EC Type Examination Certificate

DK0199.534 Revision 1

M2200-P02-DWU

AUTOMATIC CATCHWEIGHING INSTRUMENT

Issued by	**DELTA Danish Electronics, Light & Acoustics** EU - Notified Body No. 0199

In accordance with the requirements for the automatic weighing instruments in Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on Measuring Instruments (MID).

Issued to	**Marel ehf.** Austurhraun 9 210 Gardabaer Iceland

In respect of Automatic catchweigher designated M2200-P02-DWU with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class Y(a)
Maximum capacity, $10 \text{ kg} \leq \text{Max} \leq 400 \text{ kg}$.
Verification scale interval: $e \geq 10 \text{ g}$.
Maximum number of verification scale intervals: $n \leq 2000$ (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 R51-1:2006, WELMEC Guide 7.2:2011, and WELMEC Guide 8.16-1:2006.

Note: This revised edition replaces earlier revisions of the certificate.

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

The annex comprises 18 pages.

Issued on	**2016-11-11**
Valid until	**2025-06-17**

Signatory: J. Hovgård

DANAK
PROD Reg. nr 7026

Descriptive annex

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1. Name and type of instrument and modules

The automatic catch-weighing instrument is a belt weighing scale designated M2200-P02-DWU and is intended for dynamically weighing. It consists of an electronic weighing indicator M2200-P02 and a load receptor - the Maxiweigher2.

When the automatic catch-weighing instrument is used for applications that can be regarded as non-repeatable, the M2200-P02 shall be configured with M22-DSD internal alibi storage device or be connected to M12-DSD or another certified external alibi storage device.

The Instrument is Type P and Risk Class B with extension L, T and S according to WELMEC Guide 7.2.

The modules appear from Sections 3.1, 3.2, 3.3, and 3.4; the principle of the composition of the modules is set out in Sections 6.1 and 10.

1.1 Weight or price labeller

The Marel M2200-P02-DWU can also operate as a weight or price labeller when used together with Marel Secure Print (Evaluation Certificate No. DK0199-16.07).
Marel M2200-P02-DWU and Marel Secure Print can be configured the following three ways,

- Immediately printing, where the label printer is placed immediately after the weighing instrument.

- Integrated system, where several weighing instruments share a common printer.

- Delayed printing, where weighted items from one or several weighing instruments are transported and/or stored, before the labelling takes place.

The Evaluation Certificate for Marel Secure Print contains information about how weight records can be displayed in the period after the weighing is performed until the label is printed.

2. Description of the construction and function

2.1 Construction

2.1.1 Indicator

The indicator has a watertight stainless steel enclosure consisting of two parts, a bottom part in which the electronics are placed and a top cover fastened by screws through the bottom side of the indicator. The indicator is mounted on a stainless steel wall bracket on which the indicator can be tilted back and forth. A fastening handle on each side is then used for adjusting the tilting. On the front side of the indicator is a clear plastic window through which the primary weight display, rating plate, and other display annunciators can be seen. On the right side of the display window is a twelve key keypad and beneath it are four programmable function keys for operating the indicator.

The front panel comprises:

- A 128 x 240 pixel LCD display with backlight, size 68 x 123 mm (8 x 40 or 320 characters, in the standard font). This display is used for all indication, like the primary weight display, weighing unit indication, STEADY indication, ZERO indication, NET indication and Max, Min, division and range information.

- Ten key numeric keypad (0 to 9).

- A check mark key (enter key).

- A page key for control (rotate between display pages and return from menus).

- Four programmable function keys. One of them functions as a combined TARE and ZERO key along with the primary weight indication.

Supplementary equipment:

- As an option, a special 24 key IR Remote Controller type MR-1 is available.

The bottom side of the indicator:

- Seven cable glands for cables for connecting peripheral equipment, power, and load cell.

Electronics

One PCB containing all electronics is mounted to the bottom part of the enclosure. Connection to power, peripheral and load cell cables are via connectors on the bottom edge of the PCB. The keypad connection is in the top-right corner of the PCB.

Legally relevant Firmware is programmed in to a single chip microcontroller which is soldered to the main board. The microcontroller can be re-programmed in the field, but only by using a special software tool.

The microcontroller is programmed via one of the serial interfaces using special software provided by the manufacturer of the microcontroller. This task is only performed by the manufacturer of the Indicator, or his service personnel.

The programming is automatic, but it has to be initiated in a certain way. If not, there is a danger of permanent damage, which would render the Indicator in-operable.

When the Firmware starts up, a checksum test is done to make sure the Firmware is OK.

The power supply of the Indicator is mounted to the back of the PCB. The two power supply options consist of:

- 110 - 230 VAC Mains Power Supply,

- 12 to 24 VDC power supply.

2.1.2 Load cells

Set out in Section 3.3.

2.1.3 Load receptor

Set out in Section 3.4.

2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Function

The instrument is a microprocessor based electronic indicator for internal connection to load receptors with strain gauge load cells. Two verified load cell inputs are provided. The weight information appears in a primary weight digital display on the front panel LCD display, and may be transmitted to peripheral equipment.

