MINISTRY OF INDUSTRY, ENERGY AND TOURISM.	RECORD Nº 111859001	SPANISH METROLOGY CENTRE

TEST CERTIFICATE

Number: CEM-CY-01/0025-5.2 (Rev. 5)

Issued to: SENSOCAR, S. A.
P. I. Can Parellada c/ Géminis 77
08228 Terrassa - Barcelona – SPAIN

In accordance with: Paragraph 8.1 of European Standard EN 45501: 1992 / AC: 1993 on metrological aspects of non-automatic weighing instruments, and WELMEC Guide nº 2.1. The applied error fraction pi with reference to paragraph 3.5.4 of EN 45501 is 0.5.

Instrument: Weight indicator for industrial use, electronic, automatic display, single and multiple scale interval, tested as part of a non-automatic weighing instrument of accuracy class III and IIII.

Manufacturer: SENSOCAR, S.A

Trademark/Type: SENSOCAR, S.A. / SC-AX

Features

Maximum number of verification scale intervals (n)	n ≤ 10000 ($n1$ ≤ 3000) for IPFNA accuracy class III n ≤ 10000 for NAWI accuracy class IIII n ≤ 1000 for IPFNA accuracy class III n ≤ 1000 for NAWI accuracy class IIII
Minimum input-voltage per verification scale interval	0.6 μV/e
Reading range voltage	5 mV - 15 mV
Impedance range	40 Ω to 2000 Ω

CEM code --

Comments The new SC-AX version currently under review complements all versions described in review four.

Test date: December 2012

This Certificate does not confer to the equipment attributes beyond those shown by the data contained herein. Results refer to the dates and conditions under which readings were made and guarantee traceability to national standards.

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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 Ω (20, 40, -10, 5, 20ºC)
- Effect of the temperature on the indication at zero load (A.5.3.2) with minimum weighing range and impedance of 40 Ω (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

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 ≤ 10000 for IPFNA of accuracy class (I), n ≤ 1000 for IPFNA accuracy class (II), and equipped with the following versions:

New Versions	Cartridge	Option	Casing	Screen	Nº Keys
Version SC-A1	SC-A	1	Stainless steel + ABS panel or Made completely from ABS	Six digits of seven segments or LCD	5
Version SC-A10	SC-A	10		LCD screen with 3 custom fields	25
Version SC-A12	SC-A	12	Stainless steel + ABS panel	7” 24-bit RGB TFT screen	touch
Version SC-A30	SC-A	30	Desk type stainless steel	7” TFT screen	29
Version SC-A30/Q	SC-A	30/Q	Rear panel made of ABS		54
Version SC-A31	SC-A	31	Stainless steel display		29
Version SC-A31/Q	SC-A	31/Q	Rear panel made of ABS		54
Version SC-A40R	SC-A	40 R	Stainless steel with ABS rear panel	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	Stainless steel + ABS rear panel	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.

2.2. Description of the instrument

All versions of the SC-AX model comprise a rear cartridge-holder panel made of ABS and a front panel (stainless steel or ABS, depending on the version) with the peripheral elements.

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.

The front panel determines the different versions and includes the different peripheral elements, such as the keyboard, display and printer. This part will be described in each of the versions.

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.

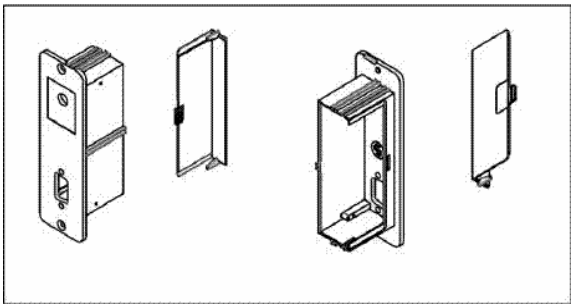


Figure 1. -Cartridge casing detail

Weight electronics board

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

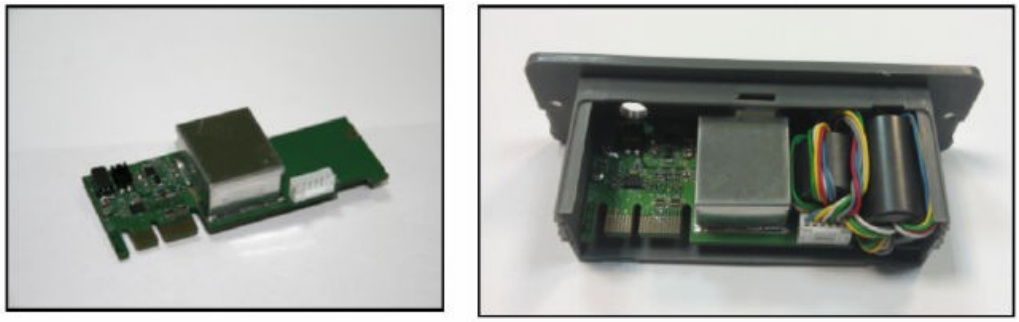


Figure 2. -Weight electronic board and weight electronic board with casing detail

