

SC-A1 Manual

Programming



SC-A1

Advanced weighing equipment with ABS or INOX finish, high-contrast LED display or backlit LCD and 5-key keyboard.



2017-05-18

COMPLETE PROGRAMMING MANUAL

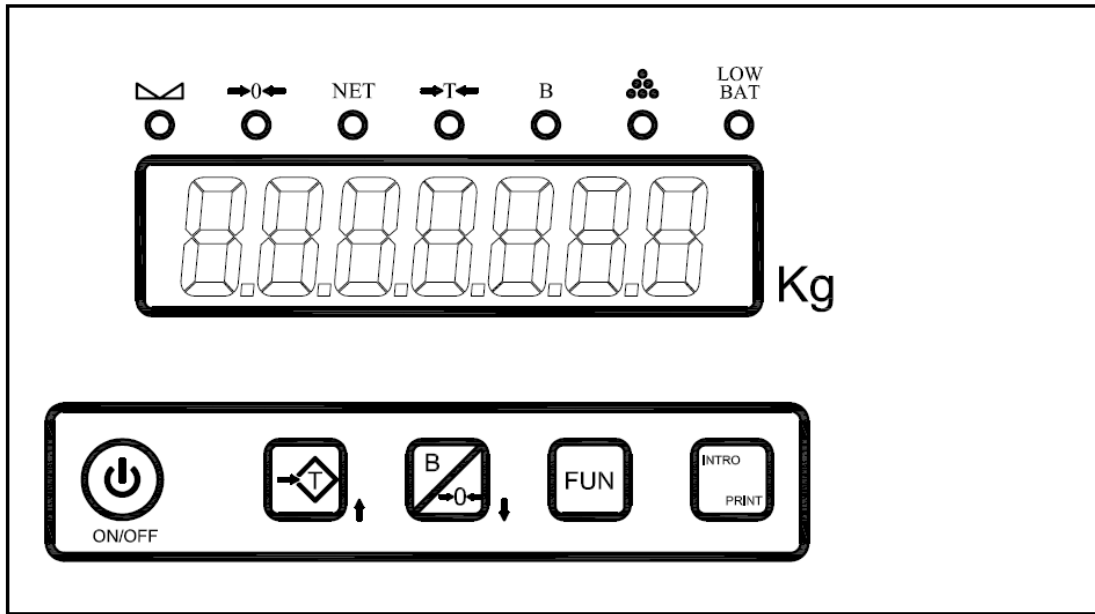
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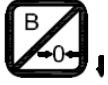



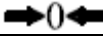


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1 DISPLAY AND KEYBOARD DESCRIPTION



KEYS		ON/OFF. Pressing the button turns the equipment on or off.
		TARE(T): (TARE) In weighing mode, make the tare weight. Also for moving up when browsing the menu.
		ZERO(B): (ZERO) In weighing mode, sets the measurer to zero or switches between net and gross if the equipment has a tare. Also for moving down when browsing the menu.
		FUNCTION(FUN): (FUNCTION) Special functions key. Also works as back button to exit a submenu when navigating the menu.
		INTRO/PRINT: (ENTER/PRINT) Confirms the operation being performed at the time. Make accumulation in weighing mode.
UPPER SYMBOLS		Stability: (Stability) Indicates that the weight on the platform is stable.
		Zero: (Zero) Indicates that the weight shown in the display is zero.
	NET	Net: (Net) Indicates that the weight shown in the display is the Net weight (resulting from subtracting the Tare from the Weight).
		Blocked Tare: (Blocked tare) The tare is locked, so even if the tare is removed, the equipment will still be tared.
	B	Gross: (Gross) The equipment is tared and shows the gross weight.
		Parts counter: (Parts counter) The equipment is showing parts and not the weight.
LOW BAT	Battery: (Battery) Shows that the battery is low (only in battery-powered models).	

2 PROGRAMMING MENU

2.1 Access

The programming menu is accessed by pressing the **FUN** and **I** keys at the same time when viewing the first messages that appear once the unit has been started up. The unit will beep twice and the **-PROG-** message will appear.

If the password option is set (**PASSWD** in the **OTHER.P.** submenu), the display will show a flashing "0", asking you to enter the password for accessing the menu. To enter the password, use the **I** key to change the value of the flashing digit, the **B** key to change the flashing digit and **INTRO** to enter the specified value. If the password is correct, the device will allow you to enter the programming menu, whilst displaying the "**CALIBR.**" message (header of first submenu). If the password is incorrect, the equipment will restart.

2.2 Polymorphism.

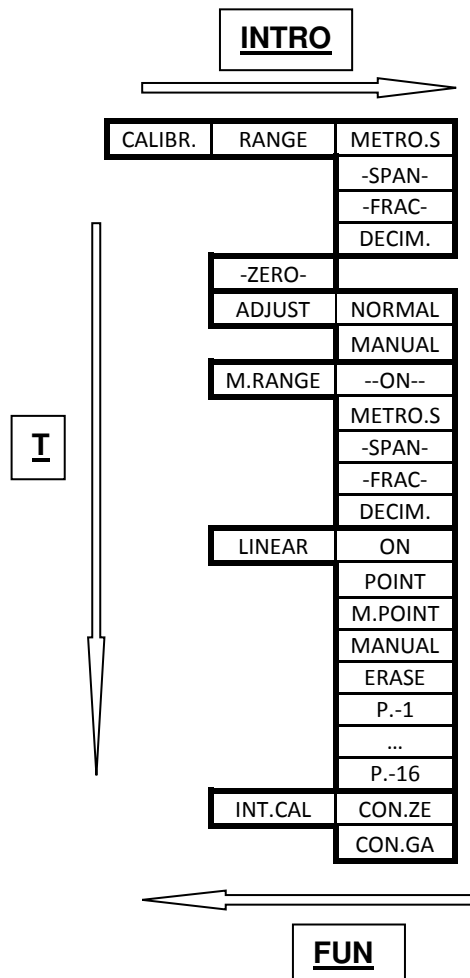
The SC-A1 consists of a modular system that can have many different configurations that increase or modify functions and capacities.

The programming menu is adapted to these different configurations and the structure changes depending on the equipment's capabilities.

2.3 Navigation.

The menu can be navigate using the keys on the front panel.

Use keys **I**, **B** to move up or down the schema to change options or submenus, and keys **FUN** and **INTRO** to move left or right to enter or leave the submenu or selected option.



2.4 Organisation of programming Menu

The programming menu is organised in 9 different submenus defined by the features of the parameters included in each one:

- Calibration Submenu (**CALIBR**)
The calibration submenu contains the metrological weighing parameters related to the calibration of the equipment.
- Weight Control Submenu (**WE.CTR.**)
Includes all other metrological weighing parameters that do not alter the value of the weight obtained by the weighing module but that do alter the way in which the information is displayed and processed, for use in the different functions of the equipment. These include the parameters for filtering, stabilising, saving zero point, etc.
- Display Submenu (**OTHER.P.**)
Includes the general parameters of the equipment (password for entering programming menu, checking programme version, serial number, etc) and those related to peripherals such as display, battery, etc).
- Serial communication Channels Submenu (**-COM-**)
Includes parameters related to the different serial communication options provided by the equipment for sending or receiving weight data from/to external devices. Includes configuration of serial communication in the different ways permitted with the equipment: RS232, RS485, Radio, Ethernet, Wi-Fi, etc
- Options Submenu (**OPTION**)
The options submenu contains all the parameters related to the configuration of modules that are not connected to the weighing or communicating functions, such as: digital Inputs/Outputs, Analogue Outputs, microSD card reader and USB-Host input.
This submenu is active (displayed) whenever the computer detects the presence of any of the devices listed above.
- External Configuration Submenu (**CFG.EXT.**)
Allows you to access the equipment's settings from an external computer (PC), to check or change those settings.
When you access the submenu, the equipment waits to establish communication with a computer (PC) so that you can check or change the settings.
- Language Selection Submenu (**LANGUA.**)
Submenu for selecting the language that the equipment uses for showing message, printing tickets and communicating with the user.

3 PROGRAMMING OPTIONS DESCRIPTION

The following tree shows the different submenus and options in the programming menu of a basic weighing SC-A1 unit.

3.1 Calibration Submenu (CALIBR.)

The calibration submenu contains the metrological weighing parameters related to the calibration of the equipment.

The options in this submenu can be checked but not modified if the write function of the weighing module's metrological seal is locked (see section 4.1.1). If this is the case, the "SWITCH" message will appear when you try to change any of the configurable parameters in the submenu, showing that you cannot write or save any change.

CALIBR.	RANGE	METRO.S	
	.	-SPAN-	
	.	-FRAC-	
	.	DECIM.	
	-ZERO-		
	ADJUST	NORMAL	
	.	MANUAL	
	-AUTO-	CAPAC.	SENSIB.
	M.RANGE	--ON--	
	.	METRO.S	
	.	-SPAN-	
	.	-FRAC-	
	.	DECIM.	
	LINEAR	ON	
	.	POINT	
	.	M.POINT	
	.	MANUAL	
	.	ERASE	
	.	P.-1	
	
	.	P.-16	
	INT.CAL	CON.ZE	
		CON.GA	

3.1.1 RANGE

Range

Assigns the full scale and weight fraction.

These three parameters can be configured together, by selecting a metrological scale (**METRO.S** option) or individually, using (**-SPAN-**), (**-FRAC-**) and (**DECIM.**).

If you choose to set the parameters individually, it is advisable to begin by assigning the decimals numerical value (**DECIM.**).

3.1.1.1 METRO.S

Metrological Scale

Allows you to select a metrological scale containing the preconfigured full scale values with the fraction and decimals number.

Pressing **I** will increase the value, **B** will decrease the value, **FUN** cancels the operation, taking you out of this menu and **INTRO** saves the selected value and takes you of the menu.

Apart from showing the selectable full scale value, the display will show the parts-count mode symbol, which will flash, showing the fraction assigned to the scale: if the light stays on, this shows the minimum fraction (maximum number of divisions) that may be selected for the full scale shown.

Possible selectable scales:
















SCALE	FRACTION	RESOLUTION	F.S. SHOWN	
3.000	0.001	1 g.	3.000	
6.000	0.002	2 g.	6.000	
6.000	0.001	1 g.	6.000	
15.000	0.005	5 g.	15.000	
15.000	0.002	2 g.	15.000	
30.000	0.010	10 g.	30.000	
30.000	0.005	5 g.	30.000	
60.000	0.020	20 g.	60.000	
60.000	0.010	10 g.	60.000	
150.000	0.050	50 g.	150.000	
150.000	0.020	20 g.	150.000	
300.000	0.100	100 g.	300.000	
300.0	0.1	100 g.	300.0	
600.0	0.2	200 g.	600.0	
600.0	0.1	100 g.	600.0	
1500.0	0.5	500 g.	1500.0	
1500.0	0.2	200 g.	1500.0	
3000.0	0.5	500 g.	3000.0	
3000	1	1 Kg.	3000	
6000	2	2 Kg.	6000	
6000	1	1 Kg.	6000	
15000	5	5 Kg.	15000	
15000	2	2 Kg.	15000	
30000	10	10 Kg.	30000	
30000	5	5 Kg.	30000	
60000	20	20 Kg.	60000	
60000	10	10 Kg.	60000	
150000	50	50 Kg.	150000	
150000	20	20 Kg.	150000	

Table 1

3.1.1.2 –SPAN-

Full Scale.

Assigns a value to the full scale.