The operation of the indicator is divided into four parts, the weighing module, the system software, the fixed application program and a downloadable user application program. The operation of the weighing module is always the same. The system has software separation between the fixed application programme and the user application programme. The downloadable user application programme may be downloaded to the M2200-P02.

The application programmes can take the weighing results and store them in memory, or send data records to a peripheral printer or computer. The interface between the user application programme and other software is defined as protective.

All variants of instruments have the same verified weighing module, regardless of the application or system software. The letters P02 in the type designation M2200-P02 stand for specific firmware software (system software).

The primary weight display is used to display other information than weight during setup and adjustment, and also during display test and during a significant fault. During the display of other information, the weighing mode is inoperative.

The functions provided are detailed below.

2.2.1 Functions and devices

The automatic weighing instrument has the following permitted functions and devices that are subject to the Measuring Instrument Directive:

- Power up test

- Initial zero setting device (max. 20 % of Max)

- Semi-automatic zero setting device

- Zero tracking device

- Preset tare device

- Storing preset tare

- Extended indicating device (service mode only)

- Gravity compensation

- Detection of significant fault

- M22-DSD internal data storage device (Alibi)

- Transmission of measurement data to an external data storage device (Alibi)

- Transmission of measurement data to an external "Marel Secure Print" application software

2.2.2 Software identification

The approved firmware version is 3.xx-yy, where xx shall be 86 or higher.
The version of the tested firmware is 3.86-14.

The user application program for M2200-P02-DWU is 6111.lua.

In order to be used with Marel Secure Print as a weight or price labeller the firmware version shall be 3.88-08 or higher.

3.   Technical data

The automatic weighing instruments and its modules are set out as follows:

3.1   M2200-P02-DWU Automatic weighing instrument

Type:	M2200-P02-DWU
Accuracy class:	Y(a)
Weighing range:	Single-interval / Dual-range (optional)
Maximum capacity (Max):	$10 \text{ kg} \leq \text{Max} \leq 400 \text{ kg}$
Minimum capacity (Min):	$\geq 20 \times e$
Verification scale interval (e):	$e \geq 0.01 \text{ kg and } e = \text{Max} / n$
Number of Verification Scale Intervals (n):	≤ 2000
Maximum preset tare effect:	$\leq 100 \text{ \% of Max}$
Temperature range:	-10 °C to 40 °C
Maximum weighing speed:	4000 items/hour
Weighing mode:	Dynamically
Conveyor speed:	Fixed speed, from 20 to 60 m/min
Extra warm-up time:	None
Maximum time between automatic zero setting:	28 minutes
Electromagnetic class:	E2
Humidity:	Non-condensing

3.2   Weighing indicator

The M2200-P02 weighing indicator has the following characteristics:

Type:	M2200-P02
Temperature range:	-10 °C to 40 °C
Accuracy class:	III and IIII
Weighing range:	Singe-interval, multi-range
Maximum number of verification scale intervals:	n'max = 7,500 (for each range)
Internal resolution:	± 8388608 counts
Maximum tare effect:	-Max
Fractional factor:	$p'i = 0.5$
Excitation voltage:	14 VDC ± 5 %
Minimum input voltage:	0.6 µV/e
Sensitivity range:	5 mV/V
Maximum input range:	70 mV
Minimum signal voltage for dead load:	-70 mV
Maximum signal voltage for dead load in case of "additive dead load":	60 mV
Maximum influence of temperature on the zero drift:	0.06 µV/°C
Maximum influence of temperature on the span drift:	4 ppm/°C
Circuit for remote sense:	Remote sensing using 6-wires in the load cell cable
Optional 4-wire system:	This is allowed if load cell(s) is connected directly to the weighing indicator
Minimum input impedance:	85 Ohm for load cells
Nominal input impedance:	350 Ohm
Maximum input impedance:	1 kOhm
Maximum line resistance between indicator and load cell:	3 Ohm for each wire in a 6-wire system
Operating temperature range:	Min -10 °C, Max +40 °C

Display and indicators :	LCD; 128x240 pixel graphical display
	(8x30 characters)
A/D converter:	23 bit Delta-Sigma type converter
Peripheral interfaces:	Set out in Section 4
Power requirements:	24 VDC, or
	110 - 230 VAC, 0.16 - 0.1A
	Optional battery operation from a 12 - 24V
	battery, 0.8 A.
Peripheral interface:	Set out in Section 4

3.2.1 Connecting cable between the indicator and the junction box for load cells

The cable between the weighing indicator and a junction box for load cells shall be a 6-wire system using sense.

3.2.1.1 6-wire system

| Line | : | 6 wires, screened |

Option 1:

| Maximum length | : | 90 m / mm^2 (for n = 7,500) |

In case the (n) for the weighing instrument is less than (n) mentioned above, the following apply:

Option 2:

Coefficient of temperature of the span error of the indicator: Es = 0.006 [% / 25K]
Coefficient of resistance for the wires in the J-box cable: Sx = 0.0132 [% / ohm]

L/A_{max} = 295.86 / Sx * (emp / n - Es) [m / mm²] in which emp = p'i * mpe * 100 / e

From this, the maximum cable length for the weighing instrument may be calculated with regard to (n) for the actual configuration of the instrument.

