Micro-Ohmmeter 600

User Guide

Prime – 600

Reference: HAFMU02

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Version: 3

Quality is the focal point of EuroSMC, S.A.'s activity, aimed at fully satisfying its customers' needs and expectations

DISCLAIMER

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LIMITED WARRANTY

This product is guaranteed against defects in materials and manufacture of the actual product for a period of 12 months as from the date the product is registered. If the product is not registered within 30 days after the shipping date, that date will be considered as the start of the warranty period.

Our commitment is limited to replacing and/or repairing those materials and components proven to be faulty during the warranty period.

This warranty does not cover defects produced by the operator outside the product specifications established in the Instructions Manual

EuroSMC, S.A. does not assume any responsibility for any direct or indirect damage accidentally caused by the product.

TRANSPORT CONDITIONS

This warranty covers the transport costs, exclusively in agreement with the following conditions and with the limitations indicated:

1. If the equipment presents a fault that requires transport to factory during a period of TWO MONTHS after the entry into force of the Warranty, the transport costs will be covered in their entirety by EuroSMC S.A.

2. If the equipment presents a fault that requires transport to factory after the initial TWO MONTH period and until the end of the first year, the costs of sending the equipment to factory will be paid by the customer and the costs of the return transport by EuroSMC S.A.

3. The customer may not, under any circumstances, send the equipment to factory without a Service Ticket issued by EuroSMC S.A.- Otherwise, EuroSMC S.A. will not be responsible for any transport cost.

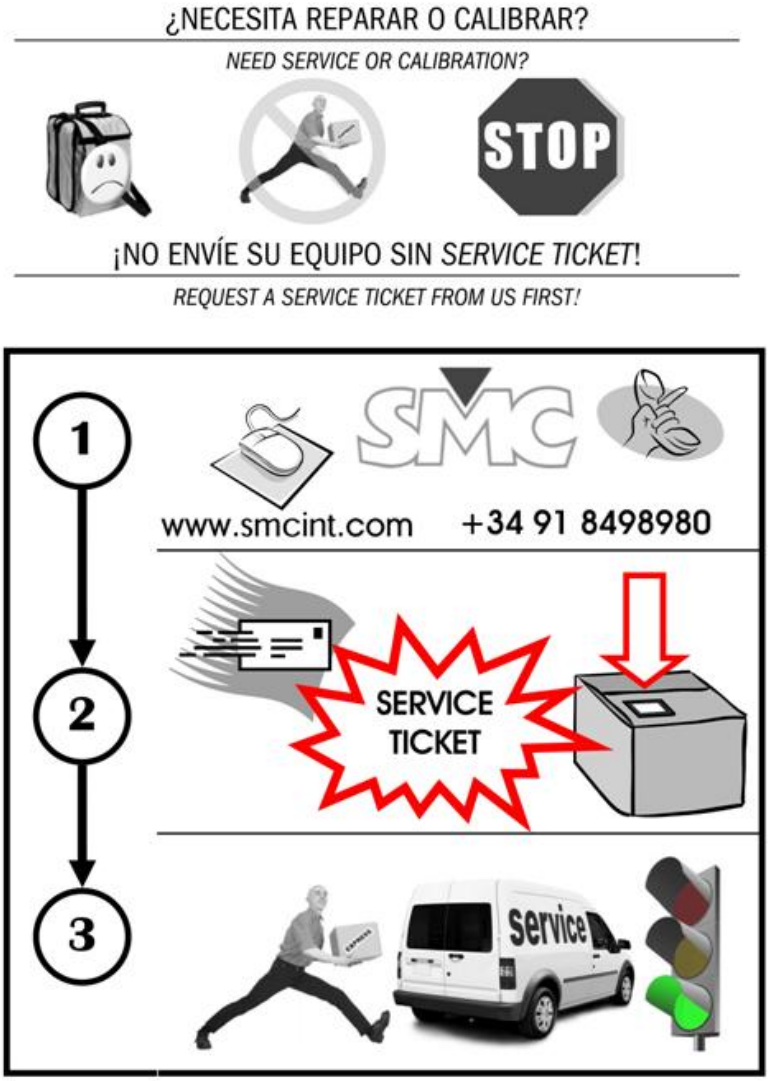
4. If the fault that the equipment presents (once diagnosed in factory) is not covered by the terms of the Warranty, EuroSMC S.A. will not be responsible for any transport cost.

HOW TO ACTIVATE THIS WARRANTY

It is essential for you to register your product as soon as possible on our website. This registration is absolutely necessary for your warranty to appropriately enter into force.

To do so, go to our WEBSITE (www.smcint.com), select the *"Support & Training"* option and click on *"Client and Product Registration"*. Please fill in the questionnaire form and click on send.

If the product is not registered, EuroSMC, S.A. reserves the right to grant or not grant the warranty for a one-year period.


¿NECESITA REPARAR O CALIBRAR?
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STOP
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CONTENT

DECLARATION OF CONFORMITY

For the Prime – 600 system, being applicable to all the elements that comprise it.

Manufacturer

EuroSMC, S.A.
Pol. Industrial P-29 C/Buril, 69
28400 Collado Villalba
Madrid - Spain

Declaration of Conformity

Based on the results of the tests performed according to appropriate standards, the product meets:

- Directive 2004/108/EC on Electromagnetic Compatibility.
- Directive 2006/95/EC on low voltage.

Standards used

Generic

IEC 61010.1 (2010)	Safety requirements for electrical equipment for measurement, control, and laboratory use.
IEC 61000-6-1 (2007)	Electromagnetic compatibility (EMC).Immunity for residential, commercial and light-industrial environments..
IEC 61000-6-2 (2005)	Electromagnetic compatibility (EMC). Immunity for industrial environments.
IEC 61000-6-3 (2007)	Electromagnetic compatibility (EMC). Emission standard for residential, commercial and light-industrial environments
IEC 61000-6-4 (2007)	Electromagnetic compatibility (EMC). Emission standard for industrial environments.

Basic

IEC 61000-3-2 (2006)	Electromagnetic compatibility (EMC) Limits - Limits for harmonic current emissions .
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IEC 61000-3-3 (2009)	Electromagnetic compatibility(EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker .
IEC 61000-4-2/3/4/5/8/11	Electromagnetic compatibility(EMC). Testing and measurement techniques.

The tests have been performed in a standard configuration. This conformity is indicated with the CE symbol meaning “European Conformity”.

ELEMENTS THAT MAKE UP THE SYSTEM

Depending on the system you have purchased, you will find the following components:

Prime – 600.	1 x Unit	
High current cables .	1 x 3 m Cable with black connector 1 x 3 m Cable with red connector	
Measurement cables .	1 x 3 m Red Banana-Banana cable 1 x 3 m Black Banana-Banana cable 1 x Red crocodile clip. 1 x Black crocodile clip. 1 x Red test tip. 1 x Black test tip.	
Bag with accessories:		
	1 x 3 m. Yellow / Green ground Banana–Banana cable .	
	1 x 2 m USB cable	
	1 x 2 m Power supply cable	
	1 x Memory stick.	
	1 x 200mA fuse.	
	1 x 25A fuse.	
	1 x Pointer for resistive screen.	
	1 x User manual .	
	1 x Bag for cables and accessories	

Optional accessories:

Nylon bag for Prime – 600.

10 m High current cables

10 m Measurement cables

3m or 10m temperature probe.

Ammeter clamp set with 2 m. extension cable.

Rigid transport box.

SAFE USE OF EQUIPMENT

Before using the equipment please carefully read this manual, especially this section, referring to safety precautions that must be observed.

Symbols used:

Hazard – this identifies actions and situations that entail risks for the user.

Precaution – this identifies actions and situations that might cause damage to the equipment.

Important – this identifies actions and situations that attention must be paid to in order to correctly carry out the test or measurement.

Hazardous situations for the user and for the Prime – 600 system

Hazard – Before making any change to the power or measurement connections, make sure that the system is not injecting.

Hazard – Following a high current injection, the hoses and connections may be very hot and may cause burns.

Hazard – Do not manually open a circuit through which current passes as this may generate high voltages.

Hazard – Never connect the power supply hoses to the line before connecting them to the equipment.

When performing tests, make sure that the circuit is grounded. If it is a switch, we recommend grounding both sides.

Hazard – The Prime – 600 system is not designed to perform tests on highly inductive loads.

Hazard – Never work with the system if you observe severe damage or damp on it.

INTRODUCTION

The Primer – 600 marks the differences with any other equipment that exists today. Its innovative design and cutting-edge technology permit tackling resistance measurement tasks in a much more efficient manner, as it takes the concept of manageability to extremes that have never been possible until now.

With Prime – 600, SMC opens the door to a new generation of test equipment, based on the formula of innovation, and designed with and for the user, backed by more than 30 years' experience in the development of practical, affordable and long-lasting solutions for its customers all over the world.

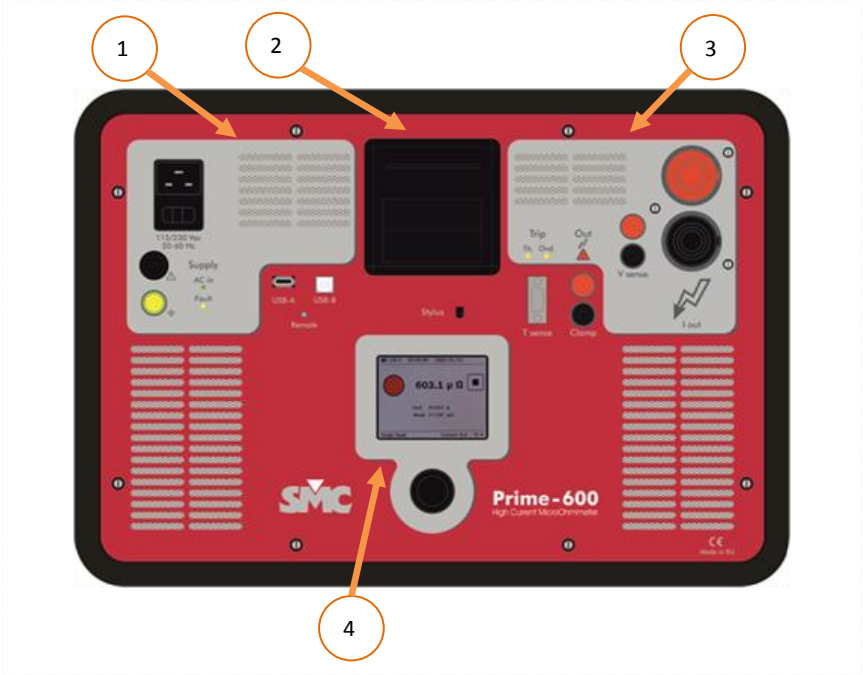
Until today, all the micro-ohmmeters on the market were limited to measuring the resistance of a static object, presenting this on the screen as a value expressed in Ohms. In contrast, the DRM function is incorporated into the Prime 600 from factory. Until now this function, which draws a chart with the resistance values measured on an object (typically the contact of a switch) at high speed and precision in a short period of time, was only available in some switch analysis devices.

It is extremely useful to assess the status of the main and arc contacts in sealed switches (vacuum or SF6) with great speed and reliability, without having to open them, with the subsequent cost saving.

You can carry out measurements one after another using the traditional method, or get the Prime – 600 to automatically register the resistance values as you apply the voltmeter tips at different points.

The Prime – 600 will show a confirmation message if it detects an error in its connections, and will automatically demagnetise the load at the end of each test for your safety. You can print out the results immediately or just save them on a USB memory stick. Later, you can download any tests you want on your Windows computer to organise them and prepare reports with a professional aspect, using the software supplied with the Prime 600. It is managed from a small touch screen for greater convenience. Updatable by direct connection to the Internet.