To modify the value shown, use the **I** key to increase the value of the flashing digit, **B** to change digit, **FUN** to cancel the operation and **INTRO** to enter the value assigned as full scale and leave this setting.

3.1.1.3 -FRAC-

Fraction

Assigns the weight fraction.

The possible values are 1, 2 or 5 and exponentials of 10.

Pressing **I** increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.1.1.4 DECIM.

Decimals

Assigns the decimals in the weight.

The possible values are 0, 1, 2 or 3.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.1.2 -ZERO-

Zero

Assigns the current value of the measured weight, calibrating it to zero.

This should be performed with the platform empty (without weight).

When you press **INTRO** the message “-**STAB**-” will be displayed, indicating that the equipment is waiting to have a stable weight value, which it can then save and calibrate to zero and leave the menu (when it will display the “-**ZERO**-” message).

3.1.3 ADJUST

Adjustment

Adjusts the unit with a standard weight of a known mass.

It is advisable that the weight exceed 25% of the full scale.

This procedure can be performed with a standard known weight on the platform in two different modes: **NORMAL** mode or **MANUAL** mode.

3.1.3.1 NORMAL

Normal Mode

In this mode, the display at all times shows the weight value x10 (with another digit for precision) that we want to assign to the real weight of the standard mass placed on the platform.

The displayed weight value can be changed by pressing **I** (to increase) and **B** (to decrease). Once you have reached the correct value, press **INTRO** to save it, or press **FUN** to cancel the process and leave the menu without saving anything.

Keeping the **I** or **B** keys pressed down for longer will increase the speed at which the displayed value increases/decreases, and it can even be multiplied by 10 if the **FUN** key is pressed.

3.1.3.2 MANUAL

Manual Mode

In this mode, the unit lets you edit the weight value by entering it digit by digit.

To change the displayed value, use the **I** key to increase the value of the flashing digit, **B** to change digit, **FUN** to leave the option and cancel the process and **INTRO** to save the value and assign it as the weight value of the mass placed on the platform.

3.1.4 -AUTO-

Auto-calibration.

Allows you to calibrate a system with calibrated analogue cells without having to adjust it using standard masses.

The auto-calibration function can be used with an individual analogue cell or on a system with many cells connected to a junction box.

You have to enter two parameters when performing an auto-calibration: the system's total capacity (**CAPAC.**) and the average sensitivity of the system's cells (**SENSIB.**).

In single-cell systems these parameters are the same as those of the cell. In multi-cell systems connected with a junction box, the capacity corresponds to the sum of the capacities of all the cells together and the sensitivity is the average sensitivity.

In terms of connections, the unit assumes that ALL the cells are connected in parallel (without any adjustment resistance involved, in other words, with the positive terminals of the cells connected to the "V+AUT" terminal of the junction box).

When you access this option, the unit will display the "**CAPAC.**" Message to indicate that the value displayed next corresponds to the total assigned capacity. To change the displayed value, use **I** to increase the value of the flashing digit, **B** to change digit, **FUN** to leave the option and cancel without saving and **INTRO** to enter and save the value. The display will then show the "**SENSIB.**" Message, to indicate that the value shown next corresponds to the average sensitivity of the load cells that comprise the system, expressed in mV/V. To modify the displayed value, use **I** to increase the value of the flashing digit, **B** to change digit, **FUN** to leave this menu without saving and **INTRO** to save the entered value, calibrate the system and exit this menu.

3.1.5 M.RANGE

Multi-range

Activate multi-range to allow the equipment to use a smaller metrological scale for weights lighter than the weight value defined as the Full Scale (**-SPAN-**) and thus show small weight values with more resolution (with fractions lower than defined as the normal scale).

The unit will work with the scale with the greatest resolution (the smallest scale) from the Zero weight value up to the weight value defined as **FULL SCALE**, changing the Normal scale when this limit is exceeded and until the weight is Zero again.

3.1.5.1 --ON--

Activates/Deactivates the multi-range option.

The **I** or **B** keys change between **-YES-** and **-NO-**; the **FUN** key is used to leave the option without changing the initial value and the **INTRO** key saves the selected value, taking you out of this menu.

3.1.5.2 METRO.S

Metrological Scale

Assigns a particular metrological scale for the multi-range mode.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu. (See table 1).

Apart from showing the selectable full scale value, the parts counter mode symbol (♣) will flash, indicating the fraction as follows: pilot on indicates the selection of the minimum fraction (maximum number of divisions) possible for the displayed full scale.

3.1.5.3 -SPAN-

Full scale

Assigns the particular full scale for the multi-range mode.

To modify the displayed value, use **T** to increase the value of the flashing digit, **B** to change digit, **FUN** to exit without saving and **INTRO** to save the value displayed as the full scale and exit.

3.1.5.4 -FRAC-

Fraction

Assigns the particular weight fraction for the multi-range mode.

The possible values are 1, 2 or 5 and their exponentials of 10.

Pressing the **T** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.1.5.5 DECIM.

Decimals

Assigns the decimals in the particular weight for the multi-range mode.

The possible values are 0, 1, 2 or 3.

Pressing the **T** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.1.6 LINEAR

Linearization

It allows to correct the lack of linearity of load cells connected to the equipment by entering up to 16 additional calibration points.

3.1.6.1 --ON--

Activates/Deactivates the Linearization option.

T or **B** keys shift from **-YES-** to **-NO-**, **FUN** key exits the option without modifying the initial value, and **INTRO** key exits the option by recording the selected value.

3.1.6.2 POINT

Point

This option allows the modification of the value measured by the equipment by means of tapping **T** and **B** keys, either increasing or decreasing the value displayed.

When entering the option by tapping **INTRO**, the value of the weight measured by the equipment is displayed. This value can be modified by tapping **T** (to increase) and **B** (to decrease). Once the correct value has been reached, tap **INTRO** and it will be recorded in the linearization table. In order to abort the process and exit without recording, tap **FUN**.

When **T** or **B** keys are kept pressed, the speed of the value displayed is increased/decreased.

3.1.6.3 POINT.M

Manual Point

This option allows manual input of the correction value in a point of the linearization table, by taking as a real value the one measured by the equipment. When entering the option by tapping **INTRO**, the value of the weight measured by the equipment is displayed. This value can be modified using **T** to increase the value of the digit, **B** to change it, **FUN** to exit the option and abort it, and **INTRO** to record the value displayed and to assign it as the corrected weight value point in the linearization table.

3.1.6.4 MANUAL

Manual

This option allows manual input both of the real value and the corrected value in a point of the linearization table.

When entering the option by tapping **INTRO**, the message “-**REAL**-“ is displayed, followed by the value of the measured weight by the equipment. In order to modify this value, use **T** to increase the value of the digit, **B** to change it, and **FUN** to exit the option and abort it. **INTRO** validates the value registered as the real value, then a very short message “**CORREC**” is displayed in order to finally edit the corrected weight value. Again, to modify this value use **T** to increase the value of the digit, **B** to change it, and **FUN** to exit the option and abort it. **INTRO** validates the introduced value recording the point in the linearization table.

3.1.6.5 ERASE

Erase

This option allows erasing the real and corrected values of **ALL** the points in the linearization table.

When entering the option by tapping **INTRO** key, we are requested to confirm that the linearization table must be erased, and the message “-**NO**-“ is automatically displayed. **T** or **B** keys change the selection, **FUN** exits the option and aborts it, and **INTRO** restarts the values automatically.

3.1.6.6 P.-XX

Correction points (from 1 to 16).

This option allows the visualization of real and corrected values of all the points in the linearization table which have been defined.

When entering the option by tapping **INTRO**, the value “**REAL**” and “**CORREC**” from the point of the table is displayed, or the message “**VACIO**” to indicate that the corrected point does not exist. Exit of the option is automatic after displaying the values.

3.1.7 INT.CAL

Internal Calibration

Allows you to view and modify the internal Zero calibration and Gain values of the unit.

These two point values are formed internally as 32-bit variables, but they cannot be represented on the screen (8 hexadecimal digits) directly (the display only has 6 digits). Consequently, they are displayed and can be edited in two parts of 4

hexadecimal digits, which are known as the most significant bit (-MSB-) and least significant bit (-LSB-).

3.1.7.1 INT.ZE

Internal Zero

Displays and allows you to modify the value of the unit's internal Zero calibration points.

When you enter this submenu, by pressing **INTRO** the “-MSB-” message appears, followed by the 4 digits of the most significant bit of the unit's Zero calibration parameter. To modify the displayed value, use **I**, to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value and go on to see the “-LSB-” followed by the 4 digits of the least significant bit of the unit's Zero calibration parameter. As before, to modify the value, use the **I** key to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value.

3.1.7.2 INT.GA

Internal Gain

Displays and allows you to change the unit's gain value.

When you enter this submenu by pressing the **INTRO** key, the “-MSB-” message will appear followed by the 4 digits of the most significant bit of the unit's gain parameter. To modify the displayed value, use **I** to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value and go on to see the “-LSB-” followed by the 4 digits of the least significant bit of the unit's gain parameter. Again, to change the displayed value, use the **I** key to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value

3.1.8 CEL.DIG

Digital Load Cells Submenu

The **DIG.CEL** submenu allows the configuration of the digital load cells system connected to the equipment (options **CEL.NUM**, **CEL.CAP** and **ANGLES**) and perform maintenance tasks (options **C.N.CEL** and **POINTS**).

A digital load cells system is composed of a certain number of digital load cells (**CEL.NUM**) of the same capacity (**CEL.CAP**) that can be individually re-adjusted by the **ANGLES** option.

All digital load cells that are part of the system have a unique identifier (load cell number) that identifies them in the system. So a system with 4 digital load cells, needs to have 4 load cells identified as 1, 2, 3 and 4. The option **CEL.N.C.** enable to change the identification number of one load cells, and the option **POINTS** see the weight information received from one specific load cell.

The options in this submenu can be checked but not modified if the write function of the weighing cartridge's metrological seal is locked (see section 4.2.1). If this is the case, the “**SWITCH**” message will appear when you try to change any of the configurable parameters in the submenu, showing that you cannot write or save any change.

During implementation of a digital load cells system is common that may occur errors in the configuration or the wiring. To aid in the diagnosis of errors that may occur

during this phase, the equipment shows a series of error messages whose format and coding can be found in *APPENDIX IV* of this manual.

DIG.CEL	CEL.NUM	
.	CEL.CAP	
.	CEL.N.C.	
.	ANGLES	CEL.SEL.
.		RESET
.	POINTS	

3.1.8.1 CEL.NUM

Number of digital load cells

Displays and allows modification of the number of digital load cells connected to the equipment.

The possible values are from 1 to 16.

Pressing the **T** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option, and **INTRO** saves the selected value, taking you out of this menu.

3.1.8.2 CEL.CAP

Capacity of digital load cells

Displays and allows modification of the individual capacity of the digital load cells connected to the equipment. All load cells must be of the same capacity.

To modify the value, use **T** to increase the value, **B** to change digit, **FUN** cancels the operation taking you out of the option, and **INTRO** saves the selected value, taking you out of this menu.

3.1.8.3 CEL.N.C

Change the number of one load cell

Allows modification of the identifier (number) of one load cell connected to the equipment.

To make this change in the number of one load cell, it is necessary to disconnect the other load cells of the equipment, so the only connected load cell is the one which you want to change its identifier (number).

When entering in this option, the equipment searches the identifier (number) of the single load cell connected to display it and be able to be edited. If in this search the equipment does not detect the presence of any digital load cell, the message "**ERROR**" is displayed.

