

TECNA[®]

TE1700

Weld TESTER

USER MANUAL

From version 1.10

TECNA[®] S.p.A.

Via Meucci 27 - 40024 Castel S. Pietro Terme – Bologna ITALY

Tel. +39 0516954411 – Fax +39 0516954490 – <http://www.tecna.net>

**DOCUMENT
NUMBER:**

MAN 5017

DISTRIBUTOR:

EDITION:

April 2014

SUMMARY

1.0 MAIN MENU	3
2.0 MEASUREMENT MENU	6
2.1 MEASUREMENT GRAPH	8
2.2 MEASUREMENT GRAPH CONFIGURATION	11
2.3 MEASUREMENT DATA.....	13
2.4 MEASUREMENT DATA CONFIGURATION.....	20
2.5 MEASUREMENT CONFIGURATION.....	22
2.5.1 ADVANCED MEASUREMENT CONFIGURATION	26
2.6 SETTING LIMITS	28
2.7 WELDING TABLE.....	33
3.0 STATISTICS MENU	35
3.1 SCATTER PLOT.....	37
4.0 DATA SAVING MENU.....	39
4.1 MEASUREMENT GRAPH CONFIGURATION	41
5.0 INSTRUMENT CONFIGURATION MENU	43
5.1 BLUETOOTH CONFIGURATION MENU	46
6.0 CONNECTING THE INSTRUMENT TO THE PC	50
6.1 PUTTY© TERMINAL EMULATOR	57
6.1.1 MAIN MENU.....	59
6.1.2 DATA SPOT PRINT.....	60
6.1.3 INSTRUMENT CONFIG MENU.....	62
6.1.4 CURRENT CONFIG MENU	64
6.1.5 LIMIT CONFIG MENU.....	65
7.0 ERROR MESSAGES.....	67
8.0 INSTRUMENT FEATURES	69
9.0 MEASURING ACCESSORIES.....	70
10.0 BATTERY REPLACEMENT AND PRODUCT LIFE END.....	71
11.0 SAFETY OF USE	72

1.0 MAIN MENU

Indication of current date and time in format dd-mm-yyyy and hh:mm

Indicator of USB pen-drive and status of connection with expansion card.

<NO USB| > → pen-drive not inserted or not recognised

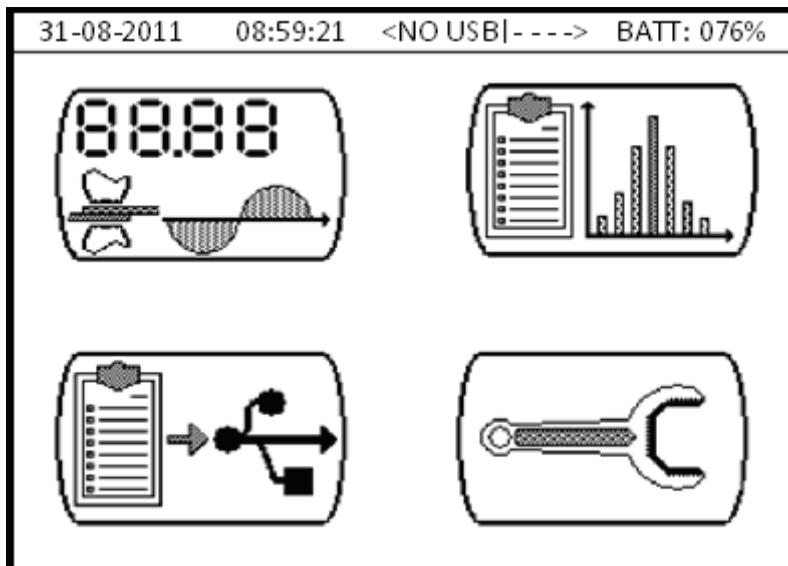
<USB OK| > → pen-drive inserted and recognised

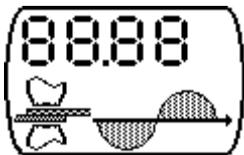
< |----> → expansion card absent

< |LINK> → card present and connection established

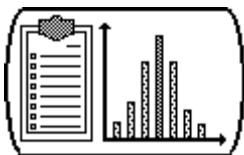
< |!LN!> → card present and connection not established

BATT: 076% → Indication of residual battery charge

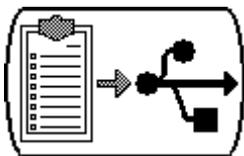




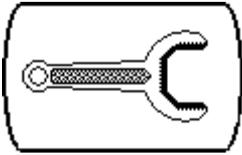
Key for accessing the TE1700 measuring functions. In this menu you can configure the ranges of the probes, LIMITS, PULSE, PRE-BLANK and POST-BLANK, TRIGGER LEVEL, FORCE FILTER, TRIGGER TYPE and the NORMAL/CONTINUOUS mode. You can also read the numeric values of the measured quantities and view them on a graph.



Key for accessing the TE1700 statistics menu. It provides a statistical analysis with a scatter plot on the last 90 weld spots performed by the instrument.



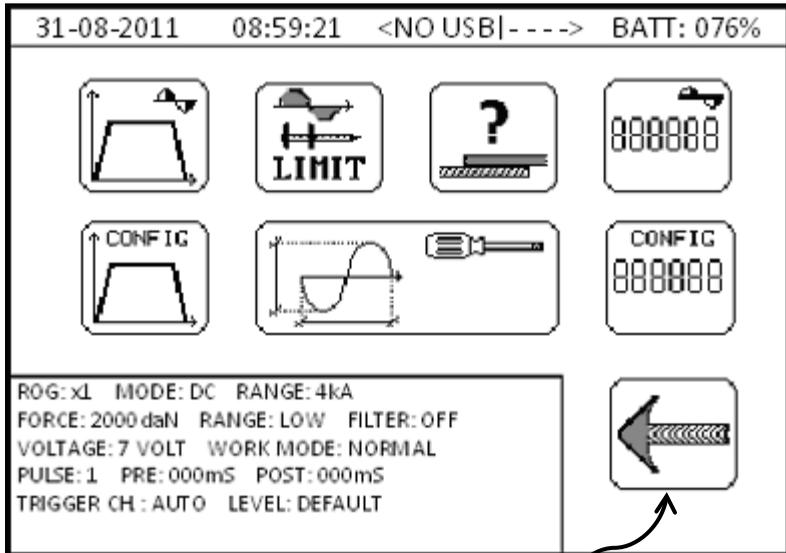
Key for accessing the menu to save data on a pen-drive. It allows you to save the bitmap chart of the measured quantities or to export the spots to a .CSV (Comma-Separated Values) file to perform off-line analyses.



Key for accessing the instrument's configuration menu, which allows you to configure:

- Time to turn off the display backlight;
- Auto-shutoff time to save battery;
- Current date and time;
- Local network supply frequency, 50 or 60 Hz;
- Which data to save of every spot, NORMAL or ADVANCED mode;
- Update TE1700 firmware;
- Connected Bluetooth devices (e.g.: PC, TE1710 Expander, etc.).

2.0 MEASUREMENT MENU



Pressing BACK returns to the previous screen

Summary of current measuring instrument configuration, including the following information:

- Type of current transducer, type of source to be measured, selected measuring range.
- Type of force transducer, selected measuring range, disturbance limitation activation.

- Selected measuring range for voltage, normal or continuous measuring mode.
- Number of current pulses, initial and final masking on signal to be measured.
- Selection of channel for measurement, either force or current or both, instrument sensitivity for starting measuring operations.

2.1 MEASUREMENT GRAPH



Available in NORMAL mode only

Allows you to access the measured quantities graph with respect to time.

This function is only active in NORMAL work mode and is not available in CONTINUOUS mode.

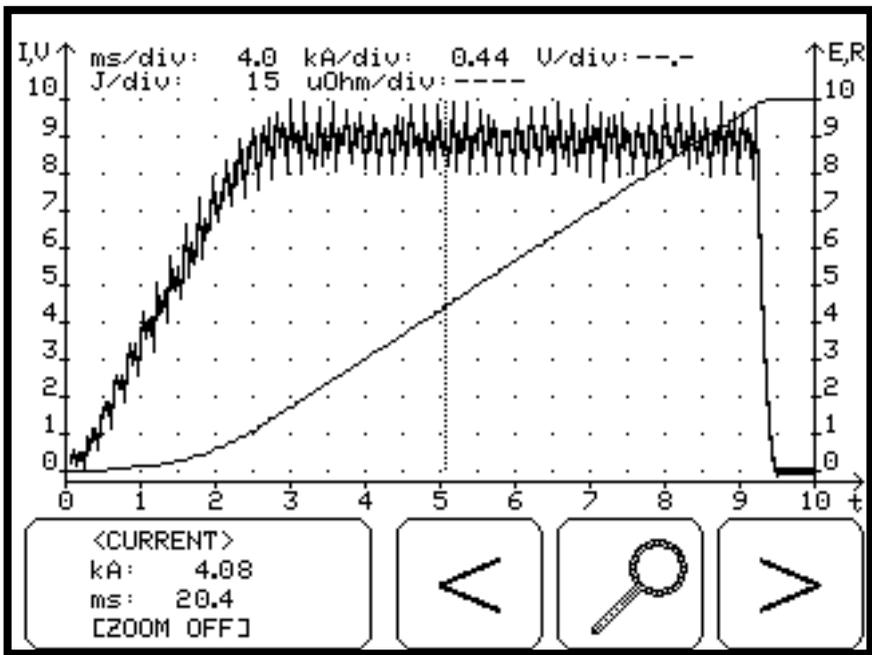
You can view a maximum of two quantities on the graph, chosen among *welding current*, *secondary voltage*, *energy* and *resistance*.

Force is plotted on its own on a dedicated graph, while the other quantities can be selected independently; quantities are chosen from the MEASUREMENT GRAPH CONFIGURATION menu.

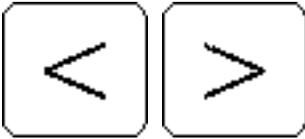
Acquiring spots while inside the MEASUREMENT GRAPH screen will decrease the max acquisition rate.

The MEASUREMENT GRAPH screen appears empty when accessed before the instrument has been able to perform a measurement.

