

EU Type Examination Certificate

No. 0200-MID-06126 Revision 1

EW2000

AUTOMATIC GRAVIMETRIC FILLING INSTRUMENT

Issued by **FORCE Certification**
EU - Notified Body No. 0200

In accordance with the requirements in Directive 2014/32/EU of the European Parliament and Council.

Issued to **Portpack UK Limited**
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UNITED KINGDOM

In respect of An automatic gravimetric filling instrument designated **EW2000** with variants of modules of load receptors, load cells and peripheral equipment.
Reference class: Ref (x) = 0.1
Maximum capacity, Max= n × d
Verification scale interval: d ≥ 10 g
Number of verification scale intervals: n ≤ 5000
(however, dependent on environment and the composition of the modules)
Variants of modules and conditions for the composition of the modules are set out in the annex.

The conformity with the essential requirements in Annex 1 and the specific requirements in Annex VIII (MI-006), chapter I & II of the Directive 2014/32/EU is met by the application of OIML R61:2004, OIML D11:2013 and WELMEC Guide 7.2:2015.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 8 pages.

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Descriptive annex

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1. Introduction

This pattern of an automatic gravimetric filling instrument designated the EW2000 is designed to dispense pre-determined loads of powdered or granular materials. The system comprises a material feed device, a weighing unit supported by strain-gauge load cell(s), an electronic indicator (weighing controller) and a PLC.

The operator selects the predetermined (target) weight and other operational inputs via the keyboard on the front of the controller. The weighing controller operates the filling machine with signals to plant actuators based on signals from the load cell(s) and plant sensors.

The display on the front of the controller shows the predetermined weight and the actual weight of the weighing unit when the machine is operating.

2. Functional description

2.1 Mechanical

The instrument comprises material handling facilities (feeding device and weighing unit) which shall enable it to respect the MPEs during normal operation.

2.1.1 Material feeding device

The feeding device may be any one of the following:

- Gravity feeder or high speed gravity feeder
- Single screw or double screw feeder
- Belt feeder or high speed belt feeder
- Vibratory feeder

2.1.2 Load receptor

For net weighing, the load receptor incorporates a weigh hopper and associated discharge device, for weighing of target weights in the weigh hopper. The weigh hopper may have one or two discharge gates, each discharge gate being pneumatically driven by one or two air cylinders. The discharge gate(s) are controlled by sensors to ensure the correct operation of the machine.

For gross weighing, the load receptor may consist of a bag clamp and spout. The bag clamp is operated by one or two air cylinders. Sensors detect the presence of a bag.

2.1.3 Load cell

Any analogue load cell(s) may be used for instruments under this certificate of type examination provided the following conditions are met:

- 1) There is a respective OIML Certificate of Conformity (R60) or a Part / Evaluation / Test Certificate (EN 45501) issued for the load cell by a Notified Body responsible for type examination under Directive 2014/31/EU.
- 2) The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2:2015), and any particular installation requirements). A load cell marked NH is allowed only if humidity testing to EN 45501 has been conducted on this load cell.

- 3) The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in the above WELMEC 2 document, or the like, at the time of EC verification or declaration of EC conformity of type.
- 4) The load transmission must conform to one of the examples shown in the WELMEC 2.4 Guide for load cells.

2.1.4 Pneumatic

The air cylinders which operate the weigh hopper discharge flaps, bag clamps and feed cut-off gates are double acting type used in conjunction with directional control valves having solenoid-pilot air actuators and spring or pilot air return actuators. The operating pressure range is 3 – 6 bar, over pressures are prevented by a pressure regulator and under pressures are detected by a pressure switch.

2.2 Electrical

2.2.1 Controller cabinet

The controller cabinet houses the PLC and/or electrical relays and power supply. The weighing controller (a CSX indicator or a CSW20 indicator) may be inset into the door of the controller cabinet. In the case of a multiple weigher installation, more than one indicator may be installed. Alternatively, may the indicator(s) be mounted separately. The pneumatic actuators controlling the filling process are mounted within the chassis of the weigher hopper.

2.2.2 Weighing controller

The controller comprises an Marco digital weight indicator either type CSX (Figure 1) or type CSW20 (Figure 2). The indicator housing is fabricated from stainless steel plate, the front panel comprises a weight display with auxiliary LCD display, and operator keyboard. The LCD panel displays the weight and user information.

