
OIML Member State Denmark	OIML Certificate No. R76/2006-A-DK2-2023.09	
OIML CERTIFICATE ISSUED UNDER SCHEME A		
OIML Issuing Authority Name: FORCE Certification A/S Address: Park Allé 345, 2605 Brøndby, Denmark Person responsible: Per Rafn Crety		
Applicant Name: Marel Iceland ehf. Address: Austurhraun 9 210 Gardabaer Iceland		
Manufacturer Marel Iceland ehf.		
Identification of the certified type <i>(the detailed characteristics will be defined in the additional pages)</i> M2400-P03		
Designation of the module <i>(if applicable)</i> Non-automatic weighing instrument		
<p>This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):</p> <p>OIML R 76-1, Edition (year): 2006</p> <p>For accuracy class (if applicable): III and IIII</p>		

**OIML Certificate No.
R76/2006-A-DK2-2023.09**

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated OIML reports:

Type examination report: No. DANAK-1916777, dated 25 August 2016, that includes 75 pages

Type examination report: No. 123-22892.10, dated 24 March 2023, that includes 24 pages

Type evaluation report: No. 123-31363.90.10, dated 21 September 2023, that includes 21 pages

The technical documentation relating to the identified type is contained in documentation file:
T212884 and 123-22892

OIML Certificate History

Revision No.	Date	Description of the modification
Initial version	04 December 2023	-

Identification, signature and stamp

The OIML Issuing Authority

FORCE Certification A/S

Date: 04 December 2023

Jens Hovgård Jensen

Certification Manager

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

Descriptive annex

The weighing instrument is designated M2400-P03 and consists of an electronic indicator module, type M2400-P03, connected to one or two separate and suitable load receptor module(s).

The instrument is a built for purpose class III, self-indicating weighing instrument with a single interval indication or dual or triple weighing ranges. It has the possibility to perform price calculation, but it may not be used for direct sale to the public.

The name of the instrument may be followed by alphanumeric characters for technical, legal or commercial characterization of the instrument.

Characteristics the non-automatic weighing instrument

Accuracy class:	III and IIII
Load Cell inputs	2 equivalent LC inputs
Weighing range:	Single-interval, multi-range (up to 3 ranges)
Maximum capacity (Max):	0.3 kg to 300 000 kg
Verification scale interval ($e_i \Rightarrow$):	≥ 0.1 g
Maximum number of Verification Scale Intervals (n_i):	≤ 10000 (class III), ≤ 1000 (class IIII)
Maximum tare effect:	-Max
Mains power supply:	110-230 VAC, 50/60 Hz, or 12 to 24 VDC.
Operational temperature:	-10 °C to +40 °C
Electromagnetic class:	E2

Characteristics the indicator module

Fractional factor:	$p_i = 0.5$
Minimum input voltage per VSI:	0.25 μ V
Excitation voltage:	± 3 VDC bipolar (6V effective)
Circuit for remote sense:	present on the model with 6-terminal connector
Minimum input impedance:	87 ohm
Maximum input impedance:	1100 ohm

Devices

- Initial zero setting device ($\leq 20\%$)
- Combined semi-automatic zero setting and tare balancing device
- Zero tracking ($\leq 4\%$)
- Automatic Tare device
- Preset Tare device
- Price calculation device
- Data storage device
- Printing device
- Gravity compensation device
- Internal alibi storage device
- Stable equilibrium, Zero, Net and active range indicators

Software

The firmware version has the form x.yy-zz, where the "x" represents major changes affecting the legal functionality, "yy" represents minor changes not affecting the legal functionality and "zz" represents minimal changes and bug fixes.

The weighing module version has the form ABC and any change requires contact with a certifying authority.

The approved versions are,

Firmware: 1.00-20 or higher (up to 1.99-99).

Weighing module: 100

The versions can be seen in the user menu.

Interface

- 2 x RS-232
- 2 x USB
- Ethernet
- 4 x digital input/outputs
- CAN bus

The peripheral interfaces are “protective” as defined in OIML R76:2006.

Load receptors, load cells, and load receptor supports

Movable platforms shall be equipped with level indicators or tilt switches.

Maximum cable lengths

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.