LOCATION OF ELEMENTS

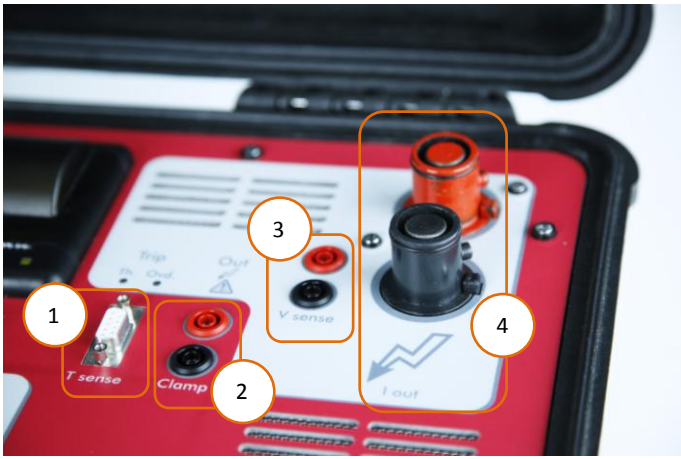


1	Power supply panel and communications
2	Printer
3	Injection and measurement panel
4	Console

Prime – 600 (Power supply panel and communications)

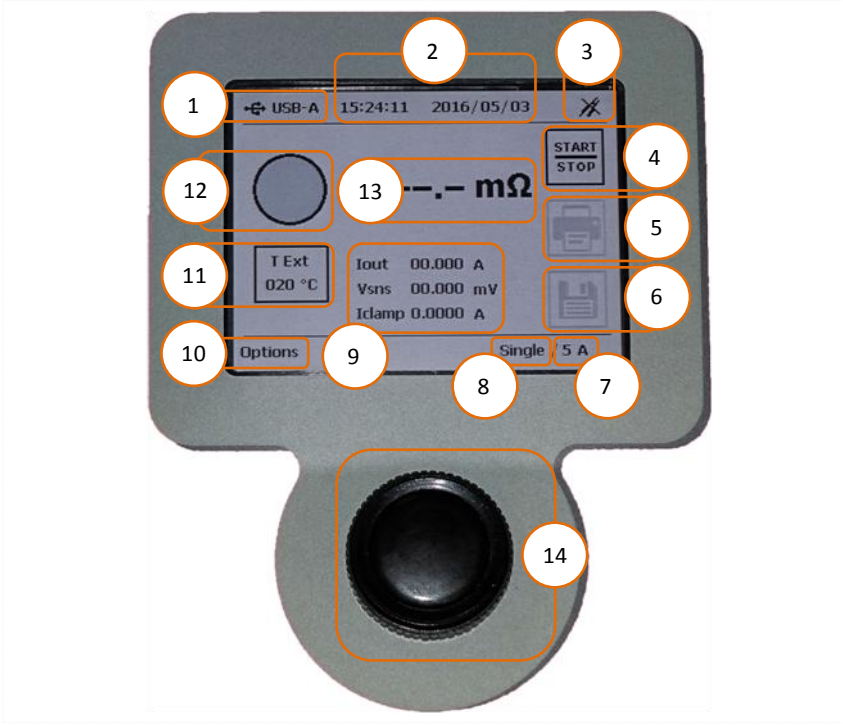
1	**25-amp fuse.**
2	**Ground tap.**
3	**USB-A host.** *Used to be able to connect a memory stick and save – recuperate reports.*
4	**USB-B device.** *Used to be able to update the equipment software and carry out other steps from a PC.*

Prime – 600 (Measurement panel).



1	**External temperature measurement.** *Temperature 4-20 mA optical transducer input. Used to compensate the resistance measurement according to the temperature.*
2	**Clamp measurement connection.** *"Dual Ground Clamp" live measurement input. Its function is to compensate the current that leaks to ground when calculating the resistance.*
3	**Voltage measurement connections.** *To calculate the resistance tested.*
4	**Current injection connections.**

Prime – 600 (A first glimpse of the console).



1	Indicates which USB port is active
2	Date and time
3	Disconnected measurement connections indicator
4	Test start / stop button
5	Print out test
6	Save test
7	Indicates the selected current injection
8	Indicates the selected work mode

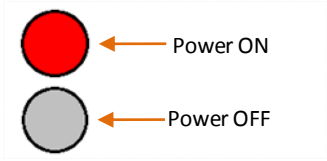
9 Instant measurements of:

- *Current that is being injected (**Iout**).*
- *Voltage that is being measured in "V sense" connections (**Vsns**).*
- *Current that is being measured in the "Clamp" connections (**Iclamp**).*

10 Access to different menus

11 External temperature measurement indicator

12 Connected power indicator. It will turn red when the power is connected, regardless of the generation mode set



13 Resistance measurement indicator

14 Rotary dial and pushbutton

HOW TO CONNECT THE SYSTEM

The Prime system will be comprised of at least a couple of high current cables, a couple of voltage measurement cables and a couple of crocodile clips.

Making the connections.

Before continuing, make sure that the on/off switch of the unit is in its Disconnected position.

Connect the power cable supplied to 120Vac or 230Vac

The power supply used must have ground tap.

Make the necessary connections both for injection and measurement. These will vary depending on the nature of the test and in some cases we will describe them later on in this manual.

Bear in mind that the longer the high current path is, the maximum injectable values may suffer limitations.

We recommend the measurement cables being connected as close as possible to the device tested, and as close to each other as possible.

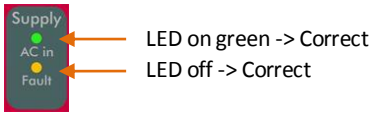
Preparing optional accessories.

The ammeter clamp, supplied as an optional accessory by EuroSMC, will be connected to the *"Clamp"* connections.

The temperature optical sensor, supplied as an optional accessory by EuroSMC, will be connected in the *"T Sense"* connector.

TURNING ON THE SYSTEM

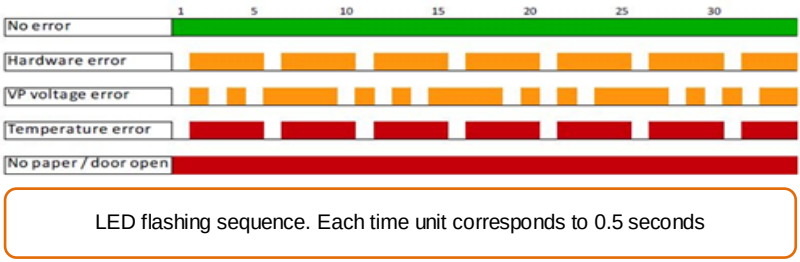
Apply the power switch of your Prime – 600. You can verify the correct supply status with the indicators on the supply panel.



The green ***AC in*** indicator must remain on, from the moment power is supplied to the unit by activating the power switch. Otherwise, the line power supply and the input fuse must be reviewed.

If the yellow ***Fault*** indicator remains on, this indicates a fault in one or more of the internal supplies of the equipment or that the line level is too low for the unit to operate correctly.

The ***printer*** indicator must stay on green, from the moment the console of the equipment is rebooted. Otherwise, this could mean



After turning on the system, this reboots and the first thing displayed on the screen is the logotype and software version of the equipment. Once rebooted, the current setup of the equipment is graphically shown on the identification screen.

Other status indicators

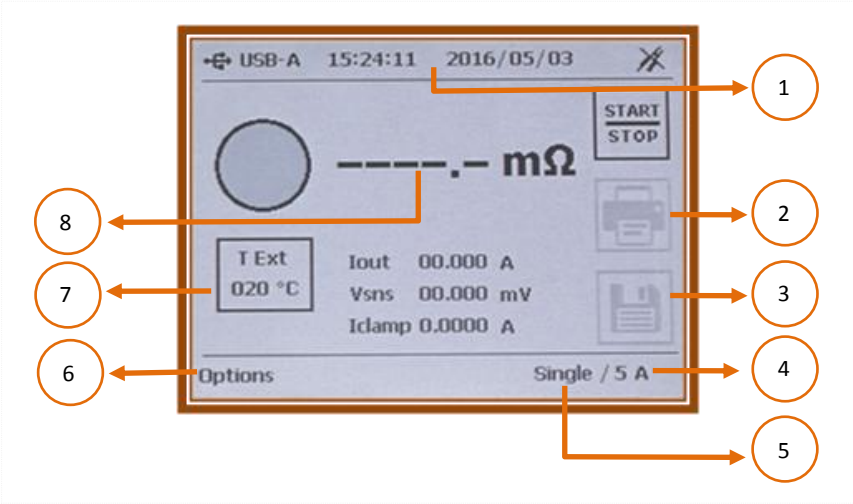
The blue ***Remote*** indicator flashes on and off when the equipment enters into firmware update mode. It will remain on when the remote communication has been established.

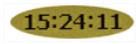
The permanent yellow indicator ***Trip. Ovd*** indicates an overload in the output. This may be due to different reasons such as the load value being too high for the required current. And, when it flashes, it indicates overload in the l.t. product. This indicator will be deleted when the power is switched on and if it persists, the source of the overload will be activated again.

The yellow indicator ***Trip. Th*** indicates thermal overload of the unit. Whilst this indicator remains on, it will not be possible to give power. When the unit recovers the appropriate work temperature it will go off.

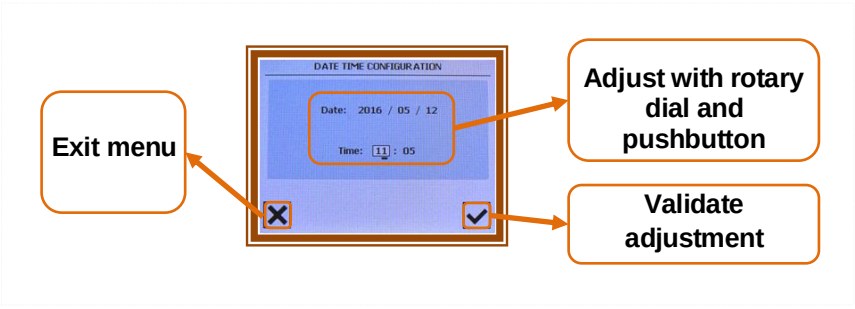
The red indicator, ***Out*****,** indicates that the equipment is injecting, regardless of the generation mode set.

Setup Menus from the main touch screen





1. Date and time setup menu

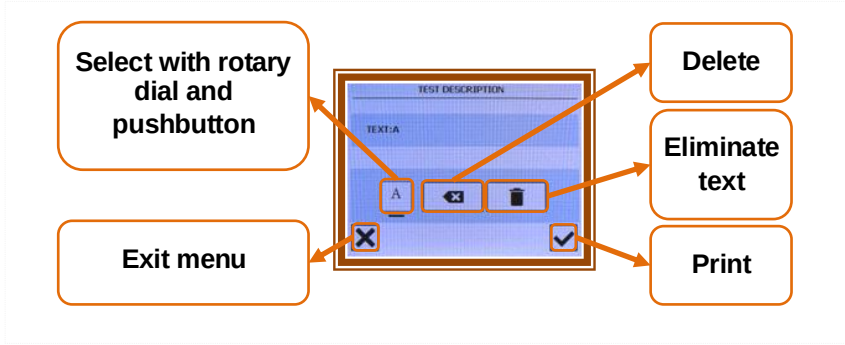


2. Printing out test. If a test ends successfully, this is automatically enabled and it can be printed.

Keep pressed (~3 seconds), if you want to make a print-out with a heading.

You can enter a description of the test.

The content of the printed results will be explained in detail later on in this manual.



