

# TECHNICAL MANUAL



**TESTER 1006** For the simultaneous monitoring of up to 4 load cells

Software version PMT 401 Rel. 1.5

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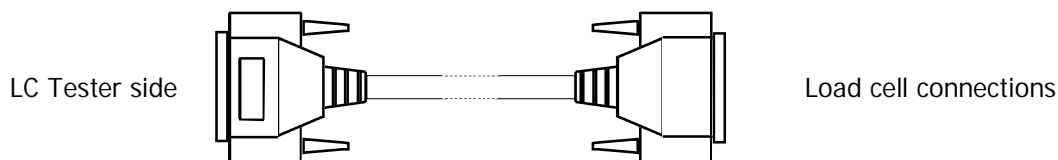
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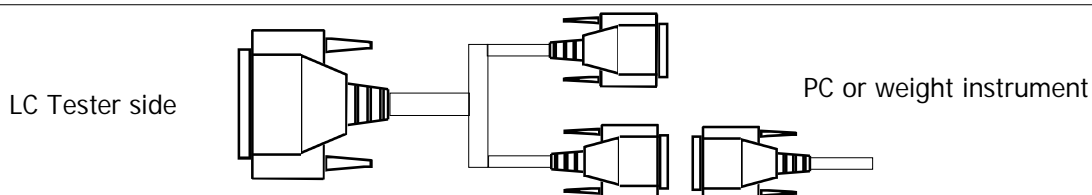
## TECHNICAL SPECIFICATIONS

<b>Instrument power supply</b>	4 x 1.5 V alkaline disposable batteries -AA size- or: 4 x 1.2 V Ni-MH rechargeable batteries -AA size-
<b>Current consumption</b>	Min. 125 mA - Max. 190 mA
<b>Battery life</b>	About 4 hours with disposable batteries About 8 hours with Ni-MH batteries (2000 mAh)
<b>Operating temperature</b>	+ 14°F to + 122°F (-10°C to +50°C)
<b>Storage temperature</b>	- 4°F to + 158°F (-20°C to +70°C)
<b>Display</b>	Graphic, 3"
<b>Keyboard</b>	16 keys + On / Off switch
<b>Overall dimensions</b>	8.66 x 4.60 x 2.00 in. (220 x 117 x 51 mm.) H x W x D
<b>Weight</b>	Approximately 1.1 lbs. (500 Grams)
<b>Enclosure</b>	Polyamide (UL94 - V2)
<b>Protection degree (front)</b>	IP 54
<b>Connection to load cells</b> With Cable <b>A</b> (std) or Cable <b>B</b> (option)	<b>"A" type:</b> 6 foot (2 m) cable with 25 pin Sub-D connectors <b>"B" type:</b> (0,3 m) serial cable
<b>Load cells excitation voltage</b>	5 Vdc @ 60 mA (4 x 350 Ω load cells) max.
<b>4 individual load cell channels with the following specs:</b>	
<b>Linearity</b>	< 0.01% of Full Scale
<b>Internal resolution</b>	24 bit
<b>Displayed weight resolution</b>	Up to 50.000 counts
<b>Input signal range</b>	-3.9 mV/V to +3.9 mV/V
<b>Decimal digits</b>	Up to 3
<b>Accuracy of the mV/V signal generated in Calibrator mode</b>	0.033% of Full Scale (1/3000)
<b>LC's excitation voltage input range</b>	Min: 3 Vdc                      Max: 15 Vdc
<b>mV signal output range</b>	Min: -3.0 mV                      Max: +20.3 mV
<b>Load cells impedance</b>	350/700 Ω selection, or min. 300 to max. 4500 Ω setting.

**Standard "A" type cable with 25 pin Sub-D connectors**



**Standard "B" type cable**



## POWER SUPPLY AND BATTERIES REPLACEMENT

The Load Cell Tester is powered by **"AA" size batteries** :

**Use four x 1.5 V Alkaline Disposable Batteries or 1.2 V Ni-MH Rechargeable Batteries**

The battery life depends on the number of load cells being powered and the intensity level of the LCD display.

**Min. consumption** is about **125 mA** (single 350  $\Omega$  load cell with display intensity at intermediate level).

**Max. consumption** is about **190 mA** (four 350  $\Omega$  load cells with display intensity at maximum level).

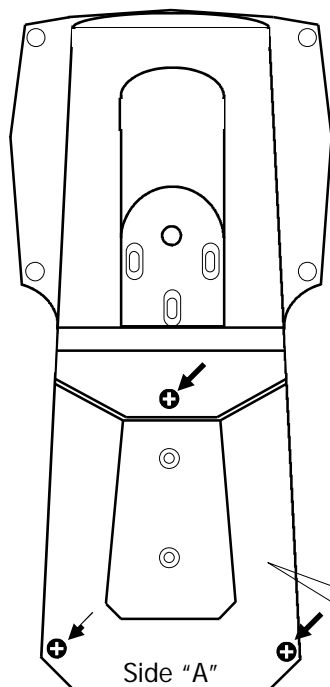
**The life of alkaline disposable batteries** is about **4 hours** in continuous operating mode\*, at the max. consumption.

**The life of the Ni-MH rechargeable batteries** depends on their capacity (expressed in mA per hour). For example, with 4 x 2000 mAh batteries, the battery life is over **8 hours** in continuous operating mode\*, at the max. consumption (2000 mAh/190 mA = 10,5 h).

Even though the theoretical limit exceeds 10 hours, the auto shut-off takes place sooner in order to assure the full functionality of the Load Cell Tester and to avoid completely discharging the batteries.

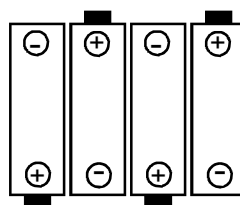
\* By "continuous operating mode" we mean that the Load Cell Tester switched-on continuously. Setting the "auto shut-off" parameter will extend the battery life (see page 16 for additional information).

### BATTERY REPLACEMENT



LC TESTER: Rear view

- Remove the 3 screws indicated by the arrows
- Gently raise side A of the cover and slide it out.
- Replace the 4 batteries as required, observing polarity as marked on the battery holder (See figure below).
- Reposition the cover in its seat
- Replace the 3 screws



**The manufacturer waives all responsibility for any damage to the Load Cell Tester caused by the use of batteries other than those listed above.**

## MAIN PERFORMANCES

Even if the **2 main functions** performed by the Load Cell Tester are independent, they allow to carry out the complete analysis of any weighing system composed by load cells (up to 4) and weight indicator.

### Function for testing the load cells

This mode is used to diagnosis the load cells.

The display shows the following group of parameters:

1. The signals coming from the load cells (mV/V values)
2. The distribution of the weight on the load cells (% values)
3. Load on each load cell compared with its nominal capacity (% values)
4. Weight value on each load cell (expressed in the selected measurement unit: g, kg, Ton, lb, N, kN)

Values 3 and 4 are only displayed if the parameters described on pages 15 to 17 have been programmed.

Faulty load cells or bad connections\*, zero offset drifts or unstable signals can be easily detected.

\* These messages appear on the display in the following conditions:

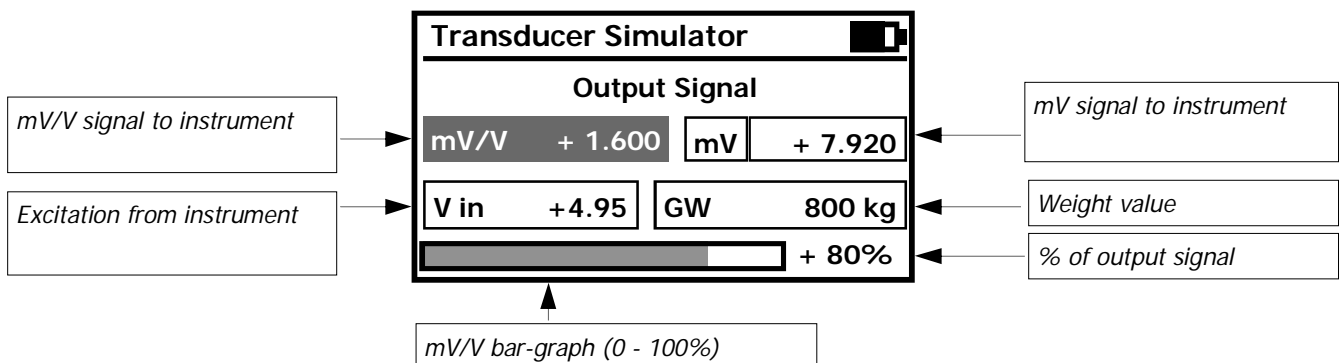
1. "EXC +" indicates a problem with the + Excitation lead
2. "EXC -" indicates a problem with the - Excitation lead
3. "SIGNAL" indicates a problem with one of the Signal leads

### Load Cells Peak Function

The 1006 Tester in this operating mode allows to view the peak values of each load cell. The peak value can be enabled or disabled, for all the 4 groups of parameters above described by pressing long the key 5. To erase peak values detected, press key C.

### Transducer Simulator / Calibrator Mode

In this mode the load cell tester is used to calibrate or check out the weight indicator. A signal of up to 20 mV can be generated and used to check the linearity and to check or calibrate the Zero and Span of any weighing instrument.



## SWITCHING BETWEEN "LOAD CELL TESTER" AND "CALIBRATOR" MODES

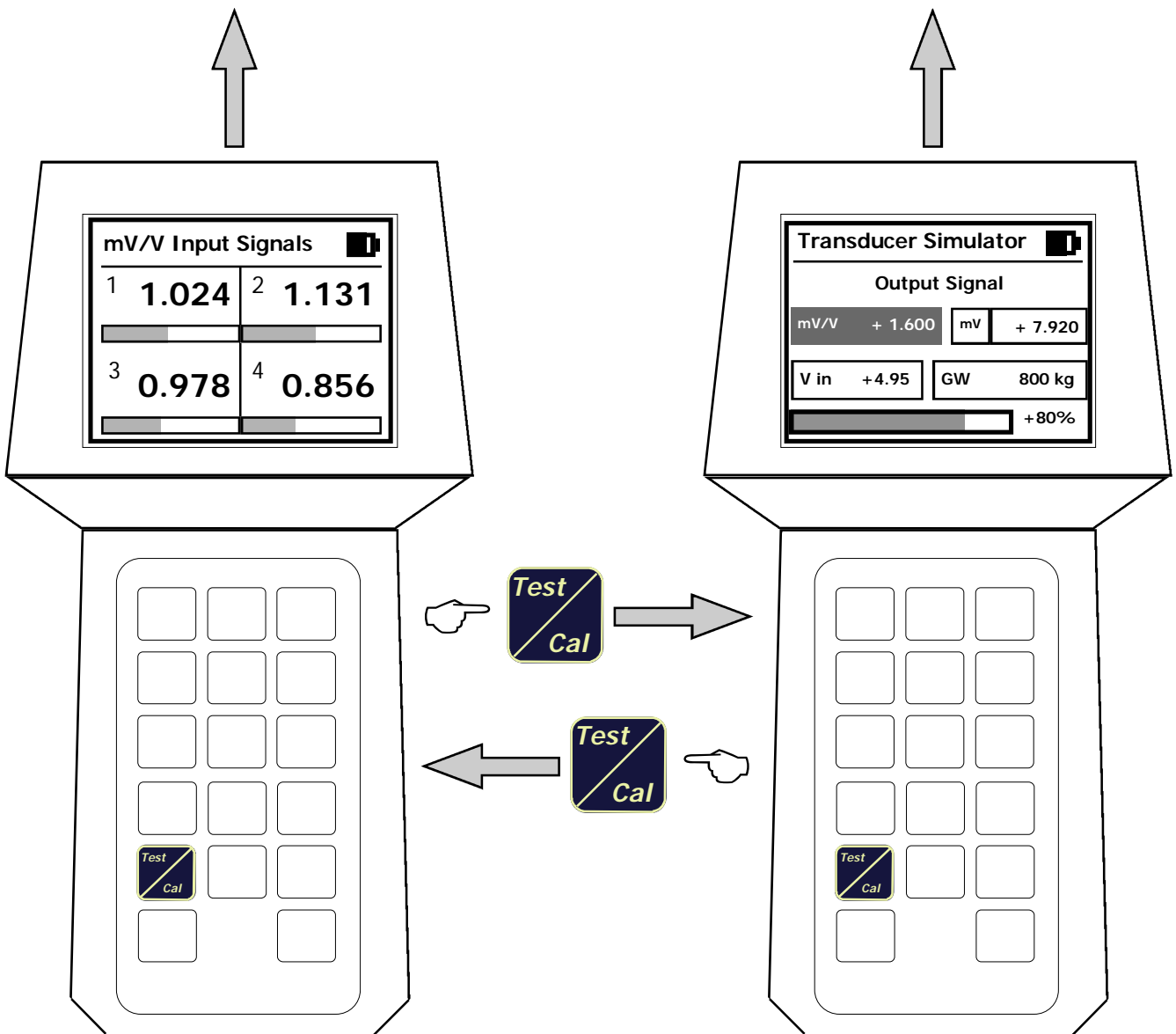
Switching between the 2 functions (as described on the previous page) is performed by pressing the **Test/Cal** key:

Function
<b>LOAD CELL TESTER</b>
To be used <b>exclusively</b> for testing the load cells

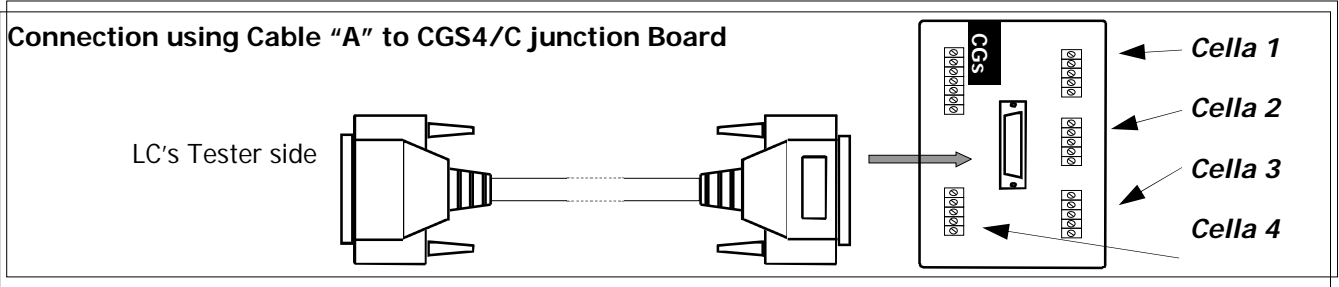
Function
<b>CALIBRATOR/SIMULATOR</b>
To be used <b>exclusively</b> for testing and calibrating the weighing instrument.