The measurement graph's screen is as follows:



Messages relating to the current position of the cursor.
The time position and the value of the selected quantity are shown.
Touching this area changes the quantities to be plotted on the graph.



The right and left arrows move the cursor horizontally, repeatedly pressing the key moves the cursor quickly.



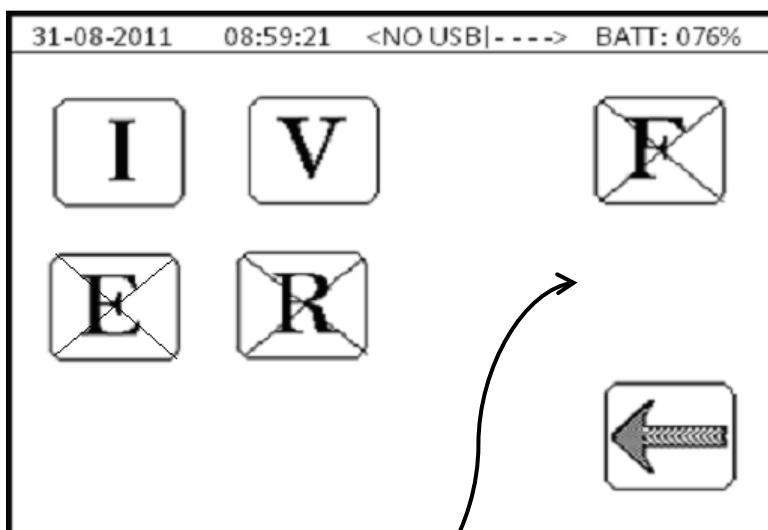
Zooms horizontally into the graph in the area of the cursor.

2.2 MEASUREMENT GRAPH CONFIGURATION



Available in NORMAL mode only

Selection of quantities to be viewed.



Id

This icon is present only with the TE1710 Expander expansion card.

Enables viewing of the displacement measurement graph.

You can simultaneously view a maximum of two quantities on the graph; the selected quantities appear without the X whilst quantities with the X are not shown in the graph.

If you wish to view the force graph, the other quantities will be deactivated automatically.

I → Welding current.

V → Secondary voltage. Requires measurement of the voltage at the electrodes.

E → Energy dispensed during the weld. Requires measurement of the voltage at the electrodes.

R → Electrical resistance of the material. Requires measurement of the voltage at the electrodes.

WARNING: *in the event the voltage and current values are considerably low, the electrical resistance value is forced to zero.*

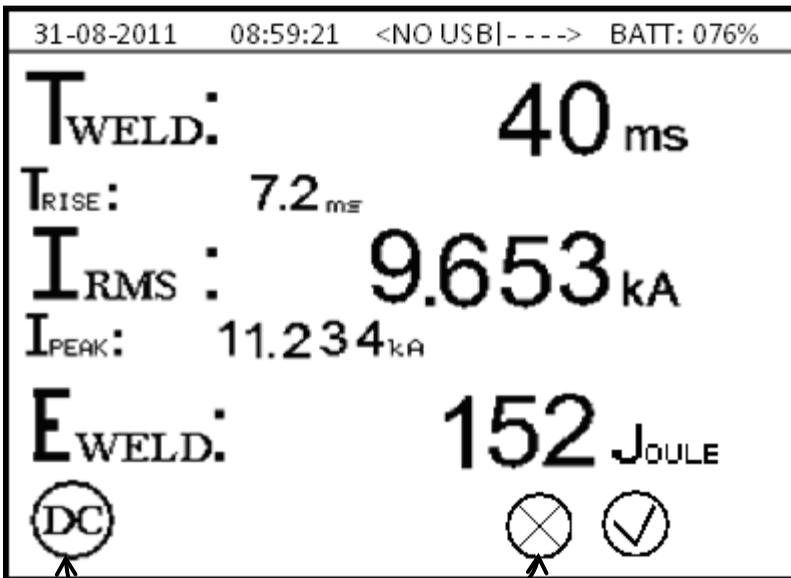
F → Measurement of the force exerted by the electrodes during the welding process.

2.3 MEASUREMENT DATA



Available in NORMAL and CONTINUOUS modes

Displays the numeric values of the quantities measured.



Indicator of active functions that can affect the measurement process.

Indicator of execution of measurement process.

Indicator of outcome of check limits on the measurement process.



Measurement within limits.



Measurement outside limits.



Check limits not active.

The quantities displayed depend on instrument configuration and on the selections made in the MEASUREMENT DATA CONFIGURATION menu.

At the bottom of the screen, indicators show the active functions in the TE1700 that can affect the numeric values shown on the display. A list of data that can be viewed is as follows.



Measurement of a direct current source, such as medium frequency inverter and three-phase unit.



Measurement of an alternate current source, single-phase spot welder.



Measurement of a pulse type current, capacitor discharge.



PRE-BLANK active during the measurement, the initial part of the welding process, for the set PRE-BLANK time, not considered in the measurement process.



POST-BLANK active during the measurement, the final part of the welding process, for the set POST-BLANK time, not considered in the measurement process.



The set number of pulses is greater than 1; the weld to be measured is pulsed and the number of pulses must be equal to the value set on the control unit.



When FORCE FILTER is activated, it suppresses the noise on the force measurement channel, recommended when using electrical axes.

Welding time measurement is always present on the display. Displayed data change, depending on the technology of the welder used:



The display indicates the total time dispensing T_{weld} current and the time taken by the current to reach its maximum T_{rise} value.



The display indicates the total time dispensing T_{weld} current and the average conduction degrees DEG.



In modes



Welding current: the RMS value of the I_{RMS} welding current and the I_{peak} peak value reached during welding are displayed.



In mode



Welding current: the RMS value of the I_{RMS} welding current, the I_{peak+} max positive peak value and the I_{peak-} max negative peak value reached during welding are displayed.



In mode



Secondary voltage: displays the RMS voltage value V_{rms} present on the secondary circuit and its V_{peak} maximum peak value. To perform this measurement, use the cables for measuring electrodes voltage.



In mode



Secondary voltage: displays the voltage peak value V_{peak} during the welding process. To perform this measurement, use the cables for measuring electrodes voltage.



In mode



Secondary voltage: displays the RMS voltage value V_{rms} present on the secondary circuit, its maximum positive peak value $V_{\text{peak+}}$ and maximum negative peak value $V_{\text{peak-}}$. To perform this measurement, use the cables for measuring electrodes voltage.



In modes



Energy dispensed during the weld E_{weld} . To perform this measurement, use the cables for measuring electrodes voltage.

P

In modes



Average power dispensed during the welding process. To perform this measurement, use the cables for measuring electrodes voltage.

R

In mode



Electrical resistance measured at the end of the welding process. This value includes the electrical resistance of the piece to be welded and the resistance of the secondary circuit included at both ends of the electrodes of the voltage probe. To perform this measurement, use the cables for measuring electrodes voltage.

I²t

In modes



Thermal current: the average I_{th} and the instantaneous i_{th} thermal current values are displayed. The average value T_{ith} is calculated by processing the samples acquired over a maximum time range of 24 hours. The instantaneous value i_{th} is obtained according to the last 2 welding samples performed. The average samples can be deleted.



Force: supplies the maximum force F_{max} during welding, at the beginning F_{on} of the welding and at the end F_{off} of the welding process.

If CONTINUOUS mode is selected, the data viewed cannot be edited by the user. The data displayed are:

- RMS value of the welding current I_{RMS}
- Positive current peak I_{PEAK+}
- Negative current peak I_{PEAK-}
- RMS value of the secondary voltage V_{RMS}
- Positive voltage peak V_{PEAK+}
- Negative voltage peak V_{PEAK-}
- Continuous force value

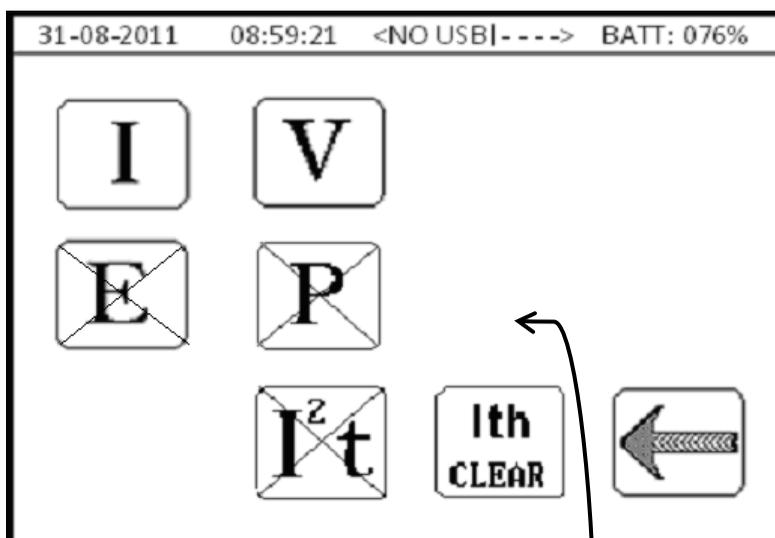
In this case the force values are updated continuously and automatically.

2.4 MEASUREMENT DATA CONFIGURATION



Available in NORMAL mode only

Selection of quantities to be viewed.



Id

This icon is present only with the TE1710 Expander expansion card.

Enables a displacement measurement to be viewed.

The selected quantities appear without the X whilst quantities with the X will not be shown in the measurement data; a maximum of 2 electrical quantities can be displayed simultaneously.

I → Welding current.

V → Secondary voltage. Requires measurement of the voltage at the electrodes.

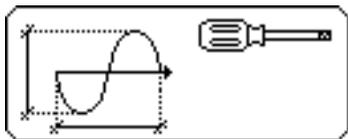
E → Energy dispensed during the weld. Requires measurement of the voltage at the electrodes.

P → Power dispensed during the weld. Requires measurement of the voltage at the electrodes.