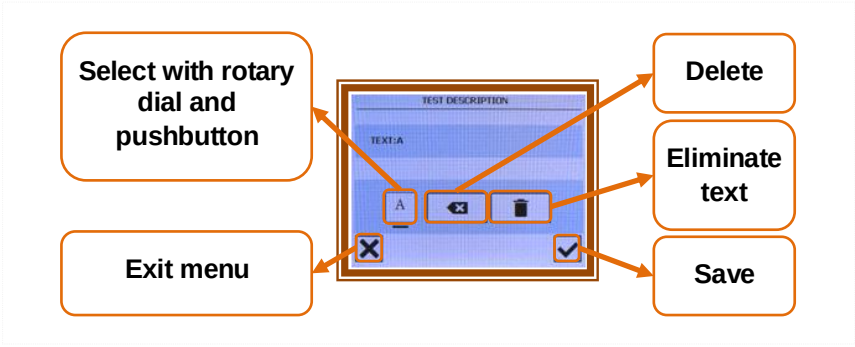
3. Save test. If a test ends successfully, this is automatically enabled and it can be saved.

Depending on what the user has selected, it will be saved on a memory stick, inserted into USB-A host, or in the equipment internal memory.

If the test result is not saved, it will be lost when the next one is started.

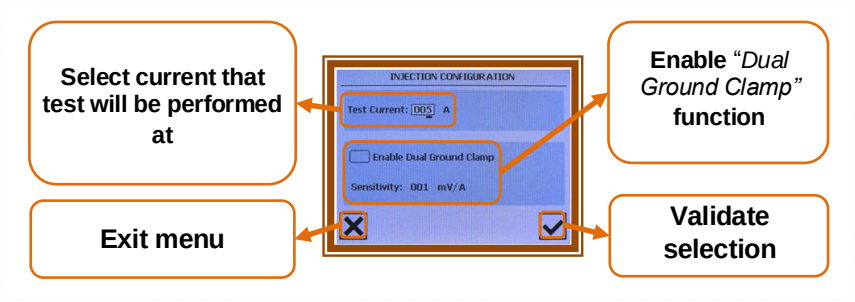
You can enter a description of the test

The management of the tests generated will be explained in detail later on in this manual .

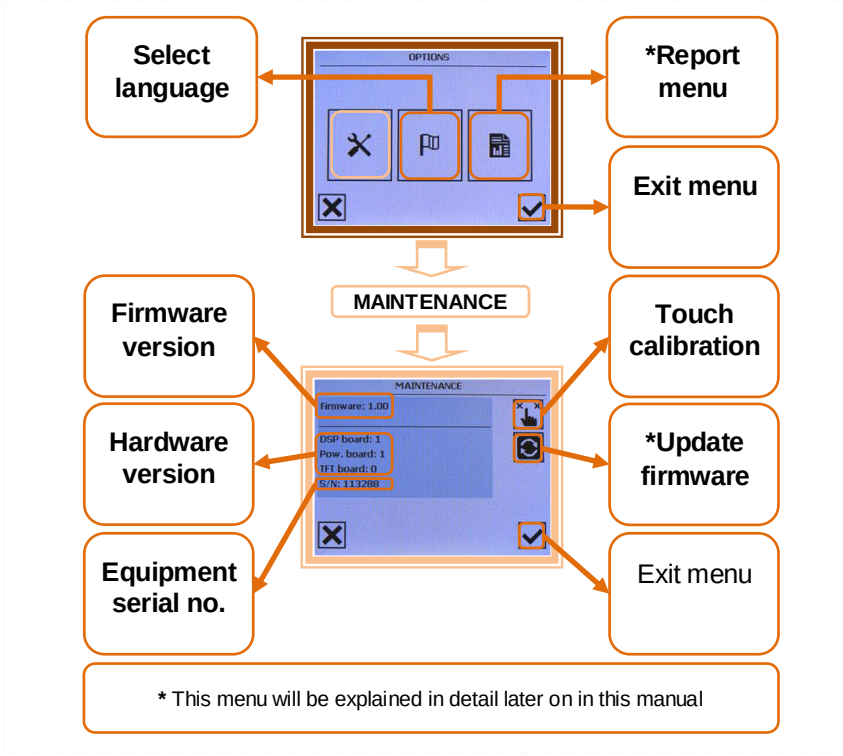


4. Work mode setup menu. This menu will be explained in detail later on in this manual.

5. Injection setup menu.

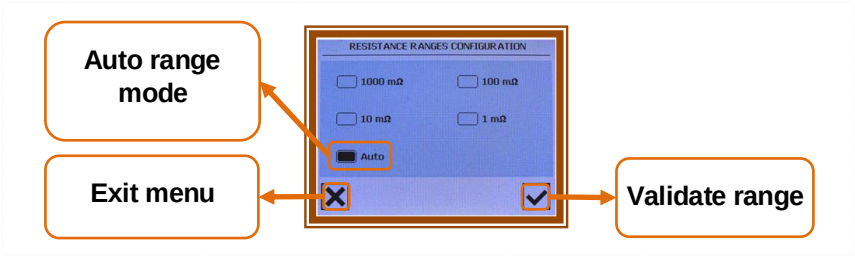


6. Setup options menu.



7. . External temperature measurement indicator. This is automatically activated when the optical temperature transducer is connected. Press to access the thermal compensation setup menu. This menu will be explained in detail later on in this manual.

8. Resistance range setup.



PERFORMING TESTS

The setup prior to performing a test is summed up as:

- Selection of work mode.
- Selection of current to inject.
- Selection of resistance range.

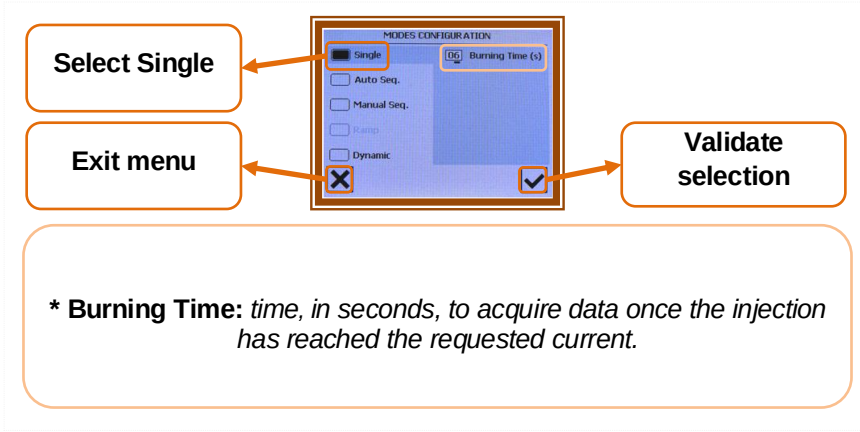
"Single" Work mode (Static resistance).

We will select this work mode when we wish to measure a resistance with precision.

Setup:

1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Turn on the equipment.

4. Access the work mode menu



5. Access the current injection menu.

   - Enter the current value that adapts to the device tested.
   - You can set up the *"Dual Ground Clamp"* functionality. This functionality will be explained in detail later on in this manual.

6. Access the resistance range menu.

   - We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Steps to be followed to perform the test:

1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.
3. Perform the test by pressing START STOP.

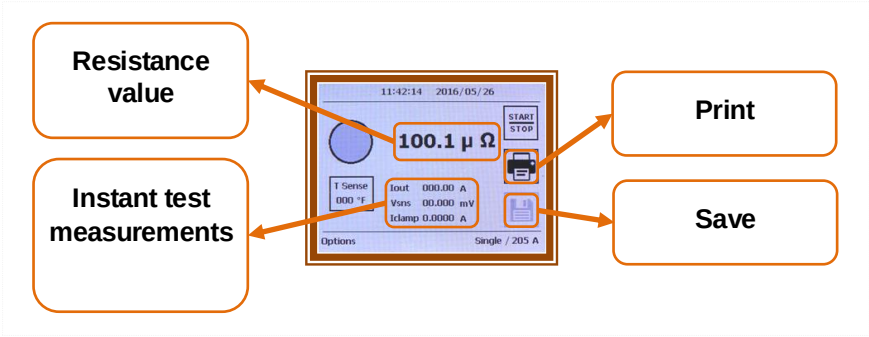
The equipment will indicate start of current injection with two beeps and the end with one beep.

For greater safety, the Prime – 600 does not take the test as finalised until the load is demagnetised.

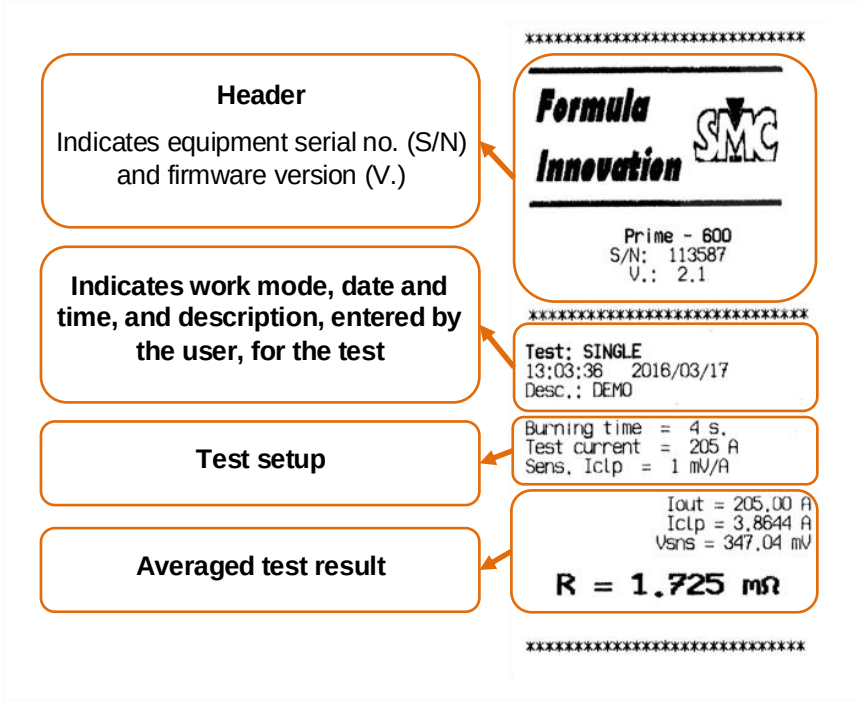
Result:

Once you have successfully finished the test, the result will be shown on the main screen and you may:

1. Save the test result



2. Print out the test result.



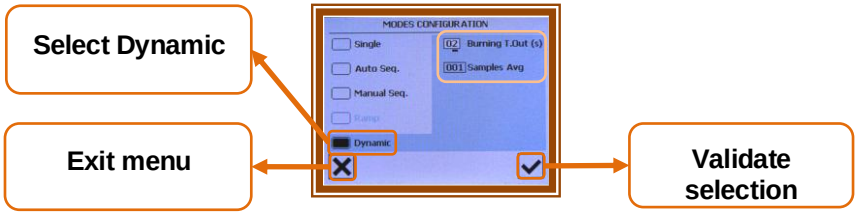
"Dynamic" work mode (Dynamic resistance).

We will select this work mode when we need to study, over time, the behaviour of the contact resistance during the opening of a switch.