Operating mode described on page 14

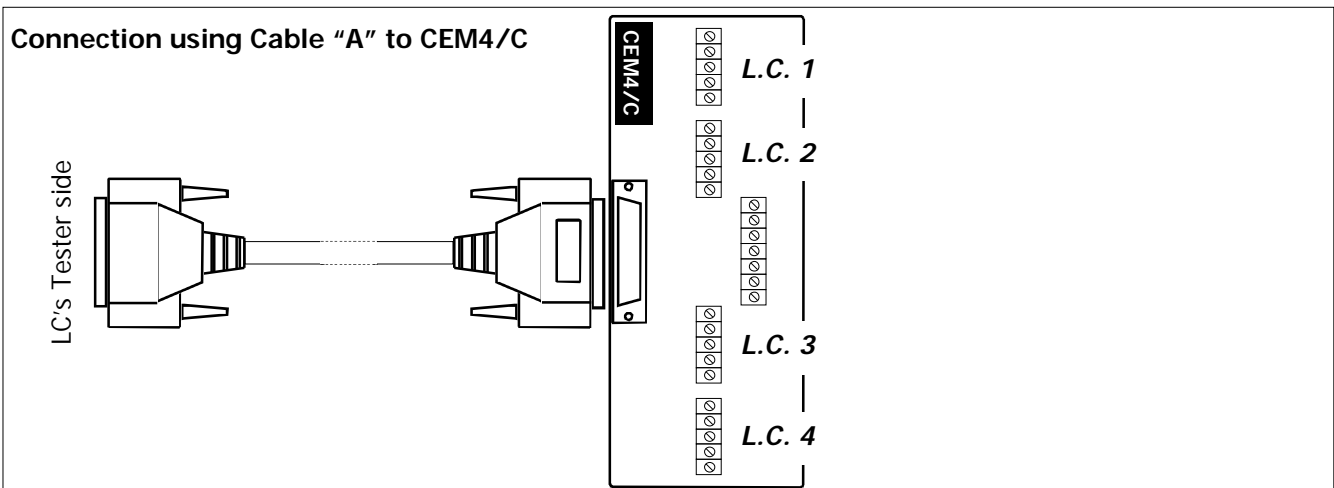
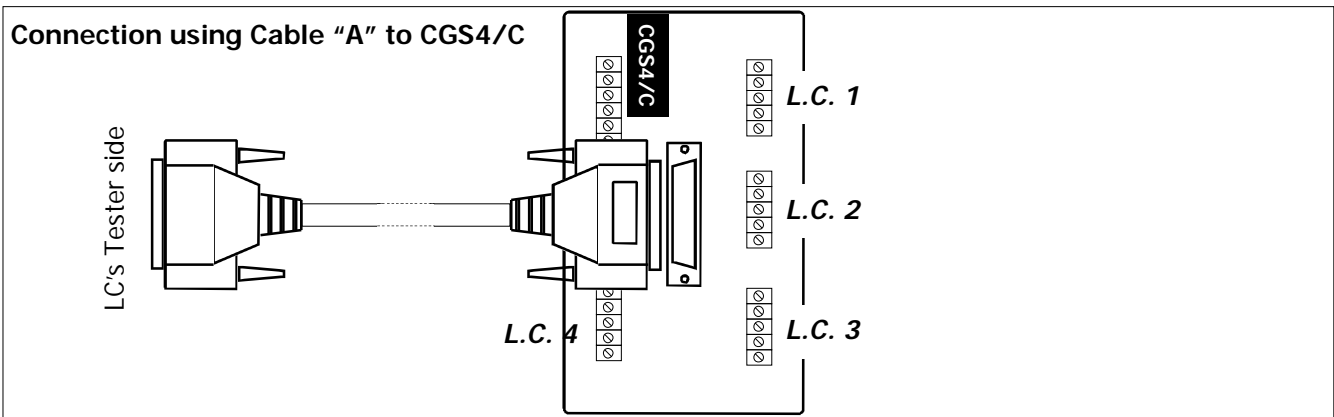
Oper. mode described on page 21, 22



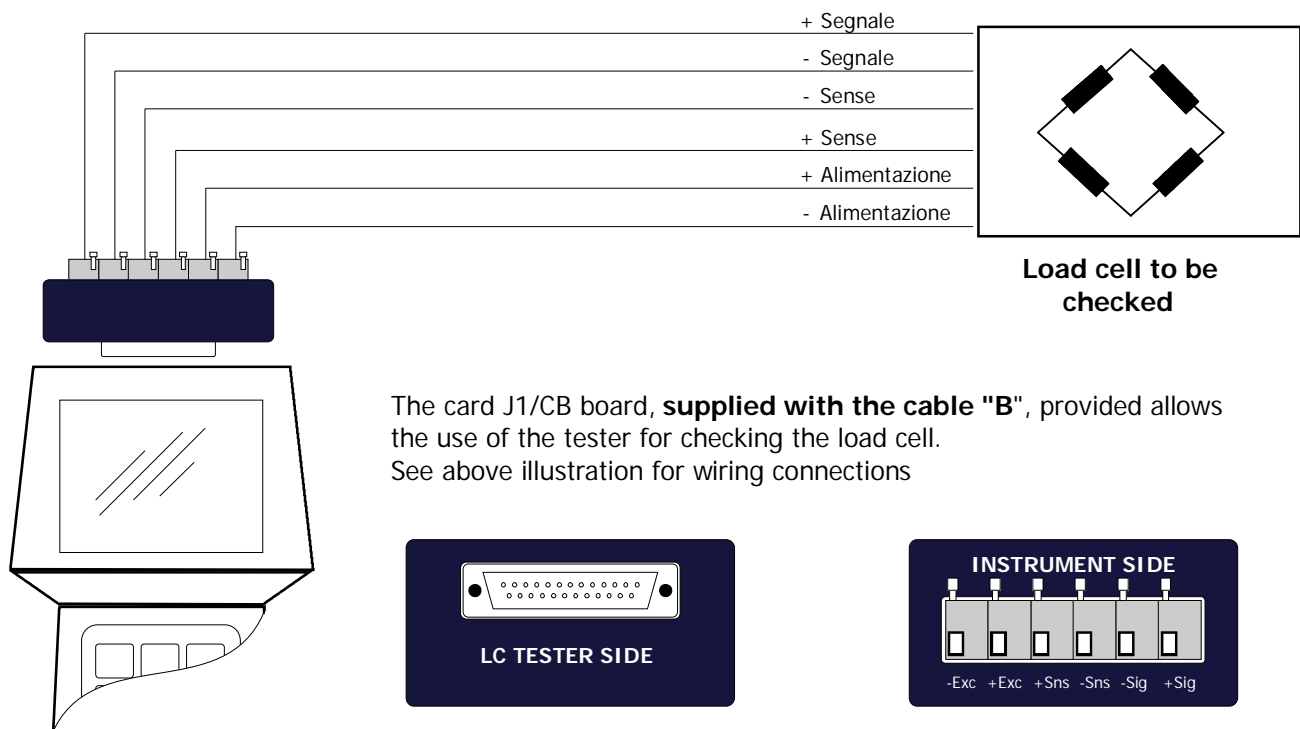
Cable "A", terminates with a 25 pin female Sub-D connector and is supplied with the J1/PT Screw Terminal Board.



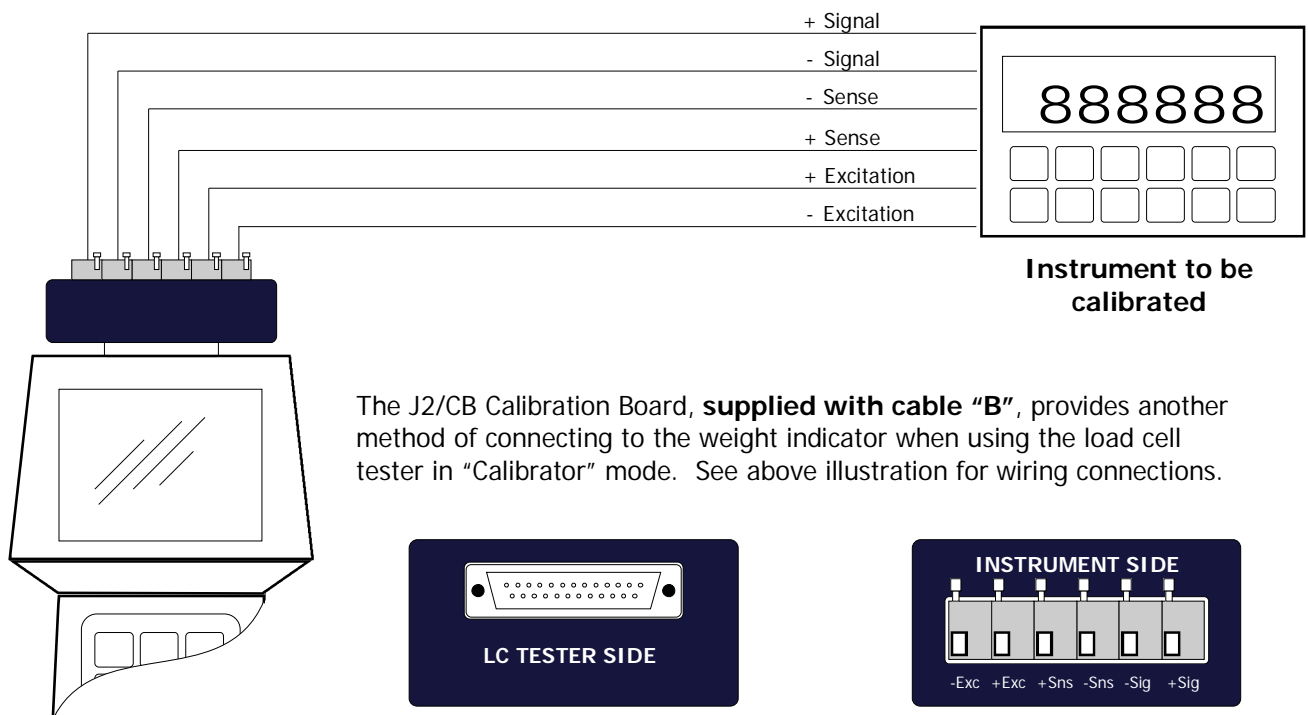
If the existing installation is equipped with model CGS4/C or model CEM4/C summing junction board, only connect Cable "A" directly to the 25 pin Sub-D connector on the board, without using the J1/PT Board.



## USING THE LOAD CELL TESTER IN "CALIBRATOR" MODE WITH J1/CB



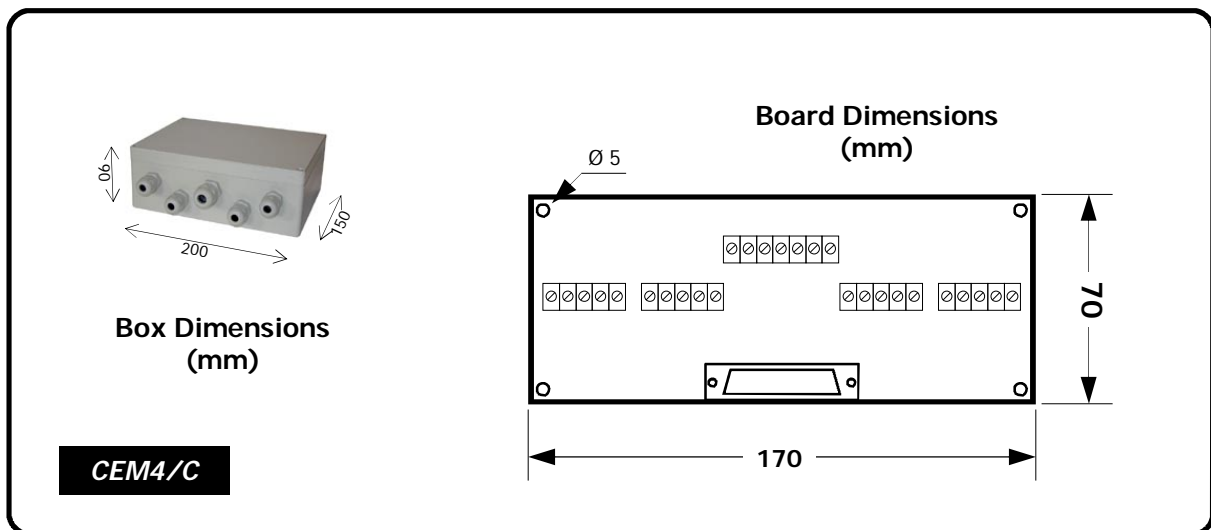
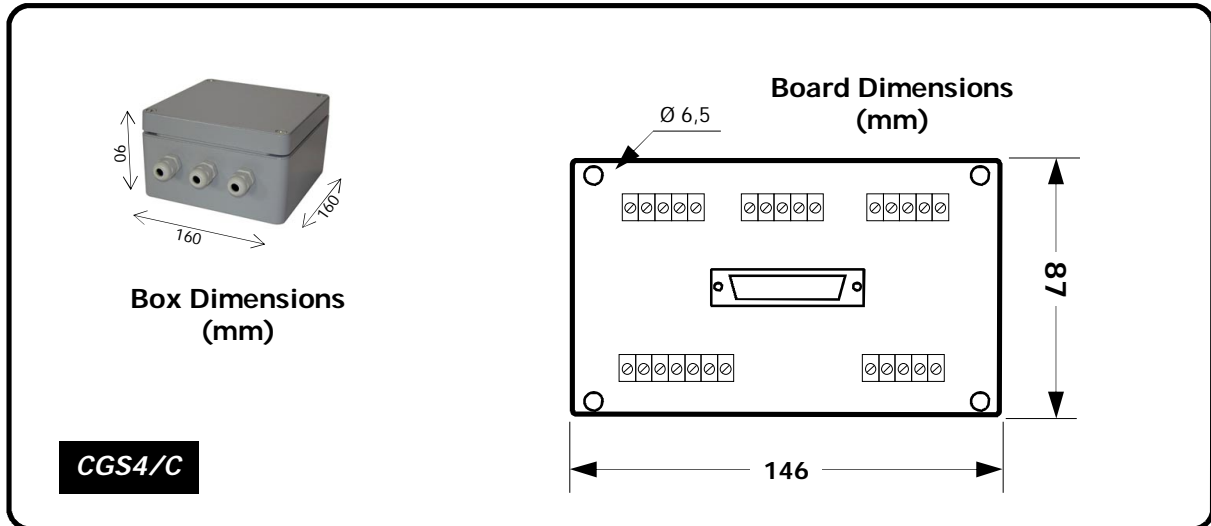
## USING THE LOAD CELL TESTER IN "CALIBRATOR" MODE WITH J2/CB BOARD





## CGS4/C and CEM4/C SUMMING JUNCTION BOXES

The CGS4/C and CEM4/C summing junction boxes, are equipped with a 25 pin Sub-D connector, which provides a quick reliable connection to the Model 1006 LC System Tester with standard Cable "A".



In order to use the LC System Tester on weighing systems using summing J-boxes other than the CGS4/C or CEM4/C, we are offering our customers a free evaluation for installing a 25 pin Sub-D connector on their own summing junction boards.

