EU Type Examination Certificate

No. 0200-MID-04685

M2200-P02-OHTS-xxxxxx

AUTOMATIC CATCHWEIGHING INSTRUMENT

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

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 catch weighing instrument designated M2200-P02-OHTS-xxxxxx with variants of modules of load receptors, load cells and peripheral equipment. Accuracy class Y(a). Maximum capacity: 150 kg to 1200 kg Verification scale interval: $e \geq 50$ g. Maximum number of verification scale intervals: $n \leq 3000$ (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 7.2:2015 and WELMEC Guide8.16-1:2013.

Note: This certificate is a revised version of DK0199.214 rev.1 extending the validation period.

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

The annex comprises 19 pages.

Issued on	**2018-08-03**
Valid until	**2028-08-03**

FORCE Certification references:

Task no.: 118-30492 and ID no.: 0200-MID-04685   **Signatory: J. Hovgård Jensen**

Descriptive annex

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1.   Name and type of instrument and modules

The automatic catch weighing instrument is an overhead track scale designated M2200-P02-OHTS and is intended for dynamically weighing. It consists of an electronic weighing indicator M2200-P02 and a load receptor.

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 T and S according to WELMEC Guide 7.2 (2009).

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

1.1   Weight or price labeller

The Marel M2200-P02-OHTS-xxxxx 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-OHTS-xxxxx 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).

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- 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

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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 P02 versions of the M2200.

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
- Automatic zero setting device
- Combined zero/tare 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)

2.2.2 Software identification

The approved firmware version is 3.xx-yy, where xx shall be 80 or higher.

The user application program for M2200-P02-OHTS is 6009.LUA.

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3. Technical data

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

3.1 M2200-P02-OHTS-xxxxxx automatic weighing instrument

Type:	M2200-P02-OHTS-xxxxxx
Accuracy class:	Y(a)
Weighing mode:	Dynamic
Weighing range:	Single-interval
Maximum capacity (Max):	150 kg to 1200 kg
Minimum capacity (Min):	$\geq 200 \times e$ for Max $\leq$ 300 kg
	$\geq 500 \times e$ for Max > 300 kg
Verification scale interval (e):	$e \geq 0.05$ kg
Number of Verification Scale Intervals (n):	≤ 3000
Maximum tare effect:	≤ 100 % of Max
Weighing speed:	up to 1000 items/hour
Temperature range:	-10 ° to 40 °C
Conveyor speed:	Variable from 4 to 30 m/min
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
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 for 2014/32/EU class E2
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
Circuit for remote sense:	Present
Minimum input impedance:	85 Ohm
Maximum input impedance:	1 kOhm
Operating temperature range:	-10 °C to +40 °C
Electromagnetic class:	E2
Peripheral interface:	Set out in Section 4

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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   : $90 \text{ m} / \text{mm}^2$ (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: $E_s = 0.006$ [% / 25K]
Coefficient of resistance for the wires in the J-box cable: $S_x = 0.0132$ [% / ohm]

$L/A_{max} = 295.86 / S_x * (emp / n - E_s)$ [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.

3.3 Load cells

3.3.1 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 a respective Part / Evaluation / Test Certificate (EN 45501) or an OIML Certificate of Conformity (R60:2000) 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.

3.4 Load receptors

The following type(s) of load receptor(s) are approved for the automatic weighing instrument:

- RL7000 Overhead track for dynamically weighing for capacities ≥ 300 kg

- Overhead rail load receptor based on 2 load cells for capacities from 150 kg to 1200 kg.

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3.5 Composition of modules

In case of composition of modules, EN 45501 annex F shall be satisfied.

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

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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 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

In case of 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 and the weight is not printed, or when the weighing result is transmitted to Marel Secure Print for printing, 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/test certificate from a notified body for type examination of weighing instruments under Directive 2014/32/EU.

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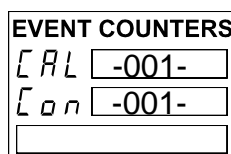
The indicator is always sealed when it starts up after power-down or reset, or after adjustment to sealed parameters. A new adjustment will increment the respective counter. The indicator has remote configuration capability through the interfaces. This feature is enabled using an internal jumper switch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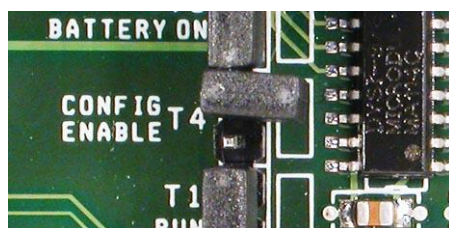
"Remote Configuration Enable" jumper switch, default OPEN or NO (off)