2.3 Operation

The weighing controller/indicator has the following devices,

- self-test sequence and display check during power-up
- determination of the stability of equilibrium
- calibration/set-up access via internal calibration switch
- initial zero-setting, overall effect < 20 %
- semi-automatic zero-setting
- zero-tracking
- indication of stable equilibrium
- semi-automatic subtractive tare (not operable during automatic operation)

System interlocks are present, within the software, to prevent,

- Air supply pressure below limit,
- Head of material in upper feed hopper insufficient
- Weigh hopper discharge gate not closed

Error messages appear on the display unit to provide information to the operator.

2.4 Software

2.4.1 Indicator

The indicator software has the version number PO7_XXX, which is displayed at power-up. Any calibration needs access to the calibration switch located on the main board, protected by seals on the enclosure, and can therefore be performed only by authorised personnel.

Any software download requires breaking the seals on the indicator and needs changing of the EPROM. This operation must be carried out only by authorised personnel and the action must be recorded as well as the new version number, when the seals are replaced.

2.4.2 PLC

If a PLC is incorporated, it is used for interlocking of upstream and downstream equipment only and contains no legally relevant software.

3. Technical data

3.1 Weighing controller/indicator

Type:	CSX or CSW20
Reference class:	Ref(0.1)
Accuracy class:	X(x), where $x \geq 0.1$
Weighing range:	Single-interval
Weighing mode:	Static
Maximum capacity (Max):	$= n \times d$
Minimum fill (MinFil):	See table in section 3.2
Excitation voltage:	5 VDC
Maximum number of Verification Scale Intervals (n):	≤ 5000
Verification scale interval (e):	$\geq 10 \text{ g}$
Minimum input voltage per VSI:	$1.0 \mu\text{V}$
Initial zero-setting range:	$\leq 20 \% \text{ of Max}$
Maximum subtractive tare effect:	-Max
Fractional factor (p_i):	0.5
Circuit for remote sense:	Active (see below)
Minimum input impedance:	10.9 ohm, ZM6XX indicator using $10 V_{\text{EXC}}$, 14.5 ohm, ZM5XX indicator using $10 V_{\text{EXC}}$, 58.3 ohm, using $5 V_{\text{EXC}}$
Maximum input impedance:	1100 ohm
Connecting cable to load cell(s):	See Section 3.1.1
Electromagnetic class:	E2
Humidity:	Non-condensing
Mains power supply:	110/120 VAC, 50/60 Hz, or 220/240 VAC, 50/60 Hz, or 24
Operating temperature range:	$-10 \text{ }^\circ\text{C} / +40 \text{ }^\circ\text{C}$
Peripheral interface(s):	See Section 4

3.1.1 Connecting cable between the indicator and analogue load cell / junction box for analogue load cell(s)

3.1.1.1 4-wire system

Cable between indicator and load cell(s): 4 wires (no sense), shielded

Maximum length: The certified length of the load cell cable, which shall be connected directly to the indicator.

3.1.1.2 6-wire system

Cable between indicator and a junction box (J-box) for load cell(s): 6 wires (sense), shielded.

Maximum cable length between indicator and junction box, if any: 150 m/mm²

3.1.2 Minimum filling (MinFill)

Minimum values of MinFill.

d	X(0.1)		X(0.2)		X(0.5)		X(1)		X(2)		
	[g]	× d	[kg]	× d	[kg]	× d	[kg]	× d	[kg]	× d	[kg]
10	667		6.67	333	3.33	133	1.33	33	0.33	11	0.11
20	1000		20.00	333	6.66	133	2.66	67	1.34	17	0.34
50	1000		50.0	500	25.00	133	6.65	67	3.35	33	1.65
100	1000		100.0	500	50.0	200	20.0	67	6.7	33	3.3
200	1000		200.0	500	100.0	200	40.0	100	20.0	33	6.6
≥ 500	1000			500		200		100		50	

4. Interfaces and peripheral equipment

4.1 Interfaces

The indicator has any of the following interfaces,

- Communication port (RS232, RS485)
- Printer port, serial port (RS232)
- Control I/O interface
- Analogue output (optional)

4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with a Part Certificate or Evaluation Certificate issued by a Notified Body responsible for Module B under Directive 2014/32/EU and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a Part or Evaluation certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;

- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

The printout of individual weight readings is for information purposes only, except for preset values and the number of weighing operations.

5. Approval conditions

5.1 Compatibility of modules

The instrument shall fulfil composition of modules according to EN 45501:2015 annex F.

5.2 Installation

The instrument shall be permanently installed or shall be provided with a level indicator.

6. Special conditions for verification

The environmental conditions should be taken into consideration by the composition of modules for a complete weighing instrument, for example instruments with load receptors placed outdoors and having no special protection against the weather.

The composition of modules shall agree with section 5.1.