If you would like to take advantage of this offer, we would require detailed drawings or a sample of the summing J-Boxes that you are currently using.

## KEY FUNCTIONS IN OPERATING MODE



Display intensity adjustment (see page 20)



Switching between LOAD CELL TESTER and CALIBRATOR modes



Navigating through the various display views in LOAD CELL TESTER mode (see page 14)



Access to configuration menu

Short press: access to "WEIGHING PARAMETERS" (see page 15)  
Long press: access to "SETUP MENU" (see page 17)



Zero the weight value in CALIBRATOR mode (see page 21)



Erase the zero of the weight value in CALIBRATOR mode (see page 21)



Coarse increment (in 0.1 mV/V steps) of the output signal in CALIBRATOR mode (see page 21)



Coarse decrement (in 0.1 mV/V steps) of the output signal in CALIBRATOR mode (see page 21)



Fine increment of the mV/V output signal in CALIBRATOR mode (see page 21)



Fine decrement of the mV/V output signal in CALIBRATOR mode (see page 21)



Switch-off

## KEY FUNCTIONS WITHIN THE VARIOUS MENUS

### Data Selection (from a list)



They take meaning of "**Arrow up**" and "**Arrow down**".

They allow to select the previous/next parameter from a list of parameters proposed by the instrument



Sometimes the selection of a certain parameter is performed with these keys instead of with the Arrow up/down keys.

The symbols + and — appear on the display to inform the Operator.



Takes meaning of "**Arrow right**".

Allows to access the parameter previously selected with Arrow up/down keys.



Takes meaning of "**Arrow left**".

Exits the menu without saving the changes



Exits the menu after saving the changes

### Entering Numerical Data



.....



Keys 0 to 9 are used to program all those parameters requiring numerical values, such as the load cell capacity, etc.



This key performs 2 functions:

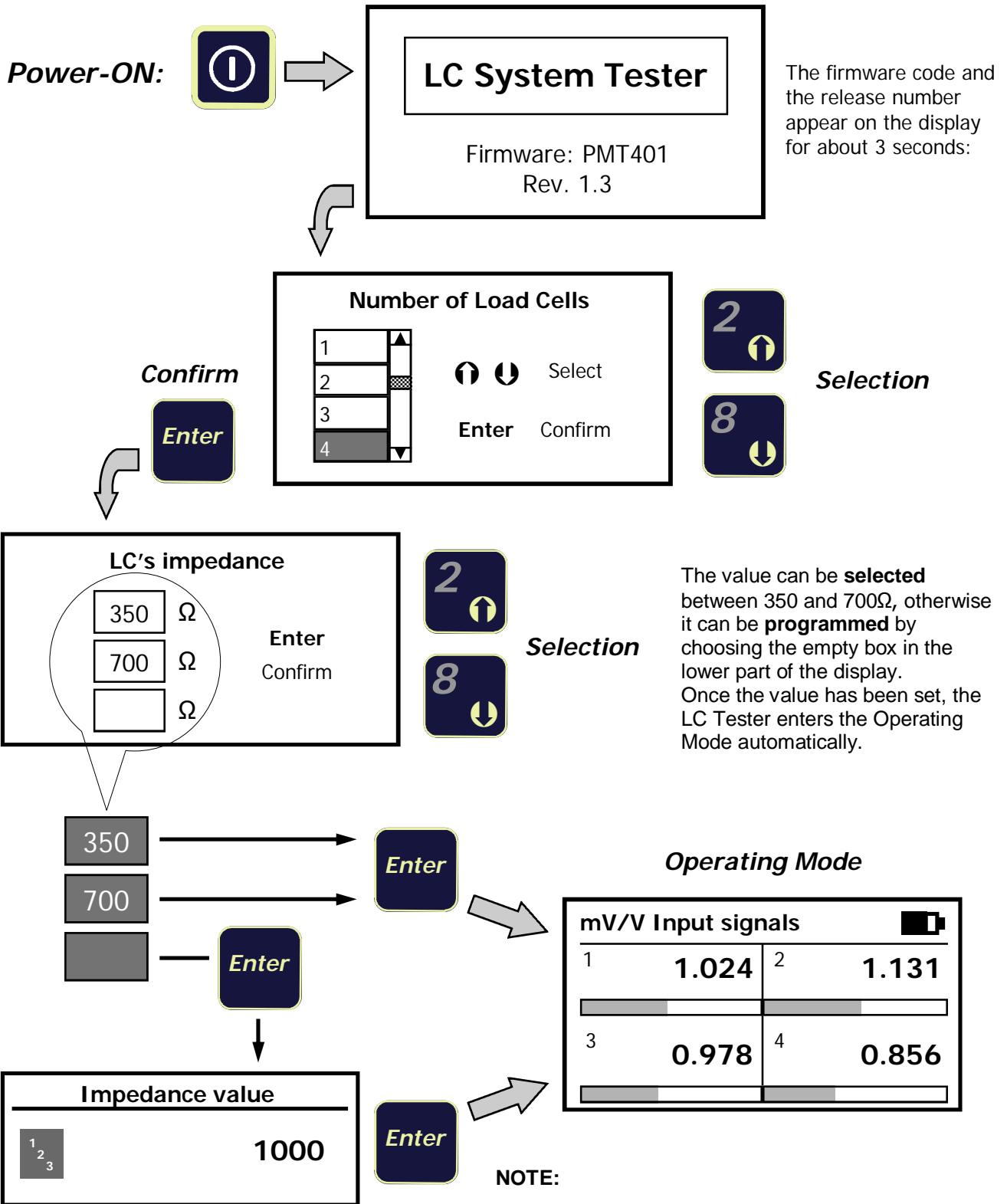
1. Used to insert a decimal point in numerical values.
2. Used to erase the data: Press momentarily to erase the last digit  
Press slightly longer to erase all of the data



Confirm and quit the settings.

# POWER-ON SEQUENCE

When **powering-on** the LC Tester the following parameters **must** be programmed:  
**Number of load cells - Load cells Impedance.**



Min. programmable value: 300Ω  
 Max. programmable value: 4500Ω  
 Decimal values will be automatically rounded to the lower integer value.

**NOTE:**  
 In case the last switch-off of the LC Tester was caused by the Auto Shut Off function (see page 18), the LC Tester immediately resumes the Operating Mode, without asking for the LC's Number and Impedance to be programmed. The instrument's memory will keep the stored values.

## OPERATING MODE : DATA VISUALIZATION

During normal operation in Load Cell Tester mode (see page 6), the “SWITCH VIEW” key switches the display among 4 different views.



**NOTE: Display views 3 (% of load on LC's) and 4 (Weight values) give significant values only if the load cell single capacity and sensitivities have been programmed.**

# "WEIGHING PARAMETERS" MENU

In Operating Mode:

Press **Enter**

**WEIGHING PARAMETERS**

- Number of Load Cells
- Unit of Measurement
- Load Cell Capacity
- LC Sensitivity Values
- Display Division Value



**WEIGHING PARAMETERS**

- Number of Load Cells
- Unit of Measurement
- Load Cell Capacity
- LC Sensitivity Values
- Display Division Value



Measurement unit selection, with **Up** and **Down**.

The selected unit of measurement appears in the box on the left of the screen.

**Unit of Measurement**

kg

- g
- kg
- Ton
- lb



**WEIGHING PARAMETERS**

- Number of Load Cells
- Unit of Measurement
- Load Cell Capacity
- LC Sensitivity Values
- Display Division Value



Enter the nominal capacity of a single load cell.

The instrument automatically multiplies the single load cell capacity by the "Number of LC's" being used.

**Load Cell Capacity**

Enter capacity of a single LC

**250 kg**



Page 16



**WEIGHING PARAMETERS**

- Number of LC's
- Unit of Measurement
- Load Cell capacity
- LC Sensitivity Values**
- Display Division Value

Setting the nominal sensitivity (in mV/V) of each single load cell. Take the data from the calibration certificates or from the labels stuck on the load cells.



**LC Sensitivity Values**

L.C. 1	2.0000 mV/V
L.C. 2	2.0000 mV/V
L.C. 3	2.0000 mV/V
L.C. 4	2.0000 mV/V



Page 17

**LC Sensitivity Values**

L.C. 1	mV/V
	<b>2.0108</b>

1  
2  
3



Setting the nominal sensitivity of LC 1



**LC Sensitivity Values**

L.C. 1	2.0108 mV/V
L.C. 2	2.0000 mV/V
L.C. 3	2.0000 mV/V
L.C. 4	2.0000 mV/V

**LC Sensitivity Values**

L.C. 2	mV/V
	<b>2.0067</b>

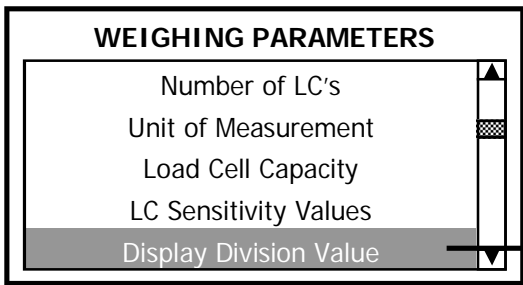
1  
2  
3



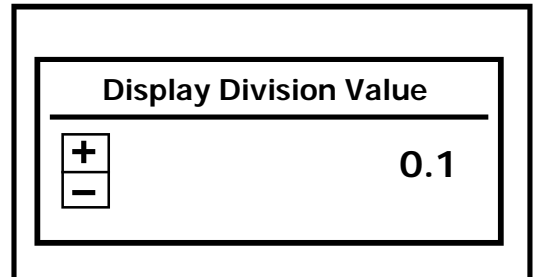
Setting the nominal sensitivity of LC 2

Perform the same procedure for the remaining load cells



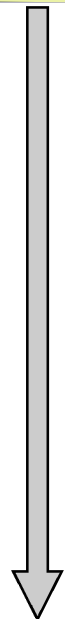


Selection of the Display division value



**Selection**

**Confirm**



The Display division value can be selected from a list (0.001 to 100, expressed in the measurement unit previously enabled).

The LC Tester automatically offers a value optimised to **10000 counts**, based on the nominal capacity of the load cells (sum of the load cell's single capacities).

Example:    Single LC capacity                    = 250  
               Number of load cells                = 4  
               LC's Total capacity (250 x 4)       = 1000

The Display division value automatically offered by the LC Tester will be: **0.1** given by the ratio:

$$\frac{\text{LC's Total capacity}}{10000} = \frac{1000}{10000} = 0.1$$

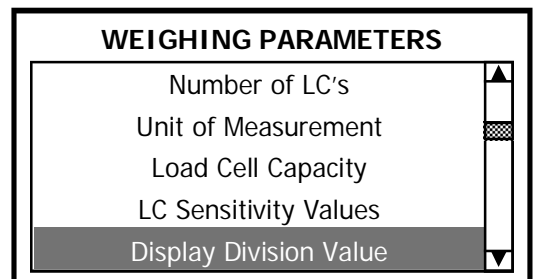
However the User has the chance to modify this value (+ or -), bearing in mind that the **maximum number of counts can be 50000**.

Considering the example given here above, the ratio:

$$\frac{\text{LC's Total capacity}}{50000}$$

equals **0.02**.

This will be the minimum usable Display division value.



**Exits the menu and returns to Operating Mode**



## ADDITIONAL FUNCTIONS

In Operating Mode:

**Press and hold** **Enter**



**SETUP MENU**

- Auto Shut Off
- LCD Contrast
- Set Date (MM/DD/YYYY)
- Set Time
- Baud Rate



Automatic shut off time delay selection. The selected value appears in the box on the left of the screen. The LC Tester switches off automatically if no keys are pressed within the selected time delay. The countdown is restored if any of the keys is pressed within the selected time delay. "OFF" = function disabled.

**Auto Shut Off**

5 MIN

OFF
3 MIN
5 MIN
10 MIN



**SETUP MENU**

- Auto Shut Off
- LCD Contrast
- Set Date (MM/DD/YYYY)
- Set Time
- Baud Rate



LCD contrast adjustment.

**SETUP MENU**

**LCD Contrast**

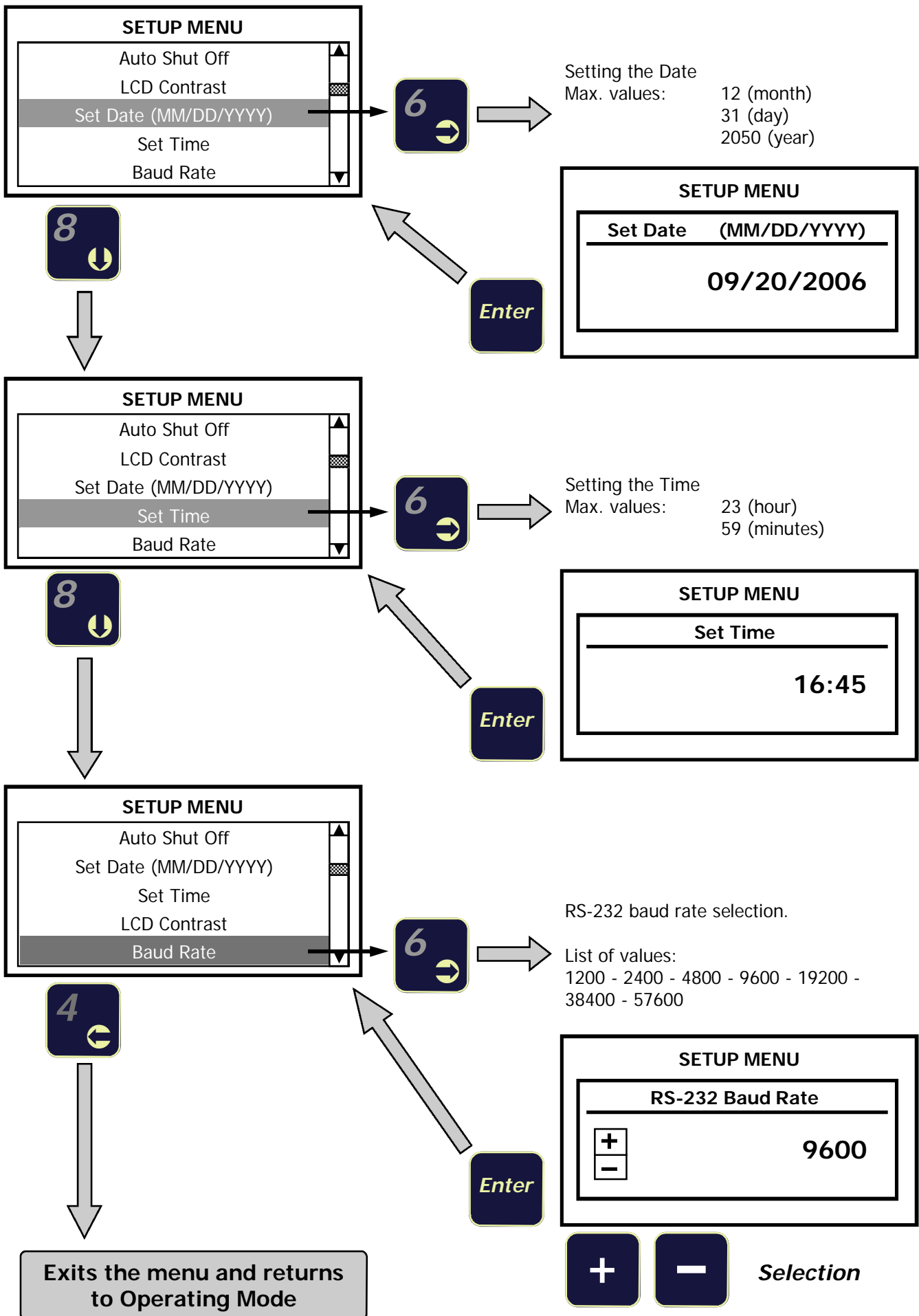
+

575

-



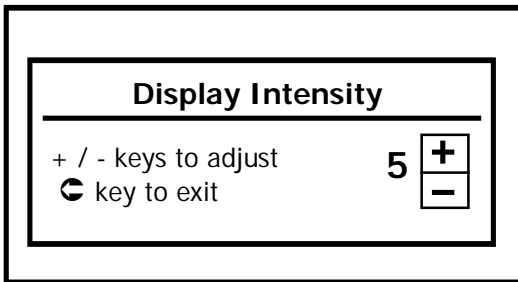
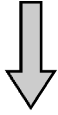
**Adjustment**