Reference: See Section 10.

The calculation program is obtainable by downloading at www.delta.dk/weighing.

3.3 Load cells

The load receptors are designed for fix mounting.

3.3.1 General acceptance of modules

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

1)   There is a respective part or test certificate (EN 45501) or an OIML Certificate of Conformity (R60) issued for the load cell by a Notified Body responsible for type examination under the 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.

3.4   Load receptors

3.4.1   Maxiweigher2

Construction in brief: All-steel or steel/iron construction
Reduction ratio: 1
Junction box: Mounted on the load receptor
Load cells: Load cell according to Section 3.2.1
Number of load cells: 4
Drawings: Various

3.5   Composition of modules

For composition of modules EN 45501 paragraph 3.5 and 4.12 shall be satisfied.

3.6   Documents

The documents filed at DELTA (reference No. T210352) are valid for the weighing instruments described here.

4.   Interfaces and peripheral equipment

4.1   Interfaces

The indicator has four peripheral interfaces designated COMM1, COMM2, Ethernet and CAN, which allow peripheral equipment to be connected.

All interfaces are characterised "Protective interfaces" according to paragraph 8.4 in the Directive.

The interfaces may be connected to

a)   Non-verified peripheral equipment, not used for legal transactions.

b)   Non-verified peripheral equipment used for legal transactions, if the indicator is also connected to a verified printer, which prints any legal transaction for the purpose of documentation and receipt (tally roll records).

c)   Verified peripheral equipment used for legal transactions.

Declaration concerning protective interfaces

The following applies to the operation of the interfaces of the indicator: It is not possible to interfere with the operation of the weight indicating device. The value of the zero reference cannot be adjusted. The value of the automatic and semi-automatic tare cannot be adjusted.

It is possible to remove the "Protective interface" status of the interfaces by operating a hardware jumper switch. When the T4 (Config Enable) jumper switch is closed (ON or YES) the instrument can be controlled completely through the interfaces. This condition is indicated by slow blinking of the primary weight indication.

The interfaces are set out below:

4.1.1   RS232

COMM1 and COMM2 are standard RS232 bidirectional interfaces with the default setting of 9600 Baud, 8 data bits and no parity. The Baud rate can be set to 1200, 2400, 4800, 9600, 19200 or 38400. The parity can be odd or even or no parity, but the number of data bits cannot be changed. Both COMM1 andCOMM2 can use xon/xoff flow control.

COMM1 is used for programming the microcontroller operating the indicator. It is not possible to use the COMM1 interface for programming the microcontroller unless the jumper switch T2 (Program) is closed.

4.1.2 CAN

CAN is a Controller Area Network interface for bus connection of CAN equipment using a single twisted pair cable (CAN-Bus).

CAN is standardised according to ISO 11898 (Level 1 and 2) and:

CAN Application Layer for Industrial applications CiA DS-201 … CiA DS-207

CANopen Communication Profile for Industrial Systems CiA Draft Standard DS-301

4.1.3 Ethernet

Ethernet is an IEEE 802.3, 10BASE-T twisted pair interface for connection to standard Ethernet networks via TCP/IP protocol.

4.1.4 Specification of connecting cables

RS232 interface cable is a screened, four-wire, 0.22 to 0.5 mm^2 (AWG 24 to 20). Combined CAN and power cable is a screened Belden 3084A two twisted pair cable, the power pair is 0.33 mm^2 or AWG 22 and the data pair is 0.2 mm^2 or AWG 24. The Ethernet cable is a standard 10BASE-T shielded, CAT 5, multi strand cable.

4.2 Peripheral equipment

Connection between the indicator and peripheral equipment is allowed by screened cable.

The instrument may be connected to any simple peripheral device (e.g. a printer) with a CE mark of conformity.

5. Approval conditions

5.1 Connection of cables

All cables shall be shielded and the shield shall be properly EMC wise connected to the housing / connector in both ends.

5.2 Alibi storage

M2200-P02 may as an alternative to internal alibi storage type M22-DSD use an external alibi storage type: M12-DSD, Test Certificate: DK0199-Alibi-07.01.

5.3 Compatibility of modules

For the composition of modules EN 45501:2015 annex F shall be satisfied.

# 6.	Special conditions for verification

## 6.1	Composition of modules

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 5.3.

An example of a declaration of conformity document is shown in Section 10.

## 6.2	Data storage device

When the automatic catch-weighing instrument is used for applications that can be regarded as non-repeatable, the M2200-P02 shall either be configured with M22-DSD internal alibi storage device or be connected to M12-DSD or another certified external alibi storage device with an evaluation or part certificate from a notified body for type examination of weighing instruments under Directive 2014/32/EU.

# 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 according to ANNEX II, module F or D of Directive 2014/32/EU.

### 7.1.1	Mechanical sealing

The identification plate shall be secured against removal with a brittle plastic sticker.

### 7.1.2	Indicator sealing

There are two separate means of sealing the instrument and either of them can be used as preferred. The two sealing options are:

- Two event counters, CAL and CON.