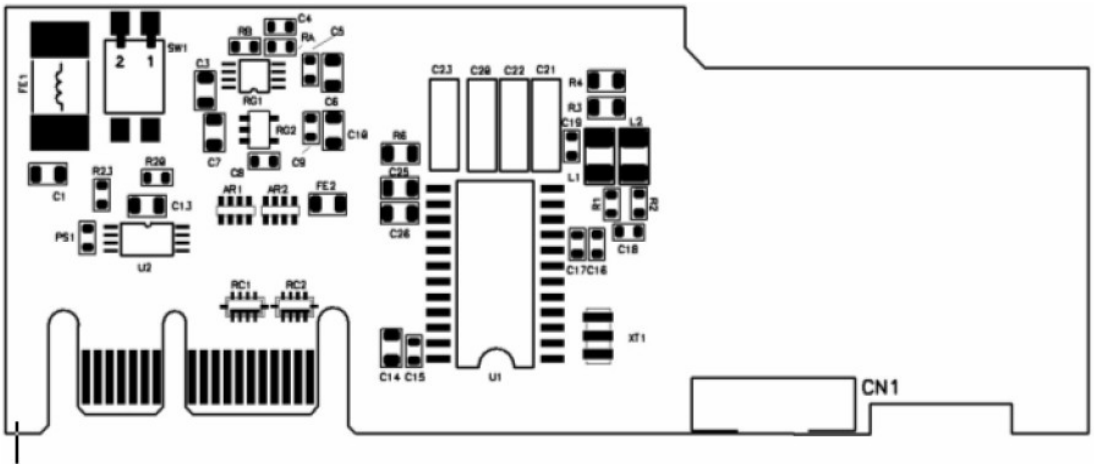


Figure 3. - Weight electronics board electronic diagram

The weight cartridge is inserted in the rear cartridge-holder panel which has a backplane circuit for interconnection between the cartridges and the 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 enable the different board communications, such as:

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

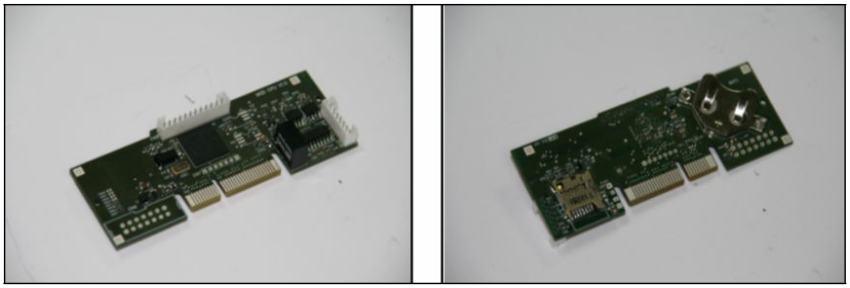


Figure 4. - Microprocessor board

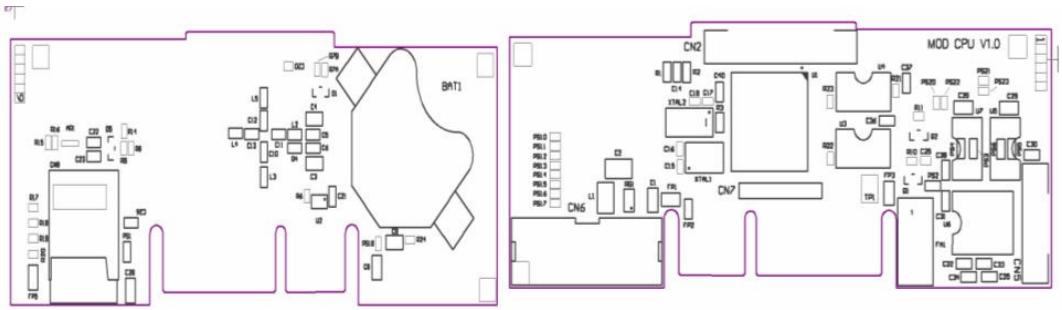


Figure 5. - Microprocessor electronics board diagram

2.2.3. Cartridge holder rear panel

The rear cartridge-holder panel comprises the casing and the backplane circuit.

