

	 DANAK PROD Reg.no. 7026	FORCE Certification 
OIML Member State Denmark		OIML Certificate No. R76/2006-A-DK2-26.10
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> MU1		
Designation of the module <i>(if applicable)</i> Non-automatic weighing instrument		
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): OIML R 76-1, Edition (year): 2006 For accuracy class (if applicable): III and IIII		

**OIML Certificate No.
R76/2006-A-DK2-26.10**

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. 121-31618.10, dated 22 June 2022, that includes 68 pages

Type evaluation report: No. 121-31618.90.10, dated 06 July 2022, that includes 20 pages

Type evaluation report: No. 126-26892.20, dated 15 September 2026, that includes 20 pages

The technical documentation relating to the identified type is contained in documentation file: A530949, 121-31618, and 126-26982

OIML Certificate History

Revision No.	Date	Description of the modification
Initial version	15 th of September 2026	-

Identification, signature and stamp

The OIML Issuing Authority

FORCE Certification A/S

Date: 15th of September 2026

Michael Lang Sørensen

2026-09-15

Digitally signed by Michael Lang Sørensen
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Project Manager

Michael Lang Sørensen

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 MU1 instrument is a class III or IIII, non-automatic weighing instrument with single-interval or dual-range, comprising an MU1 analog data processing unit, a load receptor, and a PC with display.

Characteristics

Indicator type:	MU1
Accuracy class:	III and IIII
Weighing range:	Singe-interval, multi-range
Verification scale interval (ei):	Max _i / n

Data processing unit characteristics

Maximum number of verification scale intervals (n):	10,000 for class III, (for each range) 1000 for class IIII
Internal resolution:	±8388608 counts
Maximum tare effect:	-Max
Fractional factor:	p'i = 0.5
Excitation voltage:	±3 Vdc bipolar
Minimum input voltage:	0.25 µV/e
Minimum dead load (D _{min}):	0 mV
Maximum analogue range	±30 mV
Circuit for remote sense	Active, (see below)
Minimum input impedance	85 ohm
Maximum input impedance	1100 ohm
Circuit for remote sense:	Active
Connecting cable to load cell(s):	6-wire system
Supply voltage:	5 VDC from USB
Operating temperature range	-10 °C / +40 °C
Electromagnetic class:	E2
Max. cable length between MU1 and a junction box for load cells: 1324 m/mm ²	

Load receptors

JBT Marel Load receptors:

Platform type:	Max ₁ / Max ₂	Min ₁ / Min ₂	e ₁ / e ₂ =	Number of load cells	Load Cell
PL2020	1.5 kg / 3 kg	0.01 kg / 0.02 kg	0.0005 kg / 0.001 kg	1	PC30-C3-7kg Y _≥ 15000
PL2020	3 kg / 6 kg	0.02 kg / 0.04 kg	0.001 kg / 0.002 kg	1	PC30-C3-10kg or 15kg Y _≥ 15000
PL2020	6 kg / 15 kg	0.04 kg / 0.1 kg	0.002 kg / 0.005 kg	1	PC30-C3-20kg or 30kg Y _≥ 15000
PL3020	6 kg / 15 kg	0.04 kg / 0.1 kg	0.002 kg / 0.005 kg	1	PC30-C3-30kg Y _≥ 15000
PL3020	15 kg / 30 kg	0.1 kg / 0.2 kg	0.005 kg / 0.01 kg	1	PC30-C3-50kg Y _≥ 15000
PL4020	30 kg / 60 kg	0.2 kg / 0.4 kg	0.01 kg / 0.02 kg	1	PC7-C3-100kg Y _≥ 12500
PL4026 (n=4000)	20 kg / 30 kg	0.1 kg / 0.2 kg	0.005 kg / 0.01 kg	1	PC6-C4-100kg Y _≥ 25000
PL5020	30 kg / 60 kg	0.2 kg / 0.4 kg	0.01 kg / 0.02 kg	1	PC7-C3-100kg Y _≥ 12500
PL5020	60 kg / 150 kg	0.4 kg / 1 kg	0.02 kg / 0.05 kg	1	PC7-C3-250kg Y _≥ 12500
PL5020	150 kg / 300 kg	1 kg / 2 kg	0.05 kg / 0.1 kg	1	PC7-C3-500kg Y _≥ 12500
PU8000, PU9000, OR PU9010	600 kg / 1000 kg	4 kg / 10 kg	0.2 kg / 0.5 kg	4	VPG 3510 or Flintec SLB E _{max} = 500 kg *
PU8000, PU9000, OR PU9010	1500 kg / 2000 kg	10 kg / 20 kg	0.5 kg / 1 kg	4	VPG 3510 or Flintec SLB E _{max} = 1000 kg *
PU8000, PU9000, OR PU9010	3000 kg	20 kg	1 kg	4	VPG 3510 or Flintec SLB E _{max} = 2000 kg *