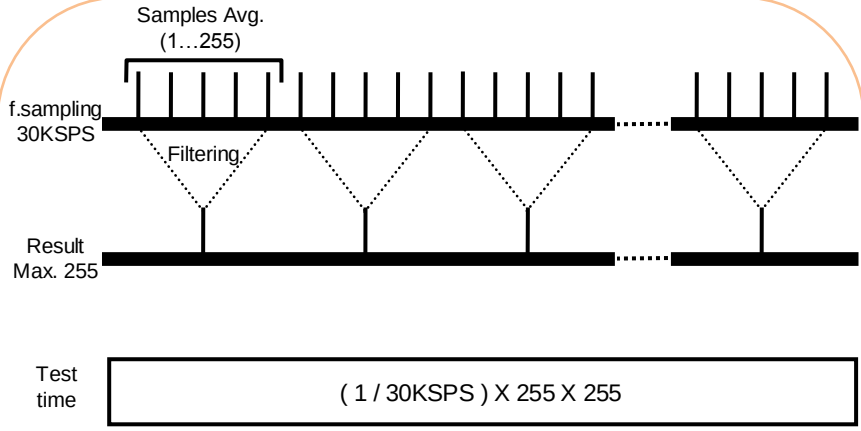
Setup:

1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Turn on the equipment.

4. Access the work mode menu.



*** Burning T.Out:** *time, in seconds, available, after stable measurement acquisition, to manually activate the switch.*



* **Samples Avg:** *Prime – 600 will take samples at a fixed speed of 30kSPS. With "Samples Avg" we can set up the equipment for it to average/filter consecutive sample packages, and use them in the result. The parameter will indicate, therefore, the number of consecutive samples that will be averaged. If we increase it we will obtain longer test times as well as less noisy results.*

5. Access the current injection menu.

   - Enter the current value that adapts to the device tested.
   - You can set up the *"Dual Ground Clamp"* functionality. This functionality will be explained in detail later on in this manual.

6. Access the resistance range menu.

   - We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Steps to be followed to perform the test:

1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.
3. Perform the test by pressing START STOP.

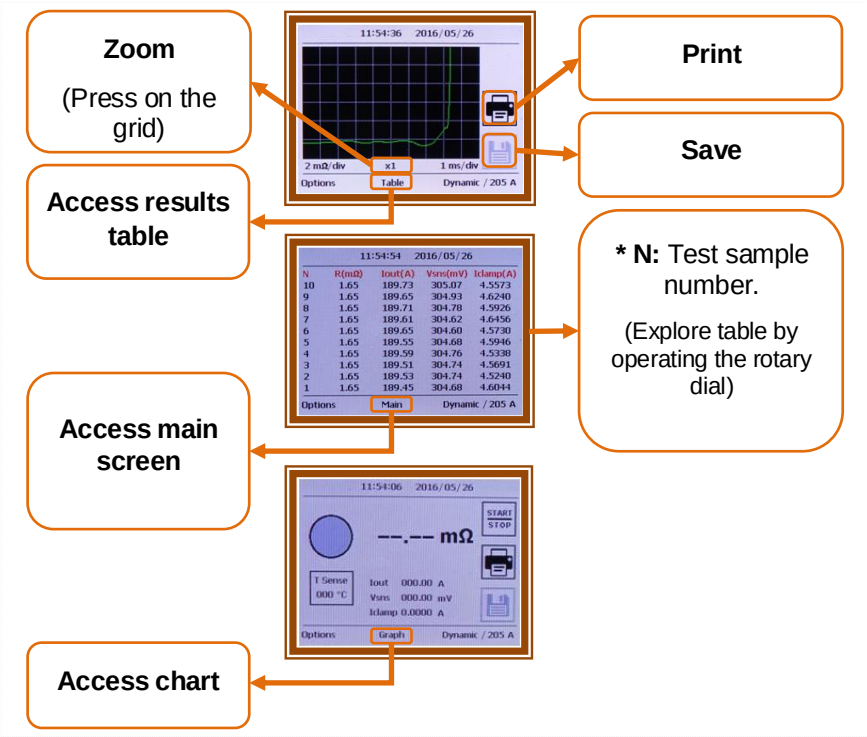
The equipment will indicate start of current injection with two beeps and the end with one beep.

For greater safety, the Prime – 600 does not take the test as finalised until the load is demagnetised.

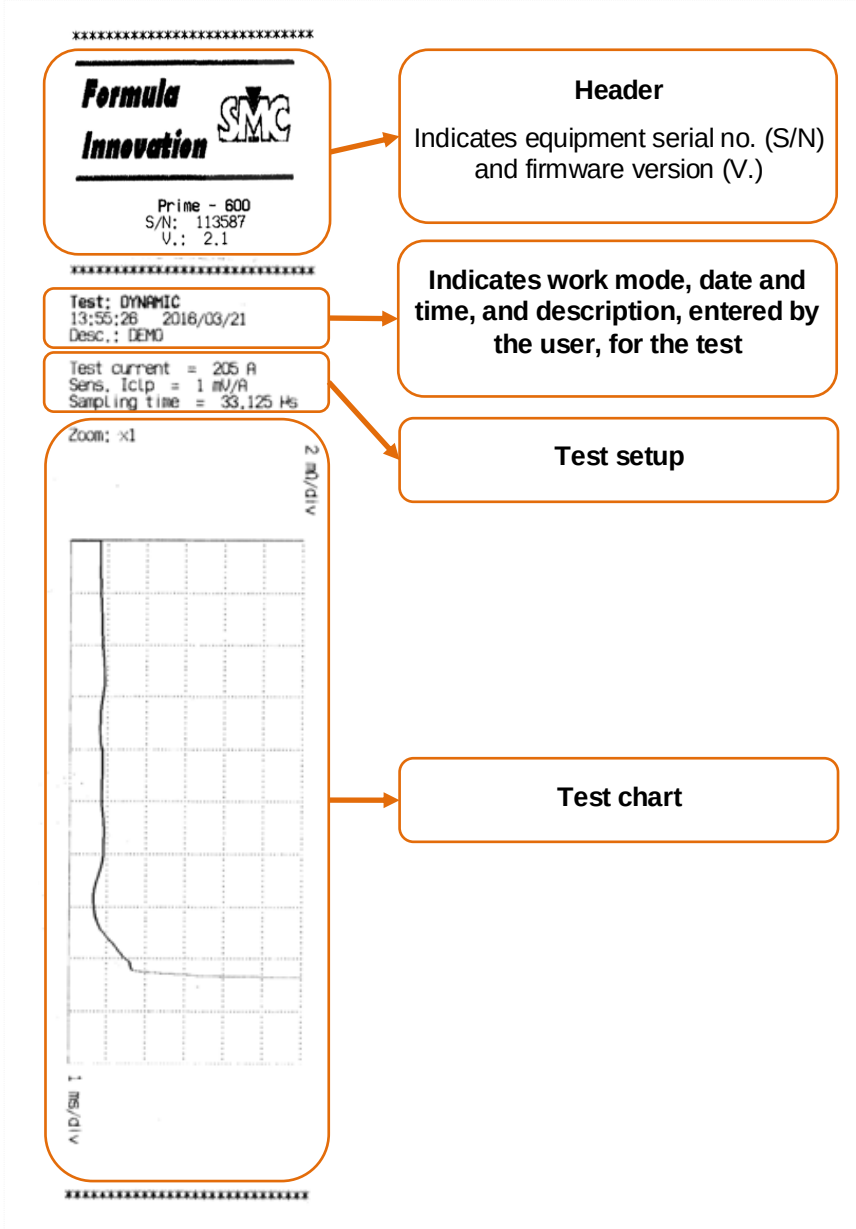
Result:

Once you have successfully finished the test, the result will be shown on the main screen and you may:

1. Save the test result.



2. Print out the test result



"Manual Seq" Work mode (Manual static resistance measurement sequence).

We will select this work mode when we wish to measure several resistances automatically and with precision in one same test.

Setup:

1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Turn on the equipment.
4. Access the work mode menu.

*** Burning Time:** *time, in seconds, to acquire data once the injection has reached the requested current.*

*** Waiting T.Out:** *time, in seconds, that the user has, after carrying out the measurement, to disconnect the measurement cables and connect them again to carry out the next one.*

5. Access the current injection menu.

   - Enter the current value that adapts to the device tested.
   - You can set up the *"Dual Ground Clamp"* functionality. This functionality will be explained in detail later on in this manual.

6. Access the resistance range menu.

   - We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Steps to be followed to perform the test:

1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Start the test by pressing START STOP.
3. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.
   a. The equipment will automatically detect the connection
   b. The start of injection will be indicated with two beeps and the current injection indicators will be activated.
   c. The end of the measurement will be indicated with one beep and the current injection indicator on the console will go off.
   d. Disconnect the measurement cables.

The red indicator, ***Out*** will remain on until the test sequence ends.

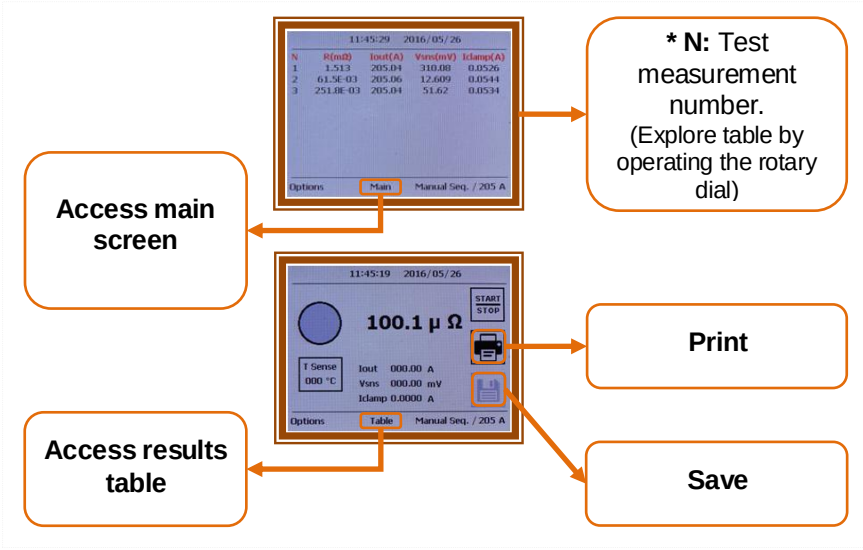
4. Connect the voltage measurement cables, in the next adequate sensing connection of the device tested
   a. The process described in point 3 will be repeated.

5. This sequence will be repeated as often as required by the user.

   a. If the user wishes to end the test, he/she must press START STOP.
   b. If the *"Waiting T.Out"* selected is exceeded, the test will automatically abort in an incorrect manner.

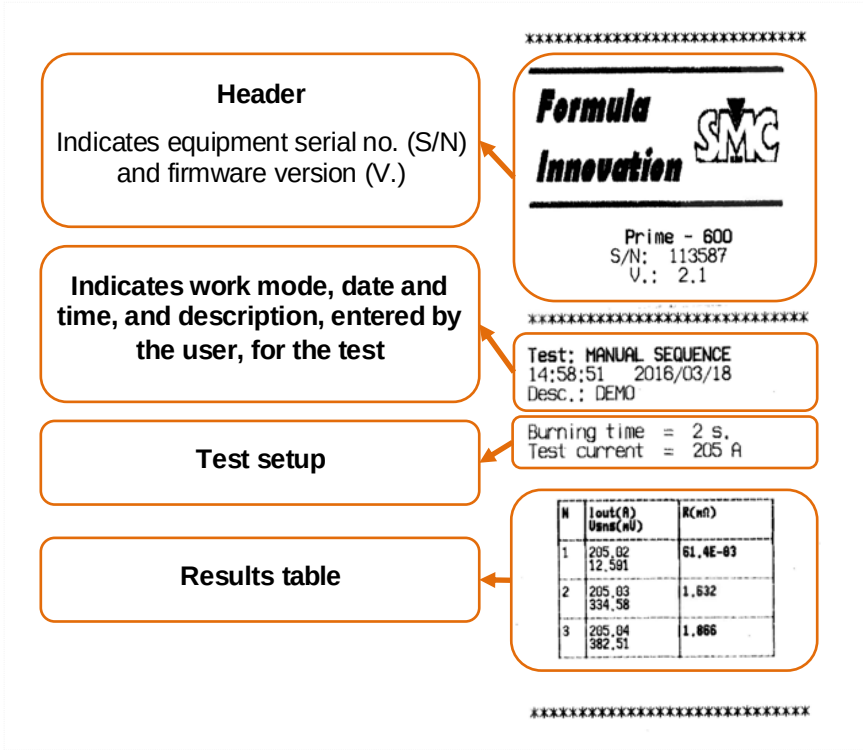
Result:

When the test has ended successfully, the result will be shown on a table.



