Online Capacity Tester MK-1
User and PC-Software Manual 230707

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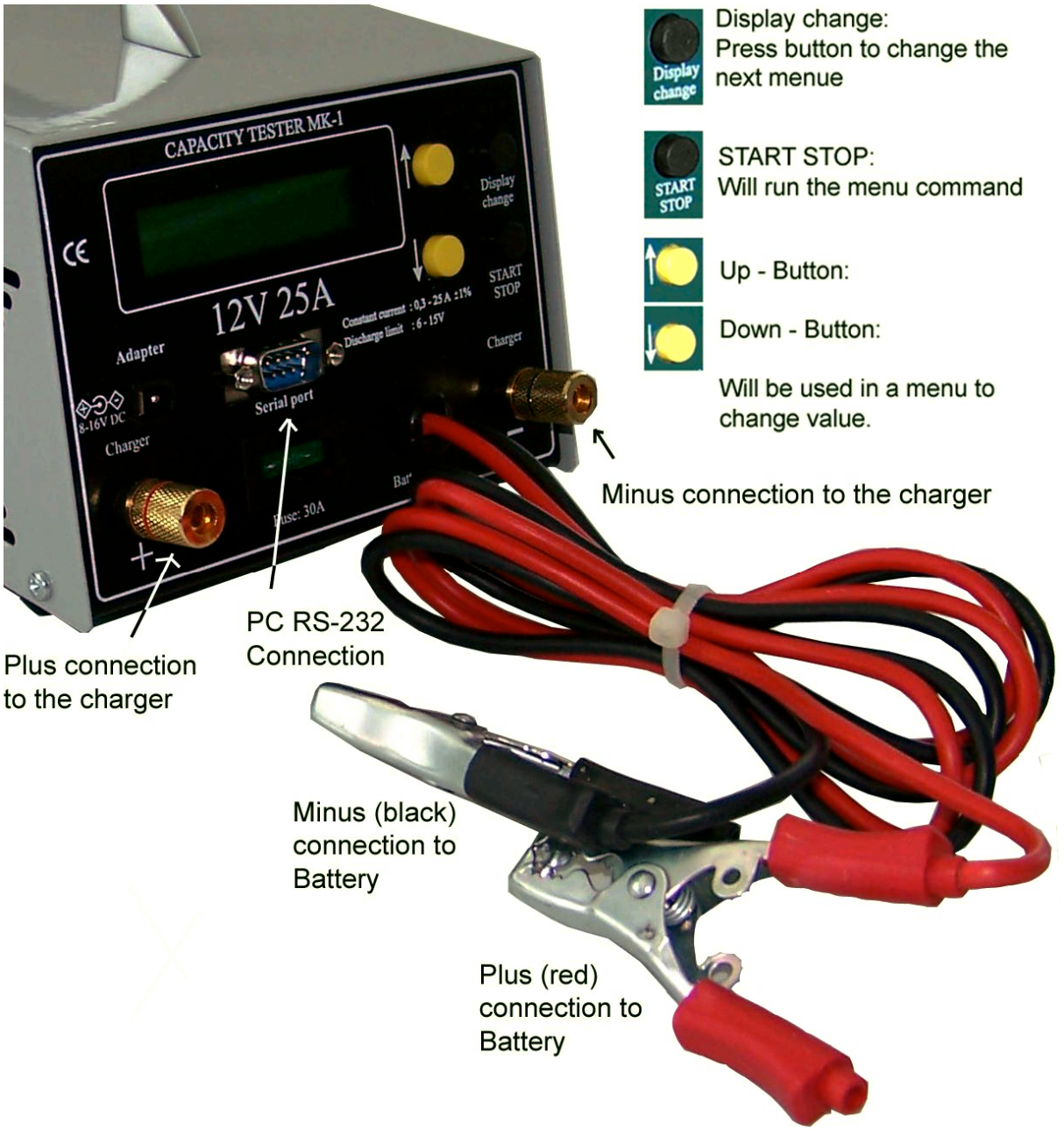

