



# OPERATION MANUAL

## BATTERY CAPACITY AND CHARGER ANALYSER (BACA) 12V25A

Version: 6.0

**AUSTRALIA**

**1300 734 253**

[sales@valen.com.au](mailto:sales@valen.com.au)

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

**NEW ZEALAND**

**0800 734 253**

[sales@valen.co.nz](mailto:sales@valen.co.nz)

[www.valen.co.nz](http://www.valen.co.nz)



## The story so far.

Regal Electro was first founded in 1981 in Cape Town, South Africa, supplying mostly security components and batteries to security installers. In 1998, the business was sold and the Managing Director, Philip Daries, immigrated to Australia. The year 1999 saw the opening of the newly renamed Regal Electro, a battery and security component supplier based in Lake Cargelligo, NSW.

**Over the next few years, it became apparent that there was a growing need in the industry for a battery supplier who knew not only the characteristics of various technologies, but also understood the technical manufacturing procedures to ensure a quality product.**

The growing team at Regal Electro worked to position the company as a premium supplier of fine energy solutions, offering a complete packaged solution to a wide range of clients.

In 2009, Regal Electro opened its very own custom built premises in Hallam, VIC to ensure fast service and delivery to its clients. 2010 saw the establishment of a presence in New Zealand.

To keep up with every-increasing growth, the Lake Cargelligo Head Office moved into a brand new purpose built facility in 2012.

In 2015, Regal Electro successfully completed its first ENLIFEN Energy Storage Optimiser (ESO) prototype which was put proudly on display at the Comms Connect Exhibition in Melbourne.

In 2017, Regal Electro went through another major change with the rebranding and reinvigorating of its core product range, Power Charge. The Power Charge range was renamed Valen, which in Latin means 'Power'. Brisbane operations also began at this time.

A Sydney head office and logistics centre was opened in Lawson in April 2018 with the view to further improve the level of service offered to clients.

In July 2018, Regal Electro made the key strategic decision to go through another rebranding and changed the company name to Valen. This decision was made to strengthen the brand and recognition within the industrial battery market.

As of today, Valen has grown exponentially since its humble beginnings to become a trusted advisor to clients throughout Australia and New Zealand. Valen is an industry leader in energy storage for mission critical applications and continues to innovate and evolve, keeping abreast of new technologies as they emerge.

# A company built on its Core Values.



## Wow Customers through Service

- Our customers want service and we want our employees to go above and beyond for our customers.
- We expect our employees to deliver a WOW experience with customers.



## Move Fast & Remain Focused to Get Results

- We are serious about results and we must never lose focus on our goals and our sense of urgency to achieve.
- Do something once and do it right.
- We believe in working hard and putting in extra effort to get things done.



## Upbeat Positive Attitude

- If our employees have a positive attitude and constantly strive to give your best effort, eventually we will overcome our immediate problems and find you are ready for greater challenges.
- Positive and negative are directions that lead to different outcomes. We expect our employees to move in the right direction each day.



## Challenge the Status Quo

- We are committed to great results and good is the enemy of great. We want our employees to embrace & drive change



## Play as a Team

- Working effectively as a team creates momentum, improves morale.
- The difference between success and failure is a great team and we expect our employees to work together as a team.

# THANK YOU FOR INVESTING IN A 12V BACA BATTERY TESTER



<b>CONNECTING THE TESTER TO THE BATTERY</b>	<b>5</b>
Menu System	5
Setting the Test Parameters	5
Reading the Test Results	7
<b>STARTING THE TEST</b>	<b>7</b>
Start with Discharging	7
Start with Charging	7
During the Test	7
Pendrive Suspend	8
<b>ERROR MESSAGES</b>	<b>8</b>
<b>TECHNICAL SPECIFICATIONS</b>	<b>8</b>
<b>SOFTWARE</b>	<b>9</b>
Main Icons	9
Measurement Window	9
<b>SOFTWARE</b>	<b>10</b>
Moving the Marker	10
Deleting the Marker	10
<b>TEST WINDOW</b>	<b>10</b>
<b>GRAPH SETTINGS</b>	<b>11</b>

## INTRODUCTION

With this processor controlled capacity tester, you can test the Ah capacity of Valve Regulated Lead Acid (VRLA) batteries.

You can set the cut-off voltage (the voltage limit where you want to stop the discharge), the discharging current and the charging time between the cycles is programmable within the tester. You can program 1 to 200 cycles.

The tester measures the charged and discharged Ah and the elapsed time since the start of each cycle.

- Performs a full battery discharge test producing an accurate and absolute report on the performance of the battery and/or charger under test.
- Easy to use software allows for data and tests from the BACA to be stored, exported to PDF or printed for the analysis of batteries.
- The BACA 12V and 24V unit can complete up to 200 cycles unassisted and record the battery and charger performance data. Enabling the user to set up the system and leave it to run the tests ultimately saving time on battery testing.
- Flexible unit allows for testing of an extensive range of battery capacities from 0.8Ah to 200Ah.