* PUXXXX are U-shaped platforms of critical, non-standard design, they are not eligible for the general load cell acceptance criteria below.

Alternatively, any platform, weigh bridge, bin, tank or hopper style load receptor with a suitable R60 certified load cell that fulfils the conditions below. Moveable platforms shall be equipped with level indicators.

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

- A Test Certificate (EN 45501) or an OIML Certificate of Conformity (R60) respectively is issued for the load cell by a Notified Body responsible for type examination under the Directive 2014/31/EU or an OIML issuing authority respectively.
- 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 installation requirements). A load cell marked NH is allowed only if humidity testing to OIML R60 has been conducted on this load cell.
- 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.
- The load transmission must be standard, non-critical design.

Software

The software is split into two parts: a metrological and an operational.

The version formats are,

- Module metrology firmware: a.bb (a = functional change, bb = bugfix)
The approved version is 1.bb where bb=00 to 99.
- Module operation firmware: yymdd (six digit date code)
The approved versions are 111220, 170131, 190314, 191021 210206, 23109, 240212, 25014 and 251208. Only 170131 and later versions support Marel Secure Printing.

The identification of the MU1 firmware can be observed on command from the PC user interface to which the MU1 is connected via the USB interface.

The MU1 analog data processing unit is a single chip microprocessor based unit, which runs on USB bus power and uses the USB bus to communicate with a PC computer. Its firmware does all legally relevant signal processing, functions and error detection of a non-automatic weighing instrument. A stream of weighing data is sent to the PC user interface software for displaying. The firmware will not stop sending data, even if an error has been detected. The PC user interface software will, however, act on error codes and stop presenting weight values on certain errors; it will also control annunciators like Stable and Net, based on codes received from the MU1 firmware.

The MU1 user interface, controls, and primary indications are presented on the screen of the PC computer connected to the USB bus and running the user interface software. The PC user interface software has the ability to authenticate the connection to a given MU1 module, and the MU1 module will only communicate with one instance of the PC user interface software at a time but multiple MU1 modules can be connected to a single PC. The MU1 module does not communicate with a PC user interface it cannot authenticate. The authentication is based on secret data known to both parties.

Because of different requirements, the look of the PC user interface can vary substantially, depending on the PC computer operating system and closed shell touch panel software requirements.

Devices

- Initial zero setting device ($\leq 20\%$ of Max)
- Semi-automatic zero setting device ($\leq 4\%$ of Max)
- Zero tracking device ($\leq 4\%$ of Max)
- Semi-automatic subtractive tare balancing device
- Automatic tare device (can be disabled when unit is set for direct sale to the public)
- Preset tare device
- High resolution (protected by sealing)
- Gravity compensation device
- Internal alibi storage device
- Stable equilibrium, Zero and Net indicators.

Printing

There is no direct printing from the MU1 NAWI instrument. The operator can instruct a non-approved software, running on the PC computer, to request weighing data from the MU1 and print it, store it, or transmit it. The request is over a protective interface.

The following legally approved weighing data can be sent to a non-approved software application:

- Weight value and unit.
- Weight value and unit and an alibi number (an alibi is also stored).
- Weight value and unit and calculated price.
- Weight value and unit, an alibi number and calculated price (an alibi is also stored).

Interfaces

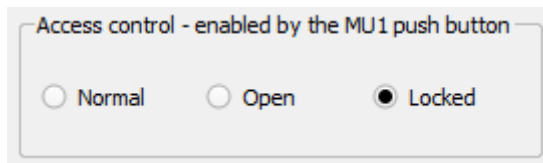
USB – USB mini B connector. Cable must be double screened

Sealing or securing

The instrument can either be sealed or secured. In both cases one of the enclosure screws of the MU1 module shall be sealed with a brittle sticker.