CAPACITY TESTER MK-1
12V 25A
Display change
START STOP
Adapter
8-16V DC
Charger
Serial port
Charger
Display change:
Press button to change the next menue
START STOP:
Will run the menu command
Up - Button:
Down - Button:
Will be used in a menu to change value.
Minus connection to the charger
PC RS-232 Connection
Plus connection to the charger
Minus (black) connection to Battery
Plus (red) connection to Battery

Introduction:

With this processor controlled capacity tester you can measure the the C20 capacity of the 12V battery. The discharge current will be set automatically. For batteries below 25Ah C20 capacity it will be the C1 rate (e.g. for 18Ah battery it will be 18A). For batteries above 25Ah C20 capacity the discharge current will always be 25A. The cut off voltage (The voltage limit where you want to stop the discharge) is set to 1,6V / cell. The tester calculates the C20 capacity referring to the Peukert values of the battery.
As a further option you can also make a single cycle test of the battery. You can set the charging in hours. In the menu of the tester you decide if you start with a charge or discharge cycle. Starting with a charge cycle, the battery will be charged until the programmed charging time is over. The battery then will be discharged with the related C20 discharge current until 1,6V / cell. Finally the battery will be charged again. If you start with a discharge cycle the battery will also be charged after discharge.
If you set the charging time to “0 hours”, the battery will only be discharged.
The test results can either be displayed online on a PC screen or can be seen as total results in the menu of the tester.

The standard delivery includes the battery tester MK-1, a 9 pole RS 232 cable for connection to a COM-Port on your PC, a power supply (for use of the tester if no battery is connected) the software CD and the user manual. 24V Charge test connection also included.

Start up procedure

Software installation

Copy the software subdirectory to your PC. The software can run directly from this subdirectory. It is also possible to run the software from a USB-stick or any other data carrying device.

For using the software please follow the software instruction.

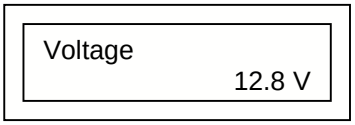
Connecting the tester to the battery

After connecting the tester to the battery you can see the software version and the serial number of the tester for a few seconds. After that, you can see the voltage of the battery on the display. Also the serial,number of the tester.

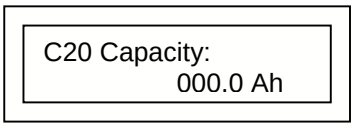
Menu System:

The main menu consists of 8 screens. You can change between the screens with the Display Change button.

1. Voltage screen



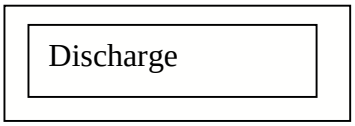
2. Test Parameter screen



To set the C20 capacity press yellow the Up / Down button. If the C20 capacity of the battery is not defined on the labelling of the battery, ask your battery dealer for the correct value.

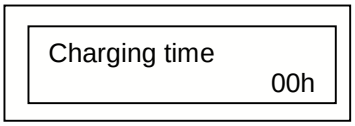
3. Discharge

If the battery is fully charged, you can start the test with discharging. Press Start/Stop button if you want to discharge the battery first.
If you added a value for “charging time” (see next menu), the battery will finally be charged again.



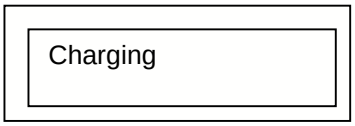
4. Charging time

If it is necessary to charge the battery before discharging it you have to define the charging time.
The charging time should be long enough to allow the battery to be fully recharged.
You can change the charging time between 1-16 hours. (Up / Down button).
ATTENTION: If the charging time is set to “00h”, the battery will only be discharged
Press Start/Stop button and the charging will start.



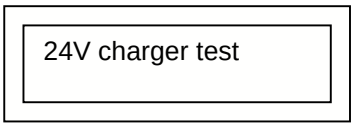
5. Charging

Press Start/Stop button if you want to charge the battery before discharging. If you added a value for “charging time” (see next menu), the battery will finally be charged again.