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:

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EVENT COUNTERS

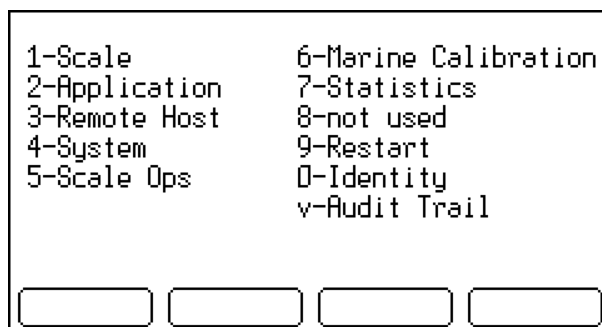|	
CAL	-001-
Con	-001-

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.

```
1-Scale          6-Marine Calibration
2-Application    7-Statistics
3-Remote Host    8-not used
4-System         9-Restart
5-Scale Ops      0-Identity
                 v-Audit Trail
```

By pressing the CHECK key, audit trail (event counter) information will be displayed.

```
CAL Events                      2
CON Events                      4
Program Jumper                 No
Config Enable Jumper           No
Lock Enable Jumper             No
Seal Enable Jumper             No
M22-DSD option                Yes


          [    ]  [    ]  [ ↑ ]  [ ↓ ]
```

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
```

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```
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                        150.00 kg
  81 e1                            0.05 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                0.100 g
 966 Minimum totalized weight      1.00 kg
 986 Warmup time (s)                    60
 997 Max age of zero (s)               600
1000 Number of stable readings required 1
1004 Use combined zero and tare button No
1007 Import enabled                    No
1008 Export enabled                    No
1015 Source Device Number               0
1021 (SA-1) Pause before recording(s) 0.000
1022 (SA-2) Pause before taking zero(s) 0.000
1033 Use internal alibi server        Yes
1056 Multi-interval (unapproved)       No
1062 Dynamic weighing allowed         Yes
1064 Seal Marine gain adjustment       No
1072 (SA-3) AWI Initial Delay (sec)   1.2
1073 (SA-4) AWI sampling time (sec)   0.8
1074 (SA-5) Max Sample StdDev [kg]     10
1075 SA-6                               0
1076 SA-7                               0
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
1092 Selective damping motion trigger  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 of selective damping (s) 0.240
1025 Degree of selective damping (n)   3
1026 Spread of selective damping (%) 15.000
```