The following will be possible from the main screen:

1. Save the result of the test by pressing.
2. Print out the result of the test by pressing.

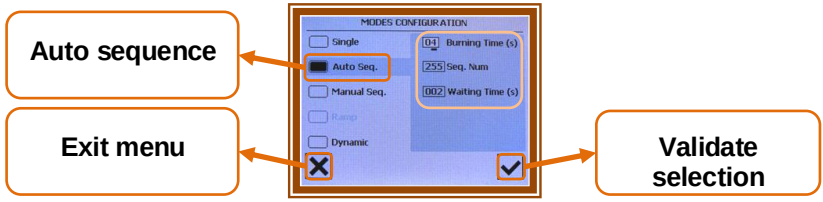


"Auto Seq" Work mode (Automatic static resistance measurement sequence).

We will select this work mode when we wish to measure the same resistance with precision and with a certain sequence.

Setup:

1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Turn on the equipment.
4. Access the work mode menu.



*** Burning Time:** *time, in seconds, to acquire data once the injection has reached the requested current.*

*** Seq. Num:** Number of measurement that will be carried out.

*** Waiting Time:** *time, in seconds, that there will be between the end of one measurement and the start of the next.*

5. Access the current injection menu.

- Enter the current value that adapts to the device tested.
- You can set up the *"Dual Ground Clamp"* functionality. This functionality will be explained in detail later on in this manual.

6. Access the resistance range menu.

- We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Steps to be followed to perform the test:

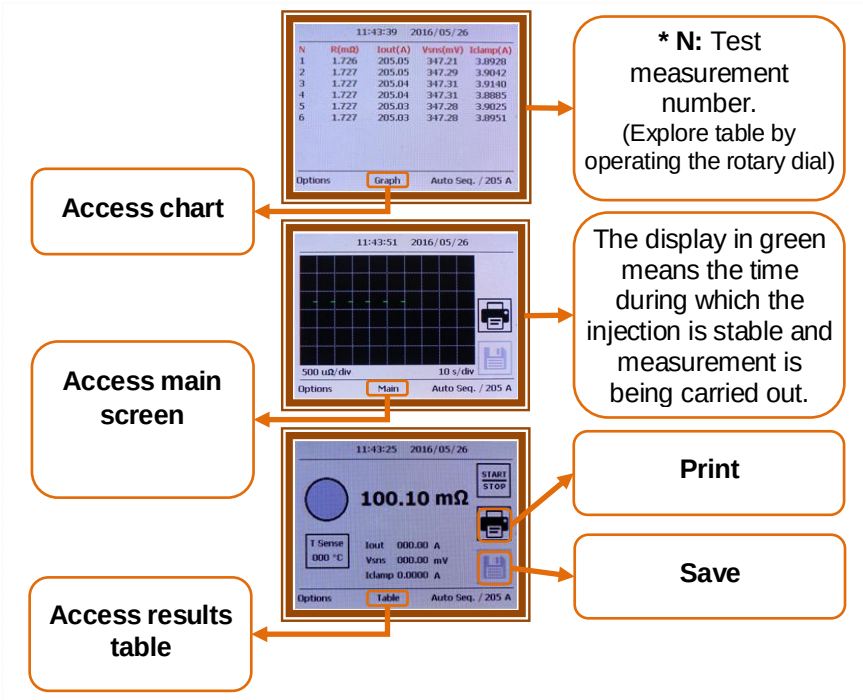
1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.
3. Start the test by pressing START/STOP.
    a. The start of injection will be indicated with two beeps and the current injection indicators will be activated.
    b. The end of the first measurement will be indicated with one beep and the current injection indicator on the console will go off
    c. Once the time set in the "*Waiting Time*" has passed, the equipment will carry out a current injection again and its subsequent measurement, and the current injection indicator on the console will once again be activated
    d. The sequence will be repeated as often as set by the user in the *"Seq. Num"* parameter.

The red indicator, ***Out,*** will remain on until the test sequence ends.

4. When the sequence has ended, the current injection indicators will go off and this will be indicated with one beep.

Result:

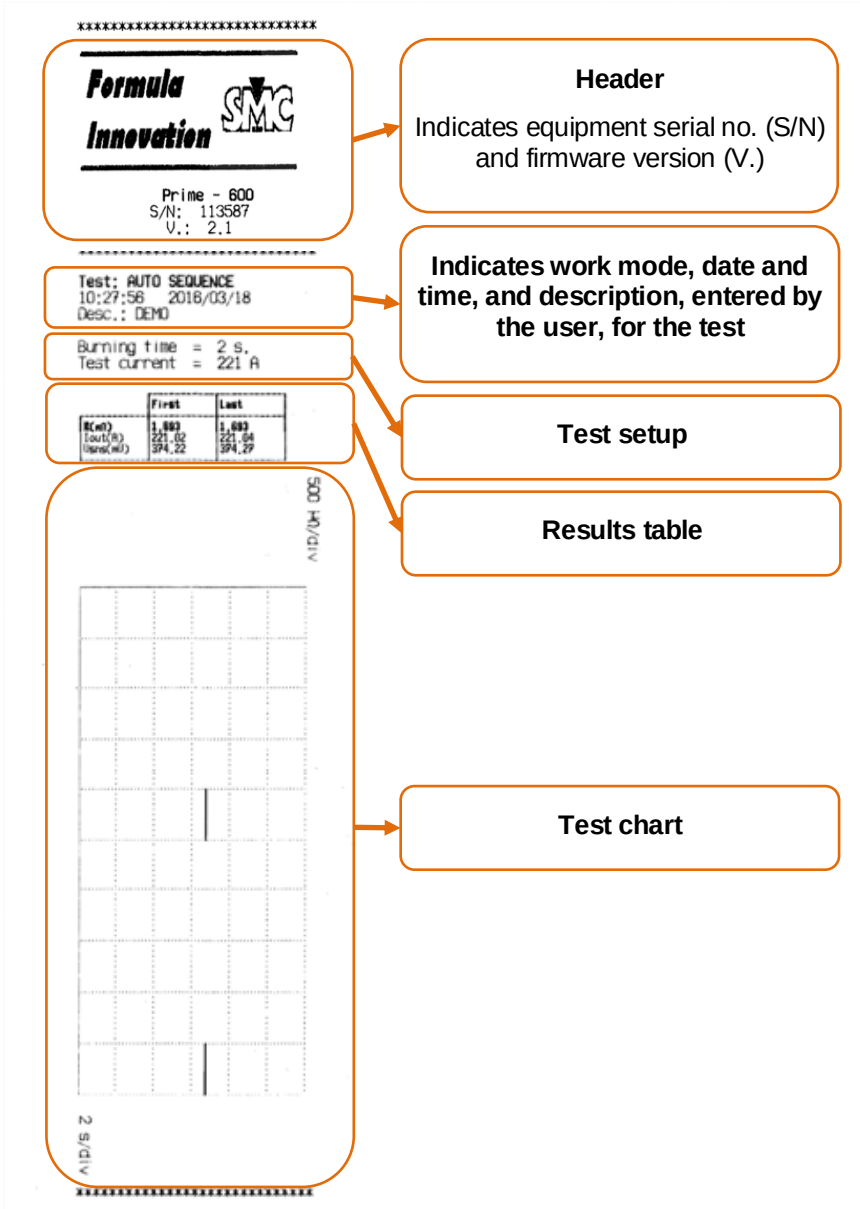
When the test has ended successfully, the result will be shown on a table.



The following will be possible from the main or graphic screen:

1. Save the result of the test.

2. Print out the result of the test



ADVANCED SETTINGS

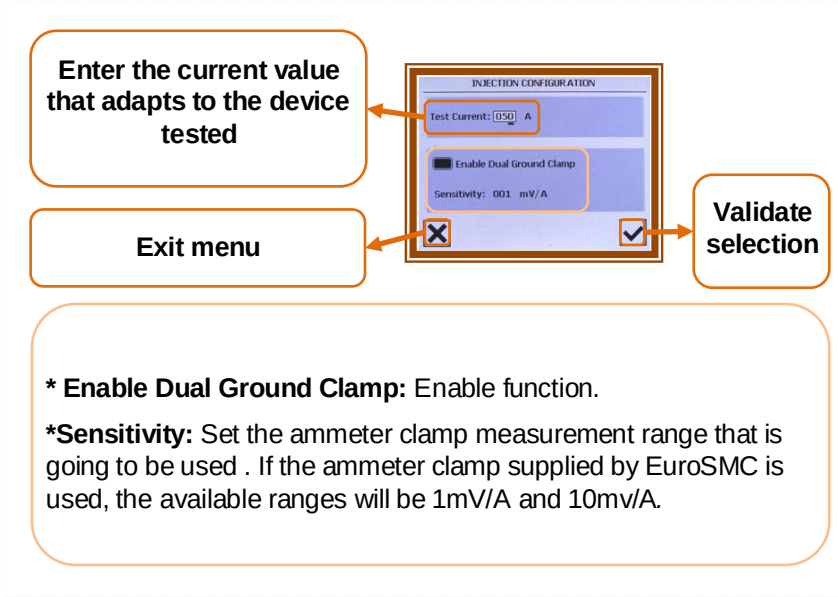
The accessories used in these settings are optional, supplied by EuroSMC.

Dual Ground Clamp"

The Prime - 600 permits working with dual grounding. This system measures the part of the current that circulates through the ground circuit and eliminates it accurately and instantaneously from the calculation of the resistance. It enables the test to be performed pursuant to safety standards and without compromising the safety of the operators or the facility.

Setting:

1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Connect the cables of the ammeter clamp to the *"Clamp"* connections of the Prime - 600.
    a. We recommend using the ammeter clamp supplied by EuroSMC as an optional accessory.
    b. A direct current measurement ammeter clamp can also be used and its output will be given in direct voltage.
4. Turn on the equipment.
5. Access the injection setup menu.

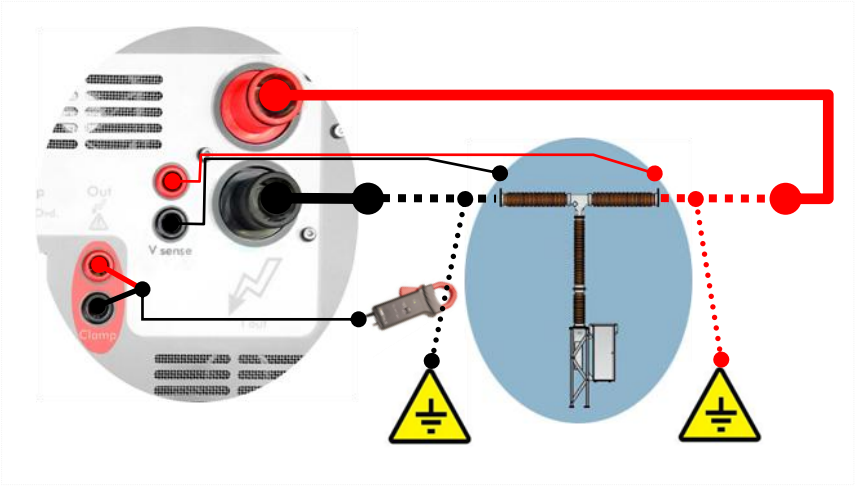


6. Access the work mode menu and set the mode that adapts to the test to be carried out.
7. Access the resistance range menu.