6. 24V Charger test

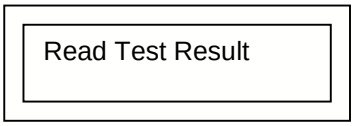
If you want to test a 24V charger you press the Start/Stop button in this menu. In this



case make sure you connected a 24V battery and a 24V charger.

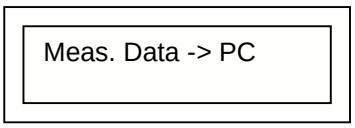
7. Read Test Results

With the Up / Down button, you will see the results of the test



8. Meas. Data -> PCt

If a PC with the tester software is connected, you can send the stored data of the



tester to the PC. Up to 3 tests will be stored in the tester. The latest test will overwrite the first. Follow the instructions of the software manual to download the data to the PC.

During the test:

During the test you can see the following screen:

Voltage
C20 caluculated capacity and the elapsed time

Elapsed time: This 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)

Calculated C20 capacity: In % you will see the calculated C20 capacity.

When the test is finished, the tester will show the as a test result the indication “Pass” or “Fail”. Battery <60% will be indicated as “Fail”

Pressing the Display Change button you can see the result of the finished cycles.

You can stop the discharge or charge any time if you press the start/stop button.

Technical Data:

	Version 12 V
Measured Voltage Range	6 – 18 V
Max. Input Voltage	16V
Min Input Voltage	6 V
Discharging current	0,3 – 25 A
	(0,1 – A)
Current error	± 2 % ± 0,05 A
Cut off voltage	6 – 15 V
Charging time	1 h – 99 h
Max Number of cycles	1
Dimensions	200 x 140 x 90 mm
Weight	1,5 kg

PC-Software instruction:

With this software you can download the measured data of the Capacity tester, draw and print charging / discharging curves or test documentation. The device reads the measurement data through RS 232.

Minimal hardware requirements

Pentium I processor, 32 MByte RAM
2 MByte free capacity on the hard drive
VGA adapter, 800x600 resolution with 256 colour.

Recommended hardware requirement:

Pentium II processor, 64 MByte RAM
SVGA grafik adapter,1024x768
Pentium II processor, 64 MByte RAM
SVGA adapter,1024x768 resolution 32K color depth

Operation system::

Windows 9x / ME / 2000 / XP

Short description of file menu

- **Read Last Measurement :** To transfer the measured data from the unit to PC.
- **Send header:** Add 4 column of information's to the test
- **Open file** : To open a previously downloaded and saved measurement
- **On Line Load**: Starts the On-Line test screen
- **Read Last 3 Measurement :** Transfer last 3 measuremenst to PC
- **Open:** Open existing file
- **Save:** Save file to directory
- **Export to Microsoft Excel:**To create a Microsoft Excel .xls file.
- **Test report:** Creates a complete test report, with discharge curve.
- **Settings:**NOTE: It is absolutely necessary to select the appropriate COM port. Otherwise it may cause abnormal operation.
- **Correction:** To set the current and voltage correction values
  Set the correction values. The software re-calculates all the values (I, U) according to the selected correction. **Voltage:** It multiplies ALL voltage values with the multiplier, or adds the offset value.
  Current: It multiplies ALL current values with the multiplier, or adds the offset value.
- **Rename –** Here you can change the filename
- **Close**
- **Exit**