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```
1061 Dynamic zero tracker gain          0.050
```

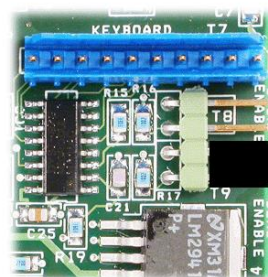### 7.1.2.2   External wire and a plumb seal

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.
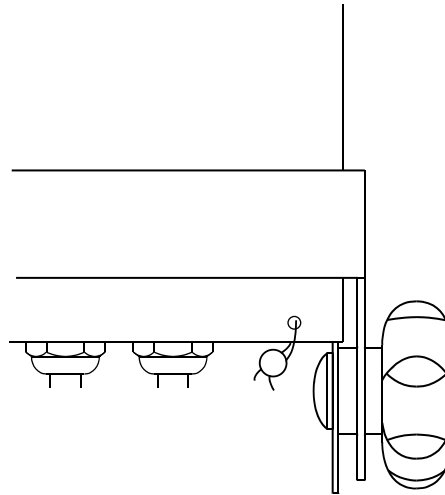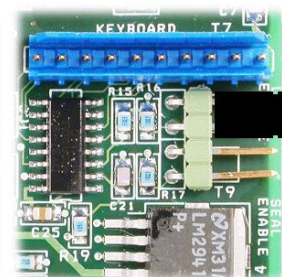

Wire and plumb seal
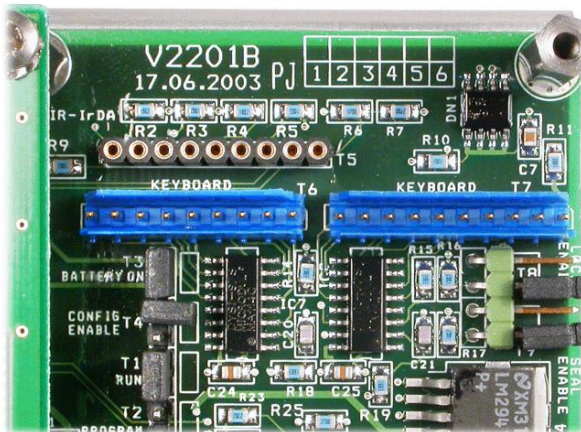
Seal and Lock Enable jumpers are in the top right corner of the V2201B Main Board.

T9
SEAL ENABLE
jumper ON

T8
LOCK ENABLE
jumper ON

Seal Enable and **Lock Enable** jumper switches

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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.

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

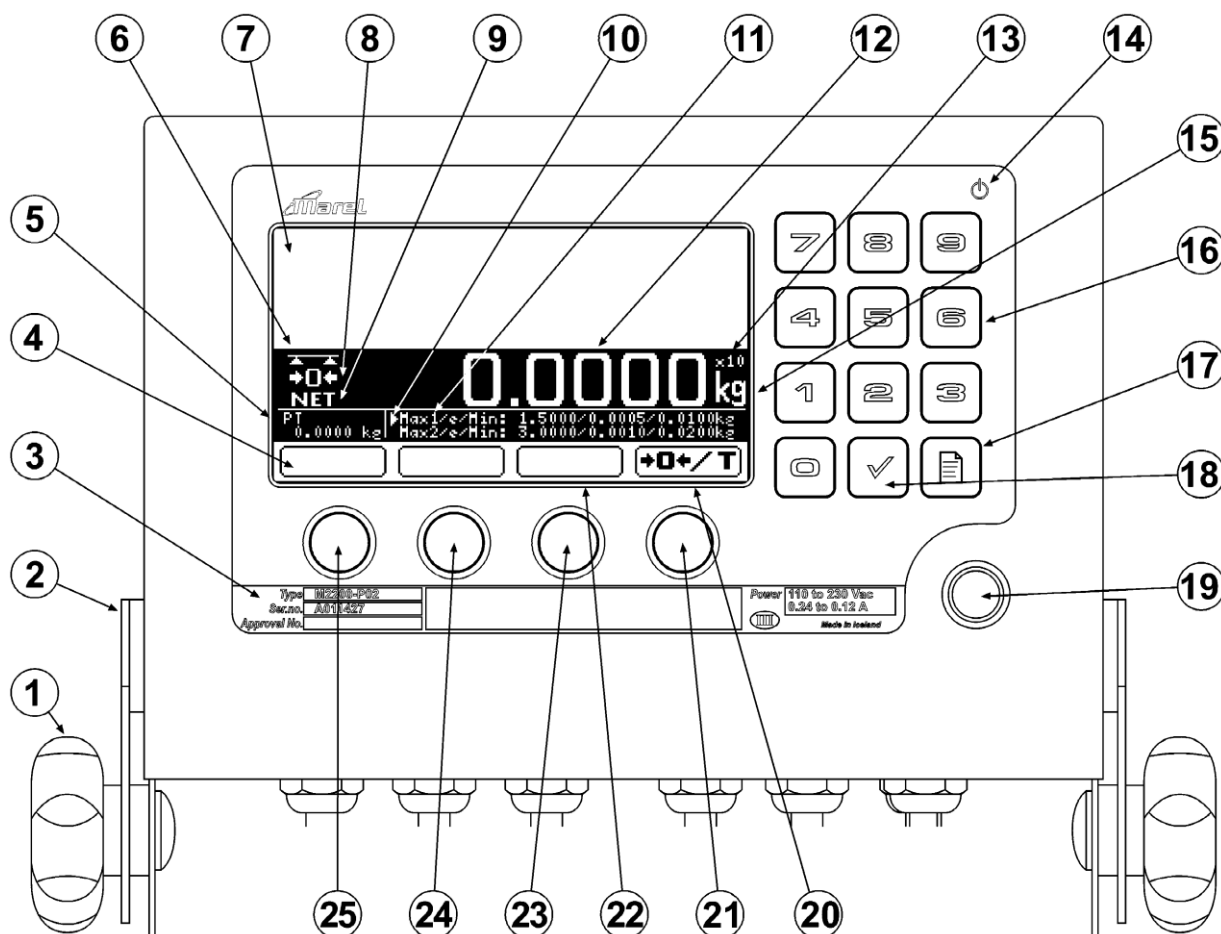The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name
- Manufacturer's postal address
- 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 / +40 °C
- Electromagnetic class: E2
