, Z and dilution factor parameters have been designed for ammonia and onion pungency sensors and they are provided by Gwent Group together with batches on ammonia and pyruvate biosensors. In the case the instrument is used with other sensors and for other purposes than above, the default parameters: A= 1, B=0, Z=1 and dilution factor= 1 in order to read the microA current values.

The Ready screen will then be displayed and from here the user can;

Press Enter to start a test

Press and release the Down arrow to view previous test results (if any)

Press and hold the Down arrow for two seconds to return to parameter entry

Press and hold both the Up and Down arrows for two seconds to display the Configuration menu

Press and hold Esc (escape) for five seconds to switch Handi-Lab off

Escape can be pressed at any time to return to the previous screen.

Handi-Lab will switch itself off if no button is pressed within a predetermined time.

## Controls

Four buttons are used to enter parameters, run tests and access the menus.

Enter	Start / Next / Yes
Escape	Stop / Previous / No
Up Arrow	Increment
Down Arrow	Decrement

## Configuration Menu

From the Ready screen press and hold both the Up and Down arrows for two seconds to display the Configuration menu, the following settings can then be viewed or changed;

- Temperature Setpoint
- Preheating Time
- Incubating Time
- Stabilising Time
- Idle Timeout
- Backlight Timeout
- Test Millivolts
- Sensor Polarity

Use Enter to display the next menu in turn and the Up and Down arrows to change a setting, any changes are remembered. Escape returns to the Ready screen.

## Parameter Menu

The Parameter menus are displayed upon power-up and can also be accessed by pressing and holding the Down arrow for two seconds. The displayed values can be accepted by pressing Enter or changed using the Up and Down arrows. Escape returns to the previous parameter.

## **History Menu**

When in Ready mode press and release the Down arrow to enter History mode. Previous test results (if any) can be viewed by using the Up and Down arrows, the most recent Pyruvate result is displayed first. Ten previous results can be stored with -9 being the oldest.

If a previous reading was in error then this information is displayed.

If the default parameter settings were in use for a reading then the final uA is displayed.

To exit History mode press Escape or to clear the history memory press Enter.

## **Display**

To save power, if no button is pressed for the time set in 'Backlight Timeout' the display backlight will switch off if running on batteries or dim if the charger is connected. Ten seconds before timeout occurs the backlight is dimmed as a warning. Pressing the Up or Down Arrows will restore the backlight.