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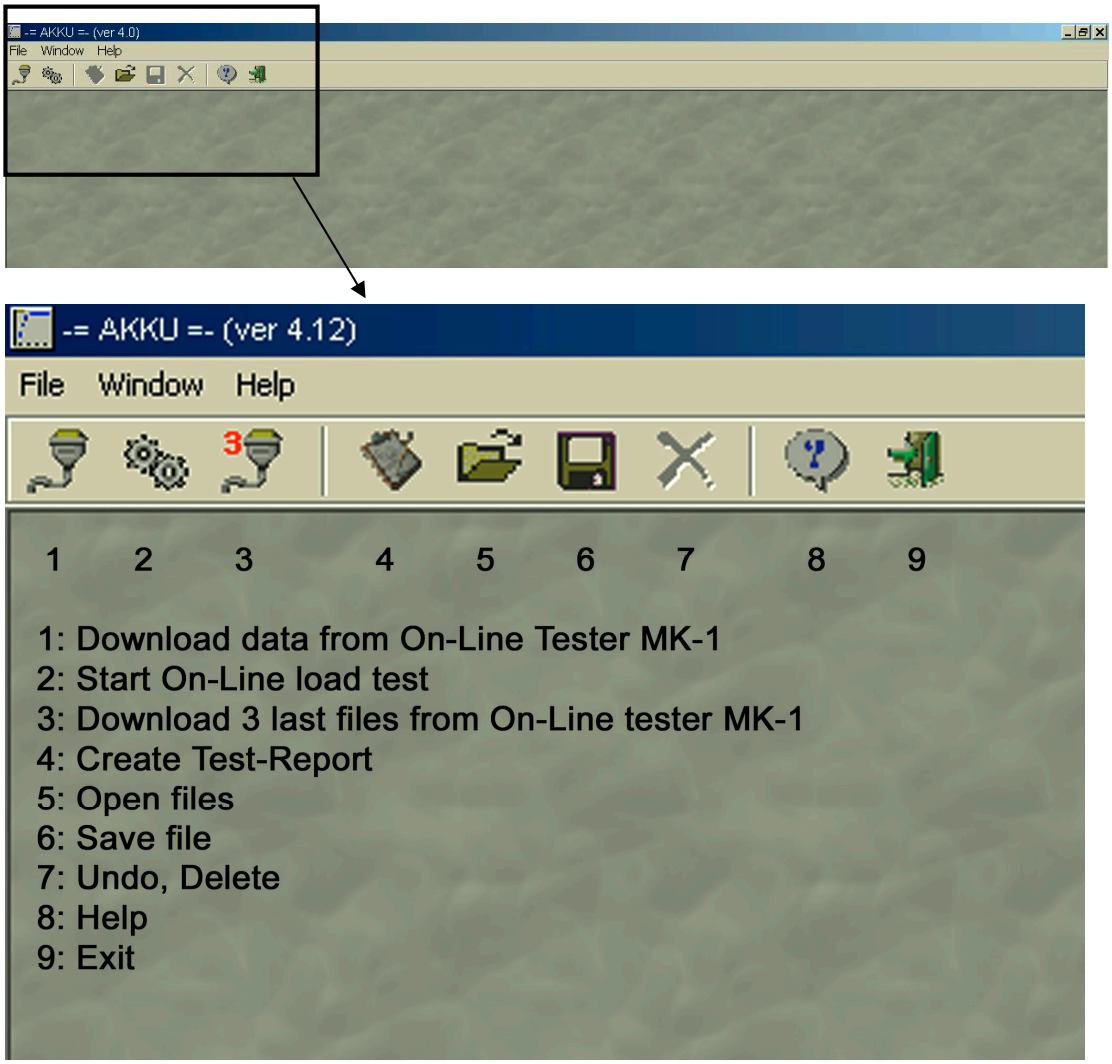
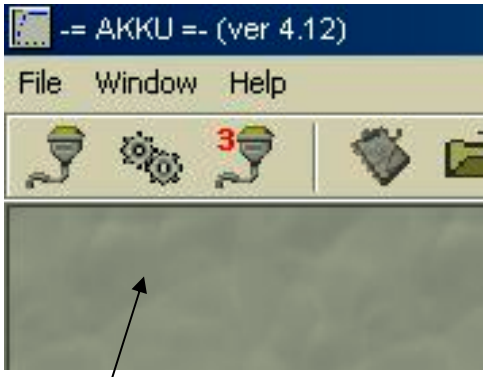
With the provided software you can either see the discharge and charge graph online on the screen or you can download the graph and create a test report for further use

Start the Akku.exe programm.