# CONNECTING THE TESTER TO THE BATTERY

After connecting the tester to the battery, you can view the software version and the serial number of the tester for a few seconds. After this, the voltage of the battery is displayed. Ensure the USB is connected to the tester before you start programming the tester. The tester will not run a test without a USB connected to it.

## Menu System

The main menu consists of 6 screens. You can change between the screens using the DISPLAY CHANGE button.

### 1 Voltage Screen

Voltage
12.8V

### 2 Test Parameter Screen

Test parameters
-----------------

### 3 Read Test Results

Read test result
------------------

### 4 Charge

Charge
--------

### 5 Discharge

Discharge
-----------

### 6 Pendrive Suspend

PNDRV Susp
------------

## Setting the Test Parameters

To set the test parameters, you have to switch to the test parameters screen and press the START/STOP button. This submenu consists of 5 different screens. You can change between the screens by pressing the DISPLAY CHANGE button. In order to change the values, use the UP and DOWN buttons. If you keep the UP/DOWN button pushed, the values change rapidly.

First, you can set the desired number of cycles.

Number of cycles
Enter 1

You can change the values 1-200 by pressing the UP/DOWN button.

After selecting the number of cycles, press the DISPLAY CHANGE button to skip to the charging time screen. You can change the charging time between 1 hour to 99 hours (UP/DOWN button)

Charging time	
Enter	02h

After setting the charging time, press the DISPLAY CHANGE button to skip to the discharging current screen. You can set the discharging current between 0.3A and 25A (0.1A steps) (UP/DOWN button). After setting the discharging current press the DISPLAY CHANGE button to skip to the cut-off voltage screen.

Disch Currebt	
	5.5A

Set the cut-off voltage (Volts or VPC) between 6V to 15V with 0.3V steps (0.05VPC step).

U-Cut Off	07.2V
Enter	1.2V/c

After setting the cut-off voltage, press the DISPLAY CHANGE button to skip to the sample interval screen.

Sample Interval	
Automatic	

The required sampling interval can be selected. Valen recommend using the automatic sampling. This uses 2000 points, so the file will be small and easily edited in the software. If you record a long test, the resolution will not be very high. Automatic is displayed as 'Aut.' and is before 0.

After finishing the setting of the parameters, press the START/STOP button to go back to the main menu screens. Navigate to the charge or discharge screen to start the battery test.

## Reading the Test Results

In the main menu go to the read test result display and press the START/STOP button.

Pressing the DISPLAY CHANGE button, you can see the result of each cycle. A cycle consists of a charging and a discharging part.

The last cycle is always a half cycle. It means that there is only charging because the tester charges the battery after the test process. So, if you have programmed 4 cycles, after the 4th cycle the tester connects the charger to the battery and does the charging. When reading the test result of the last cycle, you see only charged Ah.

Minutes	Discharged Ah
025min	05.2A*h
4/5 Read	06.2A*h

**Cycle #**                      **Charged Ah**

To go back to the main menu, press the START/STOP button.

## STARTING THE TEST

### Start with Discharging

If the battery is fully charged, you can start the test with discharging. In this case, the first cycle is a half cycle (there is no charged Ah), you will see only discharged Ah when reading the test result.

To start the test with discharging, change to the discharge screen (see menu system) and press the START button for 1 second.

### Start with Charging

If it is necessary to charge the battery before discharging it, you should select this type of start. In this case, the tester connects the charger to the battery and does the charging if you have programmed the charging time. You can program the charging time in the Test Parameters menu.

To start the test with charging, change to the Charge screen (see menu system) and press the START button for 1 second.

Before the tester starts the process, it checks if there is a charge connected to it. If not, it will ask you *Charger Ready??*.

## During the Test

During the test, you can see the following screen:

Elapsed time	Voltage
0025min	12.0V
1/1 Disch	1.3Ah

**Cycle Process**                      **Ah**

- **Elapsed time:** is the time since the beginning of the actual process (charging or discharging).
- **Voltage:** the voltage of the battery (during discharging), or the actual charging voltage (during charging).
- **Cycle:** number of cycles.
- **Process:** charging or discharging
- **Ah:** the actual charged or discharged Ah since the beginning of the actual process (charging or discharging).

Pressing the DISPLAY CHANGE button, you can view the result of the finished cycles.

## Pendrive Suspend

Before removing the USB stick from the tester, make sure the actual test is finished. Then enter the Pendrive Suspend menu and press the START button. Remove the pendrive and plug it into the PB USB and open the files with Akku.exe.