## DISPLAY INTENSITY ADJUSTMENT

In Operating Mode:

Press



Increases Intensity



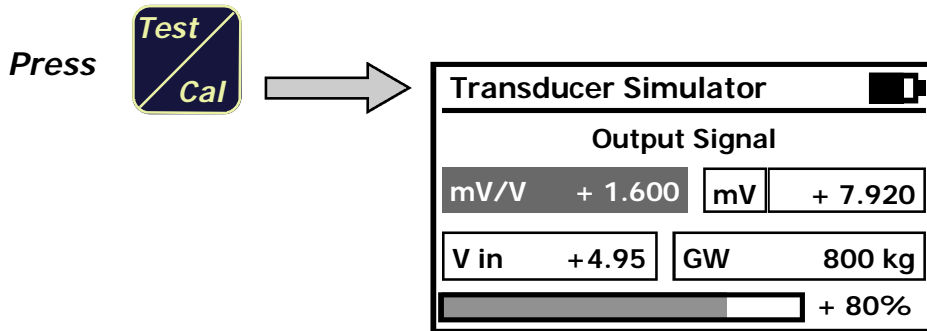
Reduces Intensity



Confirm and return to  
Operating Mode

## THE "CALIBRATOR" FUNCTION

How to enable the function:





Through this function the LC Tester acts as a **mV generator**, therefore it can be used as a load cell simulator and/or calibrator for electronic weighing instruments, to check linearity, to check 0 and FS, to perform 0 and FS calibration.

Refer to page 9 for wiring.

### Displayed data

**mV/V + 1.600**

mV/V signal generated by the LC Tester and sent to the instrument.

The  and  keys allow to generate the signal output (in steps of 0.1 mV/V) over a range from 0 to FS.

The mV/V Full Scale value corresponds to the average of the individual mV/V load cell sensitivities programmed in the "WEIGHING PARAMETERS" menu. See page 16.

**V in +4.95**

Load cells excitation voltage coming from the instrumentation.

**mV + 7.920**

mV signal generated by the LC Tester and sent to the instrument.

This value is the product of "mV/V" multiplied by "Vin".

**PL 900 kg**

Weight value corresponding to the mV/V signal generated by the LC Tester.

The weight value is expressed in the preselected measurement unit and its Full Scale is the product of "Single LC capacity" multiplied by "Number of LC's", programmed in the "WEIGHING PARAMETERS" menu.

 + 80%

Percentage of signal output referred to the Full Scale.

**In order for the "CALIBRATOR" function to work correctly, the following parameters "Number of LC's", "LC's sensitivity" and "Single LC capacity" programmed in the LC Tester must be the same as those programmed in the instrument to be controlled.**

**Example:**

**If the instrument to be controlled is normally connected to 4 load cells 250 kg each, 2 mV/V, the LC Tester must have been programmed with the same data (see pages 15-17):**

**Number of LC's = 4 - LC's sensitivity = 2.0000 - Single LC capacity = 250.**

**Key functions in "CALIBRATOR" mode**



Coarse increment of the mV signal output. Each step = 0.1 mV/V.  
Range from 0 to F.S.



Coarse decrement of the mV signal output. Each step = 0.1 mV/V.  
Range from 0 to F.S.



Fine increment of the mV signal output.



Fine decrement of the mV signal output.



Set to 0 the weight value



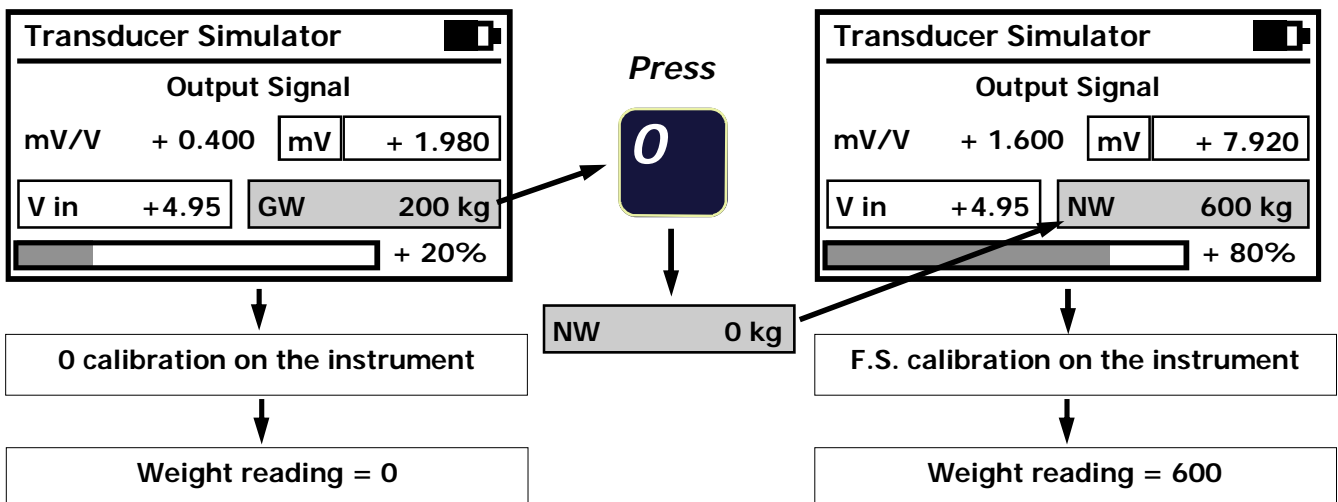
Erases the weight value 0 setting

**Zeroing the weight value shown on the LC Tester**

This function helps the User during the zero and full scale calibration of the weighing instrumentation. After having performed the zero calibration on the instrument, the user can set to zero the weight value displayed by the LC Tester also, so that the weight values displayed by the two devices can match.

Example: weighing system comprised of an instrument connected to 4 load cells 250 kg each - 2 mV/V (total 1000 kg), dead load = 200 kg, live weight = 600 kg.

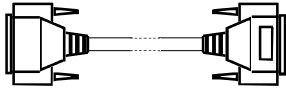
The 0 calibration must be performed with a signal of 0.4 mV/V (equivalent to 200 kg), while the F.S. calibration must be performed with a signal of 1.6 mV/V (equivalent to a signal increment of 1.2 mV/V = 600 kg)



Note: When the "0" key is pressed the box containing the weight value switches from GW to NW.  
Press the "C" key to switch from NW to GW. **GW = Gross Weight - NW = Net Weight.**

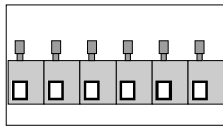
## ACCESSORIES, OPTIONS AND SPARE PARTS

Cable "A" 2m long with two 25-pin connectors



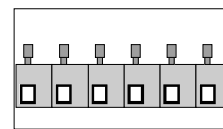
Product Code: 1006/A

Spring Terminal load cell board  
Model J1/CB



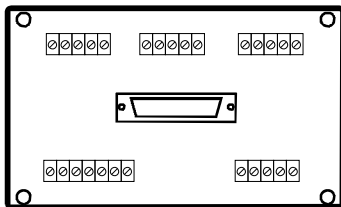
Product Code: 1006/CB1

Spring Terminal Calibration Board  
Model J2/CB



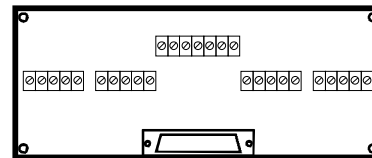
Product Code: 1006/CB2

Summing Junction Box - Model CGS4/C



Product Code: 1006/CGS

Summing Junction Box - Model CEM4/C



Product Code: 1006/CEM

### Software program for saving the Configuration Files

It is also possible to save the all weighing parameters for up to 10 different systems. This file configuration can be stored directly inside on the LC tester and than transferred to the PC via the RS-232 serial port.

All of the data (number of load cells, capacity, sensitivity, unit of measurement, division value) can be stored in up to 100 different files which can be recalled when needed. This feature expedites load cell tester set-up time by eliminating the need of having to re-enter all of the parameters.

It is also possible to save the zero and f/s mV/V values for each system for ease of any periodical checking. The configuration files can be set and stored directly from the instrument's keyboard, or with an Excel chart which can be created on a PC and then transferred to the LC Tester via the RS-232 serial port.

The bi-directional communication feature allows transferring the files from the load cell tester to a computer.

Product Code: 1006/SW

# **APPENDIX "A"**

## **UPLOAD/DOWNLOAD FILE SET UP**

The following part of the manual describes the function of set up file upload and download of our weighing instruments model MC 302, DAT 400/500 and MC 352.

For a general description of these functions refer to the next page "File Management Tools"

## FILE MANAGEMENT TOOLS

The LC Tester 1006 allows to do the upload/download of the parameters/calibration set up of the following instruments: model MC 302, DAT 400/500 and MC 352 ( max 8 file downloading on LC Tester 1006 ).

The management file is made of the functions Receive, Send, and Reset File.

The LC Tester 1006 guarantees the download of the complete configuration of the indicator and can send it to a PC for storage.

By the bidirectional RS232 communication the same files can be transferred from PC to Tester 1006 and then to the indicator.

The LC Tester 1006 can immediately send the complete configuration to a new instrument.

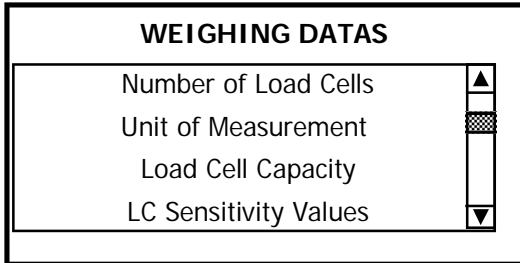
The instrument, that received the configuration, is ready to be used on the plant.



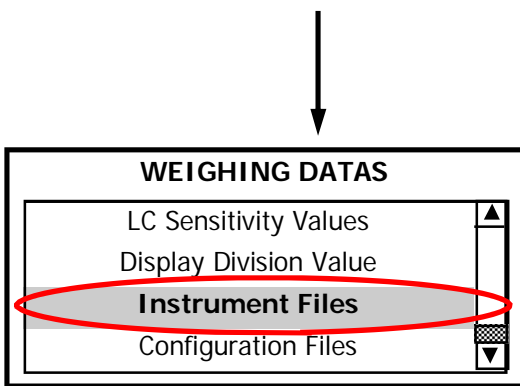
## FILE MANAGEMENT MENU


Access to the menu by pressing DATA WEIGHING release the ENTER button and then scrolling through the menus with the arrow keys up / down.

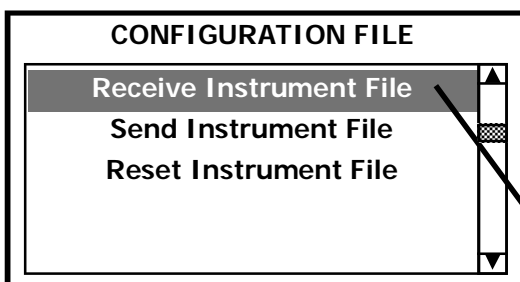
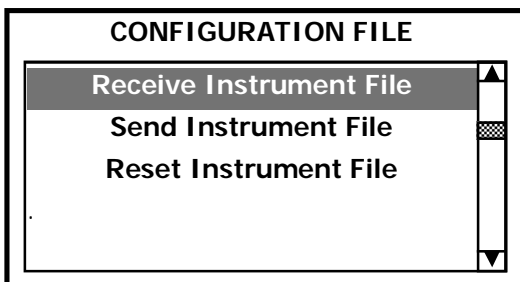
So the final part of the menu "DATA WEIGHING" will be presented as follows:



Use the up/down ARROW keys to select the "Configuration Files" ,



Press the  arrow key to access the selected file.




## RECEIVE A FILE

The File Receive Function allows to save the set up of the indicator directly on Tester 1006 through the following steps:

1. Typing the file name and confirm



Press the  arrow key to access the selected file.

## 1. TYPING the NAME

NAME:								
A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	0
1	2	3	4	5	6	7	8	9

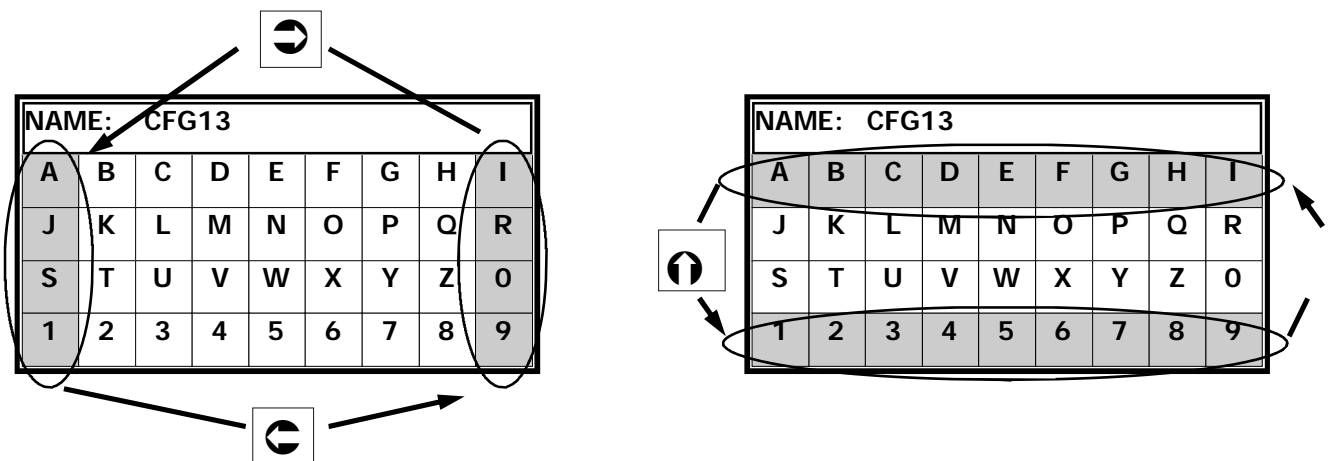
### Entering the file name:

The following grid appears on the display.  
The letter "A" is highlighted.  
After creating the file name press the enter key to transfer the file on LC Tester 1006.