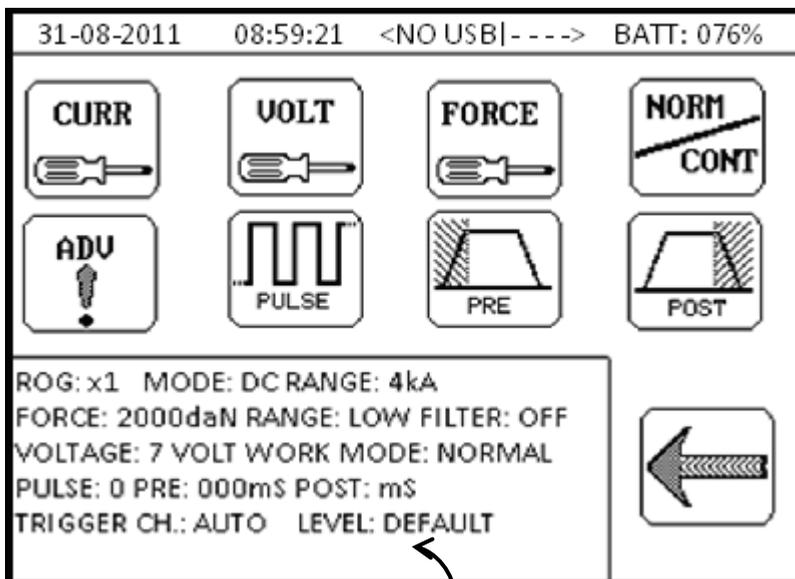
I_{2t} → Thermal current I_{th} of the welding process performed.

I_{th} CLEAR → Deletion of the thermal current samples I_{th} of the welding process performed.

2.5 MEASUREMENT CONFIGURATION



Configuration of the modes in which acquired quantities are measured.

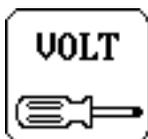


Summary of current instrument configuration



Available in NORMAL and CONTINUOUS modes

CURR - For choosing the technology of the welder used: AC, DC or CD, and also the range with which to perform the measurement. Be sure to choose the range appropriately because if you select one that is too low, error CURRENT HIGH OVER RANGE will appear but if you select one that is too high, measurement accuracy will be lost. The key is active solely if the instrument is connected to a current transducer.



Available in NORMAL and CONTINUOUS modes

VOLT - Allows you to set the electrodes' voltage range. Be sure to choose the range appropriately because if you select one that is too low, error VOLTAGE HIGH OVER RANGE will appear but if you select one that is too high, measurement accuracy will be lost.



Available in NORMAL and CONTINUOUS modes

FORCE - Allows you to set the force measuring range. Be sure to choose the range appropriately because if you select one that is too low, error FORCE HIGH OVER RANGE will appear but if you select one that is too high, measurement accuracy will be lost. The key is active solely if the instrument is connected to a force transducer.



Available in NORMAL and CONTINUOUS modes

NORM/CONT - Allows you to switch from NORMAL to CONTINUOUS operating mode and vice versa. In NORMAL mode the instrument awaits the TRIGGER activation to acquire the spot whilst in CONTINUOUS mode the instrument acquires current, voltage and force values continuously. You can activate the CONTINUOUS mode only if the welder has the AC technology, or if the current transducer is disconnected from the instrument.



Available in NORMAL and CONTINUOUS modes

ADV - Makes advanced adjustments to the measurement process; see the relative chapter **ADVANCED MEASUREMENT CONFIGURATION**.



Available in NORMAL mode

PULSE - Allows you to set the number of pulses. The number of pulses entered must be equal to the number of pulses set on the welding control.



Available in NORMAL mode

PRE BLANK - Sets the PRE BLANK time; if other than zero the initial part of the welding process, for the set time, is not considered in the measurement process.



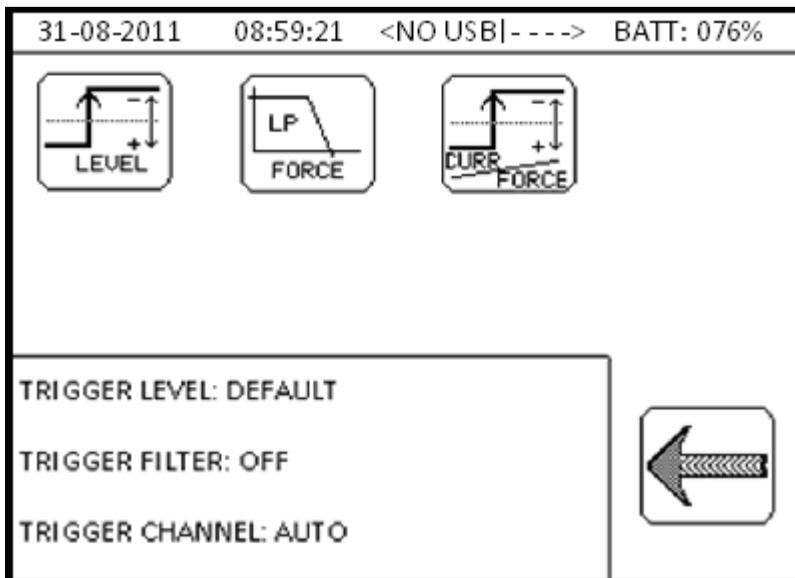
Available in NORMAL mode

POST BLANK - Sets the POST BLANK time; if other than zero the final part of the welding process, for the set time, is not considered in the measurement process.

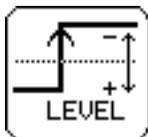
2.5.1 ADVANCED MEASUREMENT CONFIGURATION



For setting the instrument to measure under special conditions.



Summary of current instrument configuration



TRIGGER LEVEL - For changing the sensitivity with which the instrument recognises the start of the welding process. High sensitivities enable low current or force values to be measured correctly. While lower sensitivities allow measurements to be performed in environments with high electrical disturbance or mechanical vibration.



FORCE FILTER - For activating a filter on the disturbances present on the force measurement, which can occur in the presence of an electrical axis.

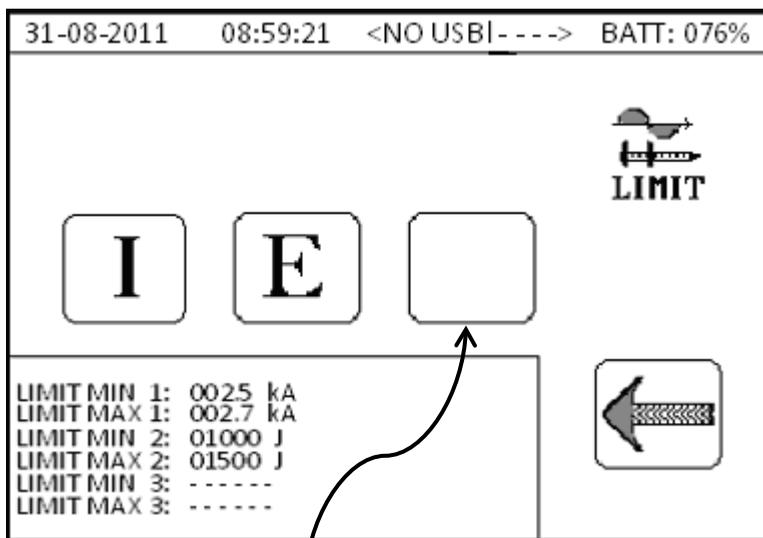


TRIGGER TYPE - The instrument normally receives the welding process start signal on both the current and the voltage channel; one of the two channels may be excluded from receiving the welding process start signal.

2.6 SETTING LIMITS



LIMIT - A control mask is associated with each acquired weld spot, with three weld limits that may be selected among the following quantities: *current*, *energy*, *time*, *force* and *displacement*. You cannot select two identical quantities from the limits mask. If using the TE1710 Expander, you can configure up to 15 limits masks through the control unit's call signals.



Enables access to the welding limit programming menu.

In the limits mask image shown in the page above, it can be noted that current and energy limits are active whilst the third limit is not.

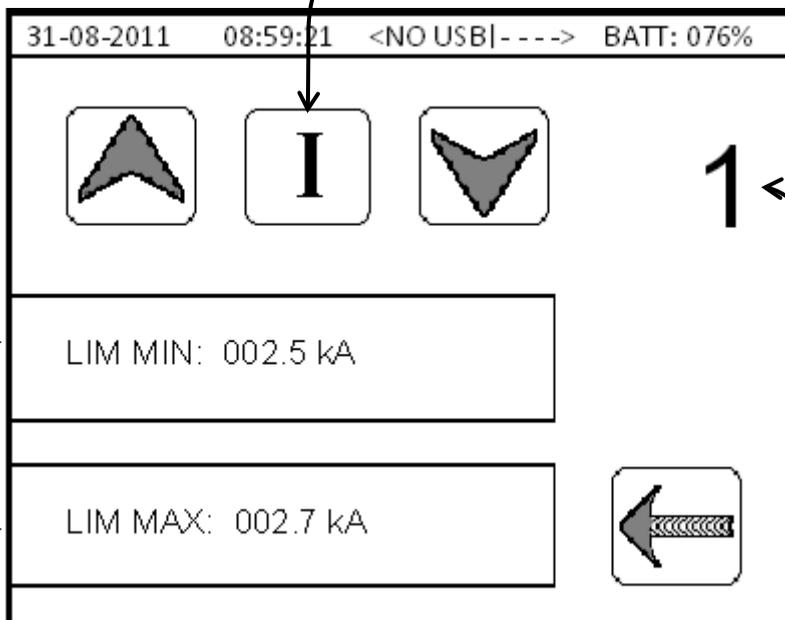
As a general rule, the following assumptions are true:

- If the MIN and MAX fields coincide, the welding limits on the quantity selected are not active.
- Within the mask, it is not possible to select the same quantity for different welding limits.

Always referring to the image in the previous page, the three buttons allow you to access the programming page of the first, second and third welding limit of the selected control mask.