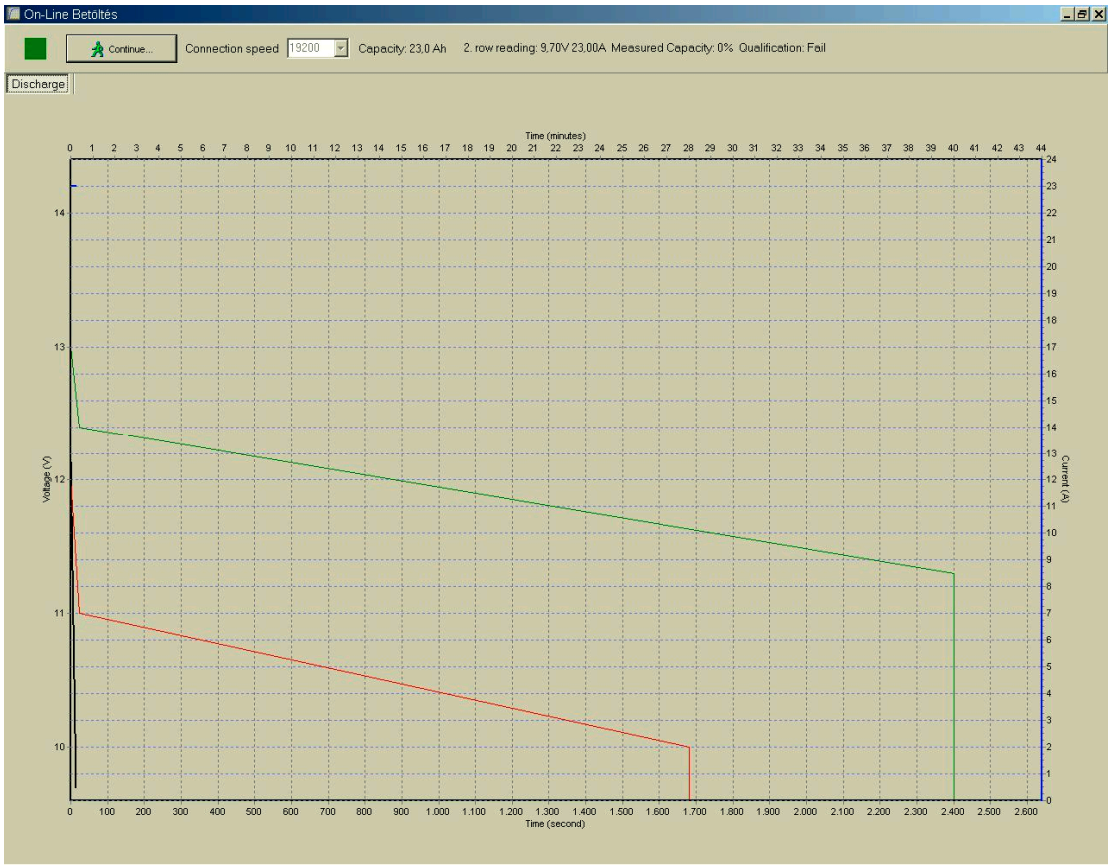
ON-Line Test Screen

Press the icon for the “On-Line load”, or choose in the menue file/On-Line load



On - Line load

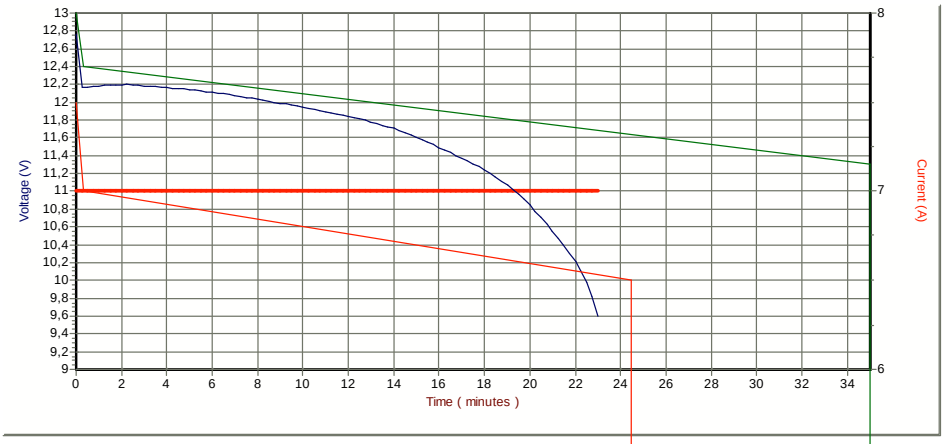
A new window will open with a blank grey screen.
ATTENTION: To see the online graph, you have to start the software before you press the START/STOP Button on the online tester. Otherwise you will see no date.