Cartridge-holder panel casing

The cartridge-holder panel is made of ABS and is fitted with guides to insert up to 4 cartridges:

- A weight cartridge (positioned in ALL versions)

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

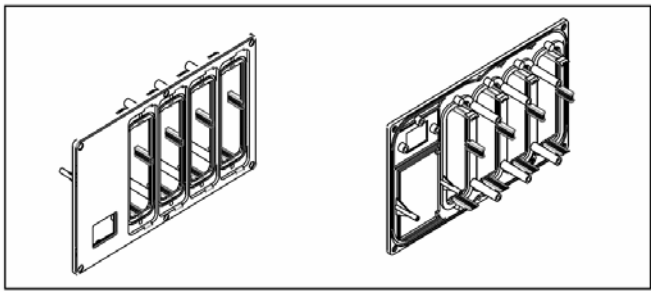


Figure 6. - Cartridge-holder panel casing

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.

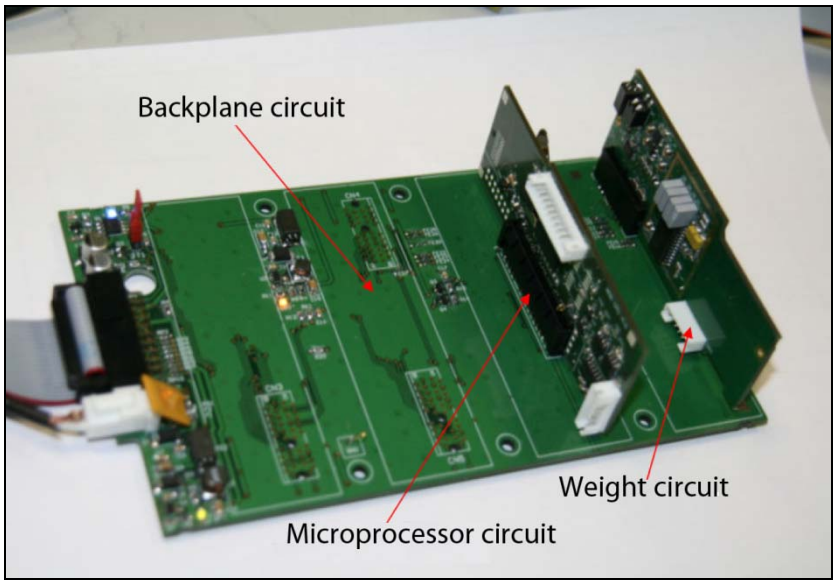


Figure 7. -Backplane circuit

END OF PAGE

2.2.4. Versions.

Version SC-A1

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:

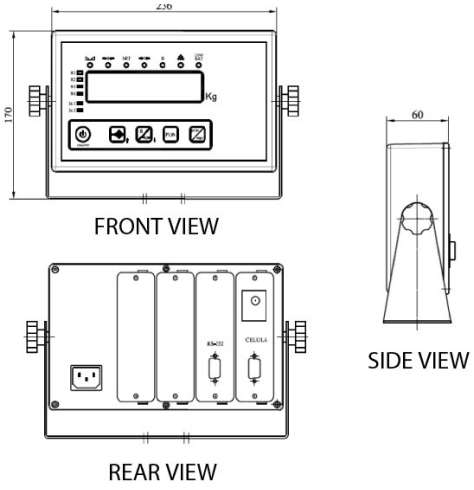
- Casing made from ABS or stainless steel
- Front printed circuit
- 6 LEDs with seven 1" segments or LCD
- 7 LCD or LED indicators for stable weight, zero, gross/net, tare and low battery
- 4 output relay indicator LEDs or 4 output relay indicator LCD segments
- 2 LED input pushbutton indicators or 2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

Cartridge holder panel:

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

Stainless steel U-shaped support piece:

- 2 brackets to secure the support piece with the front panel



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:

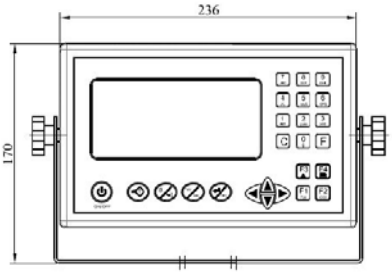
- Casing made from ABS or stainless steel
- Front printed circuit, soldered with:
- An LCD screen with 3 seven-segment digit fields, 6 relay indicators, 7 indicators for stability, stable weight, zero, gross/net, tare, piece counter and battery.
- 1 Buzzer.
- 1 Flat cable connector.
- A key cover for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