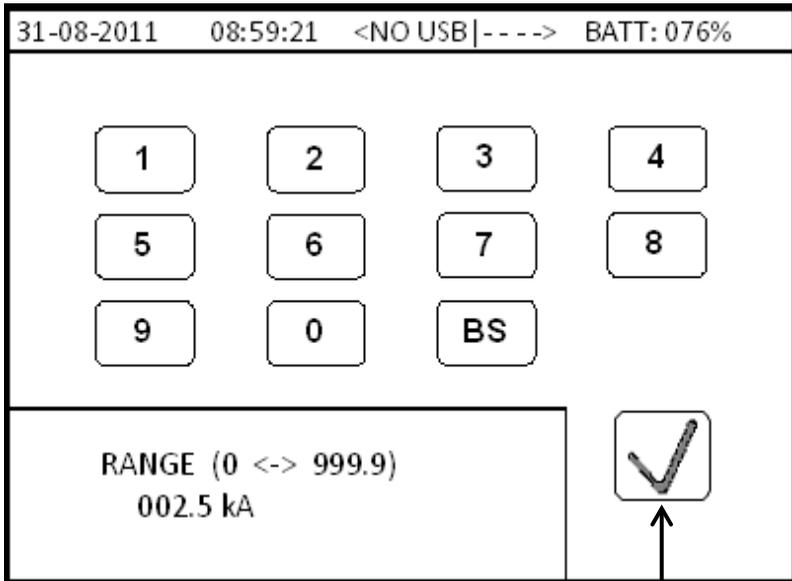


Welding limit quantity selector, to be monitored in the measurement process. If “blank”, the welding limit is not active.



Numeric indicator of the limits mask, selected via the control unit's call signals. Can be between 1 and 15.

Press the LIM MIN and LIM MAX keys to edit the minimum and maximum welding limit values.



Confirms and returns to the previous menu.

Below is the key to the welding limits managed by the measuring instrument.

Type	Minimum	Maximum	Limit	OK
	000.0 kA	999.9 kA		 OK
	00000 J	60000 J		 OK
	0000 mS	9999 mS		 OK
	0000.0 daN	6000.0 daN		 OK
	0.000 mm	9.999 mm		 OK
	-----	-----	 NO LIMITS	

The outcome of the measurement is shown at the bottom right of the MEASUREMENT DATA screen at the end of the acquisition process.

 measurement within limits.

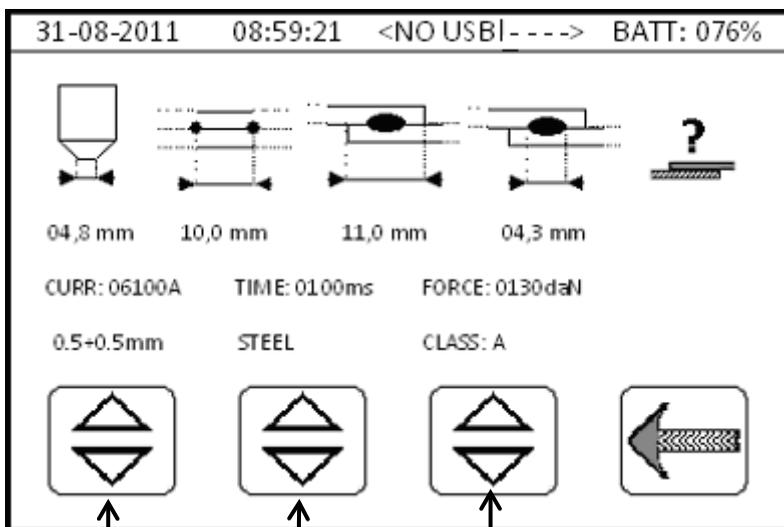
     measurement outside limits.

 Limits not active.

2.7 WELDING TABLE



For accessing the welding tables inside which the operator can retrieve the welding parameters, selecting thickness, type of material and quality class "A-B-C" of the sheets or parts being welded.



Sheet quality CLASS selection.

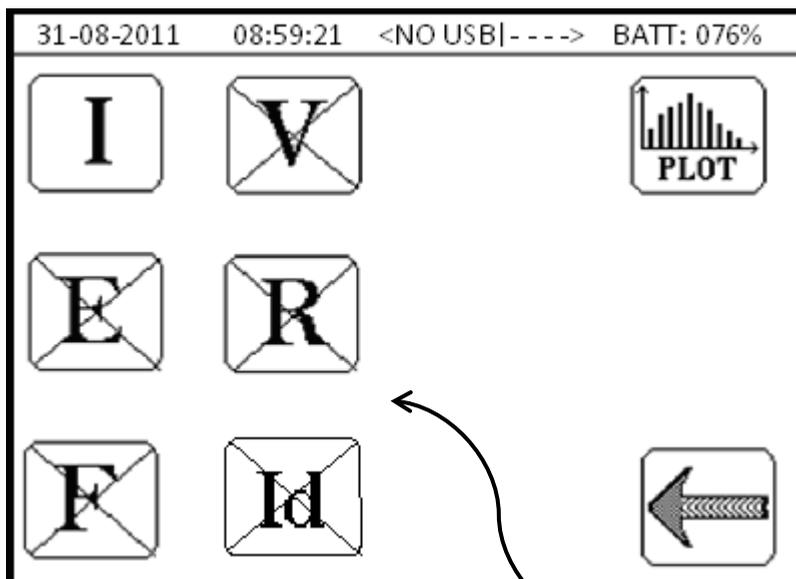
Sheet MATERIAL selection.

Sheet THICKNESS selection.

In addition to the current, time, force and electrode diameter parameters, some data on the spatial positioning of the sheets or parts being welded are also displayed.

These data are for information purposes only and must be viewed solely by qualified technicians.

3.0 STATISTICS MENU



Selection of the quantity on which statistical analysis is to be carried out. Only one quantity at a time can be analysed.

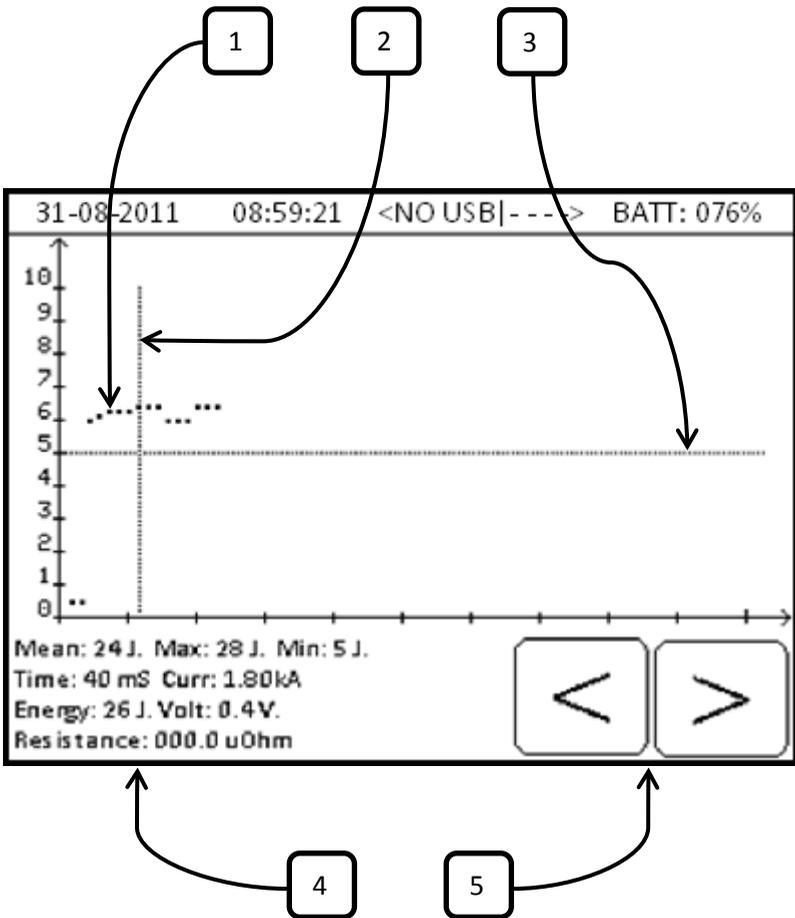
Using this function, it is possible to run a statistical analysis of the last 90 spots recorded by the measuring instrument.

Before performing the analysis, select which quantity is to be analysed among *current*, *voltage*, *energy*, *resistance*, *force* or *displacement*.

If you want to perform a more complex analysis, you can export the data of a .CSV file (Comma-Separated Values) to a pen-drive. Later on, you may use a spreadsheet to process the exported data and perform a more in-depth analysis.

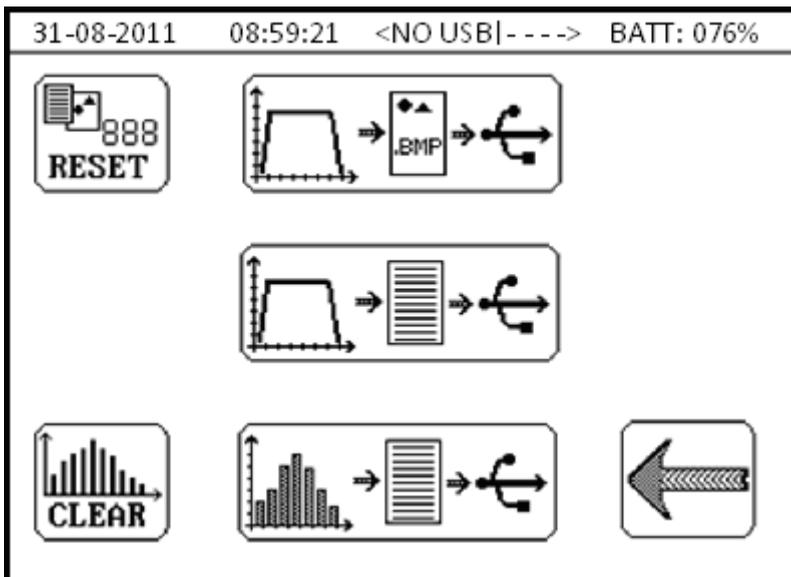
The analysis run by the instrument uses a scatter plot, which shows the distribution of the various values of the selected quantity compared to its average value. A vertical cursor can be used to examine all the data relating to each spot shown on the graph.

3.1 SCATTER PLOT



1. Representation of the welding spots performed on the graph.
2. The vertical cursor is moved with the left and right arrows, allowing details of the selected spot to be viewed.
3. The horizontal cursor indicates the average value of the selected quantity.
4. It displays the average, minimum and maximum value of the selected quantity. It also displays the welding time, current, energy, voltage and resistance of the spot selected using the vertical cursor.
5. Arrows for selecting the previous or the next spot using the vertical cursor.

4.0 DATA SAVING MENU



The menu is for saving the data contained in the instrument to a pen-drive for post-analysis or report creation.