Sealing

The MU1 instrument is sealed by setting the access control in “Locked” mode. In locked mode, legally relevant parameters cannot be changed. The access control mode can only be changed by the use of a recessed push-button on the MU1 analog data processing unit. Access to the push button is prevented with a brittle plastic sticker.



Securing by event counters CAL and CON

In “Normal” access control mode, legally relevant parameters are accessible via password. The Instrument is secured by two event counters, CAL and CON, which are incremented each time the calibration or sealed configuration parameters are changed. The maximum count of both event counters is 999, starting from 001. The event counters can be read from the PC user interface to which the MU1 is connected via the USB interface.

At verification the value of the two event counters is written on a brittle plastic sticker - sealed with a verification mark - next to it. The CAL / CON brittle plastic sticker is placed on the outside of the enclosure containing the MU1 analog data processing unit.

If the value of the CAL or CON differs from the one written at the time of verification, the seal is broken.



Fig. 1: Example of stand alone MU1 PC user interface on a Windows computer

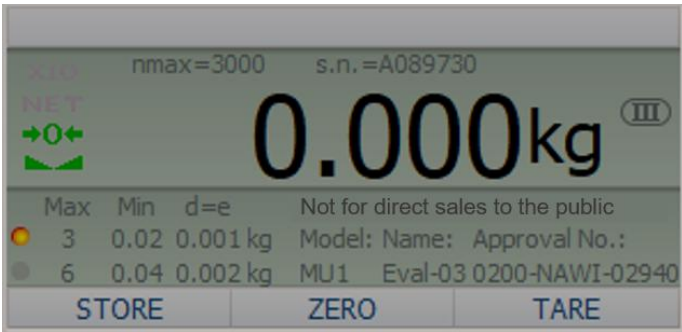
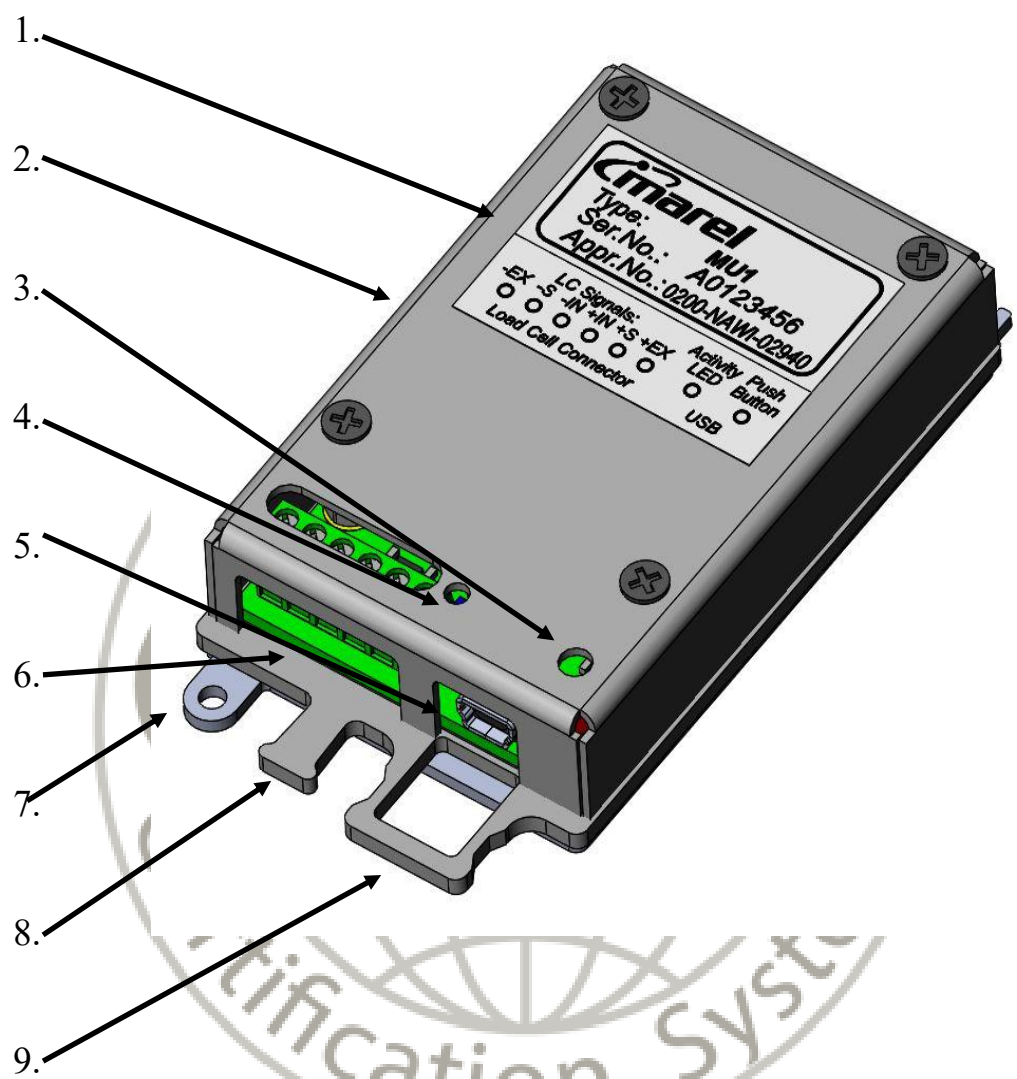