6-wire system

Cable between indicator and load cell(s): 6 wires (sense), shielded.

Maximum cable length between indicator and junction box (J-box) for load cell(s), if any:

Maximum length: 1077 m/mm²

Maximum resistance per wire: 18.2 ohm

General acceptance of analogue load cells

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 an OIML Certificate of Conformity (R60:2000 or R60:2017) issued for the load cell
- 2) The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (OIML R76:2006 Annex F), and any particular installation requirements). A load cell marked NH is allowed only if humidity testing to OIML R76:2006 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, according to OIML R76:2006 Annex F.
- 4) The load transmission must be a standard, non-critical design.

Platforms

Construction in brief	All-steel or steel-reinforced concrete construction, surface or pit mounted
Reduction ratio	1
Junction box	Mounted in or on the platform
Load cells	Any R60 certified load cell according to information above
Drawings	Various

Weigh bridge platforms

Construction in brief	All-steel or steel-reinforced concrete construction, surface or pit mounted
Reduction ratio	1
Junction box	Mounted in or on the platform
Load cells	Any R60 certified load cell according to requirements mentioned above
Drawings	Various

Bin, tank, and hopper

Construction in brief	Load cell assemblies each consisting of a load cell stand assembly to support one of the mounting feet bin, tank or hopper.
Reduction ratio	1
Junction box	Mounted on dead structure
Load cell	Any R60 certified load cell according to requirements mentioned above

PU8000 U-shaped platform

Construction in brief:	All steel, surface mounted.
Reduction ratio:	1
Junction box:	Mounted in the platform
Load cell:	4 pcs. Vishay Tedeo-Huntleigh Model 3510 or 4 pcs. Flintec type SLB or type SB14
PU8000-1000 kg:	$Max_1 = 600 \text{ kg}$, $e_1 = 0.2 \text{ kg}$, $Max_2 = 1,000 \text{ kg}$, $e_2 = 0.5 \text{ kg}$ E_{max} of load cell: 500 kg
PU8000-2000 kg:	$Max_1 = 1,500 \text{ kg}$, $e_1 = 0.5 \text{ kg}$, $Max_2 = 2,000 \text{ kg}$, $e_2 = 1 \text{ kg}$ E_{max} of load cell: 1,000 kg
PU8000-3000 kg:	$Max = 3,000 \text{ kg}$, $e_1 = 1 \text{ kg}$ E_{max} of load cell: 2,000 kg

See Figures 3 and 4.

PU9000 U-shaped platform

Construction in brief:	All steel, surface mounted
Reduction ratio:	1
Junction box:	Mounted in the platform
Load cell:	4 pcs. Vishay Tedeo-Huntleigh Model 3510 or 4 pcs. Flintec type SLB or type SB14
PU9000-1000 kg:	$Max_1 = 600 \text{ kg}$, $e_1 = 0.2 \text{ kg}$, $Max_2 = 1,000 \text{ kg}$, $e_2 = 0.5 \text{ kg}$ E_{max} of load cell: 500 kg
PU9000-2000 kg:	$Max_1 = 1,500 \text{ kg}$, $e_1 = 0.5 \text{ kg}$, $Max_2 = 2,000 \text{ kg}$, $e_2 = 1 \text{ kg}$ E_{max} of load cell: 1,000 kg
PU9000-3000 kg:	$Max = 3,000 \text{ kg}$, $e_1 = 1 \text{ kg}$ E_{max} of load cell: 2,000 kg

See Figure 5.

PU9010 U-shaped platform

Construction in brief:	All steel, surface mounted
Reduction ratio:	1
Junction box:	Mounted in the platform
Load cell:	4 pcs. Vishay Tedea-Huntleigh Model 3510 or 4 pcs. Flintec type SLB or type SB14
PU9010-1000 kg:	Max ₁ = 600 kg, e ₁ = 0.2 kg, Max ₂ = 1,000 kg, e ₂ = 0.5 kg E _{max} of load cell: 500 kg
PU9010-2000 kg:	Max ₁ = 1,500 kg, e ₁ = 0.5 kg, Max ₂ = 2,000 kg, e ₂ = 1 kg E _{max} of load cell: 1,000 kg
PU9010-3000 kg:	Max = 3,000 kg, e ₁ = 1 kg E _{max} of load cell: 2,000 kg.

