

Alphanumeric Truck Scale Display Model SC-20

PROGRAMMING



TABLE OF CONTENTS

1. PROGRAMMING ACCESS.....	3
2. PROGRAMMING MENU	4
3. DESCRIPTION OF THE MENU OPTIONS.....	5
3.1. SCALE.....	5
3.2. ZERO	5
3.3. ADJUSTMENT	5
3.4. FINE ADJUSTMENT	6
3.5. EXIT	6
3.6. DISPLAY	6
3.6.1. FRACTION.....	6
3.6.2. SPAN	6
3.6.3. STABILITY TIME.....	6
3.6.4. RESPONSE TIME	7
3.6.5. STABILITY WINDOW	7
3.6.6. FILTER WINDOW	7
3.6.7. FILTER	7
3.6.8. ZEROIN	7
3.6.9. DISPLAY LIGHT.....	8
3.6.10. ZERO AB.....	8
3.6.11. FACTORY	8
3.6.12. CLOCK	8
3.6.13. VERSION.....	8
3.6.14. SERIAL NUMBER	8
3.6.15. ZERO CONVERSION.....	8
3.6.16. GAIN CONVERSION.....	8
3.6.17. CEL MV.....	8
3.6.18. RES. CL. (Restore delete password).....	8
3.6.19. METROL. (Metrology)	9
3.6.20. TARE AC.	9
3.6.21. 0-NEG	9
3.6.22. PRINT DSD.....	9
3.6.23. EXIT	9
4. DIGITAL SC20.....	10
4.1 NUMBER OF CELLS	10
4.2 CELLS UNIT CAPACITY	10
4.3 UNIT GAINS (ANGLES).....	11
4.5 RESET UNIT GAINS	11
4.6 OTHER OPTIONS	11
4.6.1 RESPONSE TIME	11
4.6.2 ZERO ABSORPTION TIME	11
4.6.3 FILTER WINDOW.....	11
4.6.5 FILTER ORDER.....	11
4.6.6 ROBUSTNESS	11
4.6.7 CONVERTER UNIT GAINS	11
4.6.8 CELLS.....	12
4.6.9 CHANGE CELL NUMBER	12
4.6.10 CELLS TEST	12

3.6.11. *PRINT DSD*..... 12

APPENDIX I: SC20V2 INDICATORS UPDATING..... 12

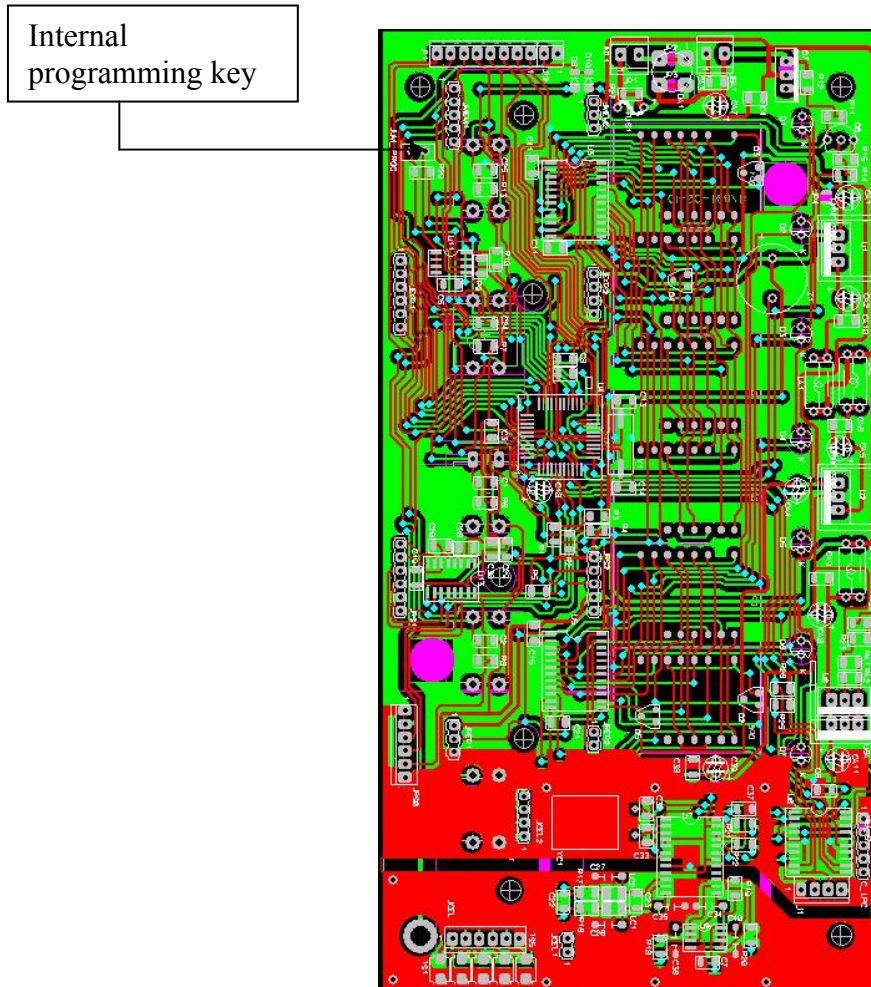
APPENDIX II: DIGITEL LOAD CELLS (POR PRENSA O POR CONECTOR)13