### KEY FUNCTIONS



The keys allow to move the cursor to any direction and also to pass from one to the other side of the grid without the need to scroll all the characters of the line /column, see the pictures here below:



**-Short pressure:** Enters the selected character and allows the selection for the next one.  
The character just entered will appear in the "NAME" field.  
When the last character (the 8th) is entered the **Enter** key causes the storage of all the weighing parameters into the file just created.

**-Long pressure:** Stores the weighing parameters into a file named with less than 8 characters.



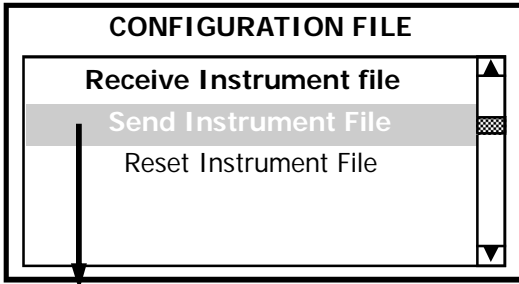
-Press for about 1 second to erase the last character entered.  
-Press for a longer time to erase the entire name.



Exit the procedure and resume normal operating mode  
No data storage.

N.B. Before the Receiving procedure check that the indicator is the Download configuration mode (sending configuration), otherwise after a short time the management file is deactivate without saving any files in the memory. If there is communication between the indicator and the tester and the tester is in Receiving mode it shows "Please wait". Once the Receiving operation is done the Tester will automatically exit the menu and by save the file.

## Send a Configuration File to an indicator

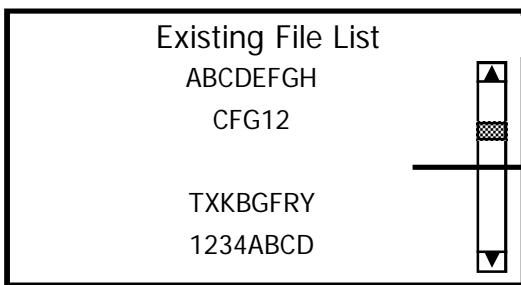


The **Send** function is used to update a new instrument and make it "operative".  
This procedure can be performed as follows:

1. **Opening a file from the existing file list**
2. **Send the file to the instrument**



### Selection file and send file



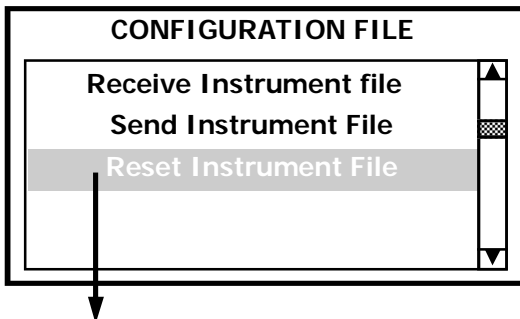
Use the keys to highlight the "Configuration Files" selection, then press the arrow

key send file to instrument.

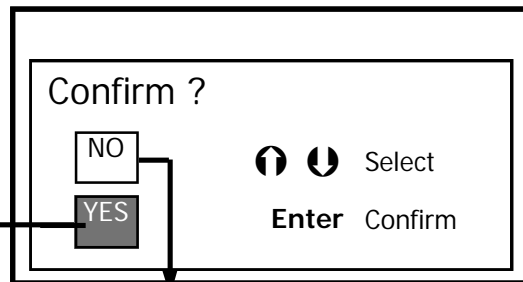
N.B. The indicator will be on upload mode.

key **exit** the menu step by step until normal operating mode.

## Deleting all files



This function allows to erase all set up configuration files stored on LC tester 1006.



Exit the menu and **delete the selected file and return on "INSTRUMENT FILE "** menu

Exit the menu without erasing all files and return on **"INSTRUMENT FILE "** menu

# **APPENDIX "B"**

## **CONFIGURATION FILE MANAGEMENT**

This section of the manual covers an OPTIONAL function that can only be activated by purchasing a PASSWORD.

Please contact the Manufacturers Sales Department for Terms and Conditions.

Please refer to page 25 for a general description of the Configuration File Management option.

## The CONFIGURATION FILE MANAGEMENT

This function enables storage of up to **100 Configuration Files** inside of the Load Cell Tester, each File contains all the weighing parameters for up to 100 different systems.

The Configuration File management is performed using the **Save, Open, Delete, Transfer File** functions. Each file is identified by a name consisting of 8 alphanumeric characters.

The Configuration File function expedites load cell tester set-up time by eliminating the need of having to re-enter all of the parameters.

The following weighing parameters can be stored in each configuration file:

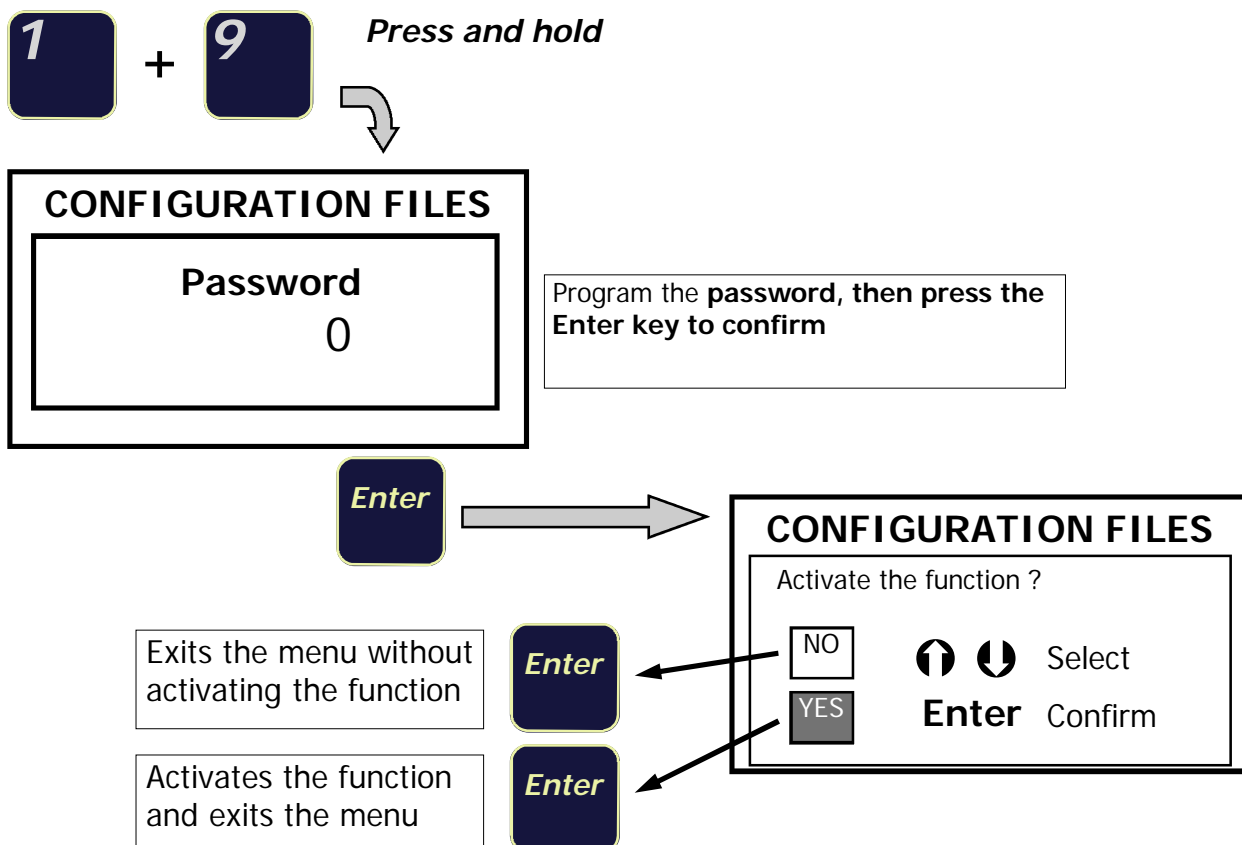
- Number of load cells (see page 13)
- Load cell nominal capacities (see page 15)
- Unit of measurement for the weight values (see page 15)
- Individual load cell sensitivities (see page 16)
- Display division value (see page 17)

It is also possible to save the zero and f/s mV/V values for each system for ease of any periodic checking. These stored mV/V values can be generated by the Load Cell Tester when being used as a "Calibrator", in order to calibrate the **Zero and Full Scale of the instrumentation** installed in the weighing system.

The configuration files can be set and stored directly from the instrument's keyboard, or with an Excel chart which can be created on a PC and then transferred to the LC Tester via the RS-232 serial port.

The bi-directional communication feature allows transferring the files from the load cell tester to a computer.

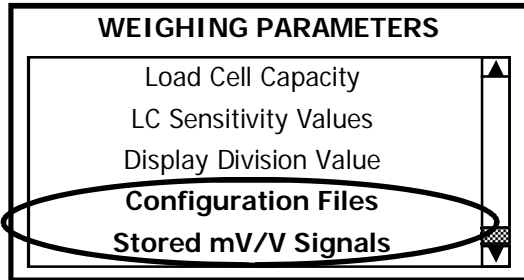
### Procedure for activating the CONFIGURATION FILES management



Once the "CONFIGURATION FILES" function has been activated, the following selections are automatically added to the "WEIGHING PARAMETERS" menu:

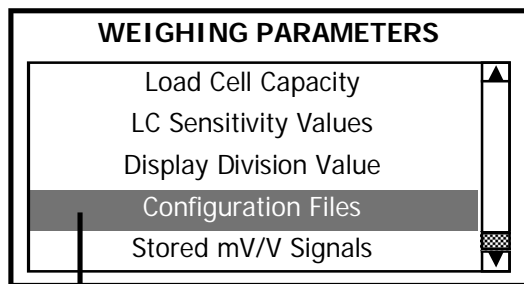
- **Configuration Files**
- **Stored mV/V Signals**

Therefore, the last part of the "WEIGHING PARAMETERS" menu will appear as follows:

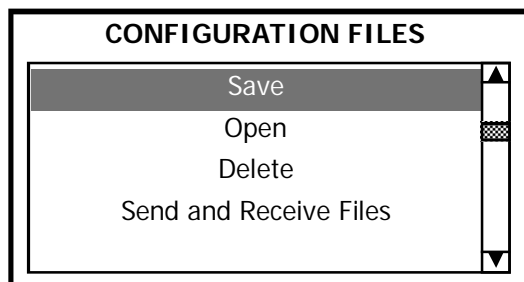


NOTE:  
Access to the "WEIGHING PARAMETERS" menu is performed by pressing the ENTER key, as described on page 15 of this Manual.

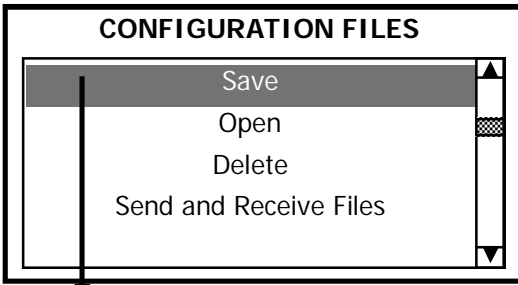
### Accessing the CONFIGURATION FILES menu



Use the arrow up/down keys to highlight the "Configuration Files" selection, then press the arrow right to access the menu.



## Saving the weighing parameters in a file

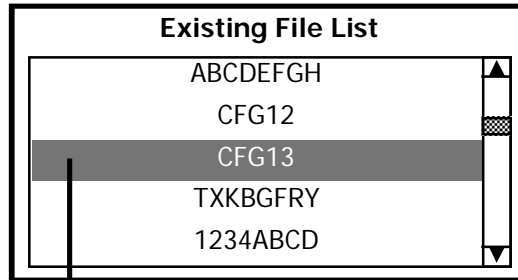
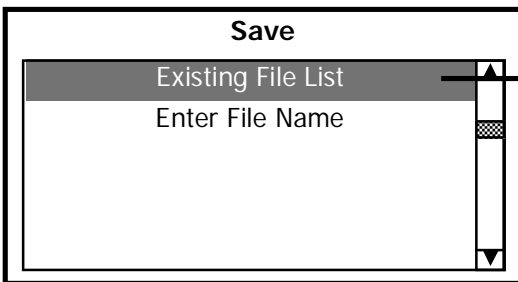


The **Save** function is used to store all the data previously programmed in the WEIGHING PARAMETERS menu in a file using one of the following methods:

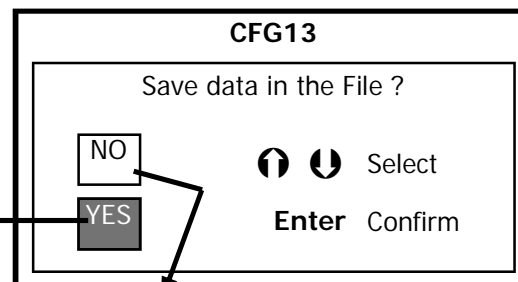
1. **Save the data into an existing file**
2. **Save the data into a new file**



### 1. Saving data to an existing file



The keys scroll **UP** and **DOWN** the list of existing files.  
 The key **access** the selected file.  
 The key **quits** the menu step by step until normal operating mode is resumed.



Exits the menu and **saves the data**. Normal operating mode is automatically resumed



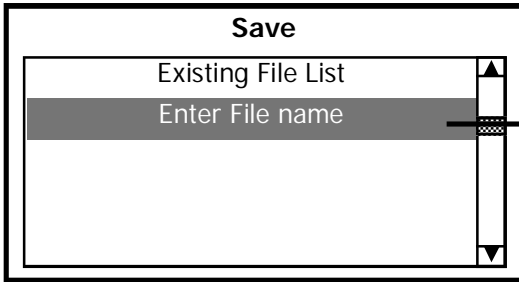
Exits the menu **without saving the data**. Display returns to **Save** menu.