See Figure 6.



Sealing

Parameter protection

There are two alternative methods to protecting the legally relevant parameters

- Either:
The instrument is secured the instrument is secured by two event counters, CAL and CON, which are incremented each time the calibration or sealed configuration parameters are changed. At verification the value of the two event counters is written on a brittle plastic sticker - sealed with a verification mark - next to it. If the value of the CAL or CON differs from the one written at verification time, the seal is broken
- Or:
the access control is set to “Locked” either by switch the DIP switch S2-SEAL to the "ON" position, or by setting the Access control in menu Audit to “Locked”. When Access control is set to “Locked” no changes can be done to CON or CAL parameters. The Access level “Locked” can only be changed by accessing the S1 push bottom on the PCB. By sealing the M2400 indicator enclosure with a tamperproof sticker or a wire and plumb seal the access level cannot be adjusted without breaking a seal.

Load cell sealing

There are two alternative methods for sealing the load cells to the indicator.

- Either:
The load cell serial numbers are stored in a CON protected memory in M2400, the serial numbers can be viewed under Menu > Audit and should be identical to those marked on the load cells.
- Or:
access to the load cell connection is physically prevented by sealing the M2400 indicator enclosure with a tamperproof sticker or a wire and plumb seal.

If a load cell junction box is present, it is always sealed by using a tamperproof sticker placed on one of its sides.

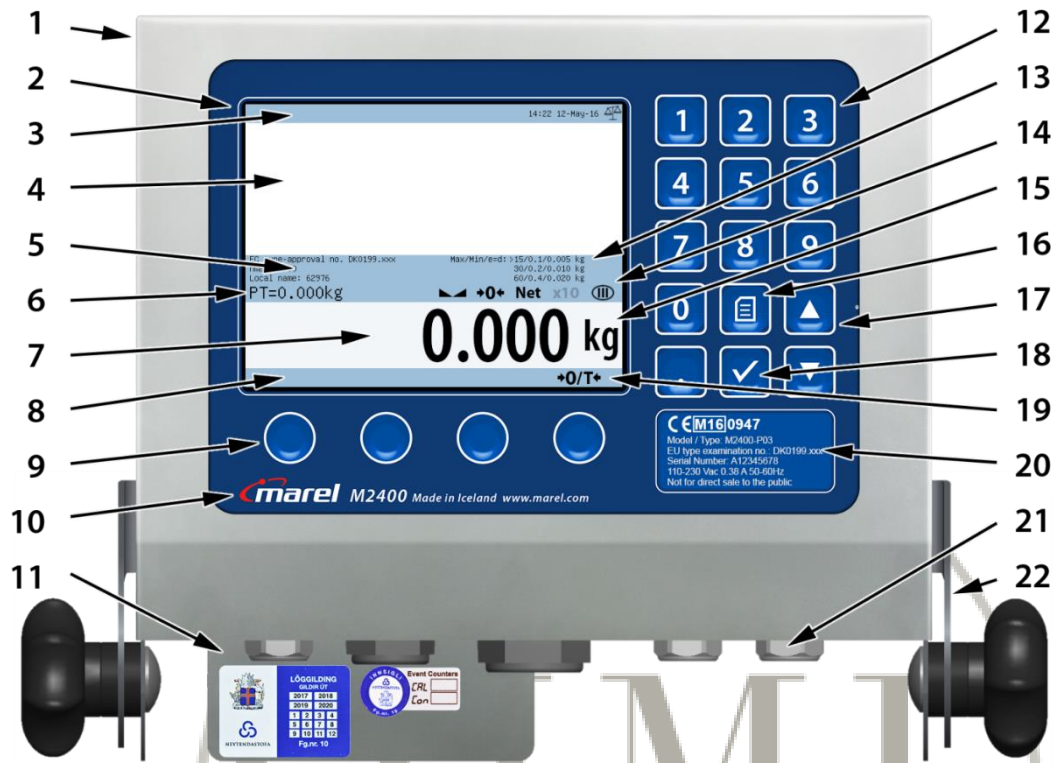
Peripheral interfaces

The peripheral interfaces are “protective”; it neither allows manipulation with weighing data or legal setup, nor change of the performance of the weighing instrument in any way that would alter the legality of the weighing.