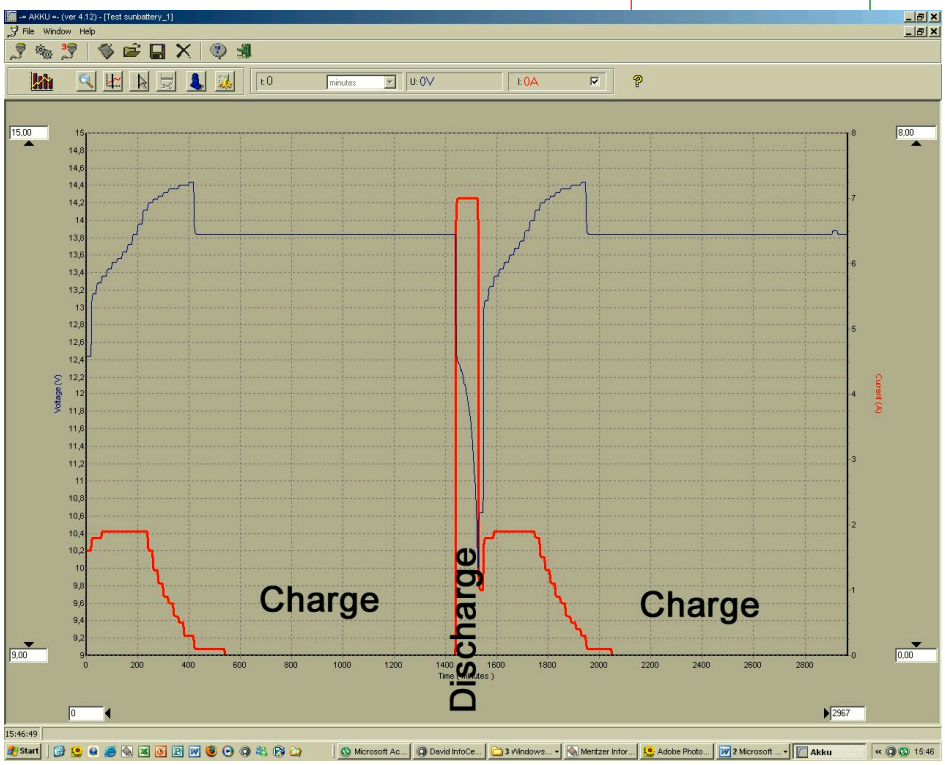
You see a green and a red line that shows the area between 60% and 100% capacity. The battery should be in between these two lines or above.