- External wire and plumb seal along with an internal jumper switch.

### 7.1.2.1	Event Counters, CAL and CON

The indicator is sealed by two event counters 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 are displayed during start-up for about five seconds and are identified as; CALxxx and CONxxx, where xxx is the count. The CAL counter seals the adjustment parameters and the CON counter the configuration settings. A further protection is provided by a password for restricting access to the calibration and configuration.

The indicator is always sealed when it starts up after power-down or reset, or after adjustment to sealed parameters. A new adjustment will increment the respective counter. The indicator has remote configuration capability through the interfaces. This feature is enabled using an internal jumper switch (T4, Config Enable). If remote configuration is enabled, the primary weight indication will blink. Remote adjustments through interfaces will increment the counters.
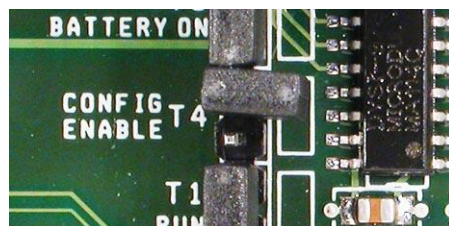
"Remote Configuration Enable" jumper switch, default OPEN or NO (off)

To indicate the sealed status of the event counter, a label with the inscribed count of the event counter is placed either on the bottom or the left side of the indicator. This label also bears the additional designation "EVENT COUNTERS" for identification. The label is made of material which will self-destruct when removed. The inscribed event count is either permanently printed or handwritten by a felt tipped pen using permanent ink. All three digits of the event counters are to be written, and pre- and suffixed by a hyphen. The orientation shall be the same as of the "EVENT COUNTERS" identification.

Example:
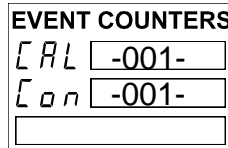
Event counter label

The EVENT COUNTER's label is sealed by partially covering it with an official sealing label.

Legal authorities can use their own means of affixing and inscribing the sealed count of the event counter, or documenting the count for later confirmation of the sealing status.

If sealing of the access to the interior of the indicator is wanted, it can be done by affixing a sealing label across the junction between the upper and lower part of the enclosure.

The status of the event counters can be displayed by pressing the PAGE key for about three seconds. The top menu of the instrument is then displayed.
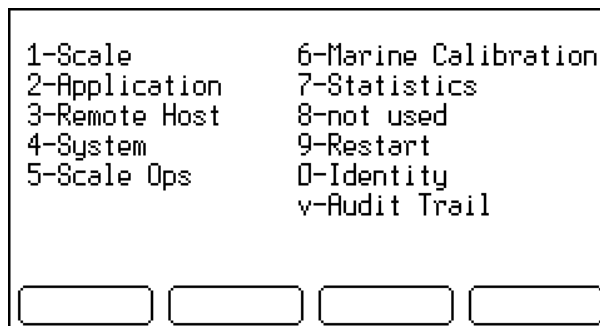
By pressing the CHECK key, audit trail (event counter) information will be displayed.
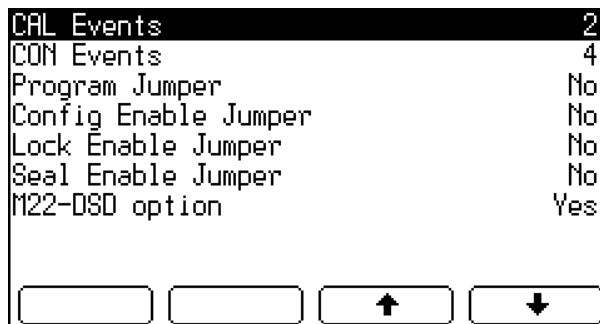
See the following text for an explanation of the Lock and Seal Enable Jumpers. See chapter 4.1 "Interfaces" for an explanation of the Config Enable Jumper.

The following parameters are protected using the **CAL** event counter:

```
 38 Units                           kg
 40 AD at Zero             1532043 count
 41 AD at Load             3046057 count
 44 Span            6,604959E-05 kg/count
132 Gravity Factor           1.000.000
155 Using Load Cell 2 only          No
185 Marine weighing                 No
```