Verification marks

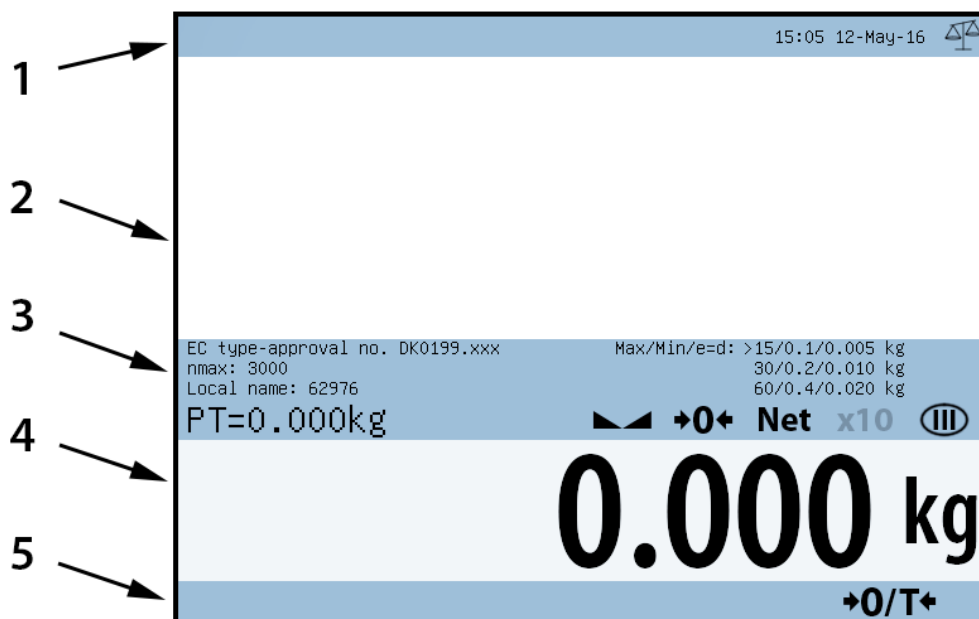
The CAL / CON seal and any additional markings are on a special forward-facing plate on the bottom of the indicator.

Pictures



No.	Description	No.	Description
1	The M2400 electrical enclosure	12	The numerical keypad, 11 keys
2	The M2400 LCD display panel	13	The weighing range indication
3	The title bar	14	The accuracy class mark and indicators
4	The Lua script display area	15	The weighing unit
5	The information banner	16	The page or home button
6	The preset tare display	17	The up and down arrow buttons
7	The primary indication display	18	The check, or enter, button
8	The button/key banner	19	The combined zero and tare button
9	Four programmable keys	20	The permanent marking label
10	The Marel logo	21	The cable glands
11	The area for verification and conformity marks	22	The wall bracket and tilt adjustment

Figure 1: M2400 indicator.



Item	Description
1	The title banner. The firmware uses this banner to display information, like the current position in the menu tree (to some extent), the clock and the date.
2	The Lua application display area. A Lua application program, or script, can use this area for displaying user information. A common application is to use this area to allow the operator to set further information about the weighing, such as what is to be weighed, and from where the material is coming and where it is going. Such information is then recorded with the weighing information.
3	The information banner. This banner is used to display various markings that do not need to be permanent when power is removed. This is also where the preset tare is displayed, if used, and where the instrument status is shown.
4	The primary indication display. This is where the weight is displayed and the weighing unit.
5	The button/key banner. The M2400 indicator has four programmable buttons beneath the LCD display. This banner is for displaying the function of each button. The rightmost button is usually used as a combined zero and tare button when the scale is in normal use.

Figure 2: M2400 primary indication display



Figure 3: PU8000 platform, top and bottom view.

