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El documento consta de un total de 26 folios. Folio 1 de 26 - Código Seguro de Verificación: 25815-12984203

 <p>MINISTRY OF INDUSTRY, ENERGY AND TOURISM</p>	<p>RECORD N°</p> <p style="text-align: center;"><b>132394001</b></p>	 <p>SPANISH METROLOGY CENTRE</p>
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## TEST CERTIFICATE

### 6<sup>th</sup> Revision to certificate CEM-CY-01/0025-5.2



<b>Issued to:</b>	SENSOCAR, S.A. Pol. Ind. Can Parellada c/ Géminis, 77 08228 Terrassa Barcelona									
<b>In accordance with:</b>	Paragraph 8.1 of the European Standard on Metrological aspects of nonautomatic weighing instruments EN 45501:1992, and WELMEC 2.1. The applied error fraction pi, with reference to paragraph 3.5.4 of this standard is 0,5.									
<b>Instrument:</b>	The model of an indicator for industrial application, electronic, self indicating, single and multiple scale interval, tested as part of a nonautomatic weighing instrument class  and 									
<b>Features:</b>	<table border="1"> <tr> <td data-bbox="494 1108 909 1254">Maximum number of verification scale intervals</td> <td data-bbox="909 1108 1500 1254">n Ö 10000 for NAWI accuracy class n Ö 1000 for NAWI accuracy class</td> </tr> <tr> <td data-bbox="494 1254 909 1332">Minimum inputvoltage per verification scale interval</td> <td data-bbox="909 1254 1500 1332">0,6 µV/e</td> </tr> <tr> <td data-bbox="494 1332 909 1388">Measuring range voltage</td> <td data-bbox="909 1332 1500 1388">5 mV 15 mV</td> </tr> <tr> <td data-bbox="494 1388 909 1422">Impedance range</td> <td data-bbox="909 1388 1500 1422">40 á a 2000 á</td> </tr> </table>		Maximum number of verification scale intervals	n Ö 10000 for NAWI accuracy class n Ö 1000 for NAWI accuracy class	Minimum inputvoltage per verification scale interval	0,6 µV/e	Measuring range voltage	5 mV 15 mV	Impedance range	40 á a 2000 á
Maximum number of verification scale intervals	n Ö 10000 for NAWI accuracy class n Ö 1000 for NAWI accuracy class									
Minimum inputvoltage per verification scale interval	0,6 µV/e									
Measuring range voltage	5 mV 15 mV									
Impedance range	40 á a 2000 á									
<b>Manufacturer:</b>	SENSOCAR, S.A.									
<b>Trademark/Type:</b>	SENSOCAR, S.A. / SCAX									
<b>CEM code:</b>	--									
<b>Comments:</b>	The new SC-AX version currently under review complements all versions described in review fifth.									

**Test Date:** January 2014

This certificate establishes the conformity of the equipment above indicated with the test described in the annex, relating to the technical and metrological characteristics of the equipment. This certificate does not bestow any form of legal international approval. This test certificate cannot be quoted in an EC Typeapproval certificate without permission of the applicant quoted above. Partial quotation of this certificate is not permitted without written permission.

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## ANNEX

### 1. TECHNICAL SPECIFICATIONS

#### 1.1. Technical procedure

The procedure (CEM-PT-5.2-04) used to assess the metrological characteristics of the instrument contained in this certificate is based on UNE EN 45501: 1992 (AC: 1993), on the metrological aspects of non-automatic weighing instruments, and WELMEC Guide n° 2.1.



The applicable tests envisaged in Annexes A, B and C of the aforementioned Standard and in the WELMEC Guide are as follows:

- ~ Administrative and technical examination (A.1, A.2 and A.3)
- ~ Weighing operation (A.4.4)
- ~ Repeatability (A.4.10)
- ~ Effect of the temperature on sensitivity (A.5.3.1) with minimum weighing range and impedance of 40 á (20, 40, -10, 5, 20°C)
- ~ Effect of the temperature on the indication at zero load (A.5.3.2) with minimum weighing range and impedance of 40 á (20, 40, -10, 5, 20°C)
- ~ Damp heat test (B.2.2)
- ~ Warmup time (A.5.2)
- ~ Voltage variations (A.5.4)
- ~ Short duration voltage reductions (B.3.1)
- ~ Bursts in power lines, I/O circuits and communications lines (B.3.2)
- ~ Electrostatic discharges (B.3.3)
- ~ Electromagnetic susceptibility (B.3.4)
- ~ Slope stability (B.4)
- ~ Cable length between indicator and load cell (WELMEC 2.1.; Annex 5)

#### 1.2. Instrument location

The tests were carried out at the facilities of the Spanish Metrology Centre.

**END OF PAGE**

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## 2. GENERAL INSTRUMENT INFORMATION

### 2.1. Type and model

SC-AX model weight indicator, where X represents the different options, for industrial use, with n m10000 for IPFNA of accuracy class  $\text{E}$ , n m1000 for IPFNA accuracy class  $\text{F}$ , and equipped with the following versions:



New Versions	Cartridge	Option	Casing	Screen	N° Keys
Version SC-A1	SC-A	1	Front: Stainless steel or ABS	Six digits of seven segments or LCD	5
Version SC-A10	SC-A	10	Rear panel: Stainless steel or ABS	LCD screen with 3 custom fields	25
Version SC-A12	SC-A	12	Front: Stainless steel or ABS Rear panel: Stainless steel or ABS	7ö 24-bit RGB TFT screen	touch
Version SC-A30	SC-A	30	Front: Desk type stainless steel	7ö TFT screen	29
Version SC-A30/Q	SC-A	30/Q	Rear panel: Stainless steel or ABS		54
Version SC-A31	SC-A	31	Front: Display type Stainless steel		29
Version SC-A31/Q	SC-A	31/Q	Rear panel: Stainless steel or ABS		54
Version SC-A40R	SC-A	40 R	Front: Stainless steel or ABS Rear panel: Stainless steel or ABS	Six 40mm digits	5
Version SC-A60R	SC-A	60 R		Six 60mm digits	
Version SC-A100R	SC-A	100 R		Six 100mm digits	
Version SC-AMON	SC-A	MON	Front: Stainless steel or ABS Rear panel: Stainless steel or ABS	6 digits in LCD	

All versions are ready to work with:

- An internal 7.5 V battery
- Digital cells compatible with the Sensocar communication bus. In this case, the analogue-digital converter is located in the load cell.
- 2 reading ranges (multi-scale).
- Double beam scale, installing two weight cartridges simultaneously.