APPENDIX III: PARAMETERS BY DEFAULT OF A LX-300. 14

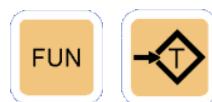
APPENDIX IV: ADDITIONAL 4-20MA..... 15

1. PROGRAMMING ACCESS

In order to access the main programming menu, it is essential for the bridge to be connected (internal programming key), which is located on the electronics board of the display.



Upon connecting the display, and while viewing the scroll message, “SC.20 2007 Truck Weighing”, simultaneously press the following keys:



While these keys are pressed, various beeps are emitted until appear -PROG-. When the two keys are released, the main programming menu is entered, and the SCALE function appears on the display.



Using , the option indicated on the display is accessed.

Using  & , go up or down to the previous or next options.

Pressing first  &  at the same time, the option is stored in the memory. The display indicates that it has been recorded in memory when appear -----.

2. PROGRAMMING MENU

The programming menu consists of main menu and a submenu, as shown below:

SCALE	
ZERO	
ADJUSTMENT	
FINE ADJUSTMENT	
EXIT	
DISPLAY	Fraction
	Span
	Stability time
	Response time
	Stab. Window
	Filter Window
	Filter
	Zero in (Zero stored)
	Display light
	Zero Ab.
	Factory
	Clock
	Version
	Serial number
	Ze. Convers.
	Ga. Convers.
	Cel. Mv.
	Res. Cl.
	Metrol.
	Tare Ac.
	0-neg
	Print DSD
	Dump DSD
	Exit

3. DESCRIPTION OF THE MENU OPTIONS

3.1. SCALE

The following scales appear in Kg (initial 6.000, 6 Kg)

NUM.	SCALE	FRACTION
0	3.000 (3kg)	1 gr
1	6.000 (6kg)	2 gr
2	6.000 (6kg)	1 gr
3	15.000 (15kg)	5 gr
4	15.000 (15kg)	2 gr
5	30.000 (30kg)	10 gr
6	30.000 (30kg)	5 gr
7	60.000 (60kg)	20 gr
8	60.000 (60kg)	10 gr
9	150.000 (150kg)	50 gr
10	150.000 (150kg)	20 gr
11	300.0 (300kg)	1 (100 gr)
12	300.000 (300kg)	50 (50 gr)
13	600.0 (600kg)	2 (200 gr)
14	600.0 (600kg)	1 (100 gr)
15	1500.0 (1500kg)	5 (500 gr)
16	1500.0 (1500kg)	2 (200 gr)
17	3000 (3000kg)	1 (1 kg)
18	3000.0 (3000kg)	5 (5 kg)
19	6000 (6000kg)	2 (2 kg)
20	6000 (6000kg)	1 (1 kg)
21	15000 (15000kg)	5 (5 kg)
22	15000 (15000kg)	2 (2 kg)
23	30000 (30000kg)	10 (10 kg)
24	30000 (30000kg)	5 (5 kg)
25	60000 (60000kg)	20 (20 kg)
26	60000 (60000kg)	10 (10 kg)
27	150000 (150000kg)	50 (50 kg)
28	150000 (150000kg)	20 (20 kg)

!Important!