- We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Diagram connection diagram to perform the test:

1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.
3. Connect the ammeter clamp to the ground tap.



Steps to be followed to perform the test:

After setting the work mode and making the connections, perform the test by pressing START STOP.

The equipment will indicate the start of current injection with two beeps and the end with one beep.

For greater safety, el Prime – 600 does not take the test as finalised until the load is demagnetised.

Result:

If the test ends successfully, you can:

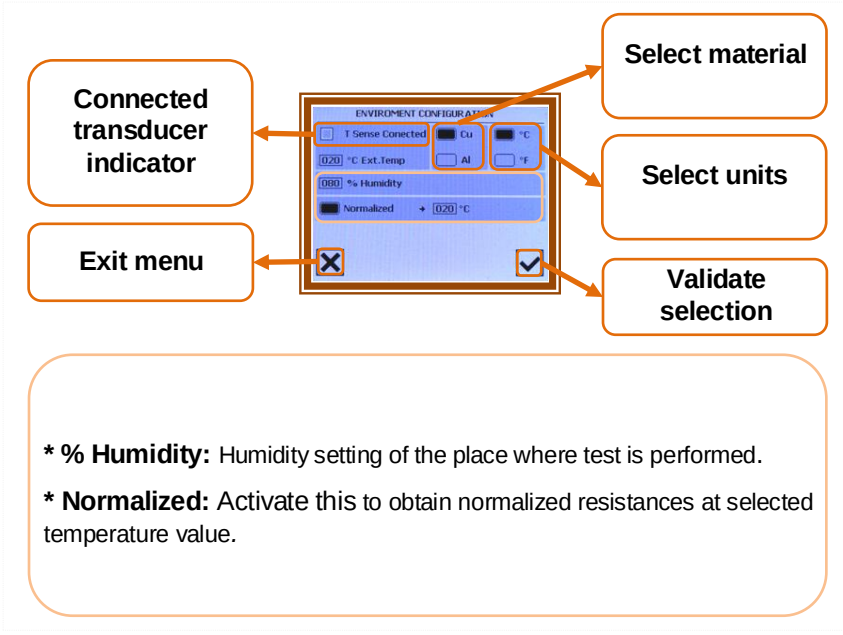
- Print out the result of the test by pressing.
- Save the result of the test by pressing.

Thermal compensation of the device tested, "T.Sense".

The optical transducer will transmit the temperature value of the point measured in each test to Prime – 600. Thus, the user can standardise the resistances measured at a standard temperature, for example 75º C, to present them on his/her report.

Setup:

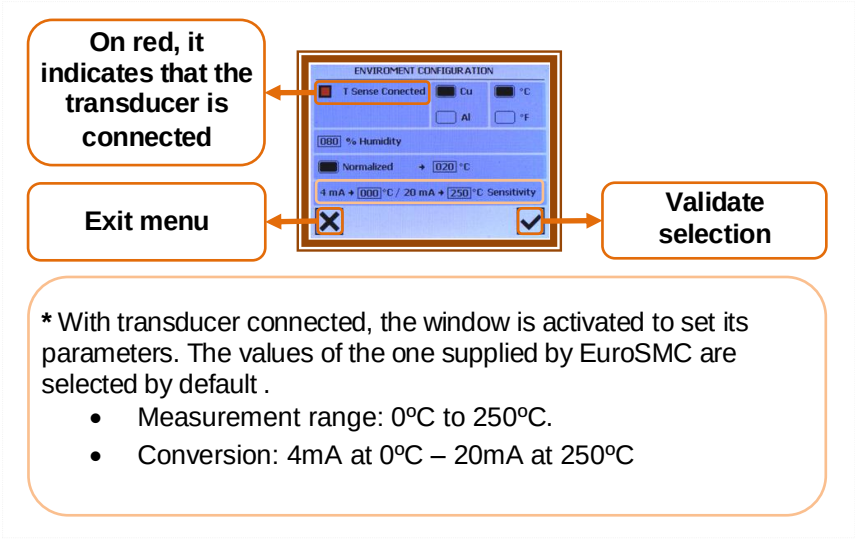
1. Connect the high current cables to the current taps of the Prime - 600.
2. Connect the measurement cables to the voltage measurement connections of the Prime - 600.
3. Turn on the equipment.
4. Access the thermal compensation setup menu.



*** % Humidity:** Humidity setting of the place where test is performed.

*** Normalized:** Activate this to obtain normalized resistances at selected temperature value.

5. Connect the optical transducer supplied by EurSMC as an optional accessories, to the *"T Sense"* connection of the Prime - 600.



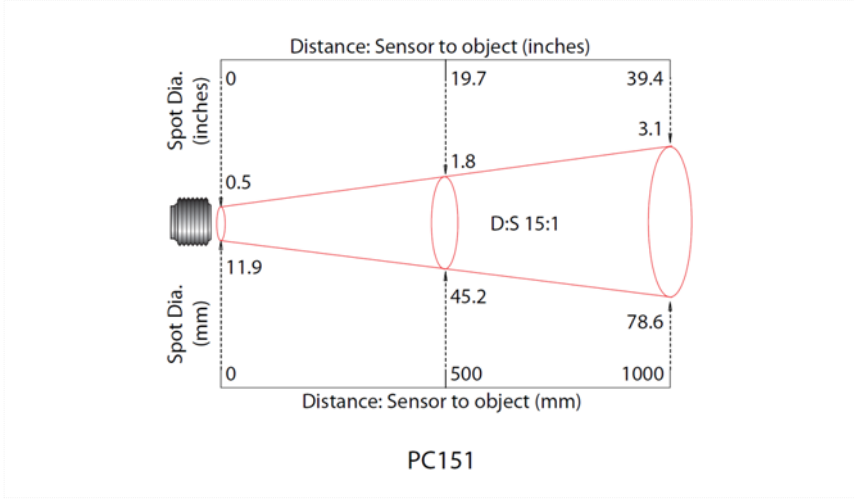
6. Access the work mode menu and set the mode that adapts to the test to be carried out.
7. Access the resistance range menu.

- We recommend using the "***Auto***" mode as better precisions can be obtained, although the resistance range to be measured can also be set.

Steps to be followed to perform the test:

1. Connect the crocodile clips of the high current cables to the current taps of the device tested.
2. Connect the voltage measurement cables to the appropriate sensing connections of the device tested.

3. Orientate the transducer towards the device tested. The distance at which it must be located will depend on the area to be measured. Follow the diagram below, as reference.



4. Start the test by pressing START/STOP.

The equipment will indicate the start of current injection with two beeps and the end with one beep.

Result:

If the test ends successfully, you can:

- Print out the result of the test by pressing .
- Save the result of the test by pressing .

OBTAINING TEST REPORTS

The Prime – 600 system has the capacity to directly print out the test results and save them for later review, by means of the PrimeSync program (for PC), or save them to recuperate them later on in the equipment console.

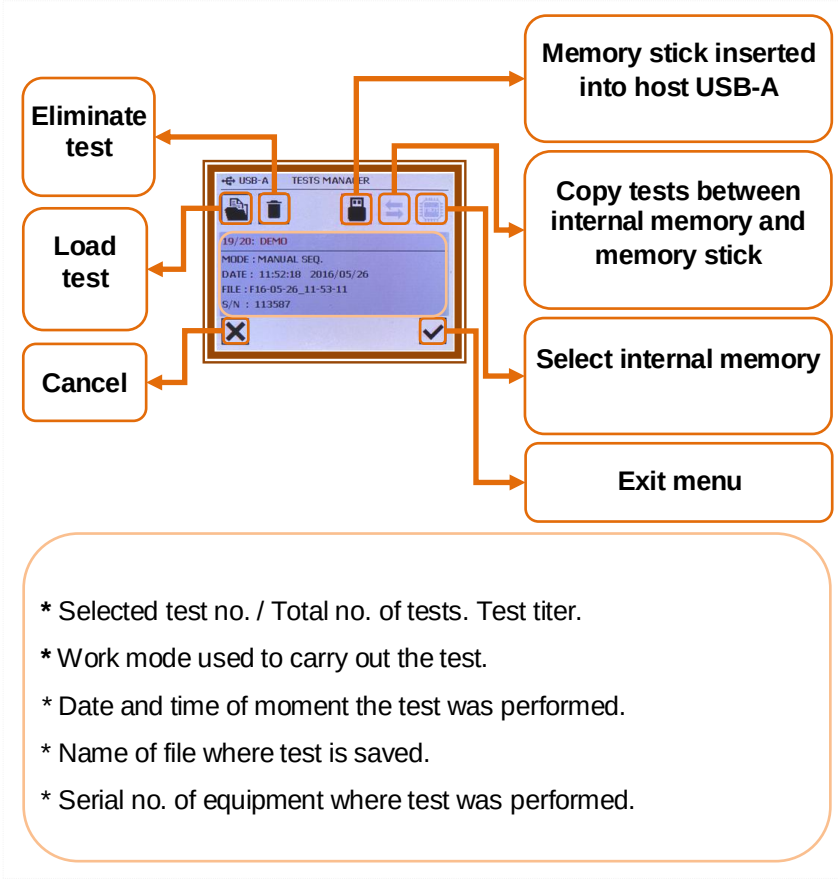
Reporting and testing concept

Testing refers to each one of the tests performed, including: the measurements that are set to be shown on the screen; the time measured; the level injected, and in general all the adjustments.

Reporting refers to the group of tests under one common heading.

Management of saved tests

By accessing the report menu we can select and recuperate saved tests, delete them and select the place where they are going to be stored.



Using the PrimeSync program to manage tests and reports.

With your Prime – 600 system, you will have received the *PrimeSync* application and a USB cable. This is all you need to display, import and print out reports from a PC with Windows operating syste

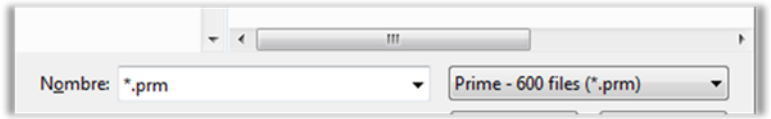
The installation and setting of the *PrimeSync* will be explained in greater detail later on in this manual, in the "*Settings"* section.

Test display.

If you have chosen the option to save the tests on a memory stick, these stored tests can be displayed with the PrimeSync application.