Fig. 2: Example of MU1 PC user interface - Innova closed shell look





1.	Nameplate
2.	Enclosure
3.	The MU1 push button
4.	Activity light
5.	Mini-USB type B connector
6.	Load cell connector with sense (6 wire)
7.	Fastening lug (3mm hole)
8.	Tie point for the screen of the load cell cable
9.	Tie point for USB connector

Fig. 3 MU1 analog data processing unit (MU1 module).

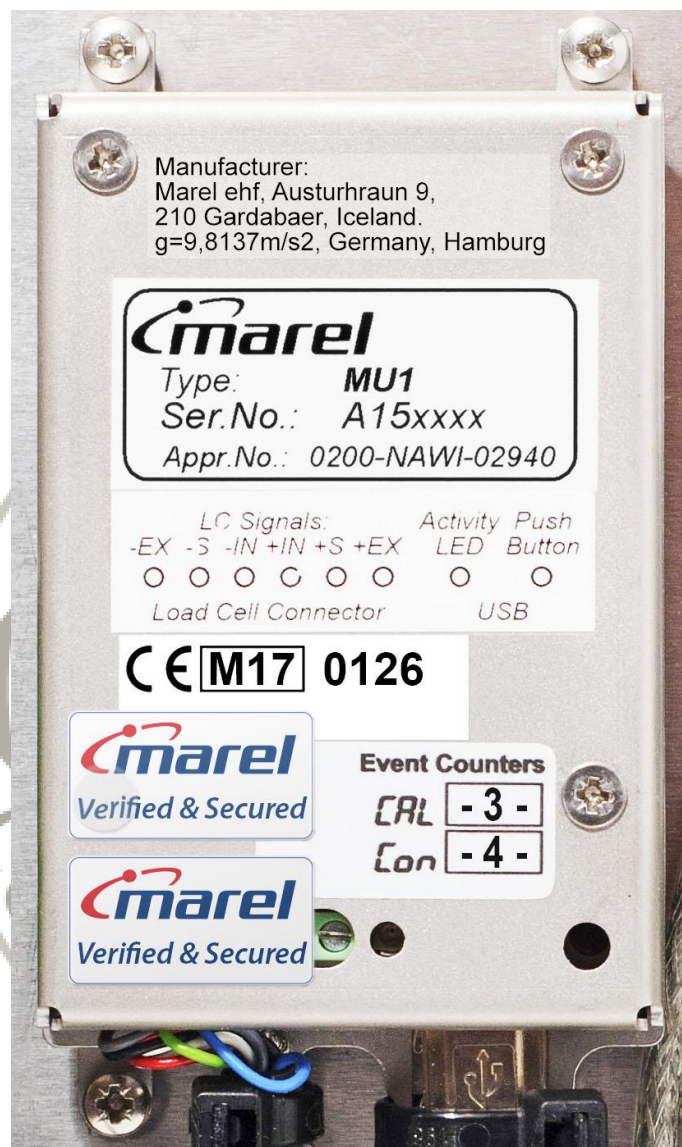


Fig. 4 Sealing of MU1 module.

The MU1 NAWI weighing instrument is formed based on a compatibility of modules calculation according to OIML R76:2006, Annex F. An example is shown below:

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, multi-range.