- If the led is illuminated →0←, the selected scale is at 6000 divisions
- If the led is not illuminated, the selected scale is at 3000 divisions

3.2. ZERO



Press  to store weighing equipment zero in the memory.

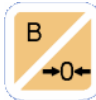
3.3. ADJUSTMENT



➔ **Quick adjustment:** At the same time, press  &  in order to increase the value on the display and make it coincides with the weight deposited on the platform.

At the same time, press  &  in order to decrease the value on the display and make it coincide with the weight deposited on the platform.

→ **Slow adjustment:** Pressing  the value on the display is increased in order to make it more accurately coincide with the weight deposited on the platform.

Pressing  the value on the display is decreased in order to make it more accurately coincide with the weight deposited on the platform. To store the adjustment in

the memory, press at the same time and in the given order  & .

3.4. FINE ADJUSTMENT

This option displays a decimal, that allows to adjust with a greater precision.

→ Is recommended to calibrate the equipment first using the normal adjustment process (which is master) and to finish by adjusting the equipment using the adjustment process of the DISPLAY option (which is 10 times slower).

The operation is the same as in the ADJUSTMENT option.

3.5. EXIT

This option is used to exit the programming menu.

3.6. DISPLAY

The DISPLAY option provides all the necessary parameters for configuring special weighing equipment.

3.6.1. FRACTION

It allows viewing the fraction that has been recorded in the SCALE option of the main menu.

3.6.2. SPAN

The SPAN option allows changing the previous span that has been stored in SCALE option of main menu.

3.6.3. STABILITY TIME

This is the time that the equipment will take to achieve weight stability in fractions of a second (approximately $\frac{1}{2}$ second).

This parameter can be given values between 1 and 255 (advisable between 1 and 12).

By increasing the value of this parameter:

- ☐ The weight precision increases.

It leaves the factory with the value 3.

3.6.4. RESPONSE TIME

Number of different readings of weight so that the display determines that the weight is unstable.

3.6.5. STABILITY WINDOW

Window, in fractions, in which apply the filter. Por defecto es 0 lo cual quiere decir que sólo se aplica en una porción de la fracción.

Su valor diferente de cero sólo se aplica al caso de pesaje de ganado.

3.6.6. FILTER WINDOW

Referring to the internal filter of the converter. It settles in internal points.

When one enters the menu appears to us a message that indicates the points by fraction of weight, this way if, for example, we want that the filter acts in the 3 last fractions and the system works with 20 points by fraction, we must program a window of filter of 60.

With the correct configuration it allows to maintain a more stable weight when it is unstable, but at the cost of slowing down the system slightly.

It can take from value from 1 to 255.

It leaves the factory with the value 64.

3.6.7. FILTER

- ☐ Filter for eliminating oscillations.
- ☐ Increases the stability.
- ☐ Makes the weight variation slower.

It can be given values between 1 and 255 (recommended between 1 & 12)

It leaves the factory with the value 3.

3.6.8. ZEROIN

It allows to choose if it is desired that when starting the equipment this one always shows zero independently of the cause that in the platform exists a weight or no.

3.6.9. DISPLAY LIGHT

It allows selecting the values of 1, 2, 3 or 4, which vary the luminosity of the display digits. The display is factory supplied with a value of 3, which is the default value.

3.6.10. ZERO AB.

It allows selecting the number of zero absorption divisions by tenths of divisions, and it can be given values of between 0.0 and 25.6 divisions.

3.6.11. FACTORY

It returns all the display parameters to the factory values.

3.6.12. CLOCK

It allows modifying the date and time of the equipment. Even though this option can be used, it is advisable to adjust the date and time of the equipment using the option under the MISCELLANEOUS menu, which is easier.

3.6.13. VERSION

It shows the software version incorporated in the display.

3.6.14. SERIAL NUMBER

It saves the serial number of the display.

3.6.15. ZERO CONVERSION

It allows modifying the zero of the converter so that the equipment does not have to be recalibrated when a display is changed. The value to be modified is in the hexadecimal system. The decimal point indicates which digit can be modified. The value is increased using the up arrow, and it is decreased using the down arrow. In order to move the decimal point to the left, press the FUN + the Up Arrow keys, and in order to move it to the right, press FUN + the Down Arrow keys. In order to exit without saving, press ENTER, and in order to save, press FUN + ENTER.