7. Securing and location of seals and verification marks

7.1 Securing and sealing

Seals shall bear the verification mark of a notified body or alternative mark of the manufacturer or his representative according to ANNEX II, module F or D of Directive 2014/32/EU.

The inscription plate is located visible on the indicating device and is secured, either by sealing or by being of a form such that it is destroyed when removed.

Calibration/set-up data is stored within a non-volatile memory on the indicator and can only be accessed via the internal calibration switch, protected by seals.

Components that may not be dismantled or adjusted by the user (jumper on main board when applicable, electronics, load cell connection) must be secured. A wire and seal solution or a tamper-evident sticker (bearing a securing mark) may be used.

8. Location of CE mark of conformity and inscriptions

8.1 Scale

8.1.1 CE mark

CE mark and supplementary metrological marking shall be applied to the instrument according to article 20 of Directive 2014/32/EU.

8.1.2 Inscriptions

Max, Min, and d shall be located near the display.

On the inscription plate of the instrument:

- Manufacturer's name and/or trademark
- Postal address of manufacturer

- Type designation
- Serial number
- Product(s) designation
- Reference class Ref(x)
- Accuracy class X(x)
- Max, Min, d
- Temperature range: -10 / +40 °C (optional)
- Electromagnetic class: E2
- Humidity: Non-condensing
- EU type examination certificate number
- Supply voltage
- Pneumatic/hydraulic pressure (if applicable)
- Maximum subtractive tare (if \neq -Max)
- Information in respect of the conditions of use (if applicable)
- Information whether or not additional devices providing metrological results comply with the provisions of Directive 2014/32/EU on legal metrological control (if applicable)

The markings and inscriptions shall fulfil the requirements of Article 8, Article 21, Article 22 and Point 9 of Annex I of Directive 2014/32/EU.

9. Pictures

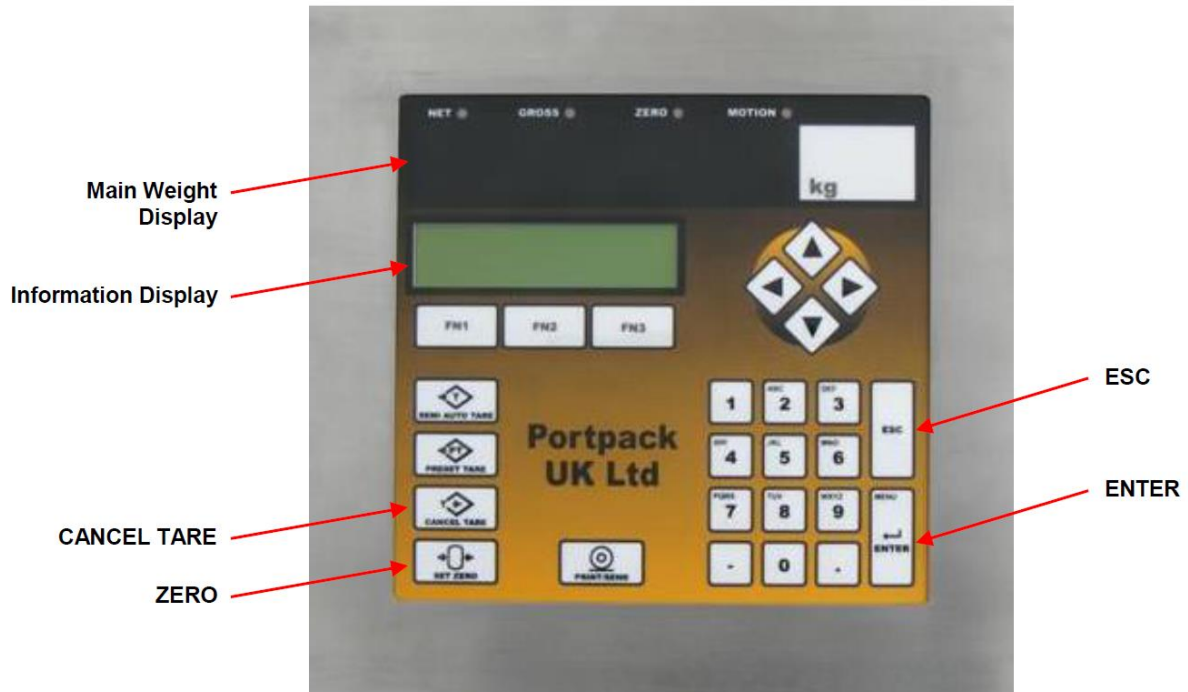


Figure 1 CSX weighing controller/indicator



Figure 2 CSW20 weighing controller/indicator