The following parameters are protected using the **CON** event counter (parameters 78, 108 and 110 can be either sealed or not, depending on the set-up):

```
CON always sealed:
  80 Max1                      20.00 kg
  81 e1                         0.10 kg
  89 Max2                       0.00 kg
  90 e2                         0.00 kg
 112 Initial zero at startup        Yes
 159 Direct Sale to Public          No
 165 Seal Extra Resolution          No
 166 Seal Zero Tracking             No
 167 Seal Response                  No
 177 Weighing Module               101
 179 Allow remote Zero and Tare     No
 297 Blank display below zero       No
 298 Remove tare entering first range  No
 482 Allow variable display units   No
 492 Prevent application update     No
 896 Allow non-metric display units No
 909 Use external alibi server      No
 963 Use OIML catchweighing (R51)   Yes
 964 Use OIML totalizing (R51 & R107)  No
 965 Minimum weight            0.20 kg
 966 Minimum totalized weight    1 kg
 986 Warmup time (s)                60
 997 Max age of zero (s)           900
1000 Number of stable readings required  1
1004 Use combined zero and tare button  No
1021 Sample Delay (s)             0.200
1022 Length of platform (m)       1.150
1033 Use internal alibi server     Yes
1056 Multi-interval (unapproved)    No
1062 Dynamic weighing allowed       Yes
1064 Sealed Marine Scale            No
1072 Maximum sample duration (s)     1
1073 Maximum sample deviation (kg)  0.01
1074 Link width (m)              0.0152
1075 Number of teeth on sprocket     20
1076 Number of links in belt        160
1077 SA-8                            0
1078 SA-9                            0
1079 SA-10                           0
1080 SA-11                           0
1081 SA-12                           0
1082 SA-13                           0
1083 SA-14                           0
1084 SA-15                           0
1085 SA-16                           0
1086 SA-17                           0
1087 SA-18                           0
1088 Dynamic recording guard      0.700
1089 Use zero button                Yes
1094 Allow two active tares         No


CON sealed in some markets (us/canada):
  78 Response              Fast [Unsealed]
 108 Zero Tracking            No[Unsealed]
 110 Extra Resolution         No[Unsealed]
1023 Selective damping allowed      Yes
1024 Period (s)                  0.445
1025 Degree (n)                     3
1026 Spread (%)                  5.000
1061 Dynamic zero filter gain    0.100
```
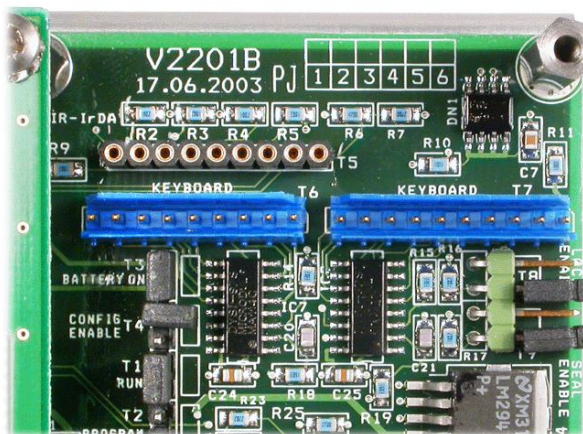
7.1.2.2   External wire and a plumb seal

An internal jumper switch, T9 or Seal Enable, will make it impossible to change the configuration of the instrument. The indicator can then be sealed by a wire and a plumb seal through holes where the top cover meets the bottom part on the left and rear side of the indicator.
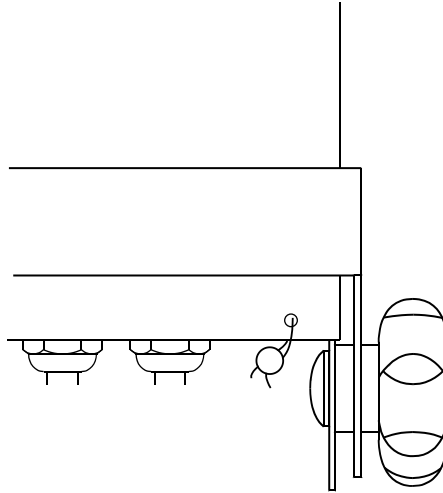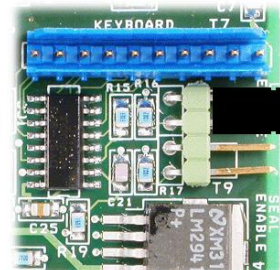

Wire and plumb seal

Seal and Lock Enable jumpers are in the top right corner of the V2201B Main Board.
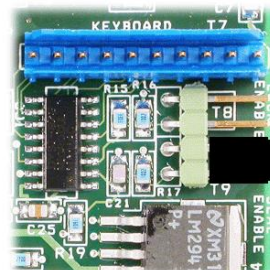
T9
SEAL ENABLE
jumper ON

T8
LOCK ENABLE
jumper ON

Seal Enable and **Lock Enable** jumper switches

Seal Enable: When the Seal Enable jumper is ON (contacts closed), the essential parameters and adjustment of the instrument cannot be changed and the indicator can be sealed using a wire and a plumb seal.

Lock Enable: When the Lock Enable jumper is ON (contacts closed), the Service Password can be changed. The Service Password is needed to access the essential parameters and the adjustment of the instrument. The default Service Password is 62735 (as the text "MAREL" mapped on the keypad of a GSM phone). When the Lock Enable is ON, the password can be changed to a more secure one, or it can be cleared for easier access.

W&M Config Password: For further protection against accidental breaking of the Event Counter Seal, a password must be entered before the Weighing Configuration can be changed. The password is 322225.

7.1.3 Junction box for load cells

Access to the junction box, if any, is prevented by means of sealing by plastic stickers or lead seals.

7.2 Verification marks

A sticker with verification marks is to be placed on or near the identification plate of the instrument.