To modify the value, use **T** to increase the value, **B** to decrease it, **FUN** cancels the operation taking you out of the option, and **INTRO** to validate the value introduced, and initiates the process of changing the identification number of the connected load cell.

If the process is successful it takes you out of this menu, if not, the equipment displays “**ERROR**” message during a few seconds, indicating that it was not possible to make the change. After these few seconds, it takes you out of this option.

3.1.8.4 ANGLES

Angle.

Allows the adjustment of the individual load cells in the system.

The **ANGLES** option enables to adjust the contribution made by each load cell individually to the total weight of platform (**CEL.SEL.** option) or erase and initialize the settings of **ALL** load cells in the system (**RESET** option).

When entering the **ANGLES** option (pressing **INTRO** key), the equipment displays the message **CEL.SEL.** Pressing the **B** or **T** keys enables to change the option **RESET** (or showing this go back to the option **CEL.SEL.**).

3.1.8.4.1.1 CEL.SEL

Selection of the digital load cell to adjust.

To perform an individual adjustment, it is necessary to have a known mass weight (no matter its value) that will be placed as close as possible to the load cell that we want to adjust, in the way that this it is the one contributes more weight in the total weight system, and thus minimize the influence of other load cells. It is recommended that the weight of this mass exceeds 25% of individual load cell capacity.

When entering this option, the equipment displays the message **CEL. xx** (where xx represents the number of the load cell to adjust). Pressing the **T** or **B** keys changes the selection, **INTRO** key enters the edit weight menu and **FUN** cancels the operation, taking you out of the option.

Once inside the edit menu, the equipment displays the total weight value x10 (with one more digit for accuracy) measured on the platform. This value can be modified by pressing **T** (to increase) or **B** (to decrease). Once the correct value has been reached, press **INTRO** and it will be saved. To abort the process and exit without saving, press **FUN**.

When **T** or **B** keys are kept pressed, the speed of the value displayed is increased/decreased, and it can even be multiplied by 10 if the **FUN** key is pressed.

3.1.8.4.2 RESET

Erase and Initialize the adjustment of ALL load cells.

This option allows to erase and initialize the individual calibration of ALL digital load cells of the system to their default values.

When entering the option by pressing **INTRO** key, the equipment asks confirmation that we really want to perform initialization of individual calibration, and shows the message “**-NO-**” by default. Pressing **T** or **B** key change the selection, **FUN** exits the option without saving, and **INTRO** initiates the process of restoring the default values.

3.1.8.5 POINTS

Points.

Shows the weight value in points measured by the selected load cell. The digital load cells are calibrated from factory to deliver a numeric value (points) proportional to the measured weight. This correspondence is linear and corresponds to the following formula:

$$\text{Points} = (40.000 * \text{Weight}/\text{SPAN}) + 10.000$$

where SPAN corresponds to the individual capacity of the load cell.

Applying this relationship, we see that:

WEIGHT	POINTS
0	10.000
SPAN	50.000

So, a 35t load cell delivers a value of 10.000 points when there is no weight, and the value of 50.000 points when is loaded with 35 tones.

When entering this option, the equipment displays the message **CEL. XX** (where XX represents the number of load cells to monitor). Pressing the **T** or **B** keys change the selection, **INTRO** initiates the monitored points of the load cell selected and **FUN** takes you out of the option.

3.2 Weight Control Submenu (WE.CTR)

The Weight Control Submenu includes the rest of the weighing metrological parameters that do not alter the value of the weight obtained by the weighing module but that do alter the way the information is displayed and processed for use in the unit's different functions. These include filtering parameters, stabilisation parameters, zero saving, etc.

The options in this submenu can be consulted but not modified if the write mode of the weighing cartridge's metrological seal is locked (see section 4.1.1). If this is the case, when you try to change any of the submenu's configurable parameters, the "SWITCH" message will appear, to warn you that you cannot save any changes.

WE.CTR	STAB.T.		
	FILTER		
	FIL.DEP.		
	GRAVI.P.	P-1	P-2
	INIT.Z.		
	O-MEMO (*)		
	ZERO.AB.		
	MIN.WEI.		
	MV.CELL.		
	METROL.		
	TARE.KE.		
	ZER.NEG		
	UNIT		

(*) Does not appear if the legal Metrology option (**METROL.**) is activated.

3.2.1 STAB.T.

Stability time

Defines the time required to establish that the weight is stable, expressed in fractions of half a second.

The default value is 1 and the values range from 1 to 255.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down the **I** or **B** keys increases the speed at which the displayed value increases/decreases.

3.2.2 FILTER

Filter

Defines the level of filtering applied to the Weight value.

The higher the level, the more the oscillations are reduced, increasing the stability but also the time required to reach the value of the final weight.

The default value is 1 and the values range from 0 to 50.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.2.3 FIL.DEP

Filtering Window

Parameter used to calculate the number of ADC conversions required to obtain the weight value depending on the variations in weight at any time.

The higher the parameter, the more precise the weight, but the time required to reach a final weight value increases.

The default value is 64 and the values range from 0 to 255.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.2.4 GRAVI.P.

Gravity parameter

Coefficient that offsets the variation in weight that occurs when the unit is calibrated at a location with a different altitude to that of the place where it is currently used.

When you enter this option, the unit displays the “**P-1**” message to indicate that the value shown next corresponds to the gravity coefficient of the place where the equipment was calibrated (*see table and formula in APPENDIX I*).

To modify the displayed value, use **I**, to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value and go on to see the “**P-2**” message that indicates that the value shown next corresponds to the gravity coefficient (*see table and formula in APPENDIX I*) of the place where the equipment is being used. Again, to modify the displayed value, use the **I** key to increase the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value.

3.2.5 INIT.Z.

Initial Zero

Defines whether the unit must automatically calibrate to zero when it is started up.

This function is activated by default.

The **I** or **B** switch from **-YES-** to **-NO-**, the **FUN** key is used to exit the option without modifying the initial value and the **INTRO** key saves the selected value, taking you out of this menu.

3.2.6 0-MEMO (*)

Zero memorisation

(*) This function will not appear if the legal Metrology option (**METROL**) is activated.

Activates/Deactivates the option whereby pressing B can assign the average weight as the zero calibration when in weighing mode.

This zero calibration value cannot be modified if the write lock of the weighing cartridge’s metrological seal is activated (see section 4.1.1). If this is the case, when you press **B** to change the calibration zero value, the “**SWITCH**” message will appear, to indicate that it was not possible to save the new zero parameter and that it will be lost when the equipment is restarted.

This option is deactivated by default.

The **I** or **B** keys switch from **-YES-** to **-NO-**, the **FUN** key will take you out of the menu without changing the original value and the **INTRO** key saves the selected value, taking you out of this menu.

3.2.7 ZERO.AB

Zero absorption

The zero absorption mechanism readjusts the unit's zero value to offset any small deviations from the weight due to variations in temperature, dust accumulated on the weighing platform, etc.

This option allows you to change the number of weight divisions over which the mechanism must not act. The maximum value of this parameter is variable and depends on the result obtained when calibrating the equipment.

When you enter this option, the message "**MA. xx**" is displayed, where xx indicates the maximum possible value; the currently assigned value is then displayed.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value and takes you out of the option.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.2.8 MIN.WEI.

Minimum weight

This option allows you to modify the number of division under which the unit will not accumulate.

The default value is 20 and the values range from 1 to 255.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.2.9 MV.CELL.

Cell millivolts

This option shows the power (in mV) delivered by the cell connected to the equipment.

When you enter the function, the value of the power is shown in mV. Press the **FUN** or **INTRO** keys to leave this part of the menu.

3.2.10 METROL.

Legal metrology

Activates/Deactivates the metrological limits established in legal weighing regulations.

This option is not activated by default.

Keys **I** or **B** switch from **-YES-** to **-NO-**, the **FUN** key takes you out of the option without changing the original value and the **INTRO** key saves the selected value, taking you out of this menu.

3.2.11 TARE.KE.

Activation of tare key

Activates/Deactivates the option of taring the equipment by pressing the tare key (**T**) in the Weighing Mode.

This option is activated by default.

Keys **I** or **B** switch from **-YES-** to **-NO-**, the **FUN** key is used to leave this option without changing the initial value and the **INTRO** key saves the selected value, taking you out of this menu.

3.2.12 ZER.NEG.

Zero Negative

Activates/Deactivates the Auto-Zero mechanism for stable and negative weight values.

This option is deactivated by default.

The **T** or **B** keys switch from **-YES-** to **-NO-**, the **FUN** key takes you out of this part of the menu without changing the original value and the **INTRO** saves the selected value, taking you out of this menu.

3.2.13 UNIT

Weight units

Allows selecting the weight units of the equipment.

Possible values are **-NO-**, **KG** and **LB**

This option has Kg selected by default.

Keys **T** or **B** change between **-NO-**, **KG** and **LB**, **FUN** exits the option without modifying the initial value, and **INTRO** exits the option by saving the selected value.

3.3 Visual options Submenu (OTHER.P.)

The viewer options submenu includes general parameters of the unit (password accessing programming menu, viewing programme version, serial number, etc) and those related to peripherals (such as displays, battery, etc).

OTHER.P.	VERSIO	
	DEFAULT	
	PASSWD.	
	DIS.OFF	
	AUT.OFF	
	D.LIGHT	
	BATT	BAT.VOL
	.	BAT.CAL
	CHKSUM	APL.PRG.
	.	MTR.PRG.
	.	SCA.PAR.
	.	APL.PAR.
	SERIAL	
	ACT.TEC.	

3.3.1 VERSION

Program Version

This option shows the version of the unit's program.

The descriptor of the programme version consists of three different parts:

E	F	N	N	N	_	B	B	B	B	R	-	M	M	M
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Where:

- E: Identifies the type of equipment
- F: Identifies the variant of the type of equipment.
- NNN: Code number of standard version.
- BBBB: Code number of special version.
- R: Revised code number of special version.
- MMM: Code number of metrological firmware version.

When you enter this submenu, the descriptor of the programme version installed in the equipment is shown. Press **FUN** or **INTRO** to exit this option.

3.3.2 DEFAULT

Factory

This function re-establishes the default factory settings, including the metrological parameters stored in the weighing cartridge (zero, calibration, etc).

Careful! If you want to preserve the unit's metrological and calibration parameters, you must activate the write lock in the weighing module's metrological seal (see section 4.1.1)

When you enter this function by pressing **INTRO**, you will be asked whether you really want to re-establish the factory settings and the “-NO-” message appears by default. Pressing the **I** or **B** key will change the selection, pressing **FUN** will cancel the operation and take you out of this function and **INTRO** begins the process of restoring the factory settings. During the restoration process, a progress bar will appear and the unit will beep when it begins and finishes the process. Once the process has been completed it will return to the start screen.

3.3.3 PASSWD.

Password

This option allows you to establish a password for accessing the programming menu (or eliminating it by entering the value 0).

You can enter any numerical code of up to 6 figures.

When you enter the function, you will see the current password, which you can edit with **I**, increasing the value of the flashing digit, **B** to change digit, **FUN** to exit the option without saving and **INTRO** to save the displayed value and leave this option.

3.3.4 DIS.OFF

Display OFF

The equipment has a mechanism that will reduce the brightness of the display (or turn off the Back Light in LCD models) when a certain period has elapsed and no activity is detected in the unit during that time (stable weight and no button or key pressed).