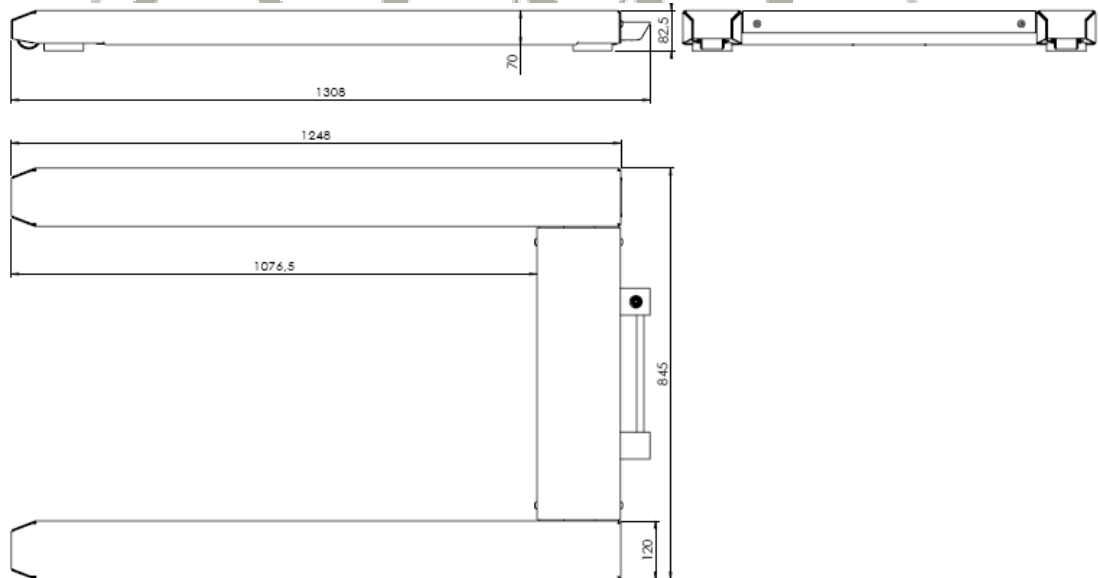


Figure 4: Drawing of PU8000 U-shaped platform.

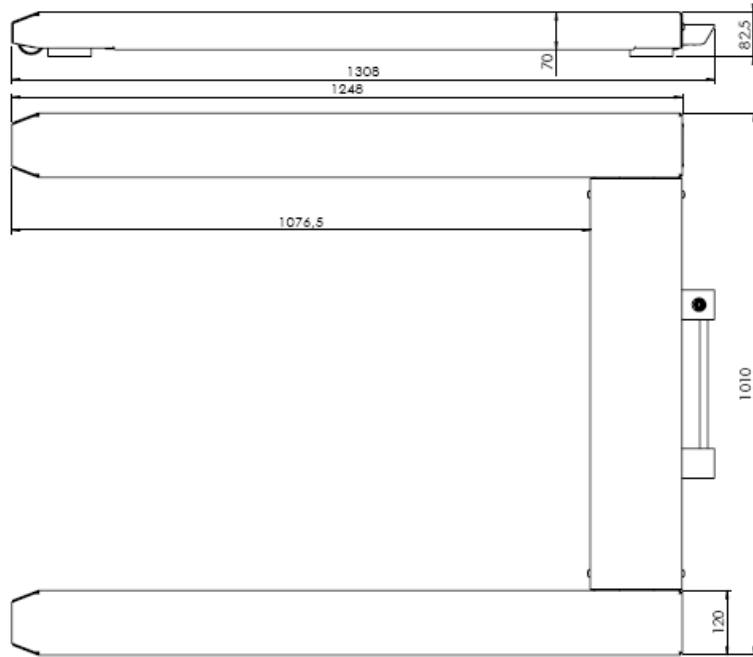


Figure 5: Drawing of PU9000 U-shaped platform.