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## 2. Saving data in a new file

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### Creating a new file

#### Entering the file name:

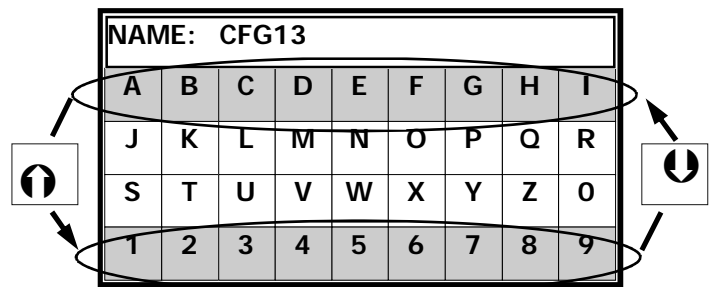
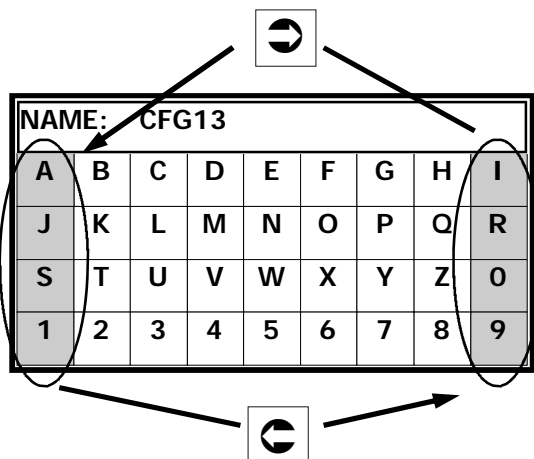
The following grid appears on the display. The letter "A" is highlighted.

NAME:								
A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	0
1	2	3	4	5	6	7	8	9

### KEY FUNCTIONS



The keys allow to move the cursor to any direction and also to pass from one to the other side of the grid without the need to scroll all the characters of the line /column, see the pictures here below:



#### -Short pressure:

Enters the selected character and allows the selection for the next one. The character just entered will appear in the "NAME" field. When the last character (the 8th) is entered the **Enter** key causes the storage of all the weighing parameters into the file just created.

#### -Long pressure:

Stores the weighing parameters into a file named with less than 8 characters. Exits the procedure without saving any data if no characters were previously entered. Quitting the procedure means to resume **normal operating mode**.



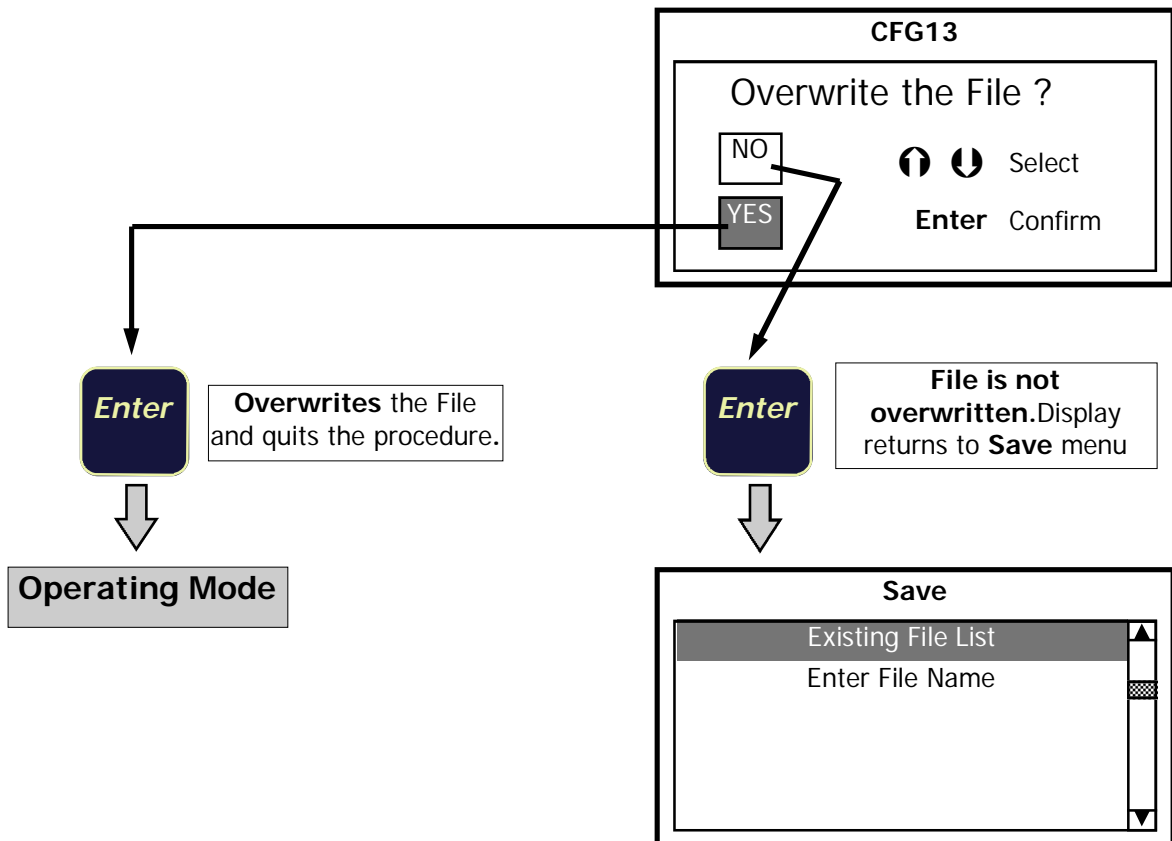
-Press for about 1 second to erase the last character entered.  
-Press for a longer time to erase the entire name.



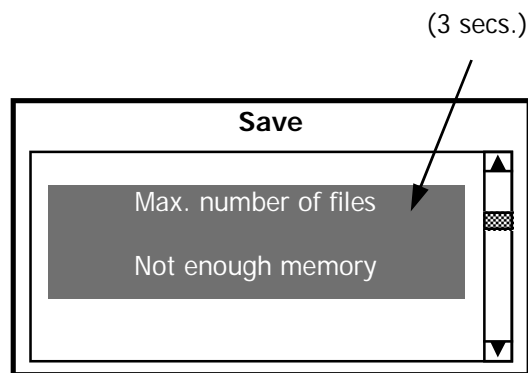
Exits the procedure and resumes normal operating mode  
No data storage.



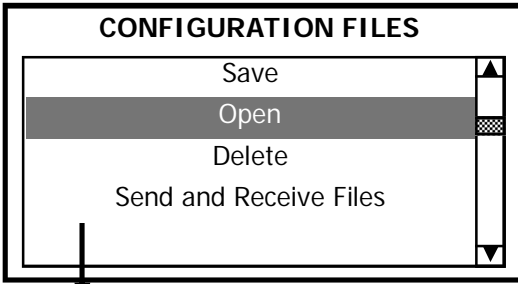
If the new file name matches an existing file name, the following message will appear on the display:



A warning message appears on the display in case the maximum number of files (100) is reached.



## Opening a Configuration File

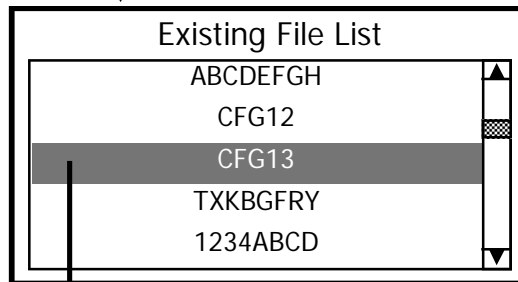
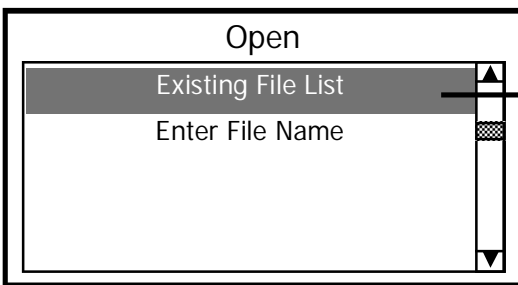


The **Open** function is used to recall a file from the instrument's memory and make it "operative". This procedure can be performed in two different ways:

1. **Opening a file from the existing file list.**
2. **Opening a file by entering the name.**



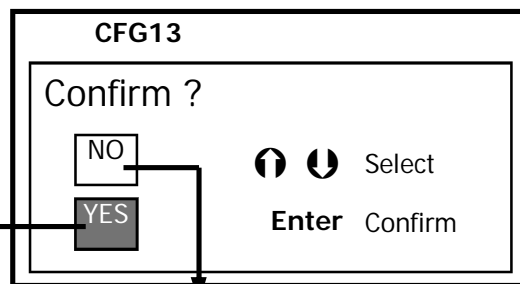
### 1. Opening a file from the existing file list



The keys scroll **UP** and **DOWN** the list of existing files.

The key **opens** the selected file.

The key **quits** the menu step by step until normal operating mode is resumed.



Exits the menu and **opens the selected file**. Normal operating mode is automatically resumed

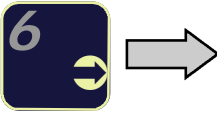
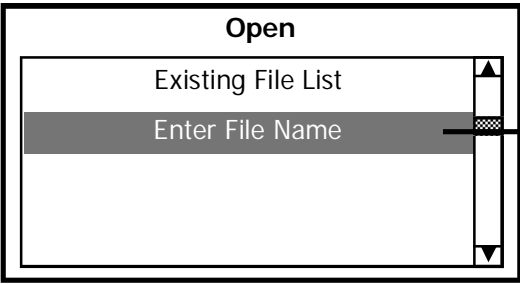
Exits the menu **without opening the selected file**. Display returns to **Open** menu.



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## 2. Opening a file by entering the name

From previous page



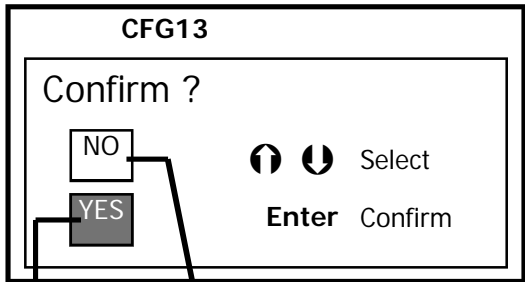
**Opening a file**  
**Entering the file name:**

The following grid appears on the display. The letter "A" is highlighted.

NAME:								
A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	0
1	2	3	4	5	6	7	8	9

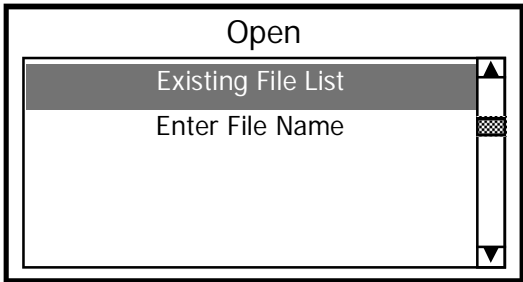
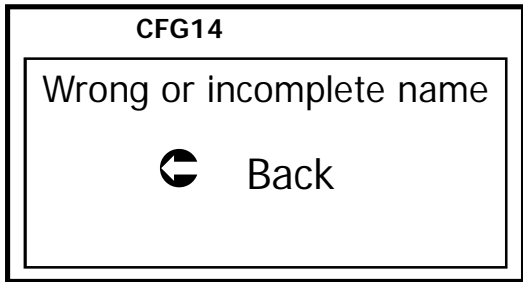
The procedures for entering the file name are those described on page 28. Refer to "Key Functions" chapter.

If the name just entered is correct the display shows the following:

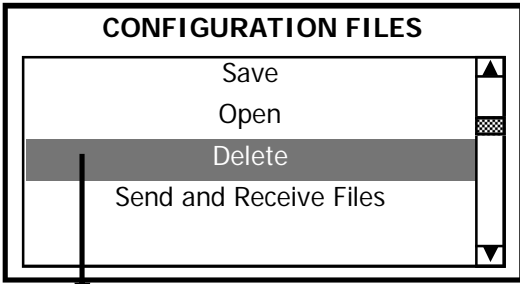


Exits the menu and **opens the file**. Normal operating mode is automatically resumed

If the name just entered is wrong the display shows the following:



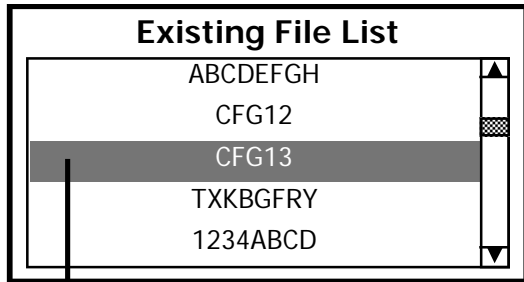
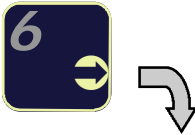
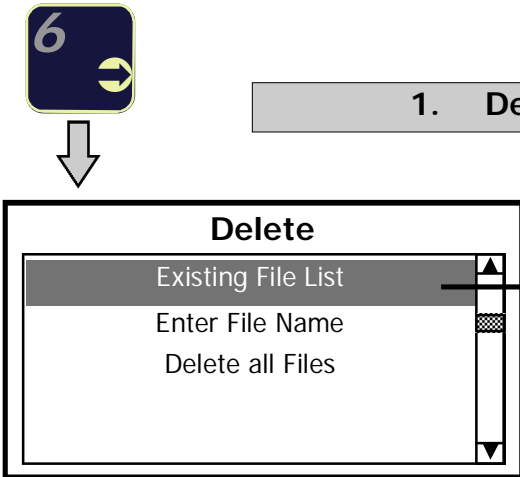
## Deleting one of the files







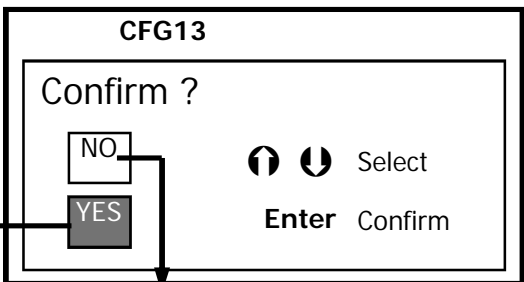
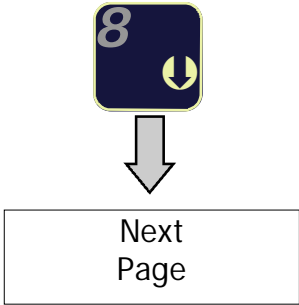
The **Delete** function is used to delete a file in the instrument's memory. This procedure can be performed in two different ways:

1. **Deleting a file from the existing file list.**
2. **Deleting a file by entering the name.**

### 1. Deleting a file from the existing file list



The   keys scroll **UP** and **DOWN** the list of existing files.  
 The  key **opens** the selected file.  
 The  key **quits** the menu step by step until normal operating mode is resumed.

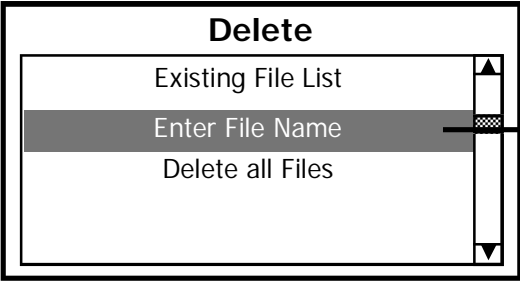


Exits the menu and **deletes the selected file**. Normal operating mode is automatically resumed

Exits the menu **without deleting the selected file**. Display returns to **Delete** menu.