This option allows you to establish the number of minutes of inactivity for this function to activate.

The default value is 0 (deactivated), with values ranging from 0 to 99.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.3.5 AUT.OFF

Auto OFF

The equipment has a mechanism that will turn it off when a certain period has elapsed and no activity is detected during that period in the unit (stable weight and no button or key pressed).

This option allows you to establish the number of minutes of inactivity for the device to power off.

The default value is “-NO-” (deactivated), with values ranging from 1, 5, 10, 30 or 60 minutes.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.3.6 D.LIGHT

Display Light

(only in devices with LED display)

This parameter establishes the brightness of the unit's LED display.

The default value is 7, with values ranging from 1 to 7.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

3.3.7 BATT

Battery

Submenu of options only applicable to battery-powered versions of the unit.

Allows you to see the power value of the battery (**BAT.VAL.**) option and calibrate the charging system (**BAT.CAL.**) option.

Depending on whether the battery is charging (if the equipment is plugged in) or discharging, the submenu will MODIFY its structure as follows:

If the battery is charging, the power value shown in the (**BAT.VAL.**) is not the battery's charged level but the voltage of the charge. In this case, it is possible to calibrate the charge measurement system as this has to be plugged into a power source for the calibration to be performed correctly. As a result, this option (**BAT.CAL.**) does not appear whilst the battery is discharging.

Consequently, depending on the charged/uncharged status of the batteries, the submenu will show one of the options or both options.

3.3.7.1 BAT. VOL.

Battery Voltage.

When entering this option, the unit will show the current voltage of the battery (charge status) or the charge voltage (calibration voltage of 12.00 Volts) depending on whether the equipment is or is not connected to the electrical network. Pressing **FUN** or **INTRO** will take you out of this function and pressing **FUN** next will take you out of the (**BATT**) submenu.

3.3.7.2 BAT.CAL.

Battery Calibration

The unit calibrates the Battery's charging system once.

This calibration is **ONLY** necessary if the (**BAT.VAL**) option shows a value other than "12.00" with the equipment connected to the electrical network.

When you enter the option the calibration process begins; the unit will automatically come out of this screen once the process has finished; by pressing the **FUN** key you then come out of the (**BATT**) submenu.

3.3.8 CHKSUM

Checksum

This submenu shows the different checksums of the unit's programme and parameters.

The checksums allow you to determine whether a programme loaded in the unit or the parameters with which it works have been modified.

The SC-A1 units have various checksum values; a checksum value for the application part of the programme (**APL.PRG.**), one for the metrological part of the programme (**MTR.PRG.**), one for the application parameters (**APL.PAR.**) and one (or various) for the weighing metrological parameters (**SCA.PAR.**) or (**PAR.SC.1**) and (**PAR.SC.2**) if the unit has twin-scales (one for each weighing cartridge).

The same programme versions will have the same programme checksums and it is normal for different versions to have different checksums. The parameter checksums change every time the parameters are modified. Whilst the weighing parameters (**SCA.PAR.**) can only be modified by entering the programming menu and provided

the write lock of the weighing cartridge's metrological seal is not activated (see section 4.1.1), the application parameters can change for various reasons. The checksum values are numerical values of 4 hexadecimal digits. Within the submenu, you can change the option using **I** or **B**, you can enter the selected option using **INTRO** and exit the submenu by pressing **FUN**.

3.3.8.1 APL.PRG

Application part of the Program.

Displays the checksum of the application part of the program.

Pressing **FUN** or **INTRO** will take you out of this option; then press **FUN** to come out of the **CHKSUM**.

3.3.8.2 MTR.PRG

Metrological part of the Program

Displays the checksum of the metrological part of the program.

Pressing **FUN** or **INTRO** will take you out of this option; then press **FUN** to come out of the **CHKSUM**.

3.3.8.3 SCA.PAR (or PAR.SC.1 / PAR.SC.2 in Twin-Scale systems)

Weighing Parameters

Displays the checksum of the metrological weighing parameters of each cartridge.

Pressing **FUN** or **INTRO** will take you out of this option; then press **FUN** to come out of the **CHKSUM**.

3.3.8.4 APL.PAR.

Application Parameters.

Displays the checksum of the application parameters.

Pressing **FUN** or **INTRO** will take you out of this option; then press **FUN** to come out of the **CHKSUM**.

3.3.9 SERIAL

Serial Number

Menu for checking the unit's serial number.

Enter this option by pressing **INTRO** and once inside you can exit by pressing **FUN** or **INTRO**.

3.3.10 KEYS.ACT.

Keys activation

Enables/Disables the functionality of the keys in Weight Mode, except for the key **[ON/OFF]** which can be disabled by selection bridge (See 4.4. point).

This option is enabled by default.

Keys **T** or **B** change between **-YES-** to **-NO-**, **FUN** exits the option without modifying the initial value, and **INTRO** exits the option by saving the selected value.

3.4 Serial communication options Submenu (-COM-)

Includes the parameters related to the different forms of serial communication that the unit provides for sending or receiving weighing information from/to external devices, such as RS232, RS485, Radio, Ethernet, Wi-Fi, etc.

As we have mentioned, the programming menu layout in a SC-A1 is adapted to the equipment's hardware configuration. In this case, the following serial communications Submenu tree is that of an SC-A1 with two serial ports or one RS232 and one.

-COM-	PORT x (*)	CONNEC.	-NO-				
.	.	.	PRINTR	-TYPE-	-STD-		
.	.	.	.	.	EPC.1K		
.	.	.	.	.	CUSTOM		
.	.	.	.	.	PAN-10		
.	.	.	.	.	TM-295		
.	.	.	.	.	GERMAN		
.	.	.	.	.	CUSTO2		
.	.	.	.	LINES			
.	.	.	.	FLO .CTR.	SW.HAND.		
.	.	.	.	.	RET.IMP		
.	.	.	.	CUTTER			
.	.	.	LABEL	-TYPE-	ZEBRA		
.	.	.	.	FLW.CTR	SW.HAND.		
.	.	.	.	.	RET.IMP		
.	.	.	REPEAT.	EMITTE.	SENSOC		
.	.	.	.	.	SENS.NW		
.	.	.	.	RECEIV.	PROTOC	SENSOC(1)	
.	
.	.	.	.	.	.	LEON (76)	
.	.	.	.	.	-KEYS-		
.	.	.	.	.	RE-GEN		
.	.	.	.	.	RELAYS		
.	.	.	.	.	ERR.COM		
.	.	.	-PC-	PROTOC	-SPAN-		
.	.	.	.	.	DECIM		
.	.	.	.	.	SENSOC(1)		
.	.	.	.	-SEND-	...	S.SEC	
.	.	.	.	.	LEON (64)		
.	.	.	.	.	-CONT-		
.	.	.	-TYPE-	RS232	BAUDS		
.	.	.	.	.	FRAME		
.	.	.	.	.	-TEST-		
.	.	.	RS485 (**)	NUMB			
.	.	.	.	BAUDS			
.	.	.	.	FRAME			
.	.	.	.	-TEST-			

(*) As the unit has two identical RS232 serial ports, the value of x can be 1 or 2, in other words **PORT 1** or **PORT 2**, (both are shown in the schema above).

(**) RS485 selection only appears with **PORT 2**.

PORT 1, PORT 2

Selection of Serial communication device.

You can change from “**PORT 1**” to “**PORT 2**” and vice-versa using the **B** or **I** keys; press **FUN** to come out of the selection submenu and **INTRO** to confirm the selection and proceed to the next configuration submenu.

3.4.1 CONNEC.

Connection

Menu for selecting the type of device to which the channel connects.

The device might be a Printer (**PRINTR.**), a Labeller (**LABEL**), a computer (**-PC-**) or a Repeater (**REPEAT.**), or (**-NO-**) if we don't want to use the device.

Change the selection using the **B** or **I** keys; press **FUN** to come out of the connection selection menu and press **INTRO** to confirm the selection and proceed to the next configuration submenu.

3.4.1.1 PRINTR.

Printer.

Menu for selecting the parameters for connecting with a printer. These include: Printer type or model (**TIPO**), number of white lines at the end of the ticket (**LINES**), Type of flow control in communicating with the printer (**FLW.CTR.**) and availability of the printer's paper cutting mechanism (**CUTTER**).

Change selection by pressing **B** or **I**; press **FUN** to come out of the printer connection configuration menu and **INTRO** to enter the selected option.

3.4.1.1.1 -TYPE-

Type

Printer Type or Model selection Menu.

The unit can connect to the following printers:

STD:	Epson Standard for 40-column tickets.
EPC.1K:	Fenix model EPC1000.
CUSTOM:	Custom Serial PLUS (40 compact columns).
PAN-10:	Fenix model PN10 (Panels)
TM-295:	Epson type TMU 295 (for Standard paper)
CUSTO2:	Custom model TG02 (24 columns)

Change the selection using **B** or **I**; press **FUN** to come out of the printer selection option and press **INTRO** to confirm the selection and proceed to the following configuration submenu.

3.4.1.1.2 LINES

Lines

Sets the number blank lines after the end of a Ticket.

The default value is 8 and the values range from 0 to 15.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** cancels the operation, taking you out of the option and **INTRO** saves the selected value, taking you out of this menu.

Holding down keys **I** or **B** increases the speed at which the displayed value increases/decreases.

3.4.1.1.3 FLW. CTR.

Flow Control.

Sets the type of flow control in the serial communication with the printer. The possible selectable values are: by software XON-XOFF (**SW.HAND**) or by delayed timing after each line print (**RET.IMP**).

Change the selection pressing **B** or **I**; press **FUN** to come out of the flow control selection option and **INTRO** to enter the selected option.

3.4.1.1.3.1 SW.HAND

Flow control by software (XON-XOF)

Activates/deactivates the software flow control option using the XON-XOFF protocol.

The default value is “-NO-“ (deactivated).

Pressing **I** or **B** changes the selection, **FUN** brings you out of the option without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.1.3.2 RET.IMP

Print delay

Adds a delay whose time you can set after each line print, to give the printer time to print the transmitted line.

The default value is 0 (deactivated) and values range from 0 to 15 in fractions of 0.5 Sec.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** takes you out of the option without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.1.4 CUTTER

Cutter (paper cutter in printer)

Specifies whether the selected printer has any automatic paper cutting mechanism.

The default value is “-YES-“ (with cutter).

Pressing **I** or **B** changes the selection, **FUN** brings you out of the option, cancelling the operation without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.2 LABEL

Labeller

Menu for selecting the labeller connection parameters, such as: labeller type or model (**TIPO**), and type of flow control in the communication with the labellers (**FLU.CTR**).

You can change selection using keys **B** or **I**, come out of the labeller connection configuration screen using **FUN** or enter the selected option using **INTRO**.

3.4.1.2.1 -TYPE-

Type

Menu for selecting labeller Type or Model.

The equipment can connect to the following:

ZEBRA: ZEBRA labeller or labeller compatible with EPL language.

GODEX: GODEX labeller.

Change the selection using **B** or **I**, or use **FUN** to come out of the labeller selection screen without saving and **INTRO** to confirm the selection and proceed to the following configuration submenu.

3.4.1.2.2 FLW .CTR.

Flow Control

Configures the type of flow control for the serial communication with the labeller. The possible selectable values are; XON-XOFF software protocol (**SW.HAND**) or delayed time mechanism after each line print (**RET.IMP**).

You can change the selection using **B** or **I**, use **FUN** to come out of the flow control selection screen or press **INTRO** to enter the selected option.