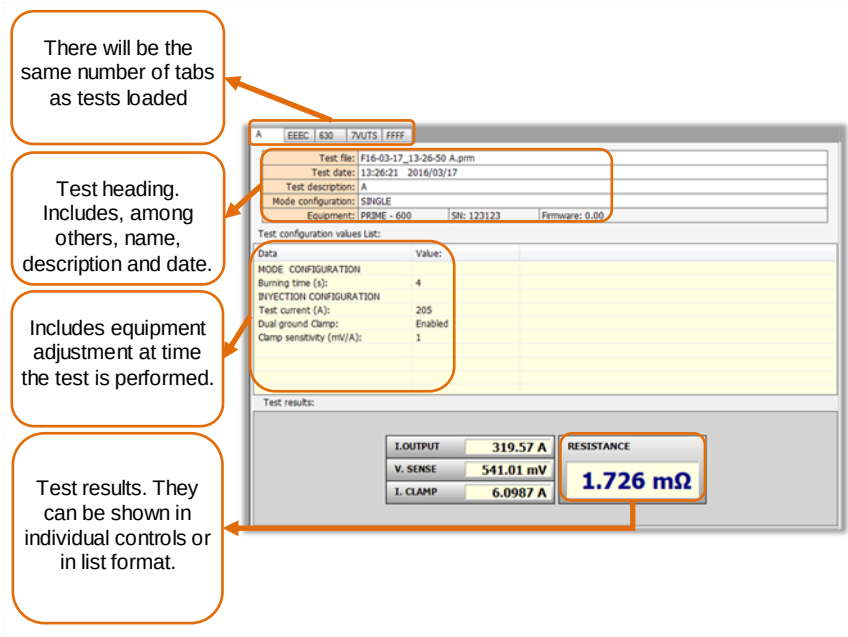
Open test allows you to select one or several tests to be displayed on the *PrimeSync* application. There is an option in the "File/Open..." menu, that is the equivalent to this action of the button.

Once pressed, the window of the file explorer will open. The searched for files have the extension "*.prm", by default.



Once you have found the folder where the stored tests are filed, you can select one or several tests. Then press open.

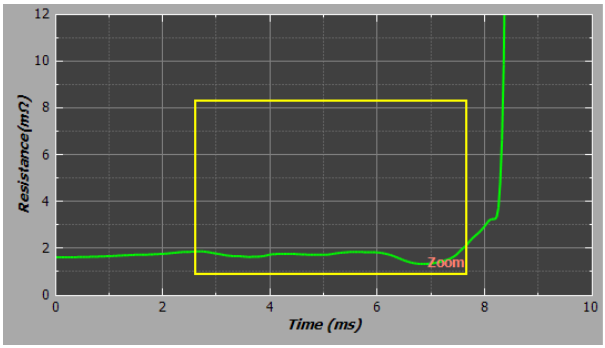
The window of the *PrimeSync* application will show a similar view to that of the figure below:



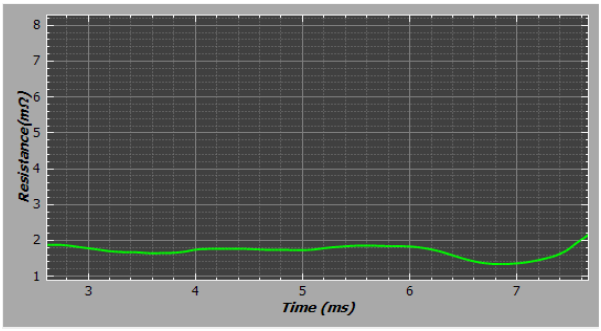
If several tests have been opened, each one of them is placed in a different tab, and only one of them is visible. This test is the one considered as active (at that time). The text that appears in each one of the tabs corresponds to the description of the test given at the time when it was saved in memory. If no description was assigned to it, the name of the file will be shown on the tab.

Graphic display

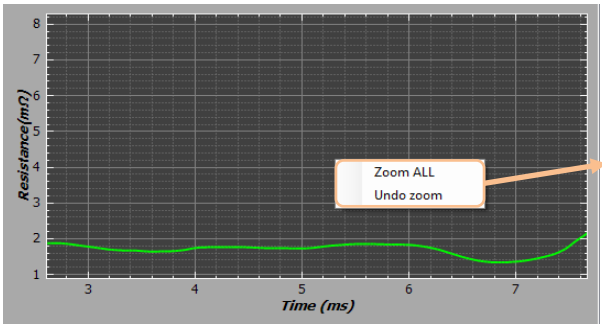
There are two types of tests (DYNAMIC and AUTO SEQUENCE mode) that contain a graphic illustration of the results. The results can be seen in enlarged view (ZOOM) by selecting a window on the chart.



Press left button of mouse and, keeping it pressed, drag the cursor until you have selected the area of the chart to be enlarged



Release the mouse button.The enlarged area of the chart will be shown.



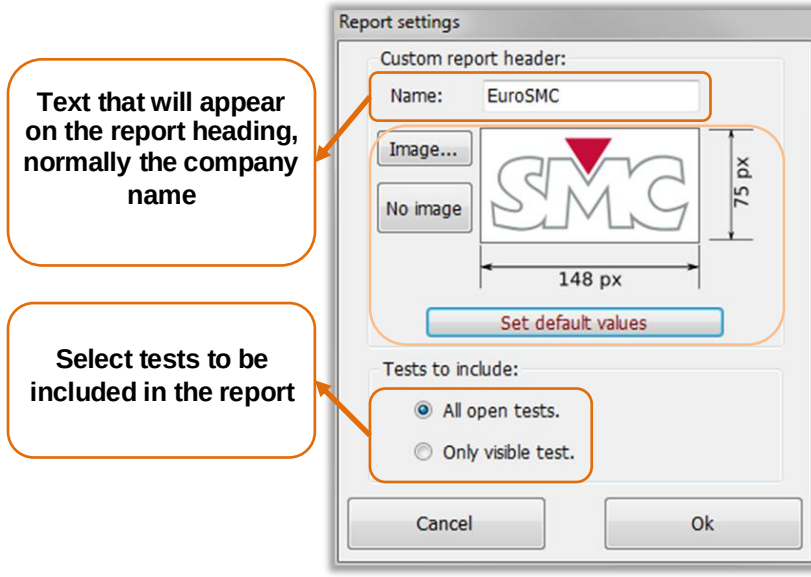
Pressing with the right button of the mouse on the chart, a menu will pop up with two possible options.

Zoom ALL: This shows a complete view of the chart.

Undo Zoom: This returns to the preview of the chart before the enlargement. If there is no preview this option will be disabled.

Report setting options

Report settings allows you to personalise some parameters of the report. To be able to choose which ones, press the button or its equivalent in the Reports/ Report settings menu.



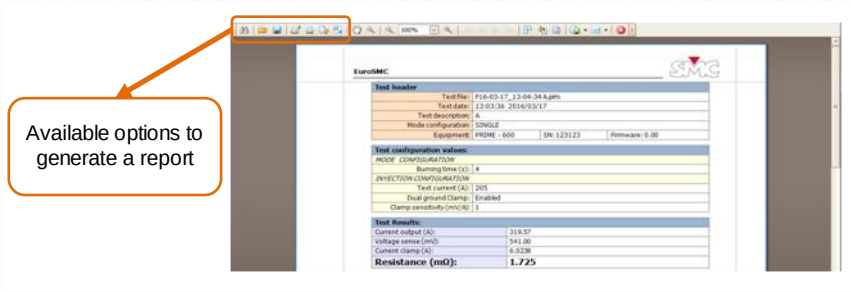
* **Image.** Normally the company logotypes. The image does not have to have the size indicated, but the proportion between the width and height of the image must be as indicated, otherwise it would be distorted.

To select the image to view, press on the "*Image…"* button. If you do not want an image in the heading, press "*No Image".*

Press "*Set default values"* to include the text of the company, EuroSMC, and its logotype.

Report preview.

Show test preview . This shows a preview of the tests selected for later printing or to generate PDF, HTML, Excel file, among others, from this same report preview.



Report generation.

Print open test. Permits sending the report with one or several trials open to a selected printer. If the document with trials has not been generated, it is created before sending .

Export to PDF. Generates a document in PDF format of the report, with one or several trials open.

PrimeSync program (for PC with Windows).

Installation.

The *PrimeSync* application is an auxiliary tool of the Prime – 600 system, whose purpose is to provide a better view of the tests performed with the equipment as well as carry out check and maintenance tasks. Access to certain application screens, where critical tasks are carried out, is password protected. Depending on the password entered, access will be given to different safety levels.

It is available for 32 bit and 64 bit Windows.

If you have not got the program you can download it from

http://webmail.eurosmc.es/SoftDownloads/Downloads/PrimeSyncInstaller.msi

Install it but **do not execute it yet**.

Connect Prime – 600 to PC.

When you use the USB cable to connect Prime – 600 to the computer for the first time, the necessary driver will automatically be installed to be able to correctly communicate the equipment to the PC.

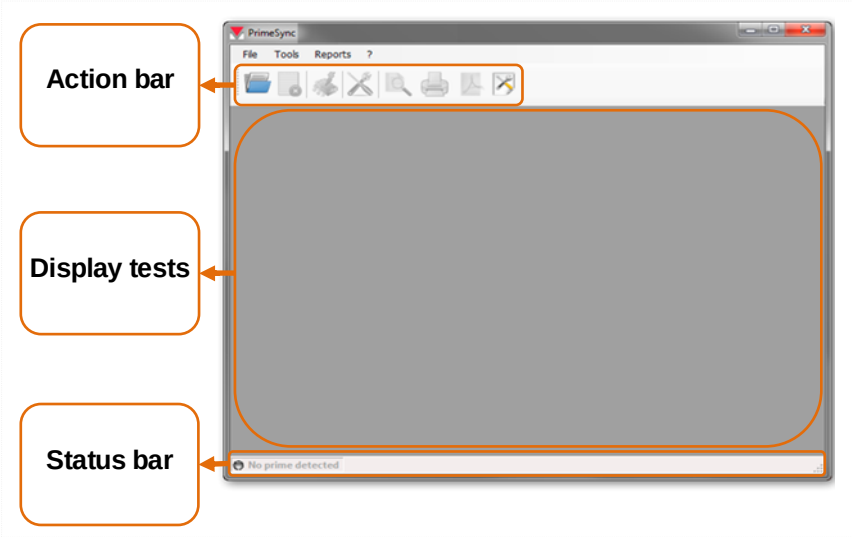
If this is not possible, it can be installed manually by accessing the folder on your PC:

- C:\Program Files\EuroSMC\PrimeSync\DriverCDCInf

User interface

Click on the icon that will have appeared on your desktop and execute the program.

When it starts up, the *PrimeSync* application will show a window similar to that below:



Action bar

Open test. This opens one or several tests performed with Prime – 600 for them to be displayed.

Close test. This closes the test that is displayed on screen. This action button would be disabled if no test is open.

Prime – 600 programming. This updates the software of the Prime – 600 equipment, enabling you to select the file to be updated. It would be enabled if the Primesync is connected in programming mode.

Prime – 600 maintenance. This opens a new window with the actions to carry out adjustments and maintenance on the Prime – 600. A password must be entered to access this window.

Show test preview. This shows a preview of the report generated with one or several tests open.

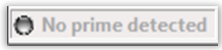
Print open test. This permits sending the report with one or several tests open to a selected printer. If the document with tests has not been generated, it is created before being sent.

Export to PDF. This generates a report document in PDF format, with one or several tests open.

Report settings. This opens a new window where certain options can be modified in the generated reports.

Status bar

This shows the information about the connection status with the *Prime – 600.*



Prime – 600 is not connected by the USB cable to the PC where *PrimeSync* is executed.

Prime – 600 is connected in normal work mode.

Prime – 600 connected in programming mode

Preparation to update the equipment

The equipment updating consists in saving new firmware in the equipment, using the *Primesync* application for this task, through a USB connection between the PC and the *Prime – 600.*

1. Connect the PC to *Prime - 600* with a USB cable (from an available USB port in the PC to the port indicated as USB-B on the front of the *Prime – 600*.)
2. Establish **Programming Mode** in *Prime – 600***.**

    a. Turn off *Prime – 600*.
    b. After turning it off, press the rotary dial on the front of the *Prime – 600 K* and keep it pressed.
    c. Keeping it pressed, start up the *Prime – 600* equipment. The luminous ***Remote*** indicator on the front of the equipment (blue) must flash on and off in this status. The front screen must not show any information.
    d. At this point it is in *Programming mode*.