Cartridge holder panel:

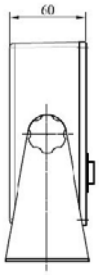
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply 100-240VAC 50-60Hz 12VDC 15W
- Backplane interconnection circuit

Stainless steel U-shaped support piece:

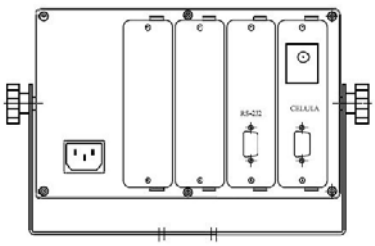
- 2 brackets to secure the support piece with the front panel



FRONT VIEW



SIDE VIEW



REAR VIEW

Version SC-A12

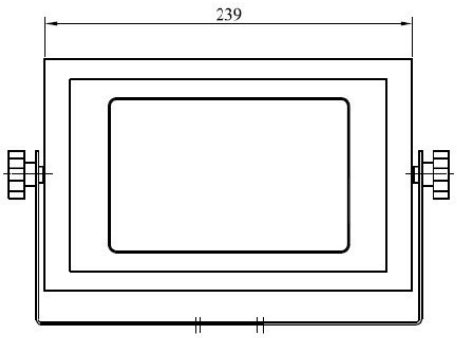
It comprises an SC-A weight cartridge and Option 12. Option 12 is defined by the peripheral elements of the front panel and includes the following components and options:

Front panel:

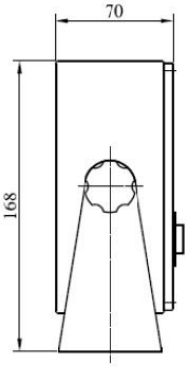
- Casing made from stainless steel
- 7” 24-bit RGB TFT screen 800x480 RS232/USB
- Resistive touch sensor
- Buzzer
- Flat interconnection cable

Cartridge holder panel:

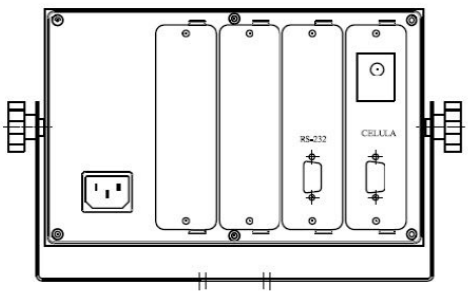
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite + Circuit breaker
- Switching power supply 100-240VAC 50-60Hz 12VDC 15W
- Backplane interconnection circuit



FRONT VIEW



SIDE VIEW



REAR VIEW

Version SC-A30

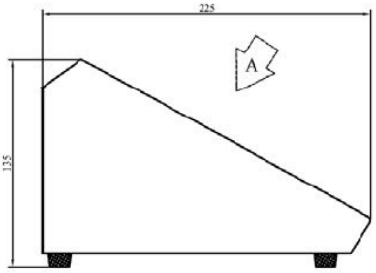
Comprising an SC-A weight cartridge and Option 30. Option 30 is defined by the peripheral elements of the front panel and includes the following components and options:

Front panel:

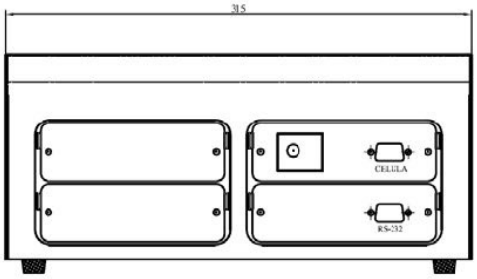
- Casing made from stainless steel
- 7” 24-bit RGB TFT screen 800x480 RS232/USB
- 29-key Matrix keyboard + ON/OFF
- PLUSII/S2B thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

Cartridge holder panel:

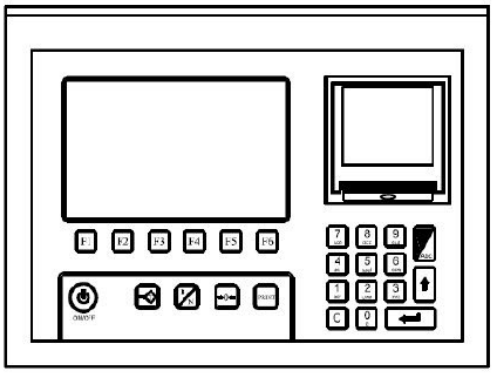
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply 100-240VAC 50-60Hz 12VDC 15W
- Backplane interconnection circuit