3.4.1.2.2.1 SW.HAND

Software flow control (XON-XOF)

Activates/deactivates the software flow control option by using the XON-XOFF protocol.

The default value is “-NO-“ (deactivated).

Pressing the **I** or **B** changes the selection, **FUN** brings you out of the screen without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.2.2.2 RET.IMP

Print delay

Adds a configurable time delay after each transmission of data.

The default value is 0 (deactivated), with values ranging from 0 to 15 in fractions of 0.5 Sec.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** takes you out of this screen without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.3 REPEAT.

Repeater

Menu for configuring the unit's connection so that it works as a repeater, either for sending weight information (**EMISOR**) or receiving weight information (**RECEPT**). Allows you to select the type of communication protocol (**PROTOC**) as well as various functioning parameters in receiver mode (**TECLAS**), (**ERR.COM**), etc.

You can select the mode, (**EMISOR**) or (**RECEPT**) using **B** or **I**, press **FUN** to come out of the repeater connection configuration screen or press **INTRO** to enter the selected mode.

3.4.1.3.1 **EMITTE.**

Emitter Mode

Determines the type of communication protocol for the connection of the equipment when working Repeater-EMITTER mode.

Allows you to select between the protocols (**SENSOC**) corresponding to the old SENSOCAR transmission protocol (and be compatible with older equipment) and the new protocol (**SENS.NW**).

Press **B** or **I** to change selection, **FUN** to exit the submenu without saving and **INTRO** to save the type of protocol selected.

3.4.1.3.2 **RECEIV.**

Receiver Mode

Configures the equipment's connection so that it works as a Repeater-RECEIVER.

The submenu allows you to choose among 40 different types of protocol (**PROTOC** option), send keys status to the Repeater-EMITTER equipment (**-KEYS-** option), set the reaction in the event of loss of communication with the Repeater-EMITTER equipment (**ERR.COM**) and if you have selected a protocol with limited weight information, you can complete it by locally defining the Full Scale value (**-SPAN-**) and the number of decimals (**DECIM**) of the weight information received, data that are necessary for processing the received weight values correctly.

Press keys **B** or **I** to change the selected option, **FUN** to come out of the selection screen and **INTRO** to enter the selected option.

3.4.1.3.2.1 **PROTOC**

Protocol Selection

Menu for selecting communication protocol for a connection defined as a Repeater-RECEIVER.

The different selectable protocols are shown in Appendix 2 of this manual.

Press **B** or **I** to change the selected protocol, **FUN** to come out of the screen without saving and **INTRO** to come out of the screen after saving.

3.4.1.3.2.2 **-KEYS-**

Keys

Enables the transmission of the status of the unit's **B** and **I** keys to the repeater-EMITTER equipment.

3.4.1.3.2.3 **ERR.COM**

Communication error warning

Determines how the unit reacts if communication with the Repeater-EMITTER equipment is lost.

If this option is enabled (**-YES-**), the equipment is configured to regularly (every 5 seconds) display the status and "**ERR.COM**" message and beep, whereas disabling the option (**-NO-**) means that the display will simply turn off.

Press keys **B** or **I** to change selection, **FUN** to exit this screen without saving and **INTRO** to save the selection.

3.4.1.3.2.4 -SPAN-

Full Scale

Defines the Full Scale value of the received weight values.

When we enter this screen, the device displays the current defined full scale value, allowing you to edit it using the **I** key for increasing the value of the flashing digit, **B** to change digit, **FUN** to leave this menu without saving and **INTRO** to save the displayed value and exit this option.

3.4.1.3.2.5 DECIM

Number of decimals

Assigns the number of decimals of the received weight values.

The possible values are 0, 1, 2 or 3.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** exits the option without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.1.4 -PC-

Communication with PC

Submenu for configuring the connection of the unit for communication with a computer.

Allows you to select the type of communication protocol (**PROTOC**) and the condition for beginning data transmission (**-SEND-**).

Change the selected option using the **B** or **I** keys, exit the submenu by pressing **FUN** or enter the selected option by pressing **INTRO**.

3.4.1.4.1 PROTOC

Protocol Selection

Menu for selecting communication protocol for the connection of the unit with a computer.

The different selectable protocols are shown in Appendix 3 of this manual.

Change the selected protocol using **B** or **I**, press **FUN** to exit this option without saving or press **INTRO** to save and exit.

3.4.1.4.2 -SEND-

Send

Menu for selecting the condition for starting weight data transmission to a computer. Allows you to select among:

- | | |
|---------------|---|
| -CONT- | Regular send configurable using the S.SEC option. |
| MANUAL | Send whenever the FUN or INTRO key is pressed (depending on the selected protocol). |
| STABLE | Sends data every time the weight becomes stable and provided that this value is not zero, and the equipment displays in some moment an inferior weight of that defined as minimum weight. The minimum weight value is calculated by multiplying the value configured in option MIN.WEI from submenu WE.CTR , for the value of a division which has been introduced in option -FRAC- from submenu RANGE in CALIBR . |

When you enter the submenu, you can change the option selected using **B** or **I**, leave the submenu without saving by pressing **FUN** or save and leave by pressing **INTRO**. If you have selected **-CONT-** the equipment will also allow you to configure the data dump intervals using the **S.SEC** option.

3.4.1.4.2.1 S.SEC

Transmissions by Second

Allows you to configure the weight data dump interval when configuring the equipment for continuous transmission whilst connected to a computer (PC).

The default value is 25 with values ranging from 1 to 25.

Pressing the **I** key increases the value, **B** decreases the value, **FUN** brings you out of the option, cancelling the operation without saving and **INTRO** saves the selected value, taking you out of this menu.

3.4.2 -TYPE-

Type

This submenu defines the type of interface (**RS232** or **RS485**), the speed of the communication (**BAUDS**) and the format (**FRAME**) of serial communication associated to the selected channel and in the case of the RS485 interface also the NUMBER of node that is assigned to your computer in case of being networked.

The submenu has a further option (**-TEST-**) for testing the interface and checking, on the physical plane, that it works correctly.

The interface type selection options appear when you enter the submenu.

You can change the selection using **B** or **I**, press **FUN** to come out of the screen and **INTRO** to confirm the selection and proceed to the following configuration submenu.

3.4.2.1 NUMBER

Number

This option configures the equipment identification number when it is part of network multipoint RS485 downstream devices.

Select values between 0 and 255. Value 0 disables the sending of the identification number.

We change the number of identification by pressing **B** or **I**, we exit the option with **FUN** without recording, and with **INTRO** recording the selected number.

3.4.2.2 BAUDS

Bauds

This option is used to configure the speed of communication of the interface.

Allows you to select normalised speeds from 1200 up to 115200 bps. The default value is 9600.

Press **B** or **I** to change the speeds, or press **FUN** to leave the screen without saving or **INTRO** to exit after saving the selected speed.

3.4.2.3 FRAME

Frame

This option configures the frame format of communication with the interface.

You can select frames of **7** or **8** data bits, **1** or **2** stop bits and parties **n** (no parity), **e** (even) and **o** (odd) in all combinations. The default value is **-n81-** (8 data bits, 1 stop bit and no parity).

Change the frame format using keys **B** or **I**, or press **FUN** to leave the option without saving or press **INTRO** to save the selected format and exit.

3.4.2.4 -TEST-

Test

This option allows you to test the interface and confirm that it is working properly, on the physical level.

The test and required testing conditions vary according to the type of interface.

Interface RS232:

For a RS232 interface, you must connect pins 2 and 3 (TX and RX) with the connector placed furthest to the communication wire connected to the equipment.

When you enter this option, the message "**EN ESP.**" Will appear; once the test has been performed, the results will be shown; these results may be:

"Error" Indicates some kind of problem in the communication: disconnected cable, communication hardware malfunction, or simply that the in the selected rs232 channel, the transmission and reception lines (pins 2 and 3) have not been connected, as required to perform the test.

"OK" Indicates that the test was performed correctly, even at the highest speed (bauds) possible (115.200).

"XXXXX" where XXXX corresponds to the maximum speed (bauds) at which the test could be performed correctly.
In a serial communication system, the length, threads section and quality of the cable used can create limits on the speeds at which communication can be established. To avoid subsequent communication problems, we recommend not assigning a speed (**BAUDS**) greater than that resulting from the test.

Interface RS485:

In an RS485 interface is not possible to perform a self-test line and display a result as it is a half-duplex interface and to transmit and receive transmitted simultaneously, so it would need two equipment to make the test. As to have more than one equipment is not always possible, to test RS485 communication is limited to constantly transmit the character "U" (55h) until the **ENTER** key is pressed, the speed and configured format in **BAUDS** and **FRAME** respectively.

3.5 External Configuration Submenu (CFG.EXT)

Allows you to access the equipment configuration parameters, for consultation and modification, externally from a computer (PC).

When you enter this submenu, the equipment will display the message “**EN ESP**” indicating that it is waiting to establish communication with a computer (PC). Use **FUN** or **ENTER** to exit this menu.

3.6 Language Submenu (LANGUA.)

The language Submenu allows you to select the language in which the equipment displays menus, prints the ticket and communications with the user.

Change the language using keys **B** or **I**, press **FUN** to come out of the selection without saving or **INTRO** to confirm and save the selection.

LANGUA.	SPANIS.
	PORTUG.
	FRENCH.
	ITALIA.
	ENGLIS.
	GERMAN

4 CONNECTIONS OF EQUIPMENT AND WRITE LOCK

4.1 Analogue Load cell connection

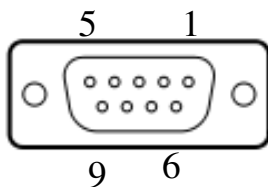
The weighing module for analogue cells allows the equipment to measure weights based on the signal delivered by an analogue cell.

It comes with a memory that saves all the parameters that affect the weight measurement and that are configured in the unit: calibrations, gains, linearity points, filters, etc. This memory has a mechanical write lock system that blocks (provided it is active) any alteration of any parameter stored in it (for more details take a look at section 4.1.1).