Certificate of EU Type-Approval N°:

INDICATOR

A/D (Module 1)

Accuracy class according to EN 45501 and OIML R76:

Maximum number of verification scale intervals (n_{max} or lower):

Fraction of maximum permissible error (mpe):

Load cell excitation voltage:

Minimum input-voltage per verification scale interval:

Minimum load cell impedance:

Coefficient of temperature of the span error:

Coefficient of resistance for the wires in the J-box cable:

Specific J-box cable-Length to the junction box for load cells:

Load cell interface:

Additive tare, if available:

Initial zero setting range:

Temperature range:

Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:

LOAD RECEPTOR

(Module 2)

Construction:

Fraction of mpe:

Number of load cells:

Reduction ratio of the load transmitting device:

Dead load of load receptor:

Non uniform distribution of the load:

Correction factor:

$$Q = 1 + (DL + T + IZSR + NUD) / 100$$

LOAD CELL

ANALOG (Module 3)

Accuracy class according to OIML R60:

Maximum number of load cell intervals:

Fraction of mpe:

Rated output (sensitivity):

Input resistance of single load cell:

Minimum load cell verification interval: ($v_{min}\% = 100 / Y$)

Rated capacity:

Minimum dead load, relative:

Minimum dead load output return: ($DR\% = 50 / Z$)

Temperature range:

Test report (TR) or Test Certificate (TC/OIML) as appropriate:

COMPLETE WEIGHING INSTRUMENT

Manufacturer:

Marel

Accuracy class according to EN 45501 and OIML R76:

Fractions: $p_i = p_1^2 + p_2^2 + p_3^2$:

Maximum capacity:

Maximum capacity for each partial weighing range:

Number of verification scale intervals for each weighing range:

Verification scale interval for each weighing range:

Utilisation ratio of the load cell:

Input voltage (from the load cells):

Cross-section of each wire in the J-box cable:

J-box cable-Length to the junction box for load cells:

Temperature range to be marked on the instrument:

Peripheral Equipment subject to legal control:

Acceptance criteria for compatibility			Passed, provided no result below is < 0		
Class ^{W1}	<=	Class ^d & Class ^C (WELMEC 2: 1)	Class ^{W1}	<=	Class ^d & Class ^C (WELMEC 2: 1)
p_i	<=	1 (R76: 3.5.4.1)	$1 - p_i$	>=	0,0
n_i	<=	n_{max} for the class (R76: 3.2)	n_{max} for the class - n_i	>=	4000
n_i	<=	n_{ind} (WELMEC 2: 4)	$n_{ind} - n_i$	>=	4000
n_i	<=	n_{LC} (R76: 4.12.2)	$n_{LC} - n_i$	>=	0
E_{min}	<=	$DL * R / N$ (WELMEC 2: 6d)	$(DL * R / N) - E_{min}$	>=	2,2
$v_{min} * \sqrt{N} / R$	<=	e_i (R76: 4.12.3)	$e_i - (v_{min} * \sqrt{N} / R)$	>=	0,000
or (if v_{min} is not given)					
$(E_{max} / n_{LC}) * (\sqrt{N} / R)$	<=	e_i (WELMEC 2: 7)	$e_i - ((E_{max} / n_{LC}) * (\sqrt{N} / R))$	>=	0,55
ΔU_{min}	<=	ΔU (WELMEC 2: 8)	$\Delta U - \Delta U_{min}$	>=	1,75
RL_{min}	<=	RLC / N (WELMEC 2: 9)	$(RLC / N) - RL_{min}$	>=	300
L / A	<=	$(L / A)_{max}^{W1}$ (WELMEC 2: 10)	$(L / A)_{max}^{W1} - (L / A)$	>=	2252
T_{range}	<=	$T_{max} - T_{min}$ (R76: 3.9.2.2)	$(T_{max} - T_{min}) - T_{range}$	>=	20
$Q * Max * R / N$	<=	E_{max} (R76: 4.12.1)	$E_{max} - (Q * Max * R / N)$	>=	0,0
$DR\%$	<=	$125 * e_1 / Max$ (WELMEC 2: 6c)	$(125 * e_1 / Max) - DR\%$	>=	0,0017
or (if $DR\%$ is not given)					
$0,4 * Max / e_1$	<=	n_{LC} (WELMEC 2: 6c)	$n_{LC} - (0,4 * Max / e_1)$	>=	

Signature and date:

Conclusion

PASSED

This is an authentic document made from the program:
"Compatibility of NAWI-modules version 3.2".