WARNING: *it is advisable to use USB 2.0 (or lower) pen-drive having more than 1GB storage capacity formatted in FAT32.*

Other types of formatting are not supported and therefore it will not be possible to save data.



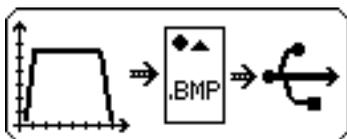
Reset counter for saving files.

Every file saved to pen-drive contains a progressive number to facilitate subsequent identification; pressing the key resets the progressive number to its default value "0" and displays the following message.



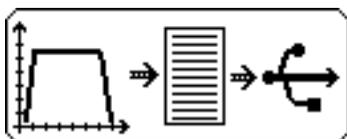
Clears the spots internal memory.

Clears the internal memory in which the weld spots are stored. It must be cleared every time a new measurement campaign is begun or when switching from NORMAL to ADVANCED statistics mode and vice versa. The instrument memory can store up to 20000 spots. When the weld spots memory is full, it deletes automatically. The following message is displayed when the key is pressed.

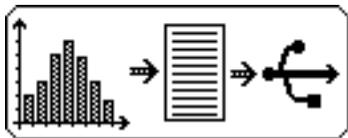


Saves the measurement graph to a pen-drive; the graph is saved as a bitmap image in 320x240 format. The saved image is visible in the MEASUREMENT GRAPH menu; the quantities selected in the menu are consequently saved.

4.1 MEASUREMENT GRAPH CONFIGURATION



Saves to pen-drive a .CSV (Comma-Separated Values) file containing numeric data relating to the quantities acquired, the configuration of the instrument used, the transducers connected and the sequence of numeric values acquired during the process that describe the time trend of the quantities.



The device exports weld spots statistics from the pen-drive's internal memory, if used. The quantity and type of saved data change, depending on whether the NORMAL or ADVANCED statistics mode is used. In both cases, a .CSV (Comma-Separated Values) file is saved containing the numeric values of each spot relating to the quantities measured and the instrument configuration. In ADVANCED mode, in addition to data described above, an additional .CSV file is created, for each weld spot, containing the numeric values describing the time trend of the quantities acquired in a single welding spot.

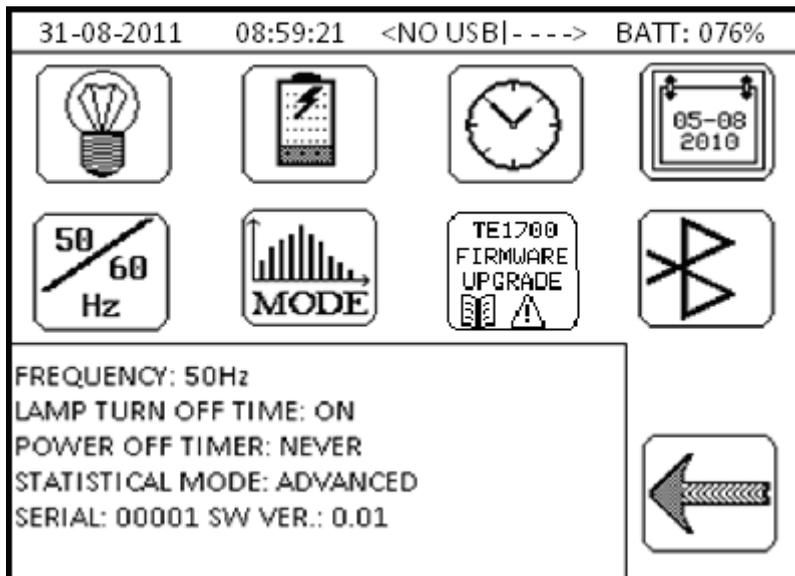
WARNING: *saving data in ADVANCED mode and a high number of spots can take a long time.*

The following icon appears during data saving.

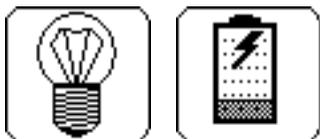


WARNING: *Do not remove the pen-drive during data writing operations; just wait until the icon disappears. If you remove the pen-drive before the write operations are over, stored data may be lost.*

5.0 INSTRUMENT CONFIGURATION MENU



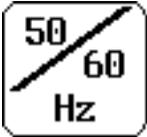
Summary of current instrument configuration.



Screen lighting shutdown time and instrument shutdown time.



Current date and time.



For setting the mains frequency on the site where the instrument is taking measurements. Choose between 50 Hz and 60 Hz. The value of this parameter affects the measurements made on AC current generators.



Allows you to select which statistical data the instrument must store for each acquired spot. If NORMAL mode was selected, only spots numeric data will be saved but if you selected ADVANCED mode, then the numeric data and the waveforms associated with each spot will be saved. When switching between the two modes, the instrument's memory must be cleared.

WARNING: *If using the ADVANCED mode, the acquisition rate decreases to minimum, due to the greater amount of data to be processed.*



Allows you to access the firmware upgrade screen, which has the following key in the foreground.



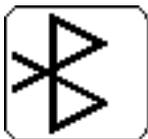
Pressing this key sets the instrument to firmware upgrade mode and the following message appears.



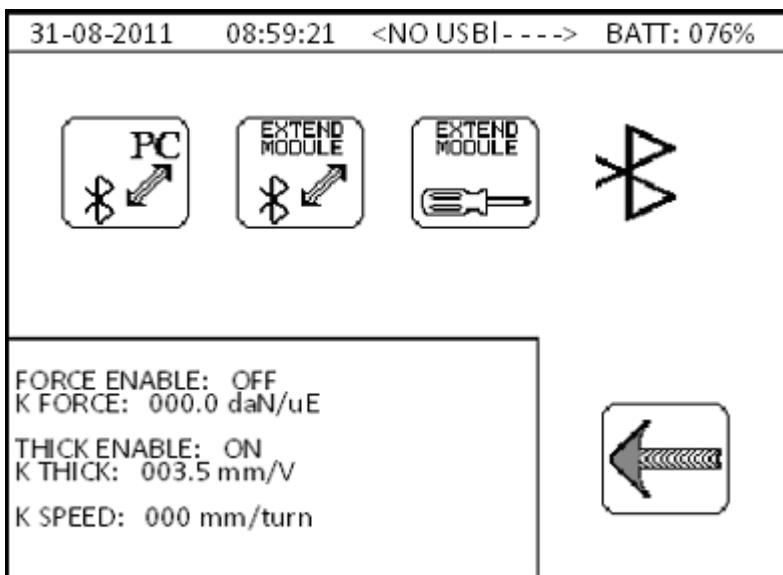
If pressed by accident, simply switch off the instrument, switch it back on again (nothing shows on the display), switch off and switch back on again.

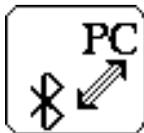
Once the firmware upgrade is started, the pairing with a compatible Bluetooth device (PC, Android) is deleted. Simply pair the Bluetooth device to the TE1700 again.

5.1 BLUETOOTH CONFIGURATION MENU



For accessing the screen that enables the instrument to be paired with compatible Bluetooth devices and the optional TECNA TE1710 Expander to be set up, if available.





PC-BLUETOOTH - The key makes the TE1700 visible and pairable with a compatible Bluetooth device (PC, Android). Each time the key is pressed, a previous pairing is deleted, so the TE1700 can be paired with only one device at a time.

The following message appears when the key is pressed.

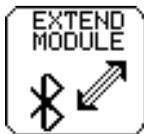


The instrument can now be detected by an external device.

If the device being paired has a Bluetooth v2.1 module or better, no code will be requested during the pairing.

Vice versa, if the Bluetooth device being paired has a Bluetooth v2.0 module or less, the default password "1234" will be requested.

Once pairing is complete, the message will clear automatically and the TE1700 will be ready for connection.



EXPANDER-BLUETOOTH - For pairing the TE1700 to the TE1710 Expander. The message appears when the key is pressed.

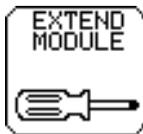


Before you start the pairing procedure, be sure the expansion card is powered and within the range of the Bluetooth connection.

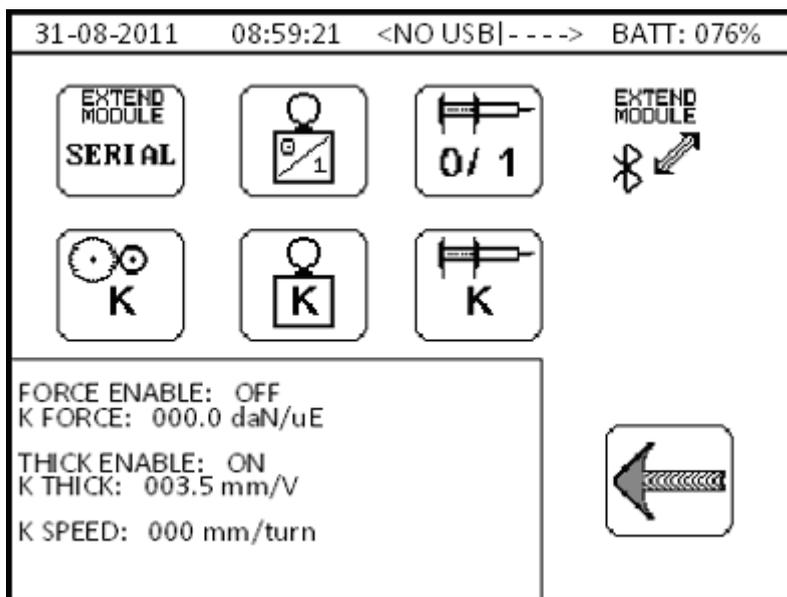
If pairing was successful, the instrument displays message EXPANDER FOUND.

If pairing was unsuccessful, the instrument displays message EXPANDER NOT FOUND.

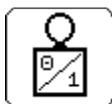




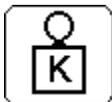
For accessing the configuration menu of the TE1710 Expander, if available.



Selects the serial number of the TE1710 Expander to which you are going to connect.



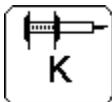
Activates/Deactivates the deformation sensor.



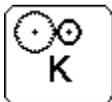
Sets the resolution of the deformation sensor.