The cartridge is connected to analogue cells through a 9-pin female SUB-D connector, as shown below:



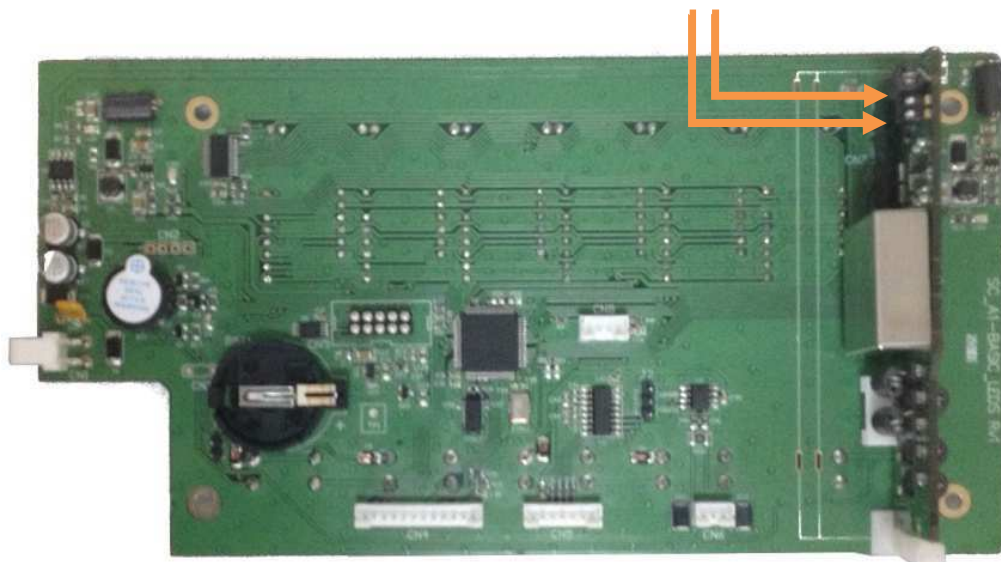
Analogue cell
(*Female Subd9 Connector*)



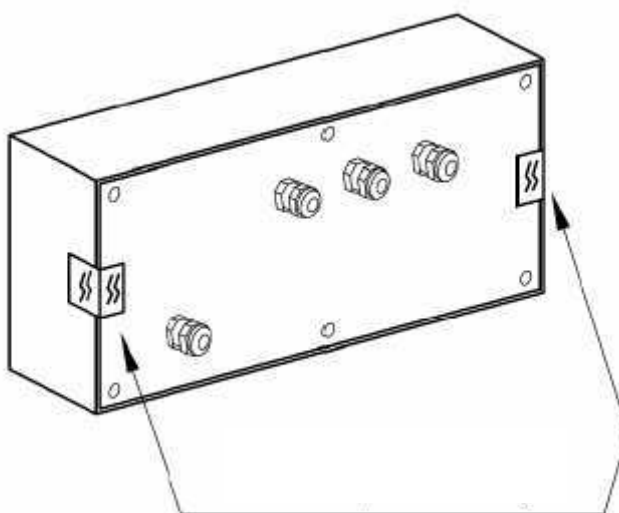
PIN	SEÑAL	4 HILOS	6 HILOS
1	Negative power (V-)	Black	Black
2	Negative signal (E-)	White	White
3	Ground	Mesh	Mesh
4	Positive signal (E+)	Green	Green
5	Positive power (V+)	Red	Red
6	Negative sense (S-)	Black	Blue
7	Not connected		
8	Not connected		
9	Positive sense (S+)	Red	Yellow

4.1.1 Write lock and metrological seal

The memory write lock mechanism consists of two micro-switches, accessible only from the inside of the equipment, which enable the writing (and modification of weighing parameters) only when the two micro-switches are in the ON position (towards the right).



To ensure that no one can manipulate the metrological parameters stored in the memory after calibrating or carrying out a metrological test of the system, two metrological seals have been placed on to stop anyone accessing (without breaking the seals) the lock mechanism (in both sides of equipment).



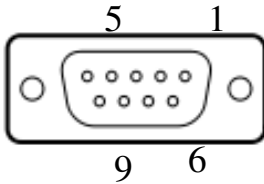
Apart from the seal system, the weight module has an internal counter that counts the number of times the parameters stored in its memory are modified. This counter cannot be restarted and its value is shown on the display whenever the equipment is started up (message “**C1 xxx**”).

4.2 Digital load cells connection

Digital load cells are connected through a 9-pin female SUB-D connector, as shown below.



Digital cell
(Female Subd9 Connector)



PIN	SIGNAL	4 HILOS
1	Negative power (V-)	Black
2	SDA/TR-	White
3	Ground	Mesh
4	SCL/TR+	Green
5	Positive power (V+)	Red
6	Not connected	
7	Not connected	
8	Not connected	
9	Not connected	

4.3 Connection serial ports RS232/485

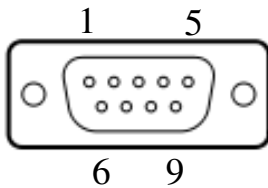
SC-A1 indicators have 2 serial channels (PORT1 and PORT 2) where in addition, the second one (PORT 2) can be selected to type of RS232 or RS485 interface. Both channels have a series SUB-D 9-pin male connector for connection, the lower connector corresponds to the first channel (**PORT 1**) and the upper connector to the second (**PORT 2**)



The functions assigned to each pin and how it is connected to the devices used most often are described in the following table:

PORT 1: RS-232 Communication

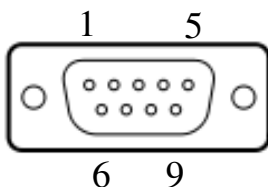
(Male Subd9 Connector)



PIN	SEÑAL	PC	SRP	LX300	ZEBRA
1	N.C.				
2	RXD	3			3
3	TXD	2	3	3	2
4					
5	GND	5	7	7	5
6	N.C.				
7	N.C.				
8	N.C.				
9	N.C.				
	BRIDGE		4-5	4-5	6-8
	BRIDGE		6-20		

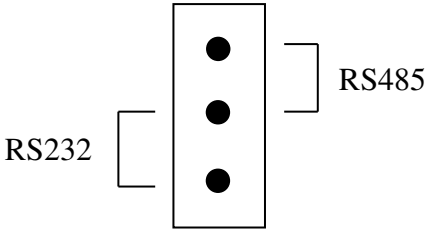
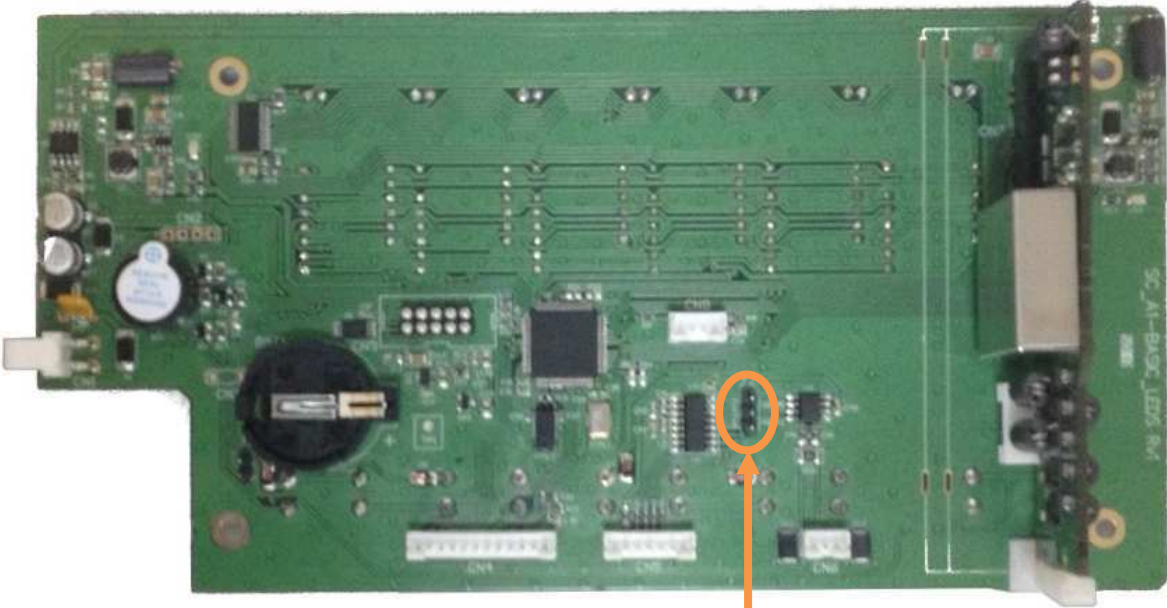
PORT 2: Comunicación RS-232 o RS-485

(Conector Subd9 macho)



PIN	SEÑAL	PC	SRP	LX300	ZEBRA
1	RTX- (B)				
2	RXD	3			3
3	TXD	2	3	3	2
4					
5	GND	5	7	7	5
6	N.C.				
7	N.C.				
8	N.C.				
9	RTX+ (A)				
	BRIDGE		4-5	4-5	6-8
	BRIDGE		6-20		

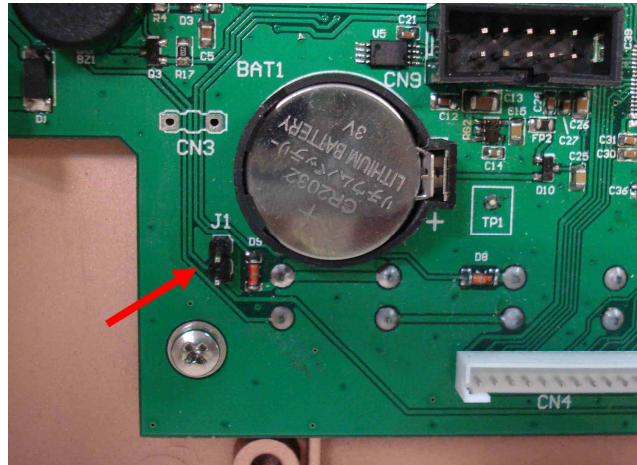
For PORT2, RS232/RS485 selection is made by a selection jumper inside the equipment, as is showed in the following diagram:



4.4 Automatic start-up of the equipment

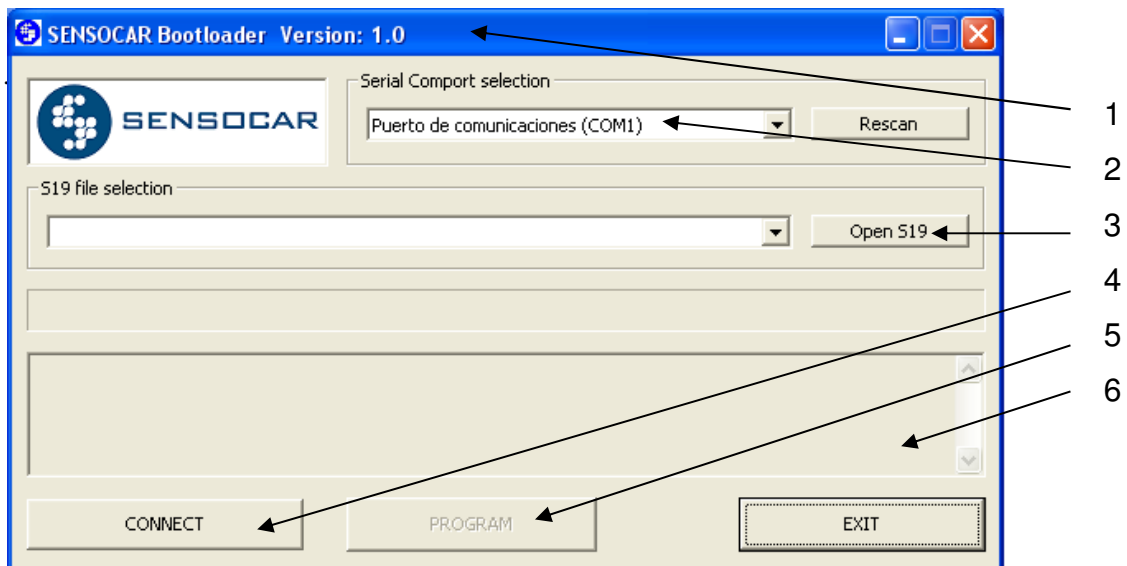
The equipment enables automatic start when receiving power. This requires placing a jumper on the J1 selection jumper. This jumper is accessible by removing the back cover of the equipment; it is placed at the bottom part, close to the battery (check image below).

When a jumper is inserted in J1 the **ON/OFF** key is also disabled, thus preventing the equipment to shut down from the keyboard.