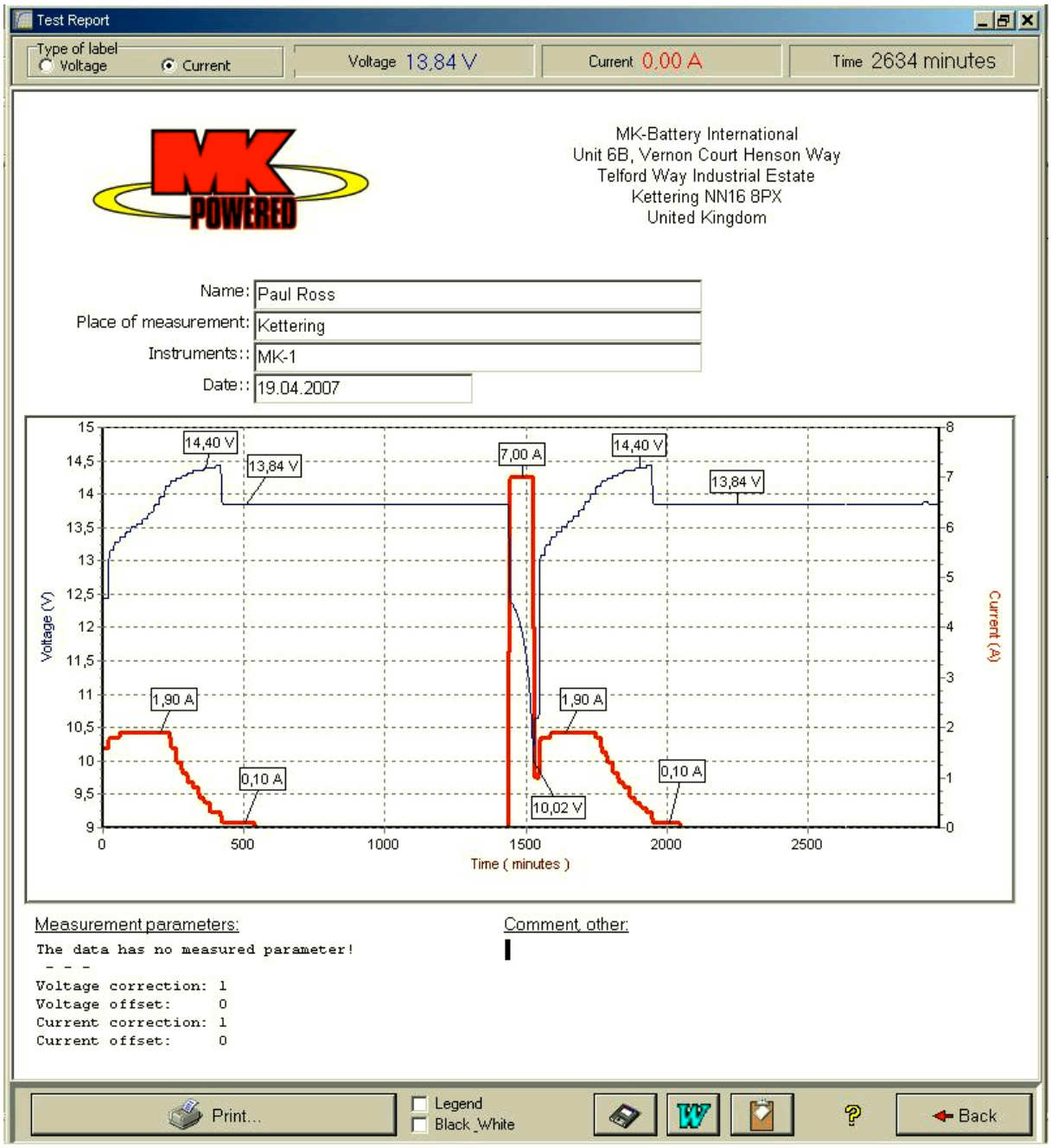
Measurements will be taken every 15 minutes and displayed.
When the test is over you press the “continue”-button and will be transferred to the software. You now can add comments to the graph and create a Test-Report.

This following application is an example graph of a discharged battery with a measured capacity of 55%. In the test report you can add your own logo and name.



The following is an example of a battery test including charge – discharge – and charge.





To comment the graph, click with the right mouse button on the voltage or current line. Choose “Type of label” on the top left of the Test report to place the marker on voltage or current line.
To remove a marker, click right on it and confirm the message box.
You can add Name, Place of measurement, Instruments and date with the actual information’s.
You can add further comments in “Comment other” on the Test Report.

1: Print the Test Report
2: Add Legend or print in black/white instead of color
3: Save Graph as Bitmap file only
4: Save whole Test-Report as a MS-Word file
5: Copy graph to clipboard
6: Help
7: Back to start page