Activates/Deactivates the position sensor.



Sets the resolution of the position sensor.



Sets the resolution of the speed sensor.

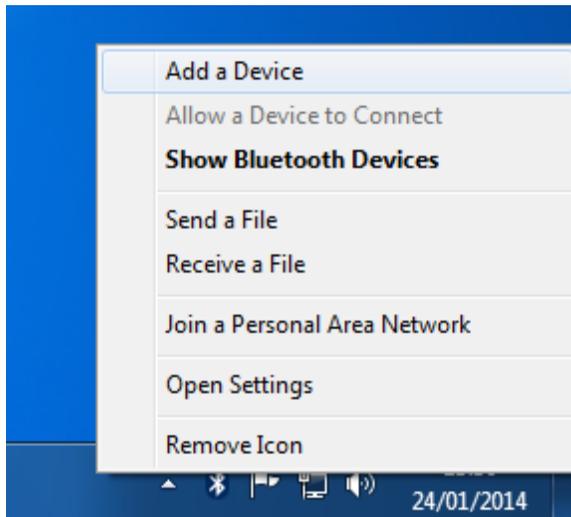
6.0 CONNECTING THE INSTRUMENT TO THE PC

In order to program the instrument remotely, you must pair the TE1700 with a compatible Bluetooth device, such as a PC. Later on you will be able to configure the instrument remotely through a terminal emulator.

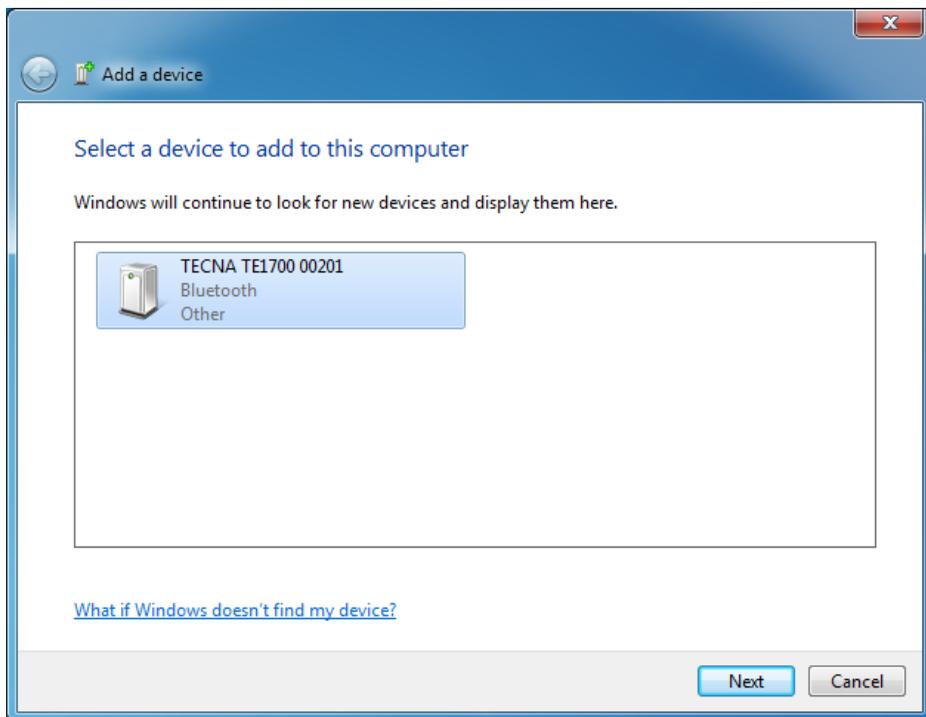
Proceed as follows to pair the TE1700 in Microsoft® Windows 7.



The Bluetooth icon is at the bottom right on the taskbar; a menu will open when you click it with the right mouse button.

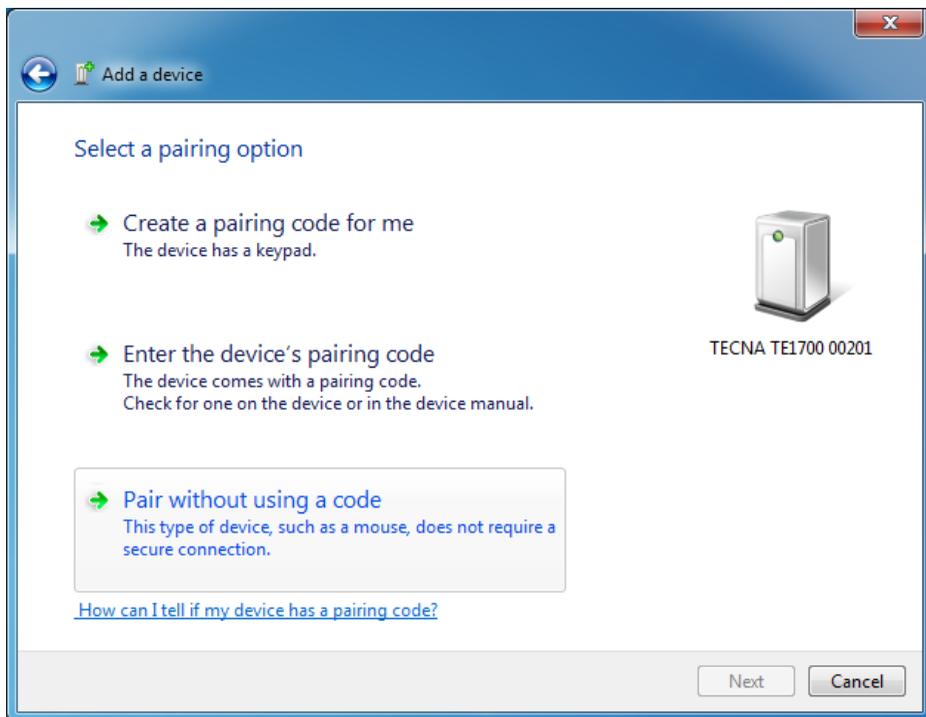


Select "Add a Device" in this menu to add a new Bluetooth device.



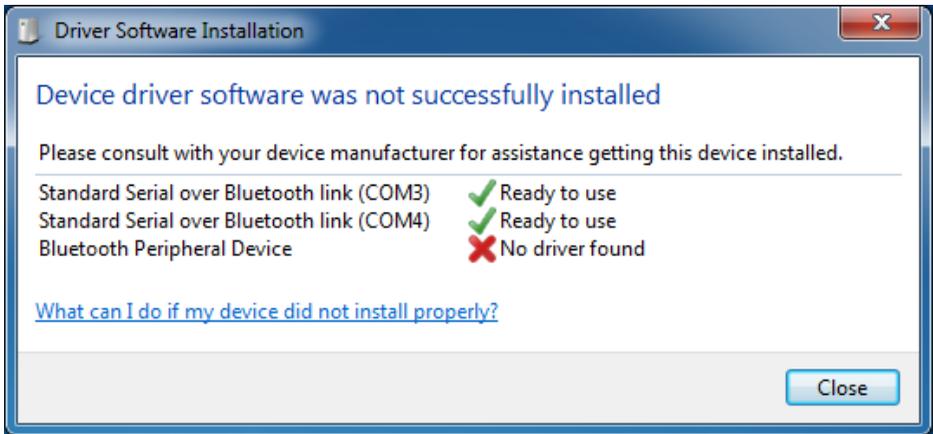
The screen shows the Bluetooth devices detected by the PC. To make it possible to detect the TE1700, press the PC-BLUETOOTH key, shown in paragraph 5.1.

The TE1700 can now be detected by the PC and should appear in the window with the name "TECNA TE1700 12345", where 12345 is the serial number of the device.



As indicated in paragraph 5.1, you need not enter any pairing code in the TE1700 if the PC is equipped with a Bluetooth v2.1 module or higher.

Then select "Pair without using a code" to pair without entering any codes.



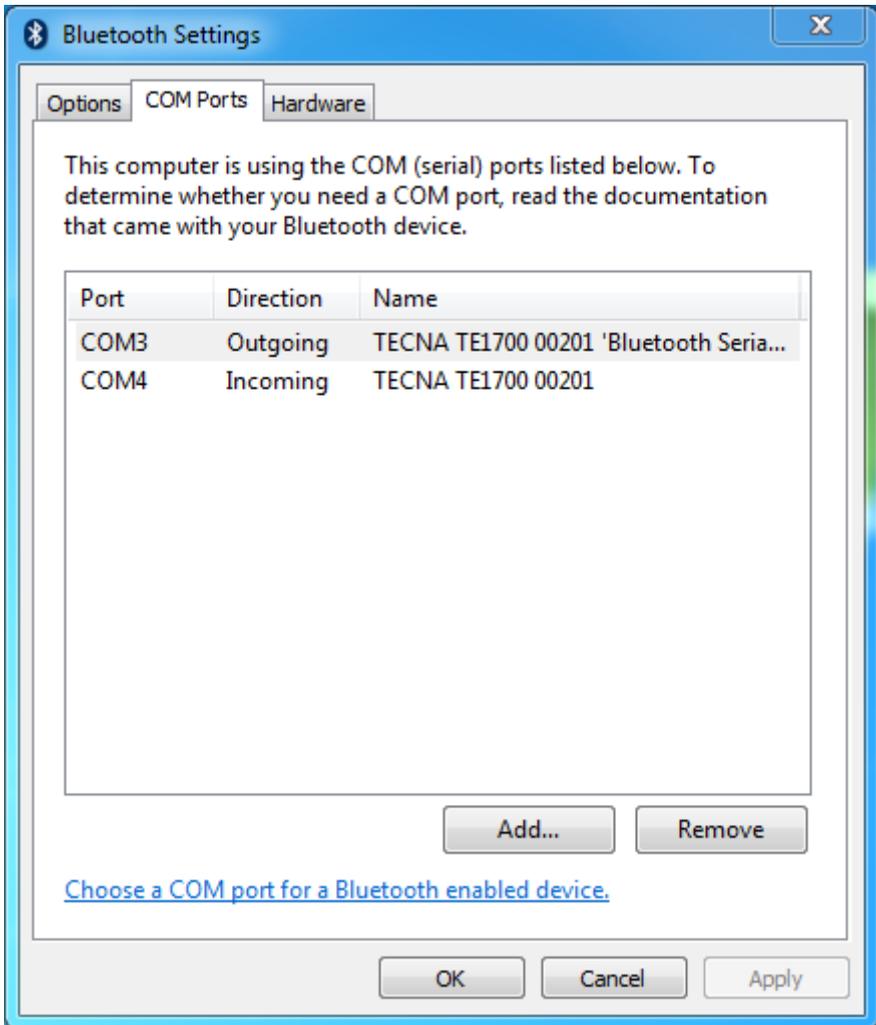
Once you have completed the pairing procedure, drivers are installed automatically. The drivers used by the TE1700 are in Windows® by default.