5 FIRMWARE UPDATE

1. Start the *Sensocar Bootloader* software.
2. Connect a crossed RS232 cable between the PC and Channel 1 of the indicator, selecting the PC port (COM) in the programme.
3. Select the firmware file that will be loaded.
4. Click on [**Connect**] and turn on the equipment before 10 seconds elapse.
5. Once communication with the indicator has been established ([**Connect**] button changes to [**Quit/Run**]), click on [**PROGRAM**] to start loading or [**Quit/Run**] to abort.
6. When the programme displays the message “**DOWNLOAD SUCCESFUL**”, the loading process has finished and the equipment will have been updated.
7. Turn off and restart the indicator.



6 APPENDICES

6.1 APPENDIX I – GRAVITY PARAMETERS

The value of the gravity parameter depends on the latitude (y) and height (h) of the place where this parameter is calculated. This parameter can be determined by the following formula:

$$g = g(y, h) = 9,780327 \cdot (1 + 5,3024 \cdot 10^{-3} \sin^2(y) - 5,8 \cdot 10^{-6} \sin^2(2y)) - 3,086 \cdot 10^{-6} h]$$

where (y) represents the latitude of the place (in radians) and (h) the height (in meters).

THE FOLLOWING IS FOR INFORMATION ONLY:				
In Spain, the gravity zones for NAWIs are not regulated.				
Our manufacturers and our notified bodies use the actual value of the places.				
For your information, please find enclosed a list of gravity values in Spain.				
City	Longitude	Latitude	Altitude (m)	gravity value (miligales)
ALBACETE	-1° 51' 18,0"	38° 59' 12,0"	680,00	979885,95
ALICANTE	-0° 29' 12,0"	38° 21' 18,0"	35,00	980026,52
ALMERIA	-2° 27' 48,0"	36° 50' 06,0"	10,00	979904,33
AVILA	-4° 41' 30,0"	40° 39' 12,0"	1140,00	979923,49
BADAJOS	6° 58' 54,0"	38° 53' 30,0"	190,00	980037,69
BARCELONA	2° 07' 00,0"	41° 23' 12,0"	64,00	980297,82
BURGOS	-3° 42' 30,0"	42° 20' 06,0"	854,00	980140,41
CÁCERES	-6° 22' 60,0"	39° 27' 42,0"	460,00	979999,79
CASTELLÓN	-0° 02' 08,0"	40° 00' 24,1"	20,10	980161,36
CORDOBA	-4° 47' 18,0"	37° 52' 42,0"	105,00	979935,18
CUENCA	-2° 08' 06,0"	40° 04' 00,0"	920,00	979881,55
GERONA	2° 49' 12,0"	41° 58' 60,0"	70,00	980330,89
GRANADA	-3° 36' 18,0"	37° 11' 12,0"	700,00	979653,05
HUELVA	-6° 56' 36,0"	37° 15' 18,0"	12,00	979970,41
HUESCA	-0° 24' 36,0"	42° 08' 06,0"	456,00	980214,51
LEÓN	-5° 34' 18,0"	42° 35' 30,0"	820,00	980159,21
LÉRIDA	0° 37' 60,0"	41° 37' 18,0"	152,10	980250,66
LUGO	-7° 33' 06,0"	43° 01' 00,0"	424,00	980346,55
MADRID	-3° 42' 36,0"	40° 26' 42,0"	690,70	979955,61
MÁLAGA	-4° 23' 36,0"	36° 43' 36,0"	60,30	979900,17
MALLORCA	2° 39' 12,0"	39° 34' 36,0"	22,00	980161,64
MURCIA	-1° 07' 36,0"	37° 59' 18,0"	50,00	979993,87
ORENSE	-7° 52' 18,0"	42° 21' 00,0"	129,00	980313,05
OVIEDO	-5° 51' 18,0"	43° 21' 30,0"	245,00	980415,78
PAMPLONA	-1° 39' 37,0"	42° 49' 34,0"	415,27	980266,11
PONTEVEDRA	-8° 38' 12,0"	42° 25' 30,0"	20,00	980380,47
SALAMANCA	-5° 40' 12,0"	40° 58' 00,0"	805,00	980046,62
SAN SEBASTIAN	-1° 58' 35,0"	43° 19' 07,0"	6,08	980436,73
SANTANDER	-3° 48' 24,0"	43° 27' 48,0"	5,00	980497,37
SANTIAGO	-8° 33' 12,0"	42° 52' 36,0"	244,60	980401,13
SEVILLA	-5° 59' 18,0"	37° 22' 54,0"	10,00	979937,23
SORIA	-2° 28' 12,0"	41° 45' 36,0"	1044,30	980028,58
TARRAGONA	1° 15' 36,0"	41° 07' 16,0"	67,53	980257,99
TALAVERA	-4° 49' 12,0"	39° 57' 42,0"	370,00	980029,98
(TOLEDO)				
TERUEL	-1° 06' 30,0"	40° 20' 42,0"	912,00	979905,82
VALENCIA	-0° 21' 36,0"	39° 28' 36,0"	11,00	980113,45
VALLADOLID	-4° 43' 54,0"	41° 38' 54,0"	692,00	980097,32
ZAMORA	-5° 44' 30,0"	41° 31' 00,0"	639,30	980139,58
ZARAGOZA	-0° 54' 00,0"	41° 38' 30,0"	225,00	980223,23
LAS PALMAS	-15° 26' 17,0"	28° 08' 17,0"	3,00	979373,57
TENERIFE	-16° 14' 50,0"	28° 27' 57,0"	4,60	979394,75

6.2 APPENDIX II - PROTOCOLS FOR A REPEATER-RECEIVER CONNECTION

NAME	BYTES	DESCRIPTION
SENSOC		Old communication protocol between SENSOCAR repeaters
SENS.NW		New communication protocol between SENSOCAR repeaters
SOEHNH	26	<p>"U"+under+over+est+(11<SP>)+sig+weight(5)+<SP>+"kg"+<CR>+<LF></p> <p>Where:</p> <p>under: ("1" if overload negative/"0" no) (negative overload flag) over: ("1" if overload positive/"0" no) (positive overload flag) est: ("1" if stable/"0" no) (stable weight flag) sig: (" " if positive/"-" if negative) (sign flag)</p>
SYSTEC	17	"S"+<SP>(est/"D")+(3<SP>)+peso(7)+<SP>+"kg"+<CR>+<LF>
SYS.MUL	20	"W"+numvis(2)+"S"[SYSTEC protocol frame]
TOLEDO	15	<p><STX> + decimals[0..3] + flg + net(5) + <SP> + tare(5) + <CR></p> <p>Where the byte flg:</p> <p>Bit 7-4: 0 Bit 3: stable weight flag Bit 2: overload flag Bit 2: negative weight flag Bit 1: net weight flag</p> <p>(typical frame: E71)</p>
TOLED.2	17	<STX>+status(3)+weight(6)+tare(6)+<CR>+CRC(optional)
-S400-	9	<STX>+weight(7)+<CR>
-EPEL-	12	<STX>(3<SP>)+weight(7)+<CR>
IE21.5	19	<p>"S" + est + <SP>+ sig + (3<SP>) + weight(6) + <SP> + "kg" + <SP> + <CR> + <LF></p> <p>Where:</p> <p>sig: (" " if positive/"-" no) (overload flag) est: ("D" if stable/" " no) (stable weight flag)</p> <p>(typical frame: E72. Continuous mode)</p>
IE150 (7 bytes)	7	<p>weight(5) + status + <CR></p> <p>Where the byte status:</p> <p>Bit 7-6: 0 Bit 5-4: 1 Bit 3: tare flag Bit 2: stable weight flag Bit 2: minimum weight flag Bit 1: zero flag</p>
S-120	10	<STX> + weight(6) + <SP> + <CR> + <LF>
MATRIX	18	<STX> + (5<SP>) + (sig/<SP>) + peso(7) + status(2) + <CR> + <LF>
EUROBI	11	<p><STX> + status + <SP> + weight(7) + <CR></p> <p>Where the byte status:</p> <p>Bit 6: stable weight flag Bit 1: Net weight flag</p>
HBM	17	<SP> + status + <SP> + sig + weight(7) + (2<SP>) + unit(2) + <CR> + <LF>
AVERY	18	<STX> + (3<SP>) + "99" + <SP> + weight(7) + <SP> + "kg" + <CR> + <LF>
SCHENC	24	<STX> + (2<SP>) + weight(7) + (2<SP>) + tare(7) + <SP> + status(2) + <LF> + <CR>

GRAVIT	17	<STX> + 00 + weight(6) + tare(6) + 0 + <CR>
COUGAR	18	<STX> + status(3) + weight(6) + tare(6) + <CR> + CRC
LAUMAS	19	"&" + "N" + weight(6) + "L" + gross(6) + "I" + CRC(2) + <CR>
-S-	8	Sig + weight(6) + <CR>
EXA	11	Command: "\$" <STX> + status + SP + weight(7) + <CR> <i>status: 0+0+1+0+cer+weightmanual+tare+notare</i> <i>Si EST => status=status+0x20</i>
HBM.AED.	10	(<SP/"-") + weight(7) + <CR> + <LF>
MARECH.	18	Command: G+W+<CR> (3 bytes) "W" + sig + net(5) + sig + gross(5) + status(2) + CHKSUM(2) + <CR> <i>status: b.6 NET, b.4 EST, b.3 CER</i>
-TR.60-	12/30	<STX> + P + weight(8) + CRC + <CR> 0 <STX> + B + weight(8) + T + weight(8) + N + weight(8) + CRC + <CR>
-DFI-	19	"s" + weight(XXX.XX) + <SP> + u + <SP> + z + <SP> + py + <SP> + LB + <CR> + <LF>
X-3000	3..9	weight(1..7) + <CR> + <LF>
DAT.400	24	<STX> + sta + weight(6) + gross(6) + peak(6) + <ETX> + CRC(2) + <EOT>
-TASF-	12/6/6	"\$" + num(2) + sig(<SP>/-) + <SP> + pts(6) + <CR> "\$TE" + numid(2) + <CR> (continuous) "\$ZE" + numid(2) + <CR> (zero rem)
PIC800	18	Command: "P" <STX> + E + <SP> + C + <SP> + sig + weight(7) + <ETX> + CHK(2) + <LF> + <CR>
PT800	11	<STX> + <SP>(2) + sig + weight(5) + <ETX> + <CR>
I-200	13	"01" + gross(7) + u(3) + <STX>
HBM-2K	11	<STX> + sig + weight(7) + sta + <ETX>
MD	18	<STX> + ndec + sig + weight(7) + SP(5) + "0" + <CR> + <LF>
PR1613	18	<STX> + MODO + STA(2) + weight(6) + <ETX>
HJPL	19	[NN] + HH + "," + KK + "," + weight(8) + "," + UU + <CR> + <LF> Includes [NN] for RS485 communication HH = "OL" or "ST" KK = "NT" (If there is tare)
ID IP	19	"S" + "D" + (5<SP>) + weight(6) + <SP> + "KG" + <SP> + <CR> + <LF>
LEON	9	status + sig + PESO(6) + <CR>

Where:

SYMBOL	HEX	DEC	DESCRIPTION
<STX>	02	2	Start of Text
<ETX>	03	3	End of Text
<CR>	0D	13	Carriage Return
<SP>	20	32	Space
<LF>	0A	10	Line Feed
<EOT>	04	4	End Of Transmission
<ENQ>	05	5	Enquiry
<SO>	0E	14	Shift Out
<SI>	0F	15	Shift In