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**2.2. Description of the instrument**

All versions of the SC-AX model comprise:

- A front panel (stainless steel or ABS, depending on the version) with the peripheral elements, such as keyboard, display and printer. This part is described in each of the versions.
- A rear panel that includes the following options:
  - Cartridge-holder panel for removable cartridges from outside
  - Fixed panel with connectors
  - Fixed panel with cable glands

The cartridge-holder panel (rear panel) is used to insert the removable cartridge known as WEIGHT CARTRIDGE. This cartridge contains all the technical and metrological parameters which define the instrument. The weight cartridge can be inserted in any version.

In fixed panels with cable glands or connectors, connections are made in the same electronic boards inside the instrument.

**2.2.1. Weight Cartridge**

All metrological parameters are located in the SC-A weight cartridge, containing:

- The AD7730 analogue-digital converter.
- The voltage regulator which feeds the load cell.
- The non-volatile memory where the metrological parameters necessary to obtain the weight of the Indicator and the weighing system are stored.
- The load cell connector.
- Internal key used to modify the metrological parameters stored in the cartridge memory and protected by a seal.

Cartridge casing

This comprises two parts made from ABS, painted on the inside with conductive paint. The cell connector and tag are inserted in the front panel. The weight electronics board and protection devices are located on the inside. The cartridge casing is common to all versions.

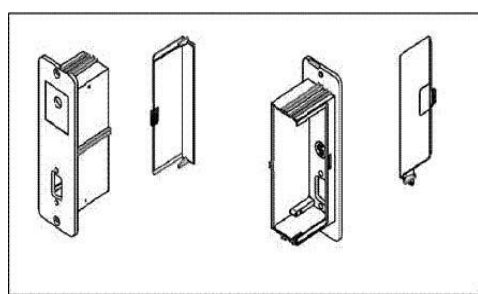




Figure 1. Cartridge casing detail

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Weight electronics board

Comprising a printed circuit where all the electronic components and the protection items which affect weight are assembled.

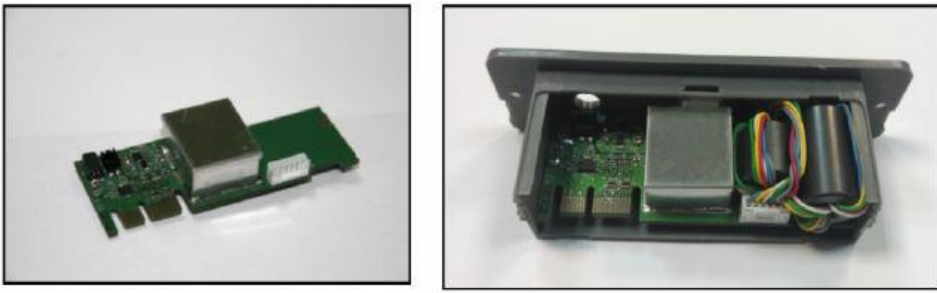


Figure 2. Weight electronic board and weight electronic board with casing detail

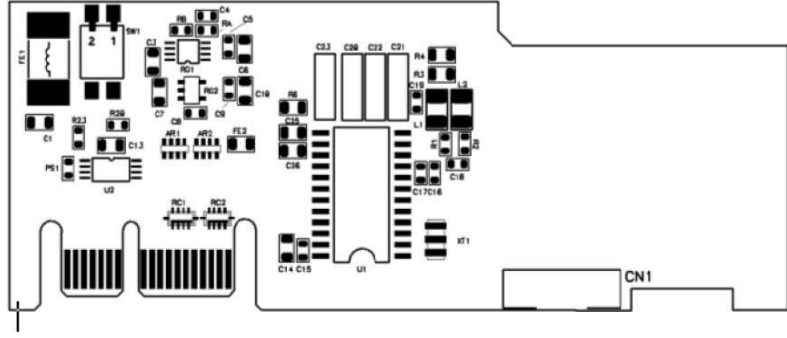


Figure 3. Weight electronics board electronic diagram

This electronics board may be inserted into the weight cartridge or in main electronics board (in the case of fixed panels options with connectors or cable glands).



In the case of the cartridge-holder rear panel, it carries a backplane circuit board that interconnects between cartridges and display circuit.

**2.2.2. Microprocessor and Communications Cartridge**

The communications and microprocessor cartridge contains the MK60DX256ZVMD10 microprocessor, which is common to all versions.

Microprocessor electronics board

The microprocessor electronics board comprises a printed circuit soldered with both the MK60DX256ZVMD10 microprocessor and the drivers, which have communication software and enable the various communications of the board, such as:

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- First RS232 port
- Second RS232/485 (Additional)