8. Location of CE mark of conformity and inscriptions

8.1 Identification plate

All inscriptions for the instrument shall be placed on the identification plate, which is located on a visible place on the measuring instrument.

8.1.1 CE mark

CE mark and supplementary metrological marking shall be applied to the inscription plate according to article 21 of Directive 2014/32/EU.

8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name

- Postal address of manufacturer

- Type designation

- Serial number

- Max, Min and e   (these shall additional be duplicated on or near the display, if the inscription plate is not placed on the front of the indicator)

- Rate of operation (items/hour)

- Conveyor speed

- Temperature range: -10 °C / +40 °C

- Electromagnetic class: E2

- Humidity: Non-condensing

- Type examination certificate number
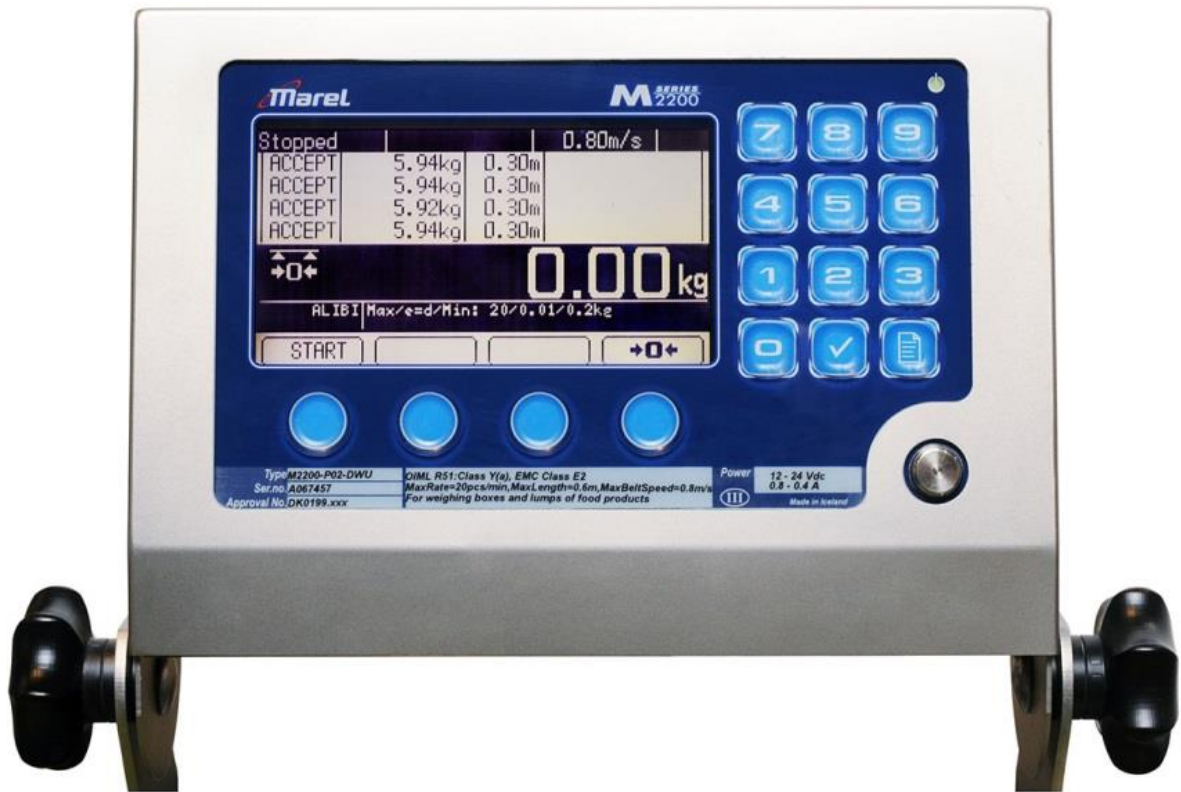
9. Pictures
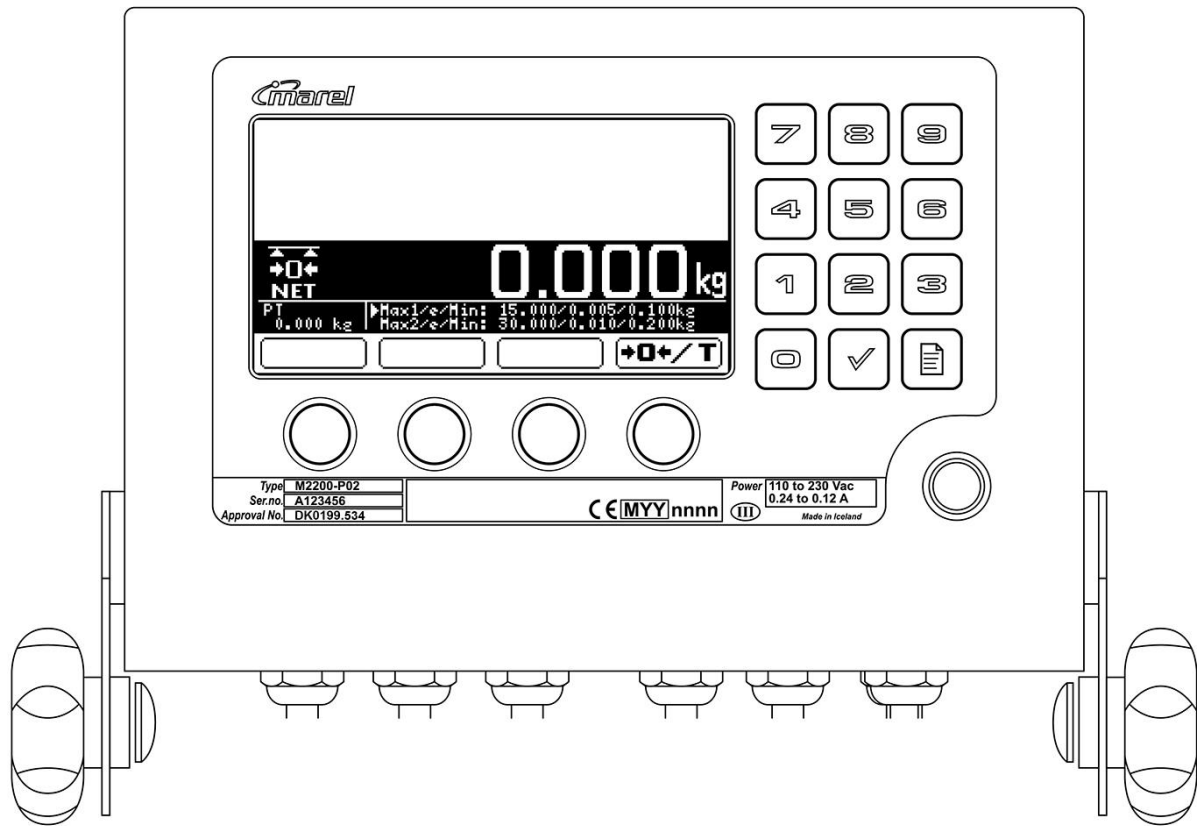