## 2. Deleting a file by entering the name

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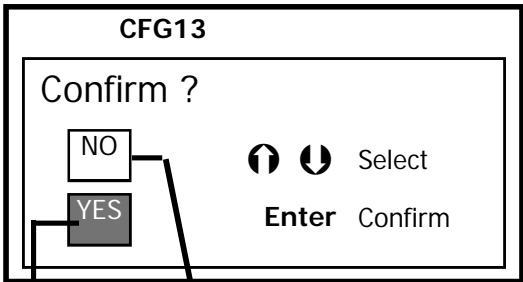
**Deleting a file**  
**Entering the file name:**

The following grid appears on the display. The letter "A" is highlighted.

NAME:								
A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	0
1	2	3	4	5	6	7	8	9

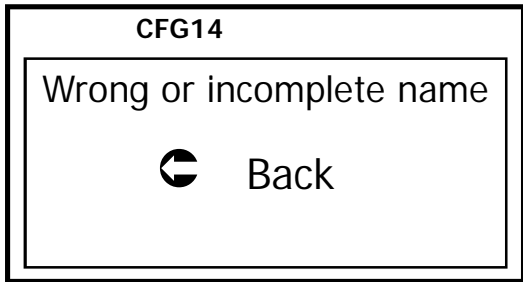
The procedures for entering the file name are those previously described on page 28. Refer to "Key Functions" chapter.

If the name just entered is correct the display shows the following:

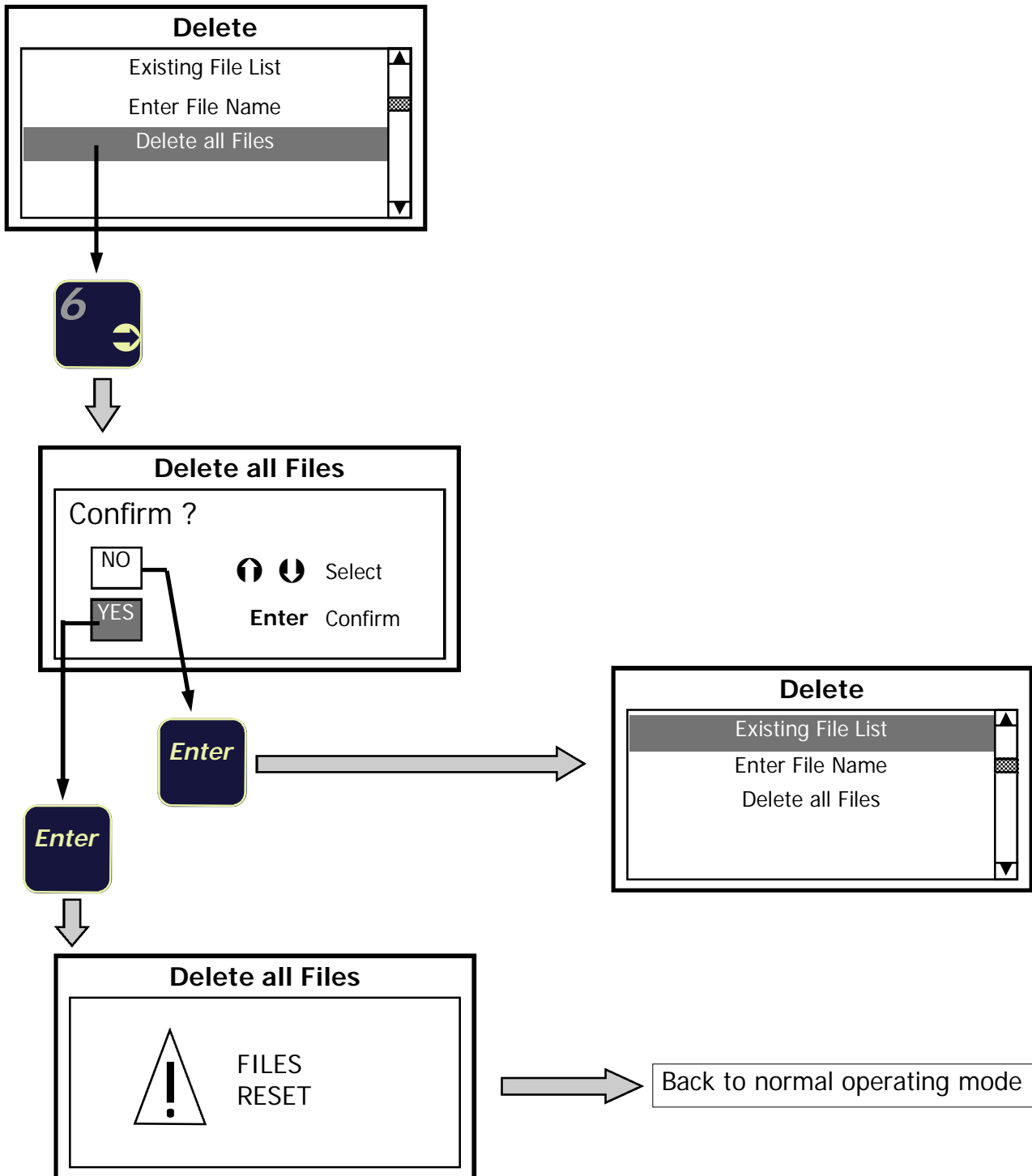


Exits the menu and **deletes the selected file**. Normal operating mode is automatically resumed

If the name just entered is wrong the display shows the following:



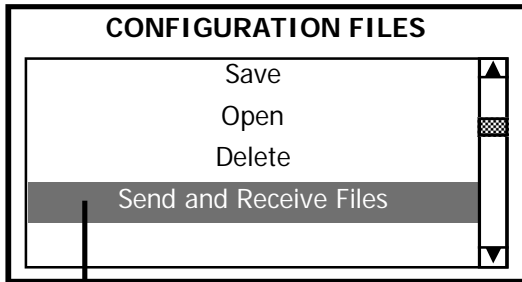
# Deleting all the files in the memory



## Transferring one file / all files

In order to transfer the configuration files to a PC or vice-versa, the following conditions must be satisfied:

1. Assure there is a valid RS-232 connection between the Load Cell Tester and the PC.
2. "Hyper Terminal" application active on the PC, in "Receive File" (from LC Tester to PC) or "Send File" (from PC to LC Tester) mode.
3. Communication parameters: 9600, 8, N, 1.

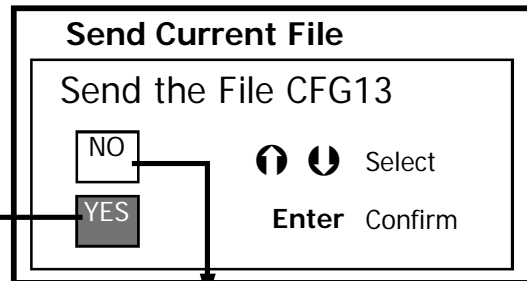
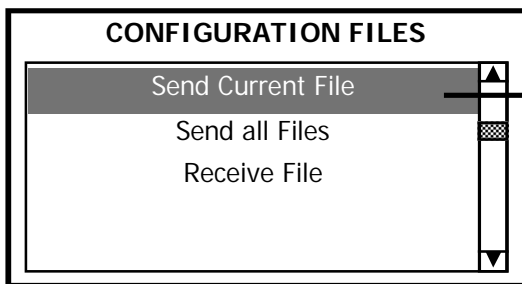


The "Send and Receive Files" function is used to:

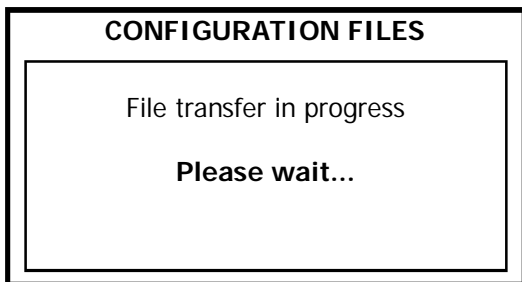
1. Send the current file to a computer only (the one currently in use).
2. Send all the files in the LC Tester's memory to a computer (including the one currently in use).
3. Receive from a PC 1 Configuration File.



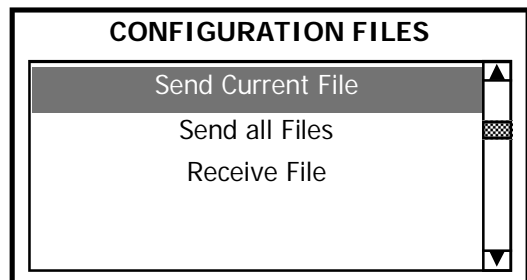
### 1. Sending the current file to a PC



Next page

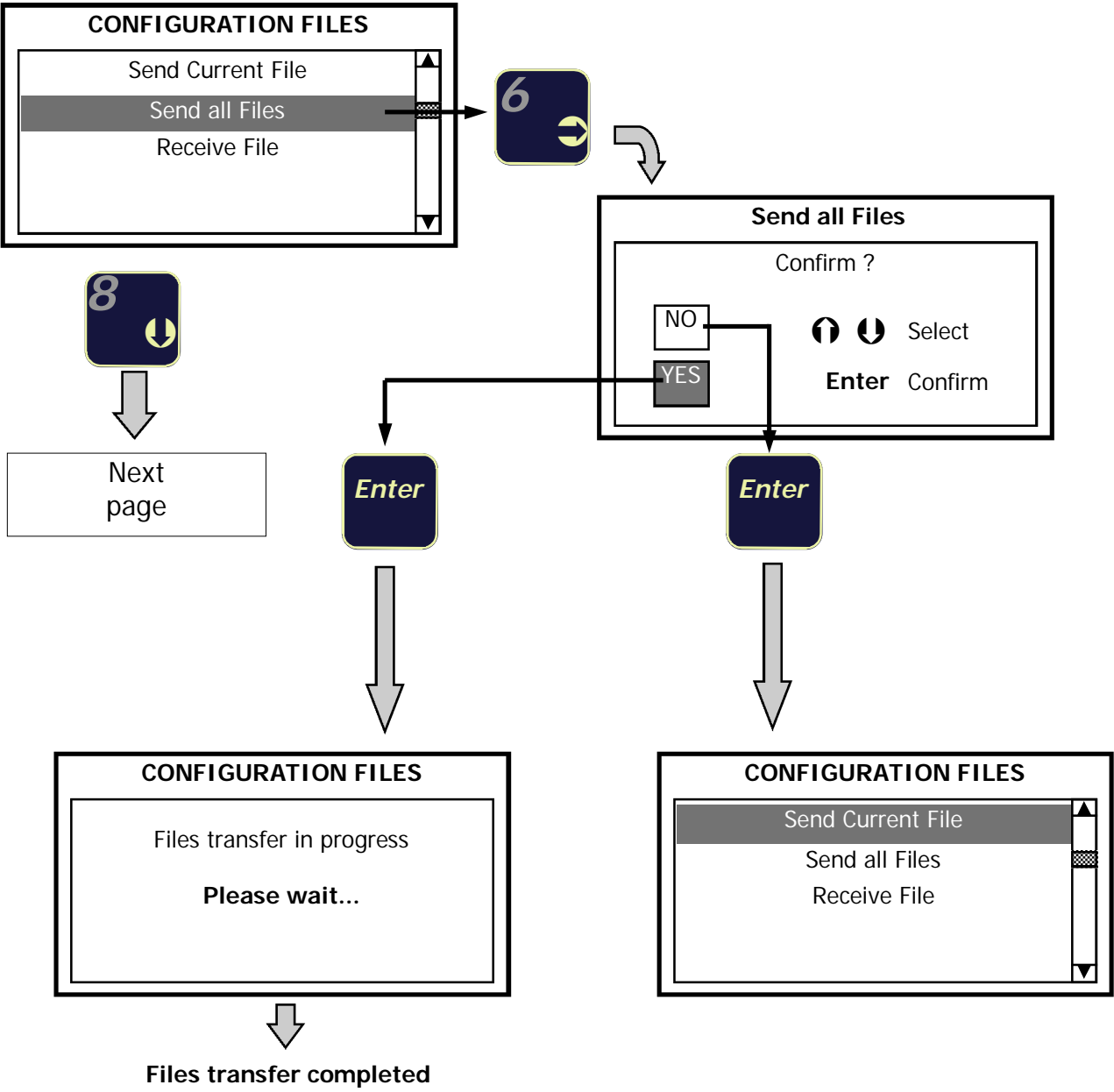


File transfer completed



## 2. Sending all the files to a PC

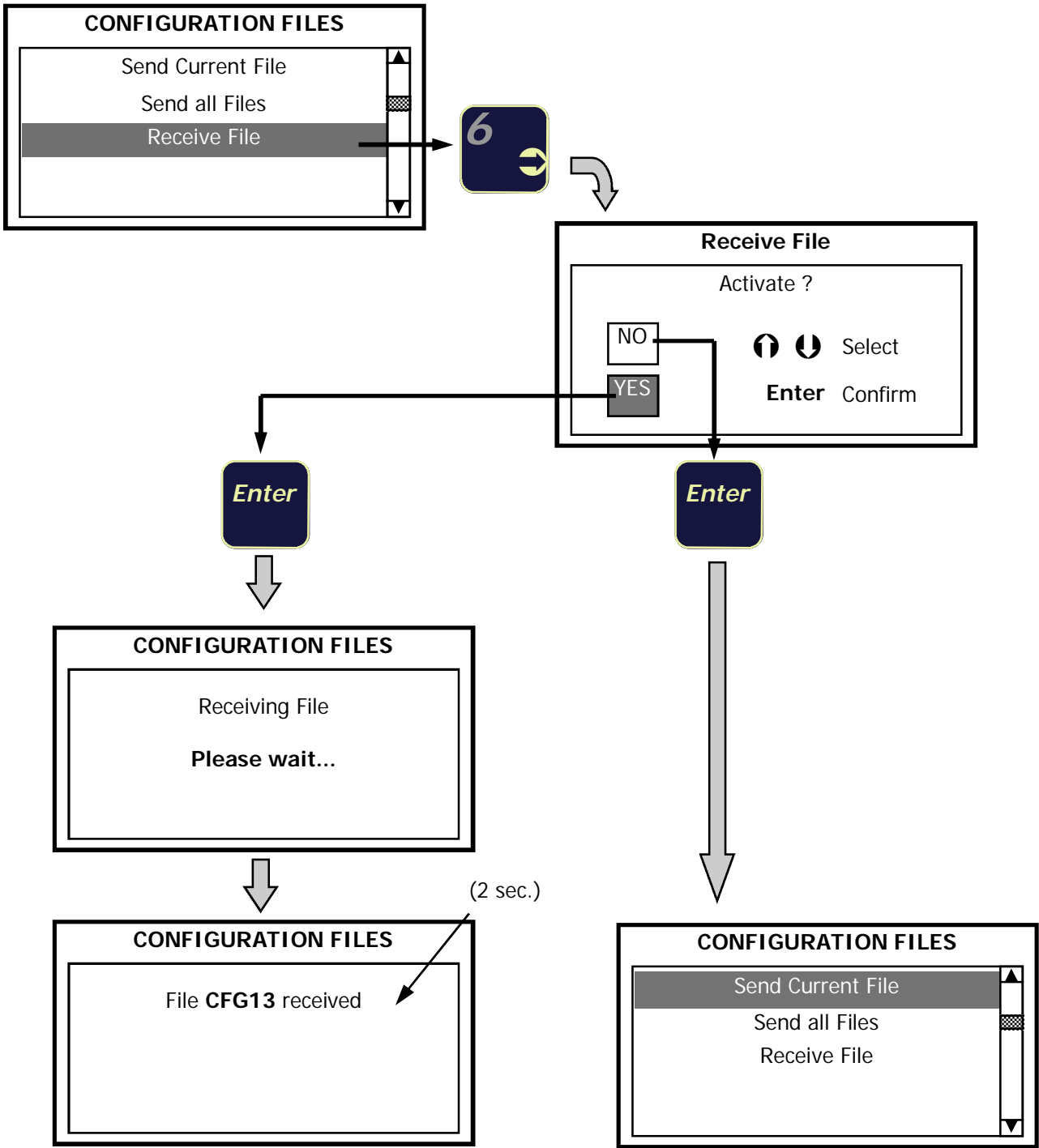
From previous page





### 3. Receiving a Configuration File from a PC

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NOTE:

**Receiving a configuration file does not mean to make it operative.**

The file just received is added to the list of existing files however, the LC Tester will continue normal operation.