WARNING: *Windows might detect a "Bluetooth Peripheral Device" without drivers "No driver found". This is not important since the error is caused by the presence of a Bluetooth profile that is not recognized in Windows®.*

The installation was successful; now you need to locate which of the two COM ports is used for Bluetooth connections at output.

By clicking on the Bluetooth icon at the bottom right in the taskbar, select "Open settings" to open Bluetooth settings.

TECNA WELD TESTER TE1700

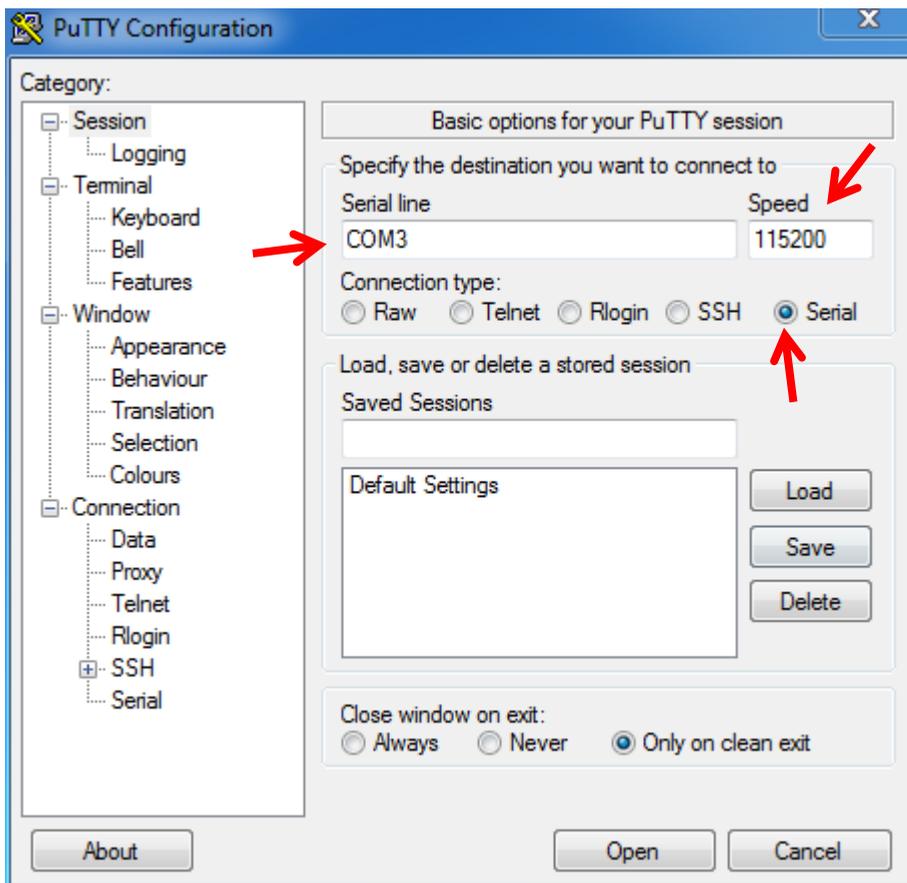


In the window that appears, you will notice that the port to be used is COM3 since the indicated "Direction" is "Outgoing".

Now you can use a terminal emulator to connect to the COM port. A terminal emulator for Windows is Putty©, a third party program distributed under MIT license.

Putty© software is available inside the pen-drive distributed with the Tecna TE1700 Weld Tester. In case of difficulty in finding the software, contact your dealer.

6.1 PUTTY® TERMINAL EMULATOR

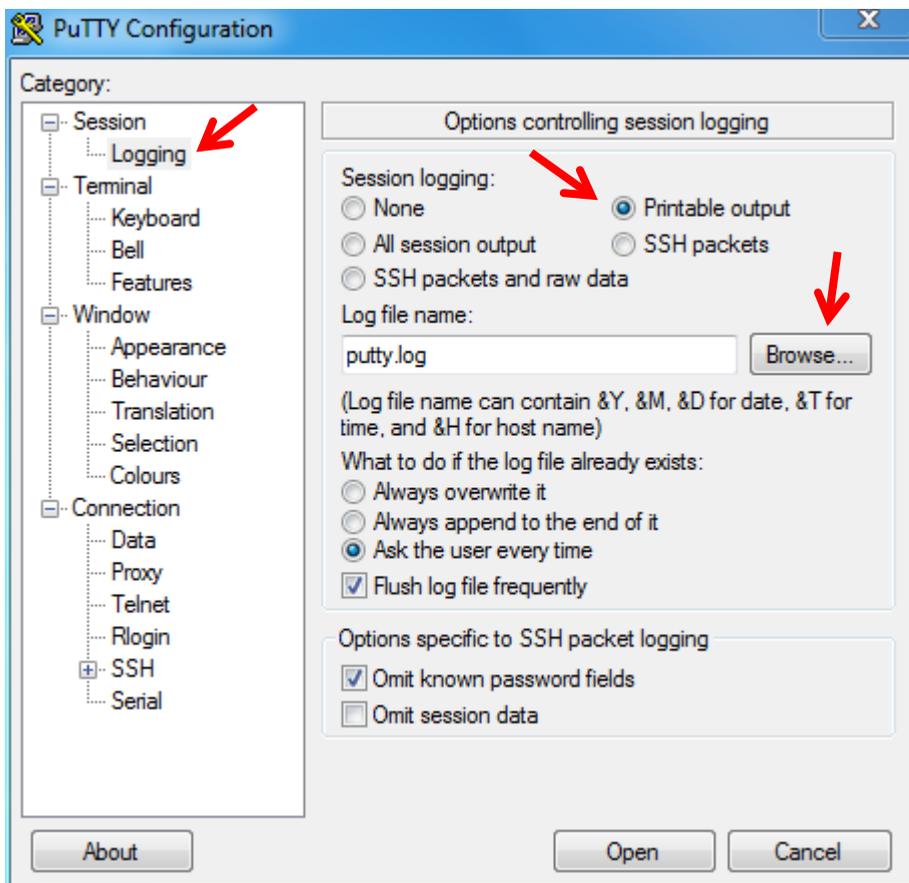


In order to connect with the terminal emulator, you must set:

- Connection type: Serial
- Serial line: outgoing serial port (e.g.: COM3)
- Speed: 115200

Press "Open" to open the connection.

If you want to save data received from the terminal emulator to a disk, go to the "Logging" menu and set parameter "Session logging" in "Printable output". Use the "Browse..." key to select the path in which to save the log file.



6.1.1 MAIN MENU

Main navigation menu enabling activation of the "DATA SPOT PRINT" function and access to the "INSTRUMENT CONFIG" menu.

```
=====
= TECNA Spa                TE1700                www.tecna.net =
= MAIN MENU                =
=====
0 -> DATA SPOT PRINT [ON] - OFF
1 -> INSTRUMENT CONFIG
SELECT FUNCTION:
```

0 → DATA SPOT PRINT: Activates\Deactivates printing of the measurements performed.

1 → INSTRUMENT CONFIG: Enables access to the instrument configuration menu.

6.1.2 DATA SPOT PRINT

If the function is active, all the measurements performed will be printed on the terminal, in green or red if the measurement is inside or outside limits, and in black if the limits check is not active.



SPOT: 02864 07-11-2013 16:09:17
LIMIT MASK NUMBER: 01 LIMIT MASK EVAL RESULT: LIMIT OK
WELDING TIME: 003.0 CYCLES CONDUCTION DEG: 118
RMS CURRENT: 0004.70 kA
POSITIVE PEAK: 0007.58 kA NEGATIVE PEAK: 0008.25 kA
SECONDARY RMS VOLTAGE: 00.27V
SECONDARY POSITIVE PEAK: 00.46V SECONDARY NEGATIVE PEAK: 00.48V
ENERGY: 00071 J POWER MEAN: 001.26kW



SPOT: 02865 07-11-2013 16:09:50
LIMIT MASK NUMBER: 01 LIMIT MASK EVAL RESULT: NO LIMIT ACTIVE
WELDING TIME: 003.0 CYCLES CONDUCTION DEG: 118
RMS CURRENT: 0004.72 kA
POSITIVE PEAK: 0007.49 kA NEGATIVE PEAK: 0008.23 kA
SECONDARY RMS VOLTAGE: 00.27V
SECONDARY POSITIVE PEAK: 00.46V SECONDARY NEGATIVE PEAK: 00.48V
ENERGY: 00070 J POWER MEAN: 001.27kW

TECNA WELD TESTER TE1700



SPOT: 02866 07-11-2013 16:11:51

LIMIT MASK NUMBER: 01 LIMIT MASK EVAL RESULT: CURRENT OUT LIMIT

WELDING TIME: 003.0 CYCLES CONDUCTION DEG: 118

RMS CURRENT: 0004.69 kA

POSITIVE PEAK: 0007.48 kA NEGATIVE PEAK: 0008.21 kA

SECONDARY RMS VOLTAGE: 00.27V

SECONDARY POSITIVE PEAK: 00.46V SECONDARY NEGATIVE PEAK: 00.48V

ENERGY: 00070 J POWER MEAN: 001.26kW

6.1.3 INSTRUMENT CONFIG MENU

Instrument configuration menu.

```
=====
= TECNA Spa                TE1700                www.tecna.net =
= CONFIG MENU              =
=====
B -> BACK TO MAIN MENU
0 -> CURRENT CONFIG MENU - ROG X1 - AC - 40 kA
1 -> VOLTAGE RANGE 7V - [13V] - 26V - 50V
2 -> FORCE CONFIG MENU - 1200 daN - LOW - MID - [HIGH]
3 -> PRE BLANK CONFIG [000] ms
4 -> POST BLANK CONFIG [000] ms
5 -> PULSE NUMBER CONFIG [1]
6 -> FORCE FILTER [OFF] - ON
7 -> TRIGGER LEVEL LOW - [DEFAULT] - MID - HIGH
8 -> CONTINUOS MODE [NORMAL] - CONTINUOS
L -> LIMIT CONFIG
SELECT FUNCTION: _
```

The numbers and letters on the left of the arrow "→" are the keys to be pressed on the terminal to perform an action on the element indicated to the right of the same arrow.