Figure 1 M2200-P02 indicator

Figure 2 The M2200-P02 Indicator, front view

Figure 3 Dynamic load receptor Maxiweigher2
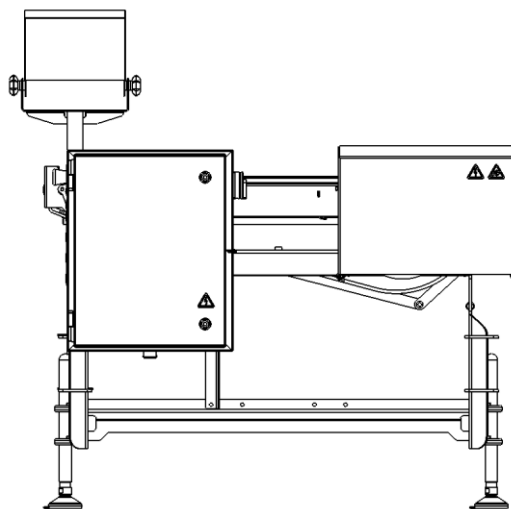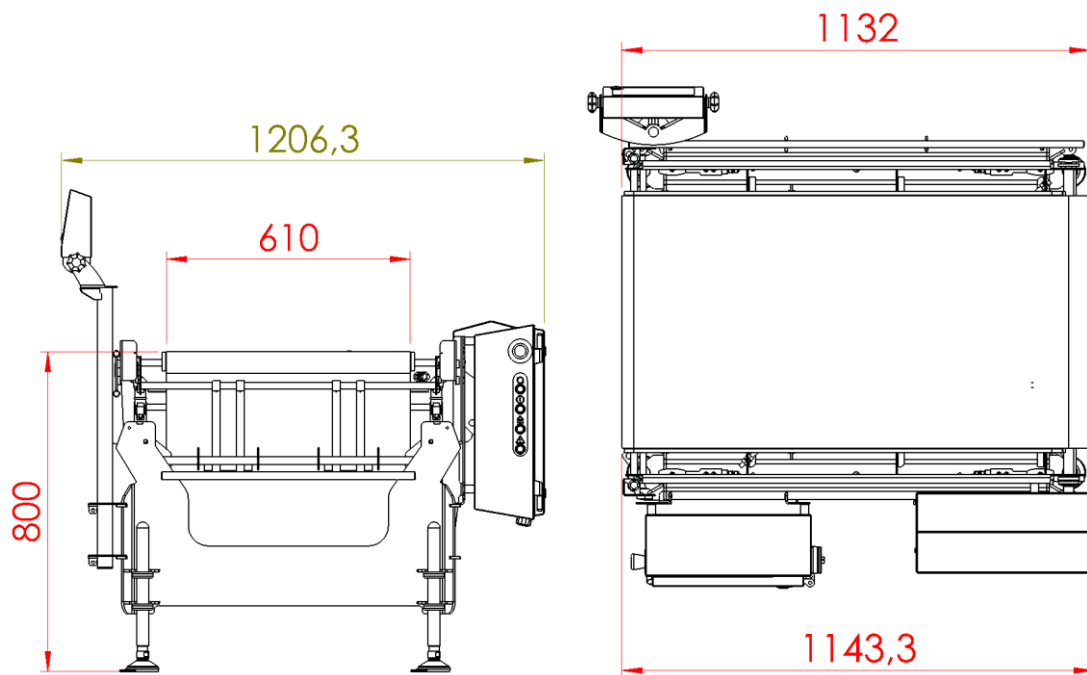
Figure 4 Dynamic load receptor Maxiweigher2