3. We open the *PrimeSync* application (if it is not open already) and on the bottom of the window the indicator of the mode in which the connection with the Prime – 600 has been connected (in this case programming mode) must appear. The button of the action bar for programming must also be enabled.

Manual equipment updating.

To carry out the updating, the *Prime – 600* must be in *programming mode*.

1. If you press this button of the action bar to program, you can select the file with the new firmware to be updated.
    a. After pressing it, the file explorer opens. By default, it will open in the folder *"\AppData\Local\EuroSMC\Prime600"* of the current user.
2. Once selected, the window of the recording process appears.
3. After the process has ended correctly, the *Prime – 600* will be rebooted.

The *PrimeSync* does not check if the version recorded is earlier or later than the existing one in the equipment. It is totally feasible to record a previous version to the one available on the Prime – 600. This decision is the user's responsibility.

Automatic equipment updating.

The *PrimeSync* application checks, when being executed, if there is a more recent version of the *Prime – 600* firmware in the **EuroSMC** software repositories**.**

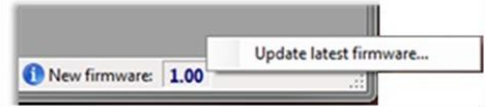
This process is carried out regardless of whether it is connected or not to a Primer – 600 device, but the PC where the application is being executed, must have an active connection to the Internet.

After the version check, if there is a more recent version, this is downloaded. The entire process occurs without any notification to the user.

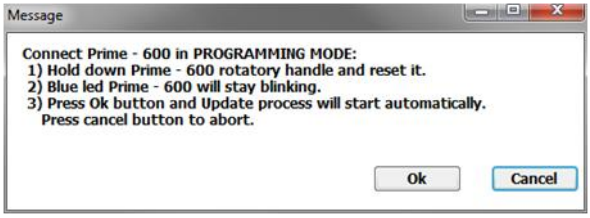
When the *Prime – 600* is connected to the PC in normal work mode (not in programming mode), a consultation is made, among other things, about the equipment firmware version. If a more recent version exists, the following indication will appear:

To update to the new version

1. *Click* with the left button of the mouse on the indicator with the new available version. The *"Update latest firmware"* menu will appear:



2. Once again, *click* on this, and the following window will appear:



This reminds us of the (necessary) process to establish the Prime – 600 in *programming model.* Carry out the steps indicated.

This process can be accessed, too, by pressing this button on the settings options menu, in the *"Maintenance"* tab of the *Prime – 600*.

3. After entering the Prime – 600 in programming mode, press the *OK* button. If you wish to cancel the process, press the *Cancel button*.
4. After the process has ended correct, the *Prime – 600* will be rebooted.

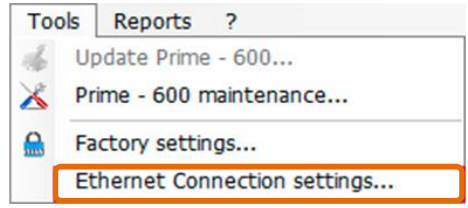
Remote connection setting by Ethernet (bridge mode)

PrimeSync has a special work mode whereby the data received by the *Prime – 600* (when connected) are sent to a remote server to be monitored. This mode is known as "*Bridge mode*".

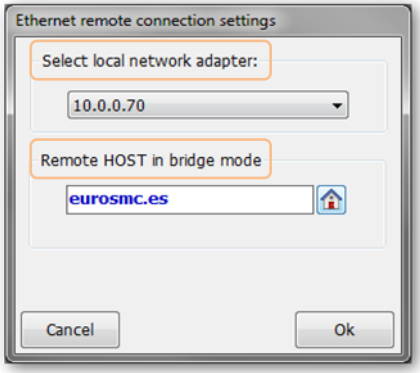
This options enables us to assign the name of the *Remote host* that we want to connect to and the network adaptor used for this.

To assign these data:

1. Go to the **Tools/Ethernet connection settings** menu.



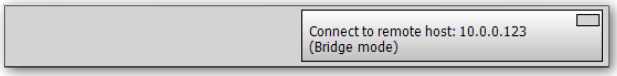
2. The settings window will show the following settings:



* **Select local network adapter**. This permits selecting the network adapter, based on its IP address. All the addresses are shown on a dropdown list.
* **Remote HOST in bridge mode**. This selects the remote address (host) to connect to and to send the *Prime – 600* data. The button situated on the right of the text of the remote host assigned the default name.

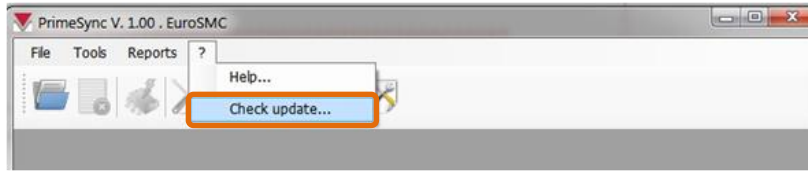
Maintenance of the Prime – 600 equipment from PrimeSync.

This button will provide access to the *Prime – 600* equipment maintenance options. It is password protected. It can only be accessed by personnel authorised by EuroSMC. This window provides access to the options that affect the equipment adjustment and its factory values, as well as the *bridge mode* actions, for remote monitoring of the equipment.



Updating the Primesync program.

To check if there is a new version of the program, you will have to access the program aid menu ***"?/Check update"***.



If a new version is available

1. A request will be made to download it and you will be able to choose the folder where you wish to save the new executable.
2. Once downloaded, close the application.
3. Execute the downloaded file.
4. The new version will be installed.
5. When it has been correctly installed, you will be able to use the new version.

PROBLEMS THAT MIGHT ARISE

SPECIFICATIONS

Prime – 600.

STATIC RESISTANCE MEASUREMENT		**Sample Rate (Max.):** 30 kSPS – **Temp.**: 10 ~ 40ºC
RANGE	**RESOLUTION**	**PRECISION**
1000.0µΩ	0.1µΩ	10.0µΩ < **R** ≤ 100.0µΩ (150 ~ 600A): ± 0.3µΩ 100.0µΩ < **R** ≤ 1000.0µΩ (20 ~ 600A): ± 0.2% ® ± 0.1µΩ
10,000mΩ	1µΩ	1,000mΩ < **R** ≤ 10,000mΩ (5 ~ 600A): ± 0.2% ® ± 0.001mΩ
100.00mΩ	10 µΩ	10.00mΩ < **R** ≤ 100.00mΩ (5 ~ 600(*)A): ± 0.2% ® ± 0.01mΩ
1000.0mΩ	100 µΩ	100.0mΩ < **R** ≤ 1000.0mΩ (5 ~ 60(*)A): ± 0.2% ® ± 0.1mΩ
(*) : Ó 6000/R(mΩ), whichever is less.		

DYNAMIC RESISTANCE MEASUREMENT		**Sample Rate (Max.)**: 30 kSPS – **Bandwidth**: 2,5 KHZ - **Temp.**: 10 ~ 40ºC
10.00mΩ	10 µΩ	0.10mΩ < **R** ≤ 1.00mΩ (5 ~ 600A): ± 0.01mΩ 1.00mΩ < **R** ≤ 10.00mΩ (5 ~ 600A): ± 0.2% ® ± 0.01mΩ
100.0mΩ	100 µΩ	10.0mΩ < **R** ≤ 100.0mΩ (5 ~ 600(*)A): ± 0.2% ® ± 0.1mΩ
1000mΩ	1000 µΩ	100mΩ < **R** ≤ 1000mΩ (5 ~ 60(*)A): ± 0.2% ® ± 1mΩ
(*) : Ó 6000/R(mΩ), whichever is less.		

CC INJECTION – WORK CYCLE		
5…600 Acc / 2s	5…300 Acc / 2min	5…150 Acc / perm
CC INJECTION – RESOLUTION		
1 Acc		
CC INJECTION – MINIMUM VOLTAGE (@V.line: 120/240 Vac)		
6 Vcc to 600A		

RESULTS MANAGEMENT	
Storage	Internal memory and USB external memory
Communications	Type B USB connection
Reports	Software for PC Windows supplied with equipment

GENERAL	
Power supply	115/230 Vac (automatic detection) / 50-60 Hz. Fuse
Dimensions	47 x 35.7 x 17.6 cm / 13.3 kg
Box	In ABS with IP67 protection degree
Temperature	Operation: 0…50ºC / Storage: -25…70ºC

Prime - 600: Typical High Current D.C. Power Output (English only).

Line Supply (V.a.c,F=50Hz)	High Current Connection Leads	I out (A)	V load Max.(V)	R load Max.(mΩ)	R Measurable Max.(mΩ)
120	Standard 2x3m/35mm^2 High Flexibility Crocodile Finished.	5	12.33	2465	1000
		150	10.18	67.9	40.0
		300	7.97	26.6	20.0
		600	3.54	5.90	5.90
240		5	13.54	2708	1000
		150	11.87	79.1	40.0
		300	10.13	33.8	20.0
		600	6.67	11.12	10.00
120	Optional 2x6m/35mm^2 High Flexibility Crocodile Finished.	5	12.31	2462	1000
		150	9.65	64.3	40.0
		300	6.90	23.0	20.0
		600	1.41	2.34	2.34
240		5	13.52	2705	1000
		150	11.33	75.6	40.0
		300	9.07	30.2	20.0
		600	4.54	7.56	7.56
120	Optional 2x10m/35mm^2 High Flexibility Crocodile Finished.	5	12.28	2457	1000
		150	8.94	59.6	40.0
		300	5.48	18.3	18.3
		535.0	0.06	0.12	0.12
240		5	13.50	2700	1000
		150	10.62	70.8	40.0
		300	7.65	25.5	20.0
		600	1.70	2.83	2.83

Remarks :

* High Current Cables & Prime - 600 at 23ºC +/- 2ºC.
* Injection Current ON Time ≤ 2S (1 Test with Prime - 600 & Current Cables from cold condition)
* Line Supply Voltage is in V.r.m.s under loaded condition.
* Values Shown are Typical Values based on the following approximation derived from real measured values:
  - High Current Output No Load Voltage & Output Resistance = 12.4V/10,9mOhms@Vline=120V.a.c.
  - High Current Output No Load Voltage & Output Resistance = 13.6V/7,68mOhms@Vline=240V.a.c.
* Values Shown for Maximum Measurable Resistance are based on the following Specified Limits:
  - Voltage at Load to be measured ≤ 6,000 Vdc (V sense input specification).
  - Resistance to be measured ≤ 1,000 Ω (Highest Resistance Measurement Range specification).

Order Information

ORDER INFORMATION

SYSTEM SETUP	
Prime – 600.	1 x Unit

ACCESSORIES INCLUDED

	3 m high current cable with black connector 3m
	3 m high current cable with red connector
	3 m red Banana-Banana cable
	3 m black Banana-Banana cable
	Red crocodile clip
	Black crocodile clip
	Red test tip
	Black test tip
	3 m yellow / green Banana–Banana ground cable
	2 m USB cable
	2 m power supply cable
	Memory stick
	200 mA fuse
	25 A fuse
	Pointer for resistive screen
	User manual
	Bag for cables and accessories

OPTIONAL ACCESSORIES

BAG 15	Nylon bag for Prime – 600
CBL11-PRIME-600-I	10 m high current cables
CBL11-PRIME-600-M	10 m measurement cables
PME-VCLMP	Set of 2 clamps voltage measurement firm grip for Prime - 600
PME-TMP-SNS10	10 m temperature probe
PME-TMP-SNS3	3 m temperature probe
PME-DG-SNS	Set of ammeter clamp with 2 m extension cable
TC-07	Rigid transport box

IMPORTANTE