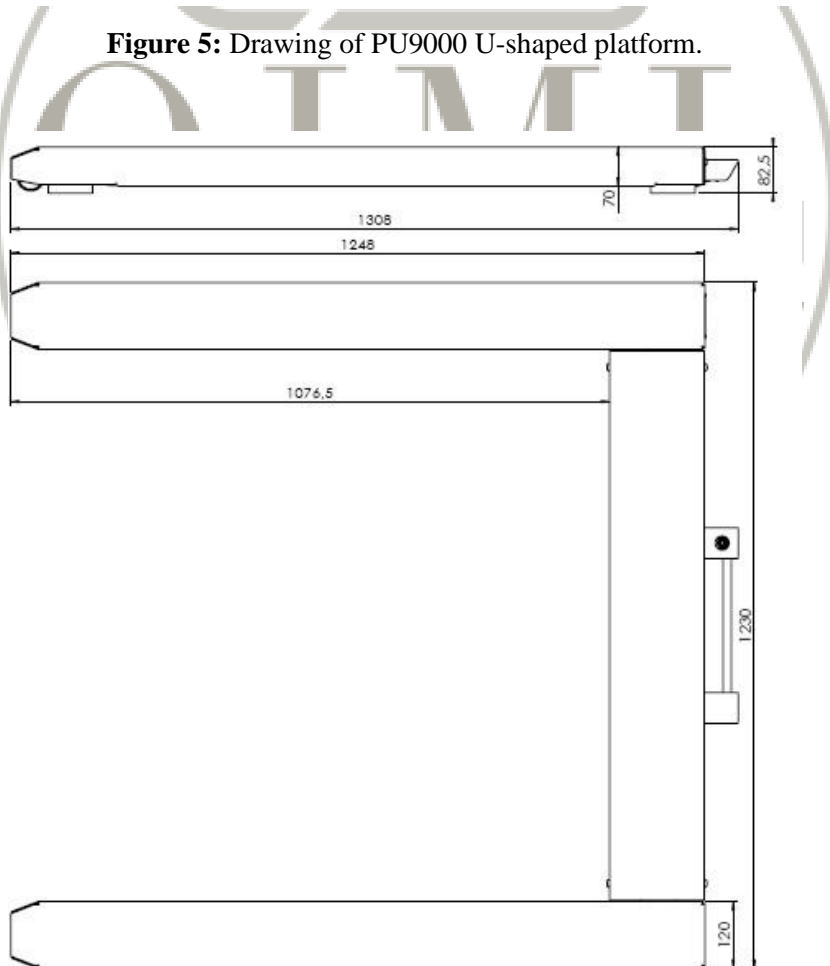


Figure 6: Drawing of PU9010 U-shaped platform.

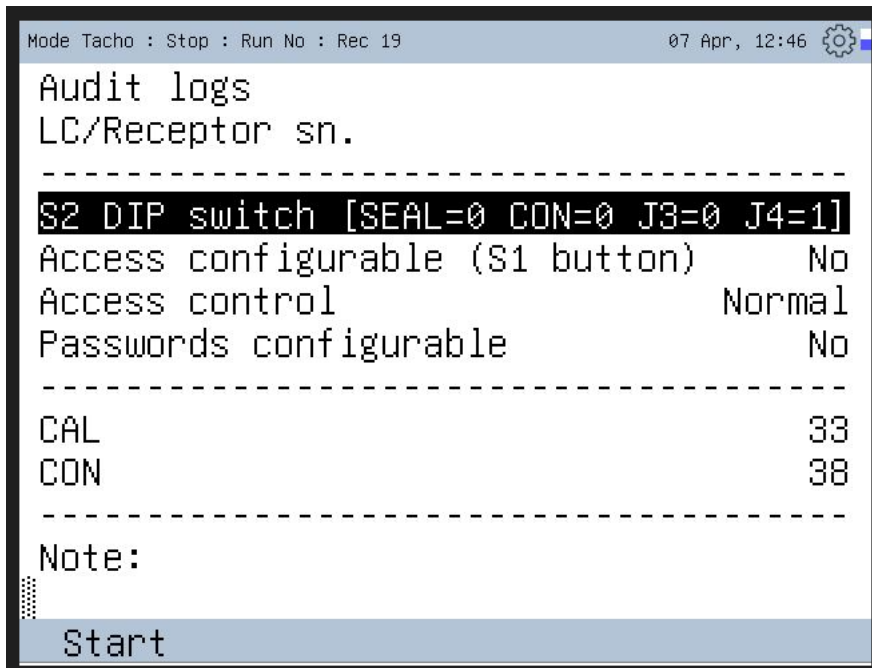


Figure 7: Software seal status