B → BACK TO MAIN MENU: Returns to the main menu

0 → CURRENT CONFIG MENU: Allows access to the current probe configuration menu.

1 → VOLTAGE RANGE: For setting the voltage rate 7V, 13V, 26V or 50V.

2 → FORCE CONFIG MENU: For setting the force rate LOW, MID or HIGH (i.e. 240 daN, 480 daN or 1,200 daN).

3 → PRE BLANK CONFIG: For setting the PRE BLANK time in milliseconds. Between 0 and 200 ms.

4 → POST BLANK CONFIG: For setting the POST BLANK time in milliseconds. Between 0 and 200 ms.

5 → PULSE NUMBER CONFIG: For setting the number of pulses. Between 1 and 9.

6 → FORCE FILTER: Activates\Deactivates the filter on the force measurement signal.

7 → TRIGGER LEVEL: For setting the trigger level on the signal.

8 → CONTINUOUS MODE: For selecting the type of signal acquisition NORMAL\CONTINUOUS.

L → LIMIT CONFIG: For accessing the submenu for setting measurement check limits.

6.1.4 CURRENT CONFIG MENU

Current probe configuration menu.

```
=====
= TECNA Spa                TE1700                www.tecna.net =
= CURRENT MENU              =
=====
B -> BACK TO MAIN MENU
0 -> CURRENT MODE [AC] - DC - CD
1 -> CURRENT RANGE 4kA - 8kA - [40kA] - 190kA
SELECT FUNCTION:
```

B →BACK TO MAIN MENU: Returns to the main menu.

0 →CURRENT MODE: For selecting the amperometric source AC, DC or CD for the current probe.

1 →CURRENT RANGE: For selecting the amperometric rate 4kA, 8kA, 40kA or 190kA for the current probe currently inserted, in this case a ROG x1.

6.1.5 LIMIT CONFIG MENU

Measurement check limits configuration menu.

```

=====
= TECNA Spa                      TE1700                      www.tecna.net =
= LIMIT MENU                      =
=====
B -> BACK TO MAIN MENU
0 -> LIMIT MASK NUMBER [01]
1 -> LIMIT NUMBER 1 TYPE: NONE [IK] ENE TIME FORCE ID
2 -> LIMIT NUMBER 1 MIN.: 002.5 kA
3 -> LIMIT NUMBER 1 MAX.: 003.5 kA
4 -> LIMIT NUMBER 2 TYPE: NONE IK [ENE] TIME FORCE ID
5 -> LIMIT NUMBER 2 MIN.: 02500 Joule
6 -> LIMIT NUMBER 2 MAX.: 03500 Joule
7 -> LIMIT NUMBER 3 TYPE: [NONE] IK ENE TIME FORCE ID
8 -> LIMIT NUMBER 3 MIN.: -----
9 -> LIMIT NUMBER 3 MAX.: -----
SELECT FUNCTION: _

```

B →BACK TO MAIN MENU: Returns to the main menu.

0 →LIMIT MASK NUMBER: Represents the numeric identifier of the check limits mask to be programmed or selected. Between 1 and 15 and can only be programmed remotely.

1 →LIMIT NUMBER 1 TYPE: For selecting the type of control in IK, ENE, TIME, FORCE or ID for the first mask limit.

2 →LIMIT NUMBER 1 MIN: For setting the minimum value of the first mask limit.

3 →LIMIT NUMBER 1 MAX: For setting the maximum value of the first mask limit.

4 →LIMIT NUMBER 2 TYPE: For selecting the type of control in IK, ENE, TIME, FORCE or ID for the second mask limit.

5 →LIMIT NUMBER 2 MIN: For setting the minimum value of the second mask limit.

6 →LIMIT NUMBER 2 MAX: For setting the maximum value of the second mask limit.

7 →LIMIT NUMBER 3 TYPE: For selecting the type of control in IK, ENE, TIME, FORCE or ID for the third mask limit.

8 →LIMIT NUMBER 3 MIN: For setting the minimum value of the third mask limit.

9 →LIMIT NUMBER 3 MAX: For setting the maximum value of the third mask limit.

WARNING: *Two LIMIT NUMBER TYPE fields having the same quantity cannot exist inside one mask.*

7.0 ERROR MESSAGES

 <p>WARNING NEW TOOL CONNECTED CONFIGURE IT</p>	<p>Signalling detection of a new transducer connected to the instrument. It should be configured correctly before use.</p>
 <p>WARNING CURRENT HIGH OVER RANGE</p>	<p>Signalling input current over the selected rate. Switch to higher rate or use a transducer with lower sensitivity.</p>
 <p>WARNING FORCE HIGH OVER RANGE</p>	<p>Signalling input force over the selected rate. Switch to higher rate or use a transducer with lower sensitivity.</p>
 <p>WARNING VOLTAGE HIGH OVER RANGE</p>	<p>Signalling input voltage over the selected rate. Switch to higher rate or use a transducer with lower sensitivity.</p>
 <p>WARNING PLEASE INSERT USB KEY</p>	<p>An attempt was made to save a file to pen-drive but it has not been inserted correctly or its format is not supported. Before saving the file, ensure the pen-drive is correctly recognised.</p>

TECNA WELD TESTER TE1700

 WARNING FILE COUNTER RESET	Signals that the progressive counter used to save the .CSV (Comma-Separated Values) file to pen-drive was reset.
 WARNING STORE MEMORY ERASE	Signals that the internal memory in which the spots to be used for statistics are stored was cleared.
 WARNING MAGNETIC FIELD TOO HIGH	The instrument is too near to the secondary area of the spot welder and the magnetic field generated interferes with the correct execution of the measurement. Move the instrument away from the secondary circuit of the spot welder.
 WARNING TOO LONG MEASURING TIME	Signals that the acquisition time of the measurement process just performed was too long. It should be reduced.
 WARNING WELD SEQUENCE TOO FAST	Signals that the execution speed of the current welding spots is too high. Reduce the speed.
 WARNING RECYCLE POWER TO ACTIVATE UPGRADE PROCEDURE	Signals that the instrument is running a firmware upgrade and needs to be switched off and back on.

8.0 INSTRUMENT FEATURES

Dimensions (LxHxD)	180x115x45	
Weight	0.7 Kg	
Current ranges	1637 Rogowsky 0.2X All Rogowsky 1X N/A Rogowsky 5X N/A Rogowsky 10X	20 KA, 40KA, 200KA, 950KA 4KA, 8KA, 40KA, 190KA 800A, 1.6KA, 8KA, 38KA 400A, 800A, 4KA, 19KA
Voltage ranges	7V, 13V, 26V, 50V 1705	
Force ranges	1661, 1673 1675 1662 1663	Force cell 200 daN Force cell 1,200 daN Force cell 2,000 daN Force cell 10,000 daN
RMS precision	Class 1	
Time precision	1 ms (DC), 0.5 cycles (AC) or 0.1 ms (CD)	
Battery performance	Rechargeable Ni-Mh Batteries with a performance of about 24 hours, depending on use. Recharged in 2 hours.	
Operating temperature	From 0°C to 40°C	
Altitude	Up to 2,000 m	
IP rating	IP40	

9.0 MEASURING ACCESSORIES

Item	Description
	1631 Rigid current transducer \varnothing min 32-36 max mm with cable L=2 m max
	1632 Rigid current transducer \varnothing min 40-45-46 max mm with cable L=2 m max
	1633 Rigid current transducer \varnothing max 80 mm with cable L=2 m max
	1635 Flexible transducer \varnothing 160 mm with cable L=2 m max
	1636 Flexible transducer \varnothing 270 mm with cable L=2 m max
	1637 Flexible transducer \varnothing 270 mm with cable L=2 m max
	1661 Load cell from 200 daN 440 lb with cable L=2 m
	1662 Load cell from 2,000 daN 4.400 lb with cable L=2 m
	1673 Compact load cell from 200 daN 440 lb with cable L=2 m
	1675 Compact load cell from 1,200 daN 2.640 lb with cable L=2 m
	1663 Load cell from 10,000 daN 22,000 lb with cable L=2 m

10.0 BATTERY REPLACEMENT AND PRODUCT LIFE END

The TE1700 uses two batteries:

- _ Buffer battery with Lithium Ions CR1220 – 3V
- _ Nickel-Metal Hydride battery, 2400mAh – 7.2V (Tecna code 72790)

The estimated life of the buffer battery is 6 years but you still need to replace it in the event that the product is unable to store date and time correctly.

The Nickel-Metal Hydride battery's estimated life is 5 years, but you still need to replace it if its operating performance is significantly reduced.

WARNING: *For safety reasons, you must disconnect all cables from the TE1700 before replacing the batteries.*

After setting the TE1700 to a safety state, you can unscrew the 6 screws at the back, those that join the two plastic shells.

WARNING: *To avoid damaging the TE1700, you should remove the Nickel-Metal Hydride battery before continuing.*

You need not perform any other operation to change the Nickel-Metal Hydride battery.

WARNING: *It is advisable to wear work gloves when replacing the buffer battery.*

But if you want to change the buffer battery, remove the 4 screws that secure the card to the front of the instrument. Use a tool made of non-conductive material, carefully remove buffer battery CR1220 from its housing and replace it with a like battery available on the market.

You may not dispose of the batteries by dumping them in the usual waste bins. They must be disposed of properly through the WEEE collection facilities in your country.



Li-ion



Ni-MH



Also adhere to the following recommendations:

- Do not dispose of new or used batteries in fire
- Do not attempt to open the batteries
- Keep batteries out of children's reach

11.0 SAFETY OF USE

To avoid electric shock, always connect the instrument to ground.

Use the appropriate connector to ground the instrument.