SIDE VIEW



REAR VIEW



FRONT VIEW

Version SC-A30/Q

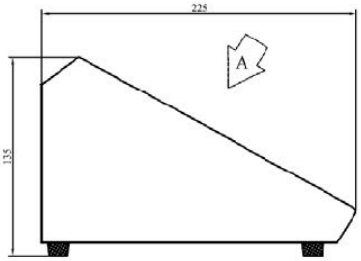
Comprising an SC-A weight cartridge and Option 30/Q. Option 30/Q is defined by the peripheral elements of the front panel and includes the following components and options:

Front panel:

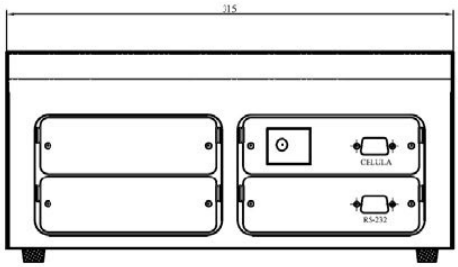
- Casing made from stainless steel
- 7” 24-bit RGB TFT screen 800x480 RS232/USB
- 54-key Matrix keyboard + ON/OFF
- S2B/12 thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

Cartridge holder panel:

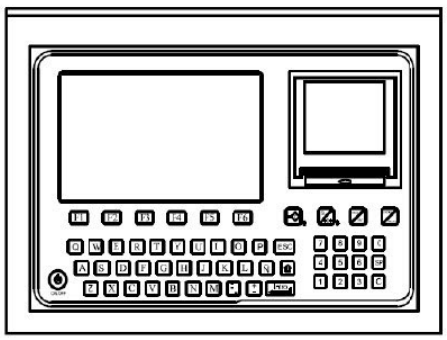
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Shucko 220 V + Ferrite
- Switching power supply 100-240VAC 50-60Hz 12VDC 15W
- Backplane interconnection circuit



SIDE VIEW



REAR VIEW



FRONT VIEW

Version SC-A31

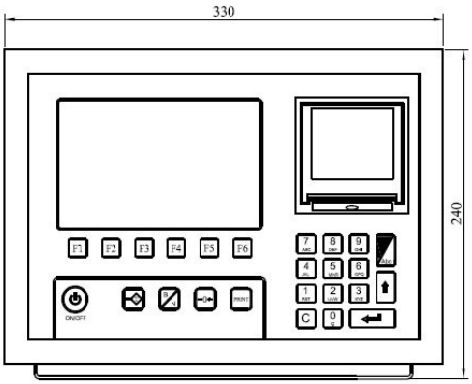
Comprising an SC-A weight cartridge and Option 31. Option 31 is defined by the peripheral elements of the front panel and includes the following components and options:

Front panel:

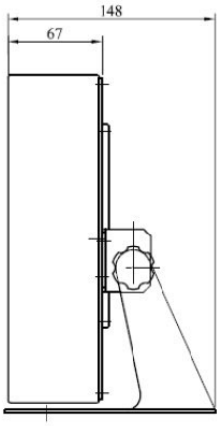
- Casing made from stainless steel
- 7” 24-bit RGB TFT screen 800x480 RS232/USB
- 28-key Matrix keyboard + ON/OFF key
- PLUSII/S2B thermal panel printer or no printer
- Buzzer
- Flat interconnection cable

Cartridge holder panel:

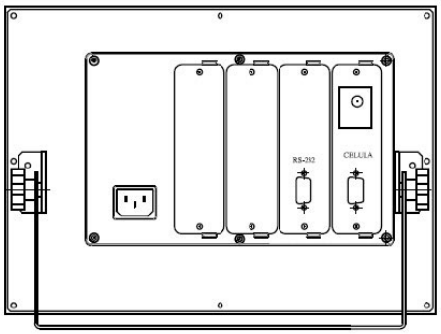
- Casing made from ABS
- Weight cartridge
- Microprocessor cartridge
- Schucko 220 V + Ferrite
- Switching power supply 100-240VAC 50-60Hz 12VDC 36W
- Backplane interconnection circuit



FRONT VIEW



SIDE VIEW



REAR VIEW