## STORING THE mV/V LOAD CELL SIGNALS

This function is used to save the individual zero and span mV/V signals coming from the load cells into the instruments memory.

- Both the **Zero** and **Span** values can be saved (by "Zero" we mean the mV/V values coming from the load cells when the weighing system is unloaded; by "Span" we mean the mV/V values corresponding to a known weight applied on the weighing system).  
The span value may not necessarily coincide with the weighing system's full scale value.
- The mV/V values can only be stored when the instrument is in "Load Cell Tester" mode, and the "mV/V Input Signals" display view is selected (see Figure 1 on page 14).
- **The stored values are automatically associated to the Configuration File currently in use.**

The stored mV/V values can be used as reference values for performing periodic checks on the load cells. When operating the load cell tester in "Calibrator" mode, it can be used to generate a zero and span mV/V output signal (based on the average of the individual signals) that were previously saved in memory. These signals can be used to check or calibrate the Zero and Span of the weighing systems instrumentation.

The mV/V signals representing zero and span can only be saved into the load cell testers memory when:

- The load cell tester is displaying the "mV/V Input Signals" (see Figure 1 on page 14).
- One of the Configuration Files has been opened (see page 30)

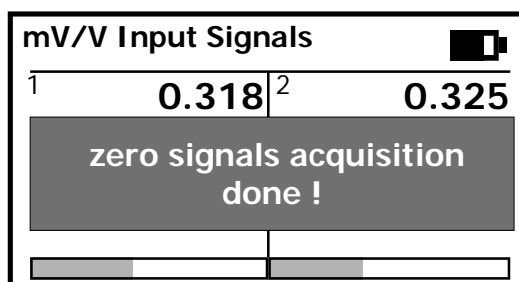
### Procedure:

#### Acquiring the Zero mV/V signals

Make sure that the weighing system is empty or unloaded prior to performing the following operation:

Press and hold the  key to save the zero mV/V signals

Once the Zero mV/V signals have been acquired, the following message appears momentarily on the display:



The stored values are automatically associated with the Configuration File currently in use.

## Acquiring the Span mV/V signals

Apply a known weight on the weighing system prior to performing the following operation


Press and hold the  key to save the span mV/V signals


Once the Span mV/V signals have been acquired, the display prompts the following setting:

mV/V Input Signals	
Enter weight value	
XXXXXX u.m.	

Note: "u.m." = pre-selected Unit of Measurement

Enter the value of the known weight applied on the weighing system.  
Refer to page 12 (*Entering numerical data*) for keys functions.


By pressing the  key, the following message appears for a while on the display:

mV/V Input Signals			
1	1.214	2	1.221
FS signals acquisition done !			

After a while the message disappears automatically and the LC Tester resumes normal operating mode

## Warning message during the mV/V signals acquisition

If none of the Configuration Files have been opened previously, the following message will appear on the display when trying to acquire the Zero or Span mV/V signals.

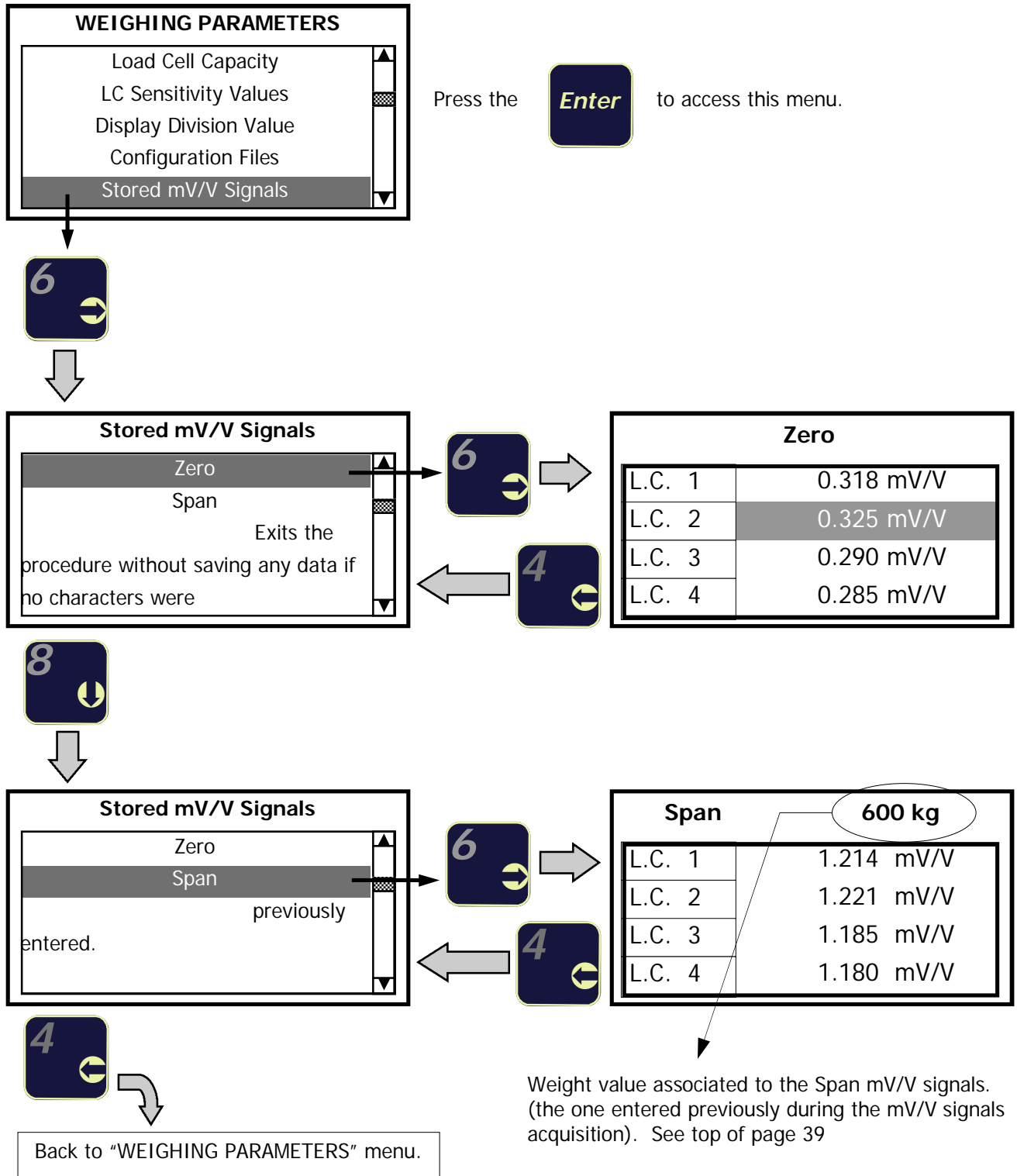
mV/V Input Signals			
1	1.214	2	1.221
Open or select a file prior to performing this function			

## Reading the Zero and Span mV/V signals stored in memory

The user has the opportunity to read the zero and span mV/V values for each system simplifying any periodic checks required on the load cells.

When recalling a Configuration File from memory, the Zero and Span mV/V values previously stored and assigned to the current file, are also recalled.

From "WEIGHING PARAMETERS" menu:



## CALIBRATOR mode - GENERATING STORED mV/V LOAD CELL SIGNALS

The stored zero and span mV/V signals can be used to check or calibrate the Zero and Span points of the instrumentation being used in weighing system.

The load cell tester will generate a mV/V signal for zero and span based on the **average** of the individual signals previously stored in memory:

Zero	
L.C. 1	0.318 mV/V
L.C. 2	0.325 mV/V
L.C. 3	0.290 mV/V
L.C. 4	0.285 mV/V

$$0.318 + 0.325 + 0.290 + 0.285 = 1.218 \div 4 = \mathbf{0.304 \text{ mV/V}}$$

In this example **0.304 mV/V** will be the value generated by the LC Tester in order to reproduce the signal coming from the load cells at zero point.

Span	600 kg
L.C. 1	1.214 mV/V
L.C. 2	1.221 mV/V
L.C. 3	1.185 mV/V
L.C. 4	1.180 mV/V

$$1.214 + 1.221 + 1.185 + 1.180 = 4.800 \div 4 = \mathbf{1.200 \text{ mV/V}}$$

In this example **1.200 mV/V** will be the value generated by the LC Tester in order to reproduce the signal coming from the load cells corresponding to a weight value of **600 kg**.

### Procedure:

Press the **Test/Cal** button to switch the LC Tester into CALIBRATOR mode

#### Generating the Zero signal



Stored mV/V signals			
File: CFG13			
mV/V	+ 0.304	mV	+ 1.504
V in	+4.95	GW	0 kg
Press C key to exit			

The LC Tester generates 0.304 mV/V. This signal is used to perform the zero calibration of the weighing indicator.

#### Generating the Span signal



Stored mV/V signals			
File: CFG13			
mV/V	+ 1.200	mV	+ 5.940
V in	+4.95	GW	600 kg
Press C key to exit			

The LC Tester generates 1.200 mV/V. This signal is used to perform the span calibration (600 kgs.) of the weighing indicator.

**NOTE:** In this particular function the LC Tester is able to generate the Zero and Span mV/V values only.  
Press the C key in order to resume normal operation in CALIBRATOR mode.

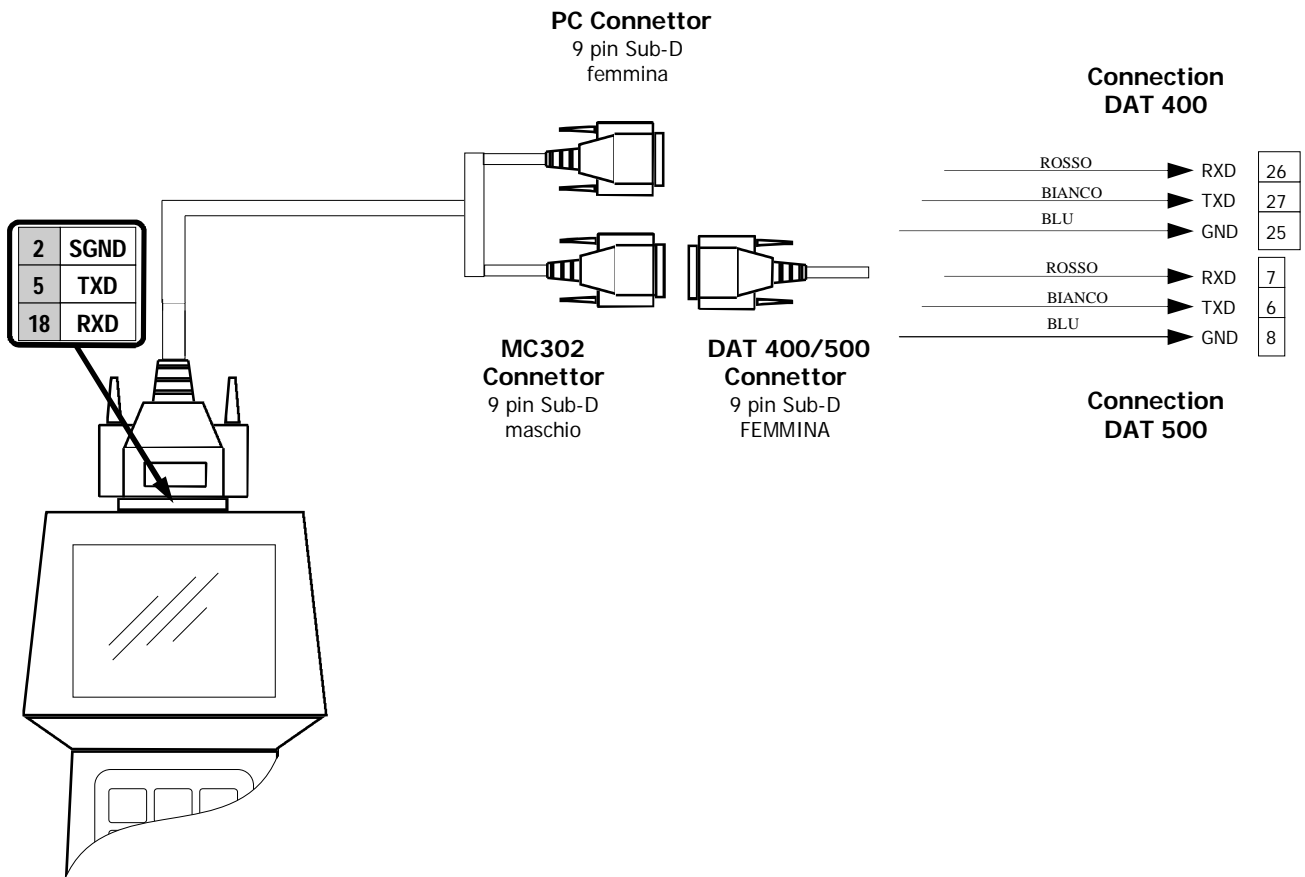
# RS-232 CONNECTIONS

The bi-directional RS-232 communication allows transferring the Configuration Files from the load cell tester to a computer and vice-versa.

The female 25 pin Sub-D connector installed on the LC Tester, includes terminals for the RS-232 connection:

LC Tester 25 pin Sub-D connector pinout		
2	GND	
5	TXD	
18	RXD	

The RS-232 connection to the PC can be established using Cable "B" .





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