6.3 APPENDIX III - PROTOCOLS FOR CONNECTION WITH PC

NAME	BYTES	DESCRIPTION		
SENSOC		Continuous transmission (sends the net weight continuously by default) Transmission by request <i>If the equipment is within a viewer network, a viewer number other than 0 must be assigned to it.</i>		
		Viewer No 0 Response: xy Response: Response to lower case (flags): F1(bits): neg|bat|est|cer|net|T|B|M	Signo+weight(7)+<CR> xy+:+<SP>+Sig+weight(7)+<CR> (xy+:+<SP>)+F1+weight(7)+<CR>	<i>(Bytes)</i> 9 13 9/13
		Response to relays reading: Each set consist of a relays mask of 8bit. The sets or relays not being used will be filled with '1's Response to battery level:	xy+:+<SP>+C8..C1+<CR> xy+:+(5<SP>)+level(3)+<CR> Level="NOB" (no battery) Level="OK ", "LOW" (1bit) Level=xxx (1byte)	13 13
		General commands: Activation for request	S+P+<CR>	3
		Net weight	S+N+<CR>	3
		+flags	S+n+<CR>	3
		Gross weight	S+B+<CR>	3
		+flags	S+b+<CR>	3
		DIG: pts. cé. Xx	S+g+xx+<CR>	5
		DIG: net cé. Xx	S+G+xx+<CR>	5
		Continuous	S+F+<CR>	3
		Stable mode	S+E+<CR>	3
		Zero	S+C+<CR>	3
		Tare	S+T+<CR>	3
		Manual tare	S+J+Tare(6/7 with decimal)+<CR>	9/10
		Tare scale	S+D+<CR>	3
		Battery Level	S+L+<CR>	3
		Acknowledge	S+A+<CR>	3
		Serial Number	S+S+<CR>	3
		Programme version	S+V+<CR>	3
		Enter /Print	S+I+<CR>	3
		Reduced weight	S+M+<CR>	3
		Register DSD	S+W+<CR>	3
		Read relays	S+U+<CR>	3
		Activate relays set C1 "0": Closed "1": Open	S+Y+mask(C1..C8)+<CR>	11
		Displays message in screen	S+Z+cccccc+<CR>	9

		Erase message of the screen and comes back to weight mode	S+z+<CR>	3
		Addressable Commands:	S+xy+genericletter+<CR>	5
		<i>In metrology: Sig+Weight (7):</i> <i>“_____” if weight negative</i> <i>“^^^^^^^^^^” if overload</i> <i>C8..C1: 8 sets of relay masks (up to 64 relays). C1 is current.</i>		
SENS.NW		New communication protocol between SENSOCAR repeaters		
TOLEDO	15	<STX> + decimals[0..3] + flg + net(5) + <SP> + tare(5) + <CR> Where the byte flg: Bit 7-4: 0 Bit 3: stable weight flag Bit 2: overload flag Bit 2: negative weight flag Bit 1: net weight flag (typical frame: E71)		
GRAVIT	17	<STX> + 00 + weight(6) + tare(6) + 0 + <CR>		
-PG-	20	sig + grossweight(7) + sig + netweight(7) + <SP> + Num(2) + <CR>		
EXA	11	Command: “\$” <STX> + status + SP + weight(7) + <CR> <i>status: 0+0+1+0+cer+manualweight+tare+notare</i> <i>Si EST => status=status+0x20</i>		
PG2	45	Continuous transmission Transmission due to stable weight Transmission by pressing ENT (accumulates and sends) “B” + grossweight (7) + “T” + tareweight(7) + “N” + weight(7) + “A” + (3<SP>) + weightacc(7) + “P” + <SP> + points (7) + <CR>		
METLER	13/18	Continuous transmission Transmission due to stable weight Transmission by pressing ENT (accumulates and sends) Without Tare: <STX> + <SP> + sig + Weight(5) + <SP> + “kg” + <CR> + <LF> With Tare: <STX> + (2<SP>) + sig + Weight(5) + <SP> + “kg” + <SP> + NET + <CR> + <LF>		
NETSCH	22	Continuous transmission <STX> + (4<SP>) + weight(5) + (5<SP>) + weightTare(4) + <SP> + A + <CR> Where: A: ‘3’ if weight stable / ‘1’ if not		
IE21.2	13	Continuous transmission Transmission due to stable weight Command: <STX> + VIS + <ENQ> + <ETX> <STX> + VIS + weight(4) + est + scar + 0 + 0 + FRAC + ncer + <ETX> Where: est: (“1” if weight stable / “0” if not) scar: (“1” if overload/ “0” if not) ncer: Number of “0”s in fraction		
IE21.5	19	Continuous transmission “S” + est + <SP>+ sig + (3<SP>) + weight(6) + <SP> + “kg” + <SP> + <CR> + <LF> Where: sig: (“ ” if positive/“-” no) (overload flag)		

		est: ("D" if stable/" " no) (stable flag weight)
IMARCH	9	Continuous transmission Transmission due to stable weight Command: "W"
		<STX> + weight(7) + <CR>
MOBBA	10	Continuous transmission Transmission due to stable weight Command: <STX> + <ENQ> + <ETX>
		<STX> + flg + weight(7) + <ETX> Where: flg: ("?" if unstable / "-" if negative / "+" if positive)
IE150	7	weight(5) + status + <CR> Where the byte status: Bit 7-6: 0 Bit 5-4: 1 Bit 3: tare flag Bit 2: stable weight flag Bit 2: minimum weight flag Bit 1: Zero flag
CYB20	33	Command: ":01040D2000623" + <CR> + <LF>
		":01040C0303" + net(6) + "000000000000" + CRC(2) + <CR> + <LF>
EXAR.R	13	Weight Command: <80h> + NumID(00h..1Fh) Command BroadCast: "\$"
		<STX> + status + SP + weight(7) + <CR> status: 0+0+1+0+cer+manualweight+tare+notare (If Weight Stable => status=status+0x20)
EPEL.A	11	Command: "\$"
		<STX> + status + weight(8) + <CR> status: 0+0+1+0+cer+manualweight+tare+notare (If Weight Stable => status=status+0x20)
EPEL.80	8	Command: "\$"
		weight(7)+<CR> if weight negative => weight(7) = "AAAAAAA"
EPEL.AN	12	Command: "\$"
		<STX> + status + weight(8) + <CR> status: 0+0+1+0+cer+manualweight+tare+notare (If Weight Stable => status=status+0x20)
CAMP.A	13	Continuous transmission
		tarehex(3) + weighthex(3) + (6<00h>) + CRC Where: sum of bytes
-S100-	10	Command: <ENQ> <STX> + weight(6) + "0" + <ETX>
-S400-	10	Continuous transmission (N82)
		<STX>+poids(7)+<ETX>+<CR> Ex1: weight: " 23.456" (weight with decimals) Ex1: weight: " 23456." (weight without decimals)
GRAVI.2	10	Continuous transmission Command1: "BRUTO" + <CR> Command2: "LEDS" + <CR>

		Gross(6) + "." + CR+":>" Est + "0" + Cero + "0001" + <CR> + CR+":>"
ARPEGE	18	Continuous transmission Command: "GW" + <CR> "W" + sig + net(5) + sig + gross(5) + status(2) + chksum(2) + <CR> sig : "+"/"-" status: bit(6) NET, bit(4) EST, bit(3) ZERO
		Command: G+W+<CR> (3 bytes) "W" + sig + net(5) + sig + gross(5) + status(2) + CHKSUM(2) + <CR> status: b.6 NET, b.4 EST, b.3 CER
-S-	8	Continuous transmission Sig + weight(6) + <CR>
SPIDER	28/19	Continuous transmission and by stable weight (Cont) "S" + <SP> + sta + (3<SP>) + net(7) + (2<SP>) + "kg" + <CR> + <LF> (Stable W) "G" + (9<SP>) + net(7) + (2<SP>) + "kg" + (4<CRLF>) sta: "S":Stable, "D":Unstable, "+" :Overload
EV2001	16	Transmission on request: "XB" + <CR> <SP> + sig + weight(7) + <SP> + "kg" + <SP> + "B" + <CR> + <LF>
		Command: "#" + <SP> + CDR + <LF> "#" + CDA + data(5) + <CR> + status + <CR> + XOR(2) + <LF> CDR = 10H, 12H, 16H, 18H, 1AH, 1CH, 14H, 20H Status (LSN): ERR+NEG+CER+EST CDA = CDR+1
PG3	20	Transmission caused by pressing FUN key. Sign + netweight(7) + Sign + tare(7) + <SP> + NumVisor(2) + <CR>
DLT-30	10	Continuous transmission Command: "\$" + <CR> <STX> + weight(7) + <ETX> + <CR>
TF-1K	9	Continuous transmission Command: <ENQ> <STX> + weight(6) + <CR> + <ETX>
DAT.400	24	Continuous transmission <STX> + sta + weight(6) + gross(6) + peak(6) + <ETX> + CRC(2) + <EOT>
MT	43	Continuous transmission <STX> + gross(7) + <SP> + "kg" + <SP> + Tare(7) + <SP> + "kg" + <SP> + "T" + <SP> + <SO> + Netro(8) + <SP> + "kg" + <SP> + "N" + <SI> + <CR> + CRC + <LF>
START	16	Continuous transmission sig + <SP> + weight(7) + pdec + (4<SP>) + <CR> + <LF>
GRAM	20	Continuous transmission "US,GS," + sig + weight(7) + (2<SP>) + "kg" + <CR> + <LF>
-CAS-	22	Continuous transmission AB + CD + (2<SP>) + weight(8) + <sp> + "kg" + <CR> + <LF> Where: If Stable => AB = "ST" Not stable => AB = "US" Overload => AB = "0L" Gross => CD = "GS" Net => CD = "NT"

Where:

SYMBOL	HEX	DEC	DESCRIPTION
<STX>	02	2	Start of Text
<ETX>	03	3	End of Text
<CR>	0D	13	Carriage Return
<SP>	20	32	Space
<LF>	0A	10	Line Feed
<EOT>	04	4	End Of Transmission

<ENQ>	05	5	Enquiry
<SO>	0E	14	Shift Out
<SI>	0F	15	Shift In

6.4. APPENDIX IV - ERROR MESSAGES WITH DIGITAL LOAD CELLS

During the implementation of a system of digital load cells is common to that may occur errors in the configuration or the wiring. To aid in the diagnosis of errors that may occur during this phase, the equipment shows a series of error messages whose format and coding can be found in the following table.

All error messages related with digital load cells have the following format “**E.xx.C.nn**”, where **xx** is error code and **nn** the number of the load cell affected (**nn** takes the value 00 if the problem affects all load cells).

CODE	DESCRIPTION	RECOVERY
01	Excess consumption in the line. (short-circuit on the supply line to the digital load cell)	For security the equipment cuts the power to the digital load cells. To restore it is necessary to press any key of the indicator. If the problem persists the error message reappears and cuts again the power to the load cells.
02	Error in the communication with load cell nn .	The message disappears when retrieved back the communication with the load cell.
03	The load cell nn is delivering a weight value abnormally high (defective or heavily loaded load cell)	The message disappears when the weight value delivered by the load cell is within normal margins.
04	The load cell nn is delivering a weight value abnormally low (possibly due to a breakdown load cell)	The message disappears when the weight value delivered by the load cell is within normal margins.
05	Possible crossed line between the negative power supply (black wire) and some signal wires from SDA (white) and/or SCL (green)	The equipment is automatically recovered once the problem is solved.
06	Possible crossed line between signal wires; SDA signal wire (white) and SCL signal wire (green)	The equipment is automatically recovered once the problem is solved.