3.6.16. GAIN CONVERSION

It allows modifying the gain of the converter so that the equipment does not have to be recalibrated when a display is changed. This parameter is modified in the same way as CONV. ZERO.

3.6.17. CEL MV.

It shows the mill volts of signal provided by the load cell without any kind of filter.

3.6.18. RES. CL. (Restore delete password)

This option is used in the event that the delete password has been modified or has been forgotten. The factory value is restored (123456)

3.6.19. METROL. (Metrology)

If this option is set it will make:

- The zero at the beginning if the weight differs in more from $\pm 20\%$ programmed bottom of scale.
- The sum of zeros (zero manual, absorption of zero and zero tracking) cannot be superior to $\pm 2\%$ of span.

3.6.20. TARE AC.

Activate/deactivate tare.

3.6.21. 0-NEG

Auto zero, if negative weight values reach stability.

3.6.22. PRINT DSD

This function do printer the weights registers (weight and time of every weights)

3.6.23 DUMP DSD

This function do printer and delete the weights registers (weight and time of every weights)

3.6.23. EXIT

In order to exit from the OTHERS submenu.

4. DIGITAL SC20

Programming Menu (FUN+T during initial scroll):

RANGE	
NUMBER OF CELLS	
CELLS UNIT CAPACITY	
ZERO	
ADJUST	
UNIT GAINS (ANGLES)	
RESET UNIT GAINS	
OTHER OPTIONS	RANGE SPAN
	STABILITY TIME
	RESPONSE TIME
	ZERO ABSORPTION TIME
	FILTER WINDOW
	FILTER ORDER
	ROBUSTNESS
	INITIAL ZERO
	DISPLAY LIGHTING
	ZERO ABSORPTION
	DEFAULT PARAMETERS
	VERSION
	SERIAL NUMBER
	CONVERTER ZEROS
	CONVERTER GAIN
	CONVERTER UNIT GAINS
	CELLS
	CHANGE CELL NUMBER
	RESTORE DELETE PASS.
	CELLS TEST
	METROLOGIC PARAMS
	NEGATIVE AUTO ZERO
	ACTIVATE TARE
	PRINT DSD
	DUMP DSD

4.1 NUMBER OF CELLS

Number of digital load cells of the system (from 1 to 16 cells).
 Numeric keyboard should be used. C to erase. INTRO to save. ESC to quit without saving.

4.2 CELLS UNIT CAPACITY

The unit capacity of each digital load cell has to be set here in TONS (from 1 to 255).

4.3 UNIT GAINS (ANGLES)

The internal individual unit gain of each load cells may be adjusted here, as the same way as an analogic potentiometer system.

F selects the cells to be modified, and its weight manual introduction should be set (without decimal point). INTRO will autocalculate the UNIT GAIN for this digital load cell. FUN quits without saving.

If a FINE ADJUSTMEN is required, after selecting the digital load cells with F, TARA should be pressed, and this individual fine adjustment  be done.

4.5 RESET UNIT GAINS

Resets all the ANGLES to the unitay ones.

4.6 OTHER OPTIONS

4.6.1 RESPONSE TIME

When stable, the ticks the system will spend before changing the displayed weight (from 1 to 64, recommended from 1 to 12). By default: 3.

4.6.2 ZERO ABSORPTION TIME

Zero absorption inertia. Recommended: 24.

4.6.3 FILTER WINDOW

Filter applies inside this window. Must be set to 1.

4.6.5 FILTER ORDER

Anti oscillating filter. The higher is the value, the higher is the stability but lower the velocity. May be between 1 and 36. By default: 3.

4.6.6 ROBUSTNESS

The higher is the value, the higher is the robustness but lower the weighing system velocity.

4.6.7 CONVERTER UNIT GAINS

Parametric values of the UNIT GAINS (ANGLES)

4.6.8 CELLS

The internal digital load cells points are showed individually, at the same time.

“ERROR” messages will be displayed at the specific digital load cell number slot, if it were a communication error.

The total weight is showed at the main display in high resolution

4.6.9 CHANGE CELL NUMBER

If a digital load cell number has to be changed, only this one must be connected to bus together with the indicator.

If the connection is OK, actual number will be displayed, and the new one may be entered. If not, it may mean that no digital load cell is detected in the bus, or there are more than 1 digital load cell in the bus.