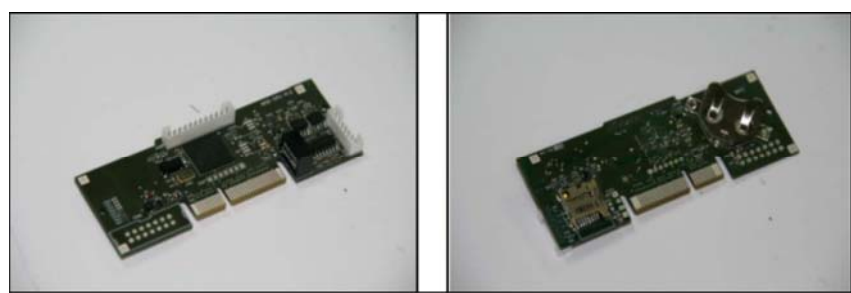


Figure 4. Microprocessor board

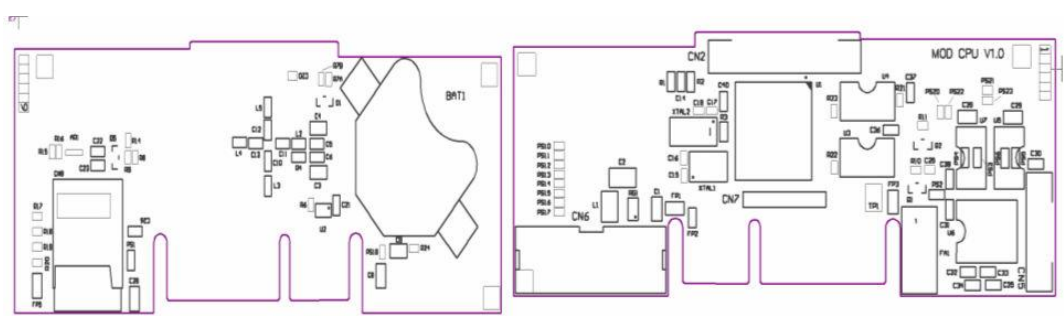


Figure 5. Microprocessor electronics board diagram

This electronic board may be mounted inside the microprocessor cartridge (in the cartridge-holder panel option), removable from outside or integrated in the main electronic board (in the case of fixed panels options with connectors or cable glands).

**2.2.3. Rear panels**

There are 3 different options:



Cartridge holder rear panel:

The rear cartridge-holder panel comprises the casing and the backplane circuit. The cartridge-holder panel is made of ABS and is fitted with guides to insert up to 4 cartridges:

- A weight cartridge
- A cartridge containing the microprocessor and communications
- 2 upgrade cartridges for special applications (Relays, Output 0-10 V/4-20 mA, etc)

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Opcionalmente 2 cartuchos de ampliación para aplicaciones especiales (Relés, Salida (010) V, (420) mA)

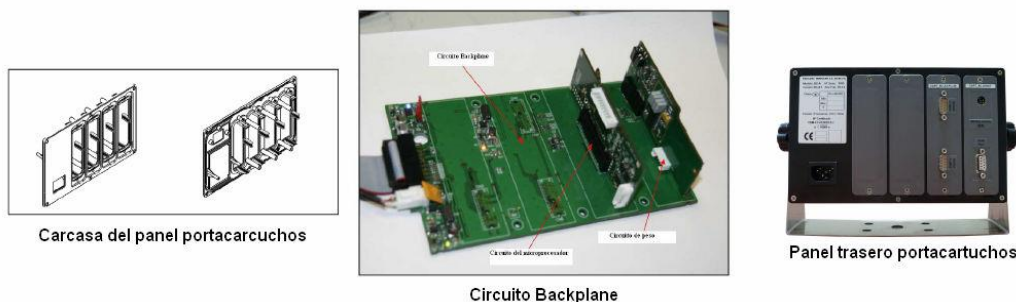


Figure 6. Cartridge-holder panel casing, backplane board and rear panel

**Backplane circuit:** This circuit contains the connectors where the different cartridges are inserted, and connects via a flat cable to the peripheral circuits located on the front panel. This backplane circuit is located in the rear section of the cartridge-holder panel.

Fixed rear panel with connectors:

The material of this panel can be ABS or stainless steel, and carries the following connectors:

- Load cell, RS232, RS485...
- Power supply and the base for mains input (220V).

This rear panel can be connected to two types of electronic board:

- A. Electronic board with microprocessor integrated
- B. Electronic board with microprocessor removable

Both electronic boards have inserted the same weight module containing all technical and metrological parameters.

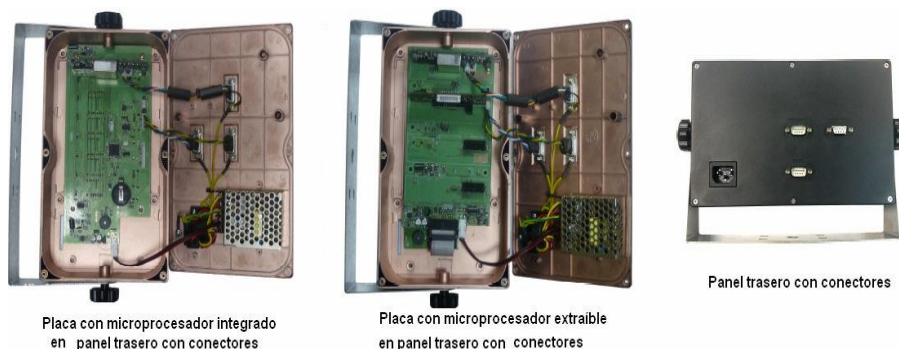


Figure 7. Detailed rear panel with connectors and board microprocessor



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#### Fixed rear panel with cable glands:

The material of this panel can be ABS or stainless steel and carries the glands where cell cables, RS-232, RS-485, etc... and 220V power cable are introduced.

This rear panel can be connected to two types of electronic board:

- A. Electronic board with microprocessor integrated
- B. Electronic board with microprocessor removable

Both electronic boards have inserted the same weight module containing all technical and metrological parameters.

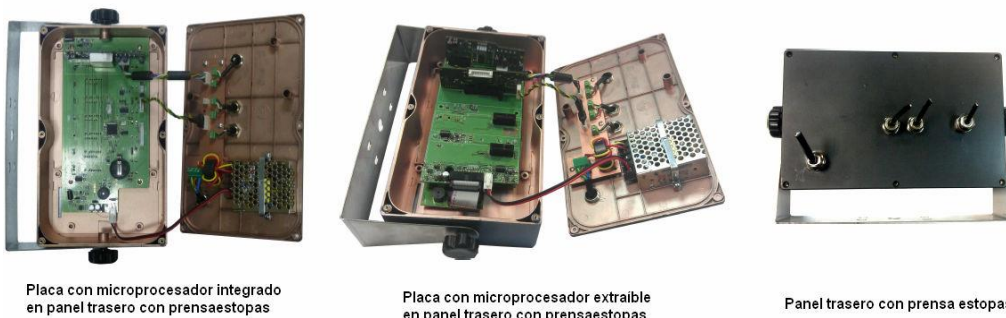


Figura 8. Detailed rear panel with cable glands and board microprocessor

#### 2.2.4. Versions.

##### Version SC-A1

Formada por un Cartucho de peso SCA y la Opción 1. La Opción 1, viene definida por los elementos periféricos que contiene el panel frontal y diferentes opciones de panel trasero:

Comprising an SC-A weight cartridge and Option 1. Option 1 is defined by the peripheral elements of the front panel and includes the following components and options:



##### Front panel:

- Casing made from ABS or stainless steel
- Front printed circuit
- 6 LEDs with seven 10 segments or LCD
- 7 LCD or LED indicators for stable weight, zero, gross/net, tare and low battery
- 4 output relay indicator LEDs or 4 output relay indicator LCD segments
- 2 LED input pushbutton indicators or 2 input pushbutton indicator LCD segments
- 5 Keys (4 function keys + 1 ON/OFF key)
- 1 Buzzer
- 1 Flat cable connector



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Rear panels:

Cartridge holder panel:

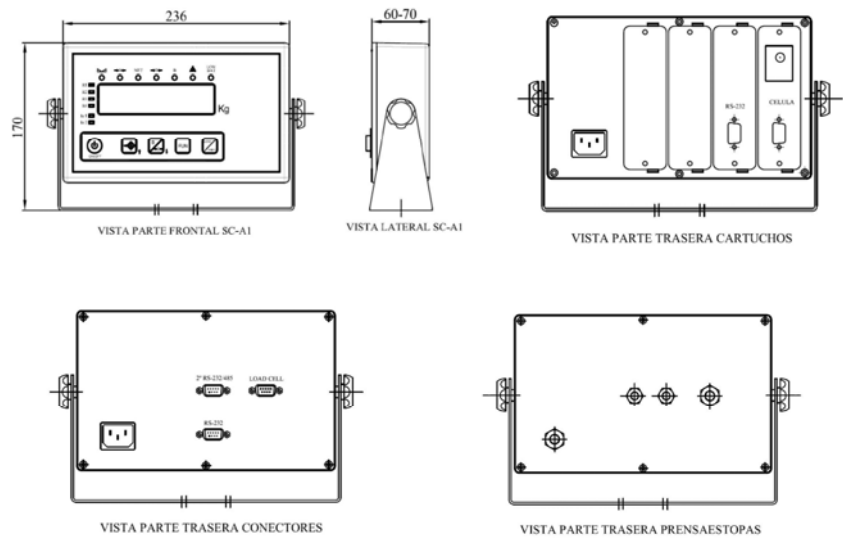
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

Panel with connectors:

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

Panel with cable glands:



- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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**Version SC-A10**

Comprising an SC-A weight cartridge and Option 10. Option 10 is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from ABS or stainless steel
- Front printed circuit, soldered with:
- An LCD screen with 3 seven-segment digit fields, 6 relay indicators, 7 indicators for stability, stable weight, zero, gross/net, tare, piece counter and battery.
- 1 Buzzer.
- 1 Flat cable connector.
- A key cover for 25 keys (including ON/OFF).

**Rear panels:**

**Cartridge holder panel:**

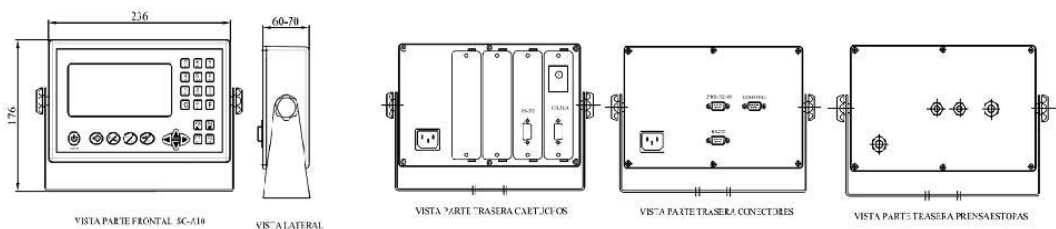
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**



- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**

- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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**Version SC-A12**

It comprises an SC-A weight cartridge and Option 12. Option 12 is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from stainless steel
- 7" 24-bit RGB TFT screen 800x480 RS232/USB
- Resistive touch sensor
- Buzzer
- Flat interconnection cable

**Rear panels:**

**Cartridge holder panel:**

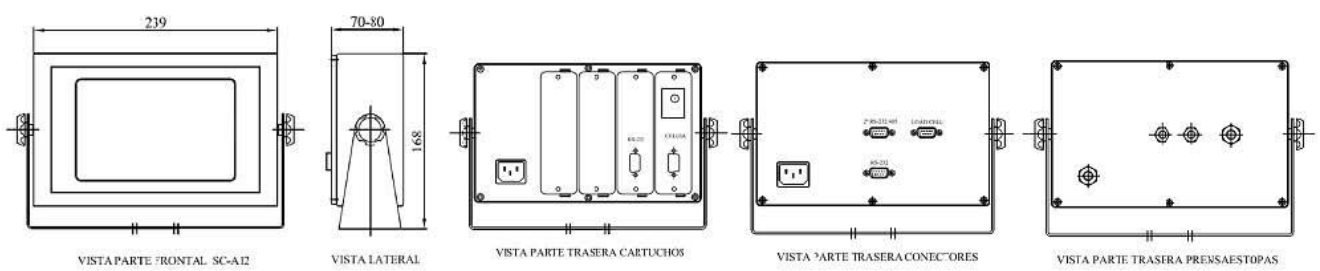
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**



- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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**Version SC-A30**

Comprising an SC-A weight cartridge and Option 30. Option 30 is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from stainless steel
- 7ö 24-bit RGB TFT screen 800x480 RS232/USB
- 29-key Matrix keyboard + ON/OFF
- PLUSII/S2B thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

**Rear panels:**

**Cartridge holder panel:**

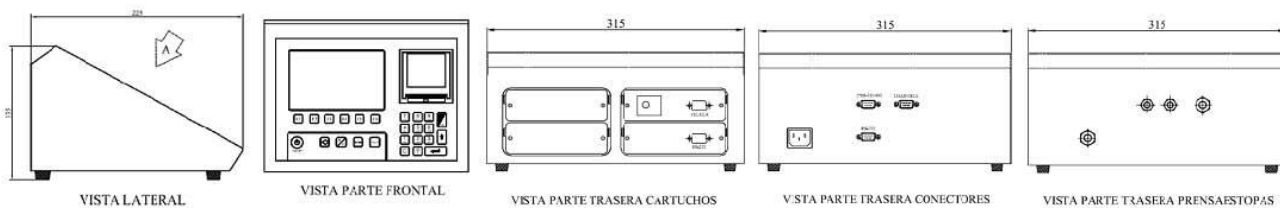
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside



**Panel with cable glands:**

- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



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**Version SC-A30/Q**

Comprising an SC-A weight cartridge and Option 30/Q. Option 30/Q is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from stainless steel
- 7ö 24-bit RGB TFT screen 800x480 RS232/USB
- 54-key Matrix keyboard + ON/OFF
- S2B/12 thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

**Rear panels:**

**Cartridge holder panel:**

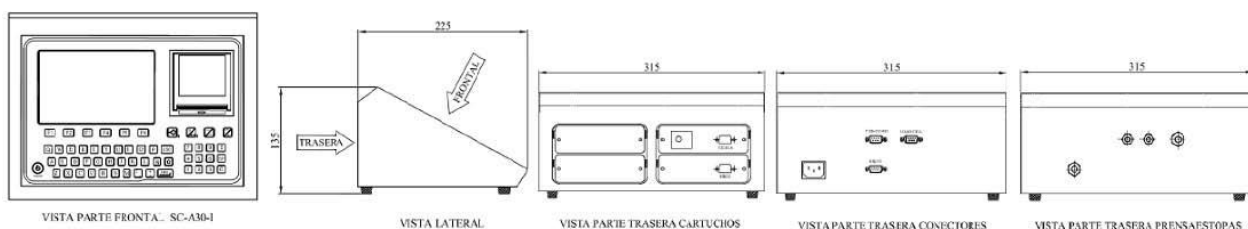
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**



- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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**Version SC-A31**

Comprising an SC-A weight cartridge and Option 31. Option 31 is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from stainless steel
- 7ö 24-bit RGB TFT screen 800x480 RS232/USB
- 28-key Matrix keyboard + ON/OFF key
- PLUSII/S2B thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

**Rear panels:**

**Cartridge holder panel:**

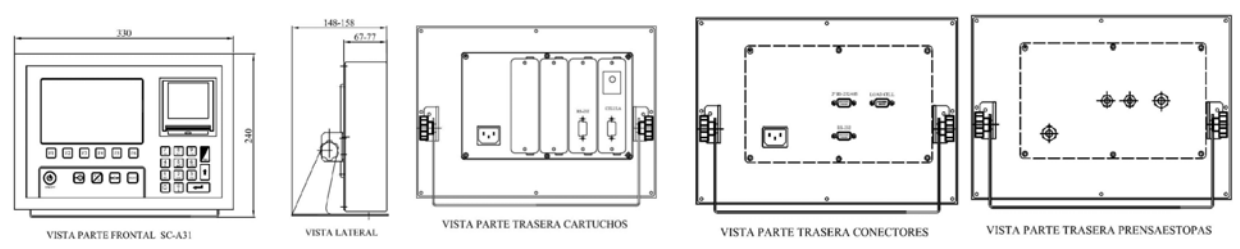
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**



- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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 <p>MINISTRY OF INDUSTRY, ENERGY AND TOURISM</p>	<p>RECORD N°</p> <p style="text-align: center;"><b>132394001</b></p>	 <p>SPANISH METROLOGY CENTRE</p>
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**Version SC-A31/Q**

Comprising an SC-A weight cartridge and Option 31/Q. Option 31/Q is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from stainless steel
- 7ö 24-bit RGB TFT screen 800x480 RS232/USB
- 54-key Matrix keyboard + ON/OFF key
- S2B/12 thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

**Rear panels:**

**Cartridge holder panel:**

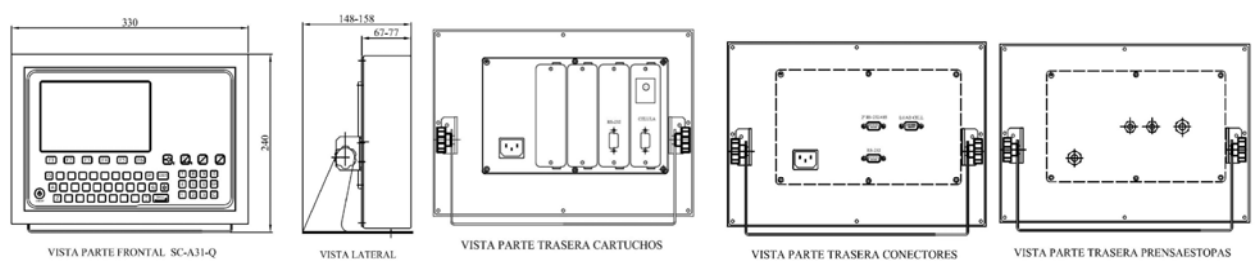
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**

- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets



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**Version SC-A40R**

Comprising an SC-A weight cartridge and Option 40 R. Option 40 R is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel:**

- Casing made from ABS or stainless steel
- Front display circuit
  - Six digits of seven segments 40mm tall
  - 6 LED indicators for stable weight, zero, gross, tare, net and battery
  - LED driver
  - 5 keys

**Rear panels:**

**Cartridge holder panel:**

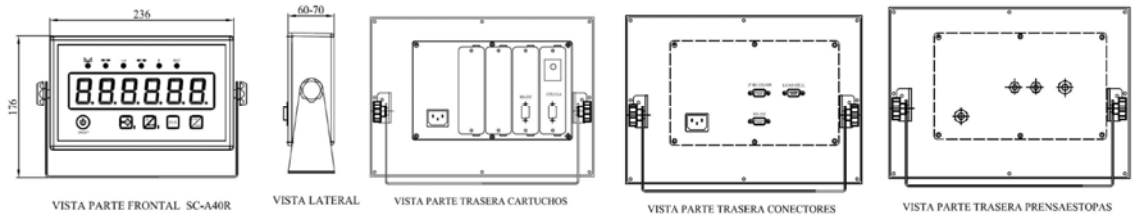
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**

- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output





The stainless steel U-shaped support piece has two fixing brackets



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**Version SC-A60R**

Comprising an SC-A weight cartridge and Option 60 R. Option 60 R is defined by the peripheral elements of the front panel and includes the following components and options:

**Front panel**

- Casing made from stainless steel
- Front display circuit
  - Six digits of seven segments 60mm tall
  - 6 LED indicators for stable weight, zero, gross, tare, net and battery
  - LED driver
  - 5 keys

**Rear panels:**

**Cartridge holder panel:**

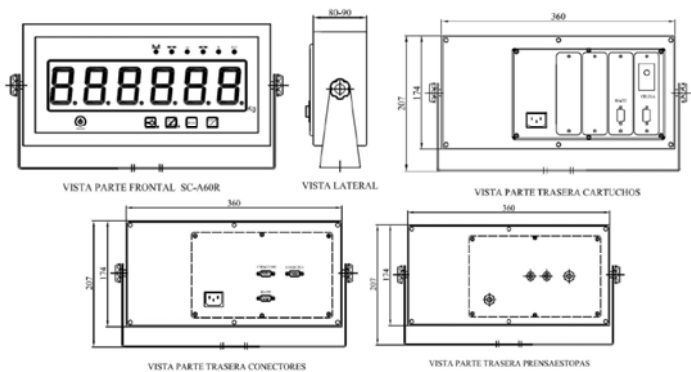
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside

**Panel with cable glands:**



- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



The stainless steel U-shaped support piece has two fixing brackets

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**Version SC-A100R**

Comprising an SC-A weight cartridge and Option 100 R. The 100 R Option is defined by the peripheral elements of the front panel and includes the following components:

**Front panel:**

- Casing made from stainless steel
- Front display circuit
  - Six digits of seven segments 100mm tall
  - 6 LED indicators for stable weight, zero, gross, tare, net and battery
  - 4 keys

Stainless steel rear cover  
Wall mount accessory

**Rear panels:**

**Cartridge holder panel:**

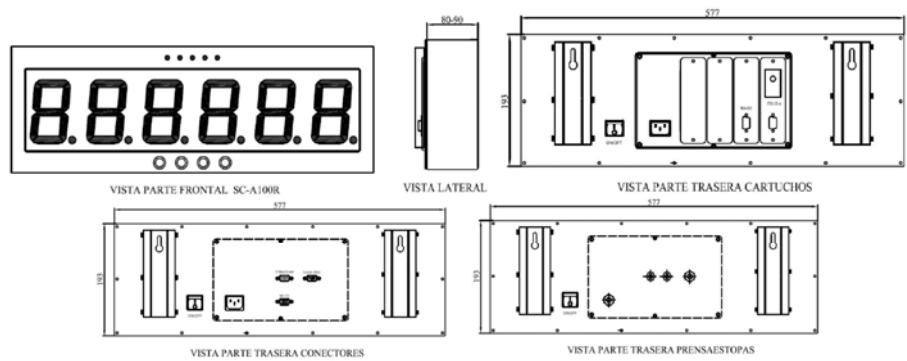
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Backplane interconnection circuit

**Panel with connectors:**

- Casing made from ABS or stainless steel
- Shucko 220 V + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Connectors with wiring and ferrites built in for electronic board communication with the outside



**Panel with cable glands:**

- Casing made from ABS or stainless steel
- Input cable (220V) through cable gland + Ferrite
- Internal terminal block connections + Ferrite
- Switching power supply (100-240) VAC (50-60) Hz 12VDC 15W
- Cable gland for cable output



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**Versión SC-A MON**

The MON Option comprises:

1 Display Version SC-A1 plus the following peripheral elements:

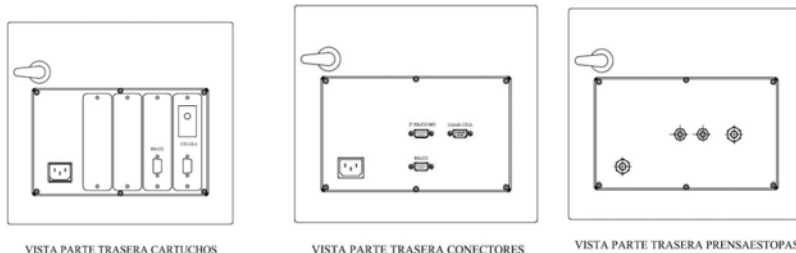
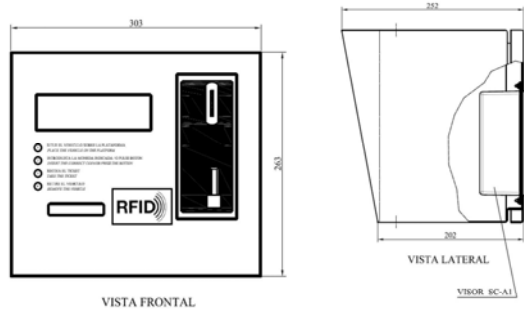
Casing made from stainless steel

Slanted front containing:

- LCD weight repeater display
- Switching power supply 100-240VAC 50-60Hz 12VDC 50W
- Electronic or mechanical coin selector
- TG02 Custom printer
- Button or RFID card reader module
- Interconnection circuit between display and peripherals
- Flat interconnection cable

Backdoor, containing

- SC-A1 display (with any of the rear panel option specified: cartridge-holder, with connectors o cable glands)
- Key to close the door



**END OF PAGE**



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### 2.3. Essential Parts. Drawings