The test file on the pendrive is finished when the test is finished or stopped by pressing the START/STOP button. Removing the pendrive or disconnecting the battery from the tester during the test will cause the loss of test data of the entire test.

## ERROR MESSAGES

- **No Pendrive 000:** this indicates that there is no USB connected to the tester. Please insert a USB before trying the test again.
- **ERROR 001 ERROR 003:** the tester is unable to write on to the USB. Remove the USB from the tester, connect it to a computer, remove the data from the USB and format it. During the formatting, any data left on the USB will be permanently deleted. Once the USB has been formatted, copy the data back on to the USB, remove from the computer, disconnect the tester from the battery and battery charger, wait for the screen to go blank and then insert the USB. Connect the battery and charger and try starting the test again.

## TECHNICAL SPECIFICATIONS









Measured Voltage Range	6V to 18.6V
Maximum Input Voltage	20V
Minimum Input Voltage	6V
Discharging Current	0.3A to 25A (0.1A steps)
Current Error	+2% + 0.05A
Cut-off Voltage	9V to 18V, 6V
Charging Time	1 hour to 99 hours
Maximum Number of Cycles	200
Dimensions	154 x 105 x 235
Weight	2kg



# SOFTWARE

## Main Icons

With the main icons, you can do the following:






	Download Measurements	
	Test Report	Opens a test report window
	Read USB Flash Drive	
	Open	Open a measurement from pendrive
	Save	Save the measurement
	Close	
	Help	This screen
	Exit	

These are the small icons, in the upper part of the main window.

## Measurement Window

After downloading the measurement data, it appears in a new window which includes the discharge curve. You can see the filename in the upper right corner of the window.

With the small icons, you can do the following:

	Original Size	Restore original size
	Zoom	Zoom any part of the curve
	Activate Vertical Marker	Move the marker with buttons
	Activate Mouse Marker	Move the marker with mouse
	Details	Shows the test result in a small window
	Setting U, I taxers	
<b>Time: 0</b> <input type="text"/> <b>minutes</b> <input type="text"/>	Time	
<b>Current: 0A</b> <input type="checkbox"/>	Current	
<b>Voltage: 0V</b> <input type="checkbox"/>	Voltage	

There are other fields. Here you can enter the values of the axes. You can write the current voltage and time values. Using this feature, you can only see the desired part of the graph. It is useful in case of long curves.

## SOFTWARE

Here you can create test reports. You can mark the desired points of the graph documenting the test details, making notes, etc.

To make the report:

1. Fill the report. You can choose to add in your logo (right click on LOGO 250x120 Pixel).



Add in your company and contact details. Fill in the name, place of measurement and instruments.

2. Select the type of marker you would like to place (voltage or current).
3. With the RIGHT mouse button, you can place voltage or current markers to any point of the graph.
4. Print the test report.



5. Close the test report.

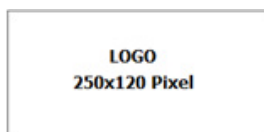
## Moving the Marker

Position the pointer to the marker, and drag the marker while keeping the left button pushed.

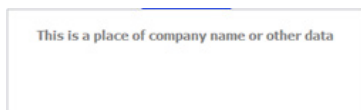
## Deleting the Marker

Position the pointer on the marker and push the RIGHT mouse button.

## TEST WINDOW



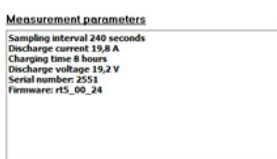
Company Logo (you can import any BMP logo by pressing the RIGHT mouse button)



Company Information

Name:   
 Place of measurement:   
 Instruments:   
 Meas. date: 5/07/2016 4:01:06 AM  
 Date: 30/06/2017 2:55:59 PM

Test Details



Test Parameters

Comment other

Comments



Print the test reports



Save the graph as BMP



Export test report in PDF format



Copy graph to clipboard

Cimke tipusa

Voltage     Current

Select Voltages or Current

Define if you would like to place voltage or current markers

<b>Voltage</b>	<b>27,60 V</b>
----------------	----------------

Voltage Values

Voltage value at the actual cursor position

<b>Current</b>	<b>0,30 A</b>
----------------	---------------

Current Values

Current value at the actual curso position

<b>Time</b>	<b>476,00</b>
-------------	---------------

Time Value

Time value at the actual cursor position

## GRAPH SETTINGS

The measurement window contains a graph setting icon. If you click on the icon, you will have the visiblle possibilities.

- Visible: what you want to be visible/invisible (current, voltage)
- Scaling Boxes: you can turn the scaling boxes off or on at the side of the graph
- Grid: you can turn the grid on or off
- Axis Scale: you can set the step values on the axes (not released at present default is 1)
- Vertical Marker: you can set the stepping values of the vertical marker