4.6.10 CELLS TEST

The same as the “CELLS” menu, but if an error occurs, its number is transmitted through the serial port (PC).

3.6.11. PRINT DSD

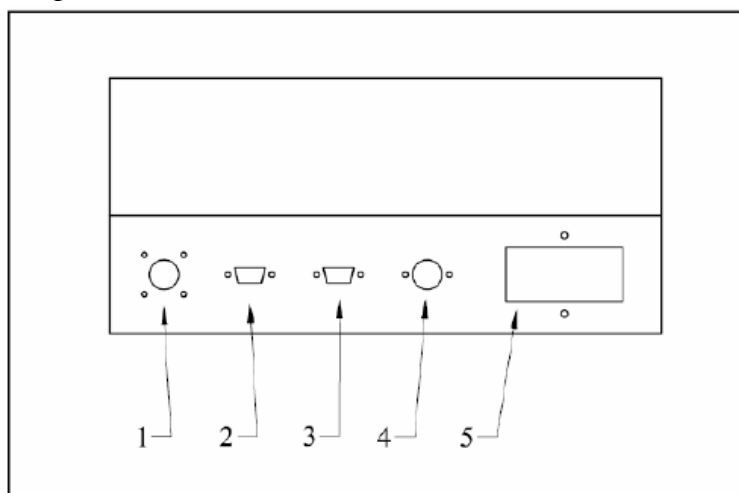
This function do printer the weights registers (weight and time of every weights)

3.6.12 DUMP DSD

This function do printer and delete the weights registers (weight and time of every weights) .

APPENDIX I: SC20v2 INDICATORS UPDATING

To update the indicator 2 files must be transferred



Vista posterior del equipo

To transfer the first file, **SC20_PC2v_ES.hex**, you have to use connector 3.

To transfer the second file, **SC20_PC2d_ES.hex**, you have to use connector 2.

Updating mode is the same as for the other Sensocar indicators.

To update the indicator software:

1. Make PROGRAMMING RS232 cable:

PC side (DB9 female): 4-6-8 shorted

INDICATOR side (DB9 female): 8-9 shorted

Pin by pin:

5-5

2-3

3-2

2. Connect the programming cable from the PC to the indicator.

3. Unzip program if it were necessary into .HEX file, and let it in a known folder.

4. Install application PC "FlashMagic".

5. Turn on the indicator and verify that does NOT shows "888888"

6. Execute "FlashMagic"

STEP1: Device: 89C669

STEP2: Erase blocks used by HEX file

STEP3: Select file .HEX to load (program updating)

STEP4: NONE

STEP5: Start!

7. Once finished, turn off and turn on the indicator again.

APPENDIX II: DIGITEL LOAD CELLS (Por prensa o por conector)

Approved CE OIML-R60:

Accuracy class:

Vmin:

Excitation voltage:

Power consumption:

Transmission velocity:

Conversions per second:

Intern resolution:

Temperature limits OIML60:

Isolation resistance:

4000 divisions

C3-C4

E_{max}/15000

8-15 V DC

35mA

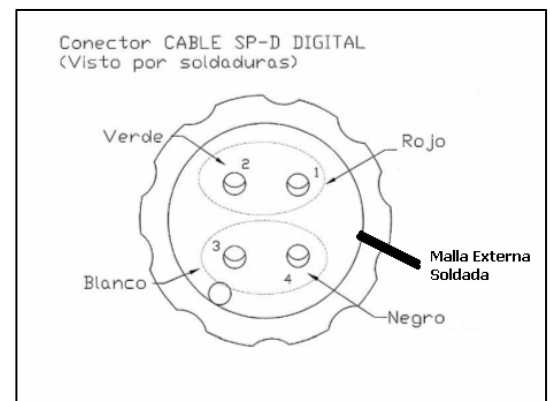
100 kHz (Max)