Description	Drawing	Rev.
SC-A1: Front, back and side view	DISPLAY SC-A1	29-10-12
SC-A10: Front, back and side view	DISPLAY SC-A10	29-10-12
SC-A12: Front, back and side view	DISPLAY SC-A12	29-10-12
SC-A30-I: Front, back and side view (printer)	DISPLAY SC-A30-I	17-12-12
SC-A30 : Front, back and side view	DISPLAY SC-A30	17-12-12
SC-A30-I-Q: Front, back and side view (printer)	DISPLAY SC-A30-I-Q	17-12-12
SC-A30-Q: Front, back and side view	DISPLAY SC-A30-Q	17-1-12
SC-A31-I: Front, back and side view (printer)	DISPLAY SC-A31-I	29-10-12
SC-A31: Front, back and side view	DISPLAY SC-A31	18-12-12
SC-A31-I-Q: Front, back and side view (printer)	DISPLAY SC-A31-I-Q	29-10-12
SC-A31-Q: Front, back and side view	DISPLAY SC-A31-Q	18-12-12
SC-A40R: Front, back and side view	DISPLAY SC-A40R	19-9-12
SC-A60R: Front, back and side view	DISPLAY SC-A60R	19-9-12
SC-A100R: Front, back and side view	DISPLAY SC-A100R	19-9-12
SC-A MON: Front, back and side view	DISPLAY SC-A MON	10-10-12
REAR PANEL ABS CABLE GLAND SC-A31-I/SC-A31-Q	RPANEL 6ABS- PREN.-03	12-02-14
REAR PANEL ABS CONNECTORS SC-A31-I/SC-A31-Q	RPANEL 6ABS- CON.-02	12-02-14
REAR PANEL ABS CABLE GLAND SC-A30-I/SC-A30-I-Q	RPANEL 6ABS- PREN.-02	12-02-14
REAR PANEL ABS CABLE GLAND SC-A1/SC-A10/SC-A12/ SC-A40R	RPANEL 6ABS- PREN.-01	12-02-14
REAR PANEL ABS CONNECTORS SC-A1/SC-A10/SC-A12/ SC-A40R	RPANEL 6ABS- CON.-01	12-02-14
REAR PANEL ABS CONNECTORS SC-A MON	RPANEL 6ABS- CON.-06	12-02-14
REAR PANEL ABS CABLE GLAND SC-A MON	RPANEL 6ABS- PREN.-06	12-02-14
REAR PANEL ABS CONNECTORS SC-A100-R	RPANEL 6ABS- CON.-05	12-02-14
REAR PANEL ABS CABLE GLAND SC-A100-R	RPANEL 6ABS- PREN.-05	12-02-14
REAR PANEL ABS CONNECTORS SC-A60-R	RPANEL 6ABS- CON.-04	12-02-14
REAR PANEL ABS CABLE GLAND SC-A60-R	RPANEL 6ABS- PRENS.-04	12-02-14
REAR PANEL ABS CONNECTORS SC-A31-I/SC-A31-Q	RPANEL 6ABS- CON.-01	12-02-14



Immunity to electromagnetic fields is achieved, amongst others, in the following manners:

- Metal casing forming a Faraday cage
- ABS casing with metallic paint coating on the inside
- RF Filter
- Photoelectric insulation of the communication ports
- Earthing for casings and power circuits
- Shielded cell cable.
- Inductive filter in the cell signal input
- Ferrite in the cell cable

**END OF PAGE**

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## 2.4. Main Characteristics

Accuracy class	III and IIII
Verification scale number (n)	m10000 for IPFNA III class m1000 for IPFNA IIII class
Maximum effect subtractive tare	
- Max operating temperature	10°C/+40° C
Power supply voltage	230 VAC / 7.5VDC
Electric frequency	50 Hz / 60 Hz
Load cell excitation voltage	5 V
Minimum reading range voltage	5 mV
Maximum reading range voltage	15 mV
Minimum output signal at dead load	0 mV
Maximum output signal at dead load	10 mV
Minimum sensitivity per verification scale interval	0.6µV/e
Maximum input impedance	2000 δ
Minimum input impedance	40 δ

The connection cable between the load cells or junction box and the indicator must be of 4 or 6 screened wires. The maximum cable length is shown in the following chart:

MAXIMUM CABLE LENGTH				
Load cell impedance	4-wire system cable section			Reading unit
	0.2 mm <sup>2</sup>	0.5 mm <sup>2</sup>	1.0 mm <sup>2</sup>	
40 á	0.20	0.5	1.0	m
350 á	1.05	2.60	5.30	m

When sense (6-wire system) is used, no specific limitation for the length of cable connecting the indicator and the load cell or junction box is necessary.

### Functions:

- Tare
- Subt. tare
- Printing
- Tare setting
- Semi-automatic resetting
- Gross/net selection
- Programming
- Validation / accumulation

### Device:

Reset device ( $\leq 8\%$ ).

Semi-automatic reset device ( $\leq 2\%$ ).

Automatic reset device ( $\leq 2\%$ ).

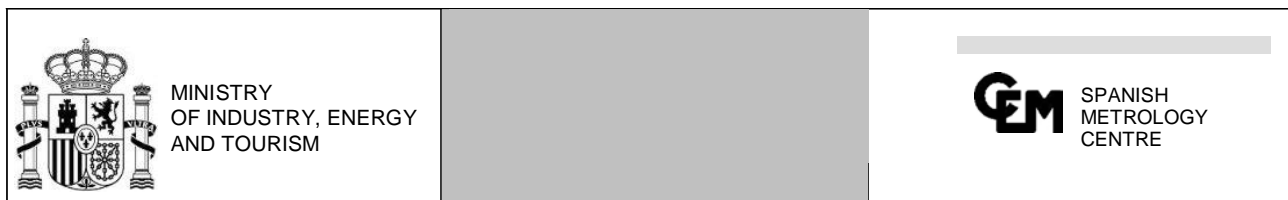
Semi-automatic subtractive tare device (tare and setting of tare)

Setting devices through a contact with restricted access by way of a seal on the weight cartridge.

Memory storage device.

Weight mode block device for programming.

Safety devices: Display, communication and keyboard test; Minimum power supply voltage detection; Reset field limitation ( $\leq 8\%$ ); Weighing field limitation (max + 9 e); Minimum weighing field limiter at Min = 20 e.



## 2.5. Description of Software

The software for all system versions is structured into two clearly differentiated parts: Metrological Software is the part related to obtaining the representable weight value based on the signal supplied by the weight captors. This constitutes the legally relevant part of the software and is therefore subject to legal control.

Application Software is the part which adds functionality by processing the representable weight value provided by the metrological software and handling the other items of the system (viewer, keyboard, digital I/O, communication ports, etc).

Moreover, the specific device parameters are differentiated and separated in the two parts of the software. Whilst the parameters related to the application software are stored in non-volatile memory located in the CPU cartridge (microprocessor), the parameters related to the metrological software are stored in non-volatile memory inside the weight cartridge.