10. Composition of modules – an example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval

Certificate of EU Type-Approval N°: TAC: | DK0199.534

INDICATOR A/D (Module 1) Type: M2200-P02

Accuracy class according to EN 45501 and OIML R76:	$Class_{ind}$ (I, II, III or IIII)		III
Maximum number of verification scale intervals (n_{max}):	n_{ind}		7500
Fraction of maximum permissible error (mpe):	p_1		0,5
Load cell excitation voltage:	U_{exc}	[Vdc]	14
Minimum input-voltage per verification scale interval:	Δu_{min}	[µV]	0,6
Minimum load cell impedance:	R_{Lmin}	[Ω]	85
Coefficient of temperature of the span error:	Es	[% / 25°C]	
Coefficient of resistance for the wires in the J-box cable:	Sx	[% / Ω]	
Specific J-box cable-Length to the junction box for load cells:	$(L/A)_{max}$	[m / mm²]	90
Load cell interface:	6-wire (remote sense)		
Additive tare, if available:	T^+	[% of Max]	0
Initial zero setting range:	IZSR	[% of Max]	-10 / 10
Temperature range:	T_{min} / T_{max}	[°C]	-10 / 40
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:			

LOAD RECEPTOR (Module 2) Type: MaxiWeigher2

Construction:		Platform	
Fraction of mpe:	p_2		0,5
Number of load cells:	N		4
Reduction ratio of the load transmitting device:	$R = F_M / F_L$		1
Dead load of load receptor:	DL	[% of Max]	245
Non uniform distribution of the load:	NUD	[% of Max]	50
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$		4,05

LOAD CELL ANALOG (Module 3) Type: Flintec SB6

Accuracy class according to OIML R60:	$Class_{LC}$ (A, B, C or D)		C
Maximum number of load cell intervals:	n_{LC}		3000
Fraction of mpe:	p_3		0,7
Rated output (sensitivity):	C	[mV / V]	2
Input resistance of single load cell:	R_{LC}	[Ω]	1100
Minimum load cell verification interval:	($v_{min\%}$ = 100 / Y)	$v_{min\%}$ [% of Emax]	0,0098
Rated capacity:	E_{max}	[kg]	51
Minimum dead load, relative:	$(E_{min} / E_{max}) * 100$	[%]	0
Temperature range:	T_{min} / T_{max}	[°C]	-10 / 40
Test report (TR) or Test Certificate (TC/OIML) as appropriate:		D09-97.04 rev.2	

COMPLETE WEIGHING INSTRUMENT Single-interval

Manufacturer: Marel ehf.	Type: M2200-P02-DWU-MaxiWeigher2		
Accuracy class according to EN 45501 and OIML R76:	$Class_{WI}$ (I, II, III or IIII)		III
Fractions: $p_i = p_1{}^2 + p_2{}^2 + p_3{}^2$:	p_i		1,0
Maximum capacity:	Max	[kg]	20
Number of verification scale intervals:	n		2000
Verification scale interval:	e	[kg]	0,01
Utilisation ratio of the load cell:	$\alpha = (Max / E_{max}) * (R / N)$		0,10
Input voltage (from the load cells):	$\Delta_u = C * U_{exc} * \alpha * 1000 / n$	[µV/e]	1,37
Cross-section of each wire in the J-box cable:	A	[mm²]	0,22
J-box cable-Length:	L	[m]	5
Temperature range to be marked on the instrument:	Not required T_{min} / T_{max}	[°C]	
Peripheral Equipment subject to legal control:			

Acceptance criteria for compatibility				Passed, provided no result below is < 0	
$Class_{WI}$	<=	$Class_{ind}$ & $Class_{LC}$	(WELMEC 2: 1)	$Class_{WI}$:	**PASSED**
pi	<=	1	(R76: 3.5.4.1)	1 - pi =	**0,0**
n	<=	n_{max} for the class	(R76: 3.2)	n_{max} for the class - n =	**8000**
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	**5500**
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	**1000**
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	**12,25**
$v_{min} \cdot \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * $\sqrt{N}$ / R) =	**0,000**
or (if v_{min} is not given)				Alternative solutions:	↑ ↓
$(E_{max} / n_{LC}) \cdot (\sqrt{N} / R)$	<=	e	(WELMEC 2: 7)	e - ((E_{max} / n_{LC}) * ($\sqrt{N}$/ R)) =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	Δu − Δu_{min} =	**0,77**
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	**190**
L / A	<=	$(L / A)_{max}{}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}{}^{WI}$ - (L / A) =	**67**
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) =	**30,8**

Signature and date:

Conclusion . . . . . **PASSED**

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

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