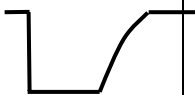
40 s⁻¹

24 bit

-10°C / 40°C

>5000 MΩ



Impedancia del bus (INDICATOR DISCONNECTED)				
SDA(3) WHITE - SCL(2) GREEN			6K6	
SDA(3) WHITE -Vcc(1) RED			3K3	
SCL(2) GREEN -Vcc(1) RED			3K3	
Tensions	V _{CC} (1)	RED	9V-10V	
	V _{SCL} (2)	GREEN	9V-10V	
	V _{SDA} (3)	WHITE	9V-10V	
Wave form				
SCL(2)	GREEN	E: 5V@10μs		
SDA(3)	WHITE	E: 5V@20μs		
Isolation measurement				
V _{CC} (1) + Tierra			>1000 Mohm	
V _{SCL} (2) + Tierra			>1000 Mohm	
V _{SDA} (3) + Tierra			>1000 Mohm	
V _{GND} (4) + Tierra			>1000 Mohm	

Minimum tension in the farthest load cell: V₁₄ > 7V.

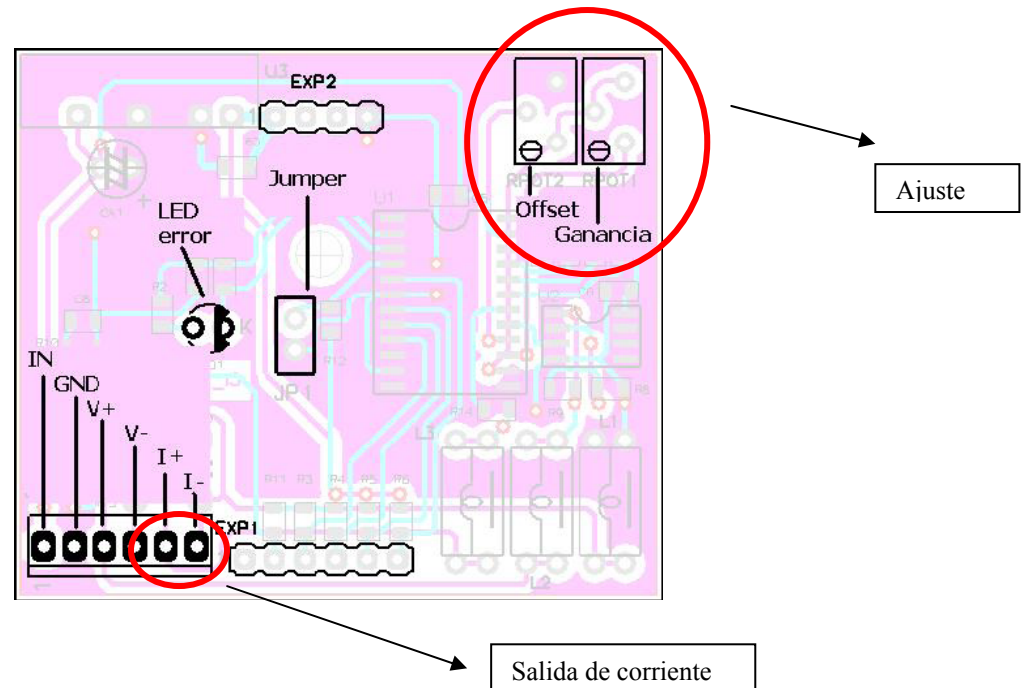
APPENDIX III: PARAMETERS BY DEFAULT OF A LX-300.

Nombre del parámetro	Parámetro por defecto	Parámetro para un SC20
Page length for tractor	12 inch	4 inch
Skip over perforation	Off	On
Auto tear Off	Off	On
Auto line feed	Off	Off
Print Direction	Bi-D	Bi-D
Software	ESC/P	ESC/P
0 slash	0	0
High speed draft	On	On
I/F mode	Auto	Auto
Auto I/F wait time	10 seconds	10 seconds
Baud rate	19200 BPS	9600 BPS
Parity	None	None
Data length	8 bit	8 bit
Parallel I/F bidirectional mode	On	On
Packet mode	Auto	Auto
Character table	---- no importa ----	---- no importa ----
International character set for ... table	---- no importa ----	---- no importa ----
Manual feed wait time	1.5 seconds	1.5 seconds
Buzzer	On	On
Auto CR (IBM 2380 Plus)	Off	Off
IBM character table	Table 2	Table 2

APPENDIX IV: ADDITIONAL 4-20mA

- Integration of weight output in screen for the action en un autómata 4-20mA.

- Additional 4_20m:



Connected in the **printer port** to the output 6 → I(-) y 7→ I(+):