### 2.5.1. Software Identification

The software for all system versions is identified by way of an administrative code with specification of the type of system, the application software version (with the different functions) and the metrological software version of the programme.



The system's software version identification code has the following format:

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

Where:

- E: System Identifier
- F: Variant Identifier (Auxiliary)
- NNN: Standard version
- BB: Special version
- TT: Final version
- R: Software check
- MMM: Metrological Software Version

This software version identification code is displayed in the start-up screen in systems with a graphic screen, whilst in other systems it can be checked in the "VERSIO" option, which is found in the "DISPLAY" submenu of the settings menu.

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Apart from this version identification code, the system has a signature in the form of an individual checksum for each software part (application and metrological), which is calculated every time the system starts up. The result of the calculation of the value of these signatures can be checked in the "CHKSUM" option, which is found in the "VISOR" submenu of the system's settings menu. These signatures can be used to detect modification of any part of the software programme.

The specific device parameters also have a signature in the form of an individual checksum for each type of parameter (application and metrological), which is calculated when the system starts up and can be checked in the "CHKSUM" option, which is found in the "VISOR" submenu of the system's settings menu. If the system detects any modification of the signatures of these operation parameters (metrological or not), it blocks weight reading mode and requires access through the system's settings menu, in order to restore the correct values of the modified parameters.

System identification code in line with system version

Version	System Identifier (E)
SC-A1	A
SC-A10	C
SC-A12	E
SC-A30	H
SC-A30/Q	H
SC-A31	H
SC-A31/Q	H
SC-A40R	Z
SC-A60R	Z
SC-A100R	Z
SC-AMON	P



### 2.5.2. Software version

The software version used is as follows:

SOFTWARE VERSION	METROLOGICAL SOFTWARE VERSION
0000 A	001

### 2.6. Interfaces and peripheral devices

All versions support the following interfaces in order to connect to different peripheral devices such as PCs, printers, PLs, labellers, etc.

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- Serial port RS-232/485
- USB port for PC keyboard
- Ethernet connection
- Output 4-20 mA (0-20 mA)
- Output 0-10 V
- Relay output
- Radio connection

The interface is protected in accordance with paragraph 5.3.6.1 of European Standard EN 45501.

"Any peripheral equipment to be connected to the instrument contained in this certificate must be technically compatible with it and, where appropriate, have its corresponding test certificate as issued by a Notified Body of any EU Member State."

### 2.7. Data plate

The adhesive sticker becomes spoiled when tampered with. It is positioned in the rear section and contains, at least, the following data:

- Marking or name of the manufacturer.
- Test certificate number.
- Instrument serial number and year of manufacture.
- Model
- Max, Min and e
- Accuracy class
- Electrical characteristics: Voltage, frequency and power (or intensity).

In addition to weight indication, at least the following items will be shown:

- Maximum scope
- Minimum scope
- Verification scale intervals

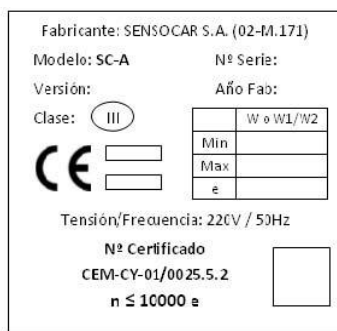




Figure 9. Data plate



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## 2.8. Seals

There are two complementary sealing systems A and B:

A) An internal key which, when disconnected, does not allow change to any of the system's technical and metrological parameters.

- In case of cartridge-holder rear panel, a destructible label, which becomes spoilt when tampered with, provides individual identification for the cartridge and seal. In addition, the cartridge is sealed at the rear panel through another tag.

- In the other cases, two destructible labels, which becomes spoilt when tampered with, prevents any manipulation of internal electronics.

B) A permanent electronic seal, based on an ordinal counter which registers the number of times modifications have been made in the metrological parameters of the weighing system. This counter cannot be reset and  $\delta C_n XXX\delta$  is displayed in the system's start-up sequence.



Figure 10. Seal



Figure 11. Initial seal position



Figure 12. Internal Key detail

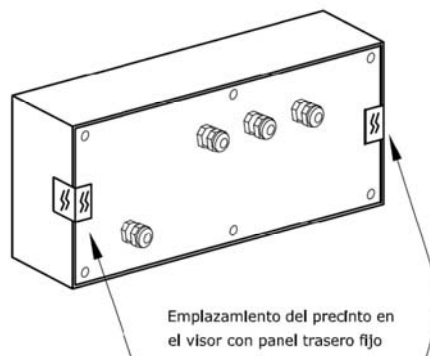




Figure 13. Detailed seals in fixed rear panel

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### 3. RESULTS OF THE TEST

The tests carried out and the results obtained are as follows:

Tests	+	Remarks
Administrative and technical examination (A.1, A.2 and A.3)	. /	(1)
Weighing operation (A.4.4)	. /	(1)
Repeatability (A.4.10)	. /	(1)
Warmup time (A.5.2)	. /	(1)
Effect of the temperature on the indication at zero load (A.5.3.2) with minimum weighing range and impedance of 40 $\Omega$ (20, 40, -10, 5, 20°C)	. /	(1)
Damp heat test (B.2.2)	. /	(1)
Voltage variations (A.5.4)	. /	(1)
Short duration voltage reductions (B.3.1)	. /	(2)
Bursts in I/O circuits and communications lines (B.3.2)	. /	(2)
Electrostatic discharges (B.3.3)	. /	(2)
Electromagnetic susceptibility (B.3.4)*	. /	(2)
Slope stability (B.4)	. /	(1)
Cable length from indicator to load cell (WELMEC 2.1. ; Annex 5)	. /	(1)

(1): Version tested SC-A31

(2): Versions tested SC-A1 and SC-A31 and SC-A1 with connectors

\* Field intensity: 10 V/m

Testing of reductions of short duration voltage, bursts in I/O circuits and communications lines, electrostatic discharges and electromagnetic susceptibility have been carried out with a load cell and 700  $\Omega$  of impedance.

The cable length test has been carried out with a load simulator and at impedances of 350  $\Omega$  and 40  $\Omega$ .

The other tests have been carried out with a load simulator and 40  $\Omega$  of impedance.

**END OF DOCUMENT**