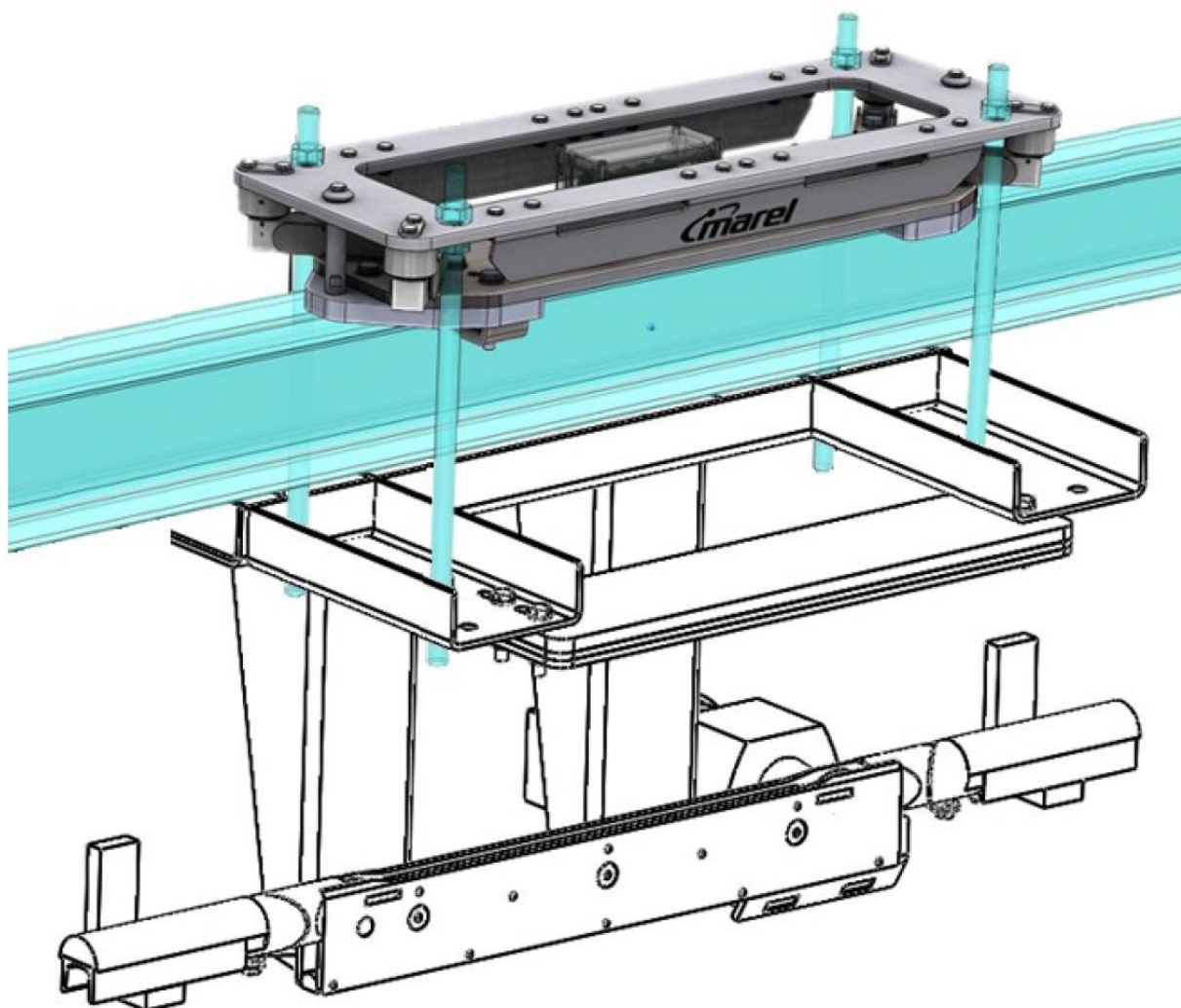- Humidity: Non-condensing
- Type examination certificate number

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9. Pictures

Figure 1 M2200-P02 indicator

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Figure 2 The M2200-P02 Indicator, front view

1. Fastening knob
2. Adjustable wall bracket
3. Rating plate
4. LCD; push-button legend area
5. "PT" Preset Tare indicator and value
6. "STEADY" indicator
7. LCD; application area
8. "ZERO" indicator
9. "NET" indicator
10. Weighing range marker
11. Weighing range characteristics
12. Primary weight indicator
13. Times ten extended weight resolution
14. Power ON indicator
15. Weighing unit indicator
16. Numeric keypad, 0 to 9
17. The Page key
18. The Check key
19. iButton reader pin
20. "ZERO/TARE" push-button legend
21. "ZERO/TARE" push-button
22. LCD; push-button legend area
23. General purpose push-button
24. General purpose push-button
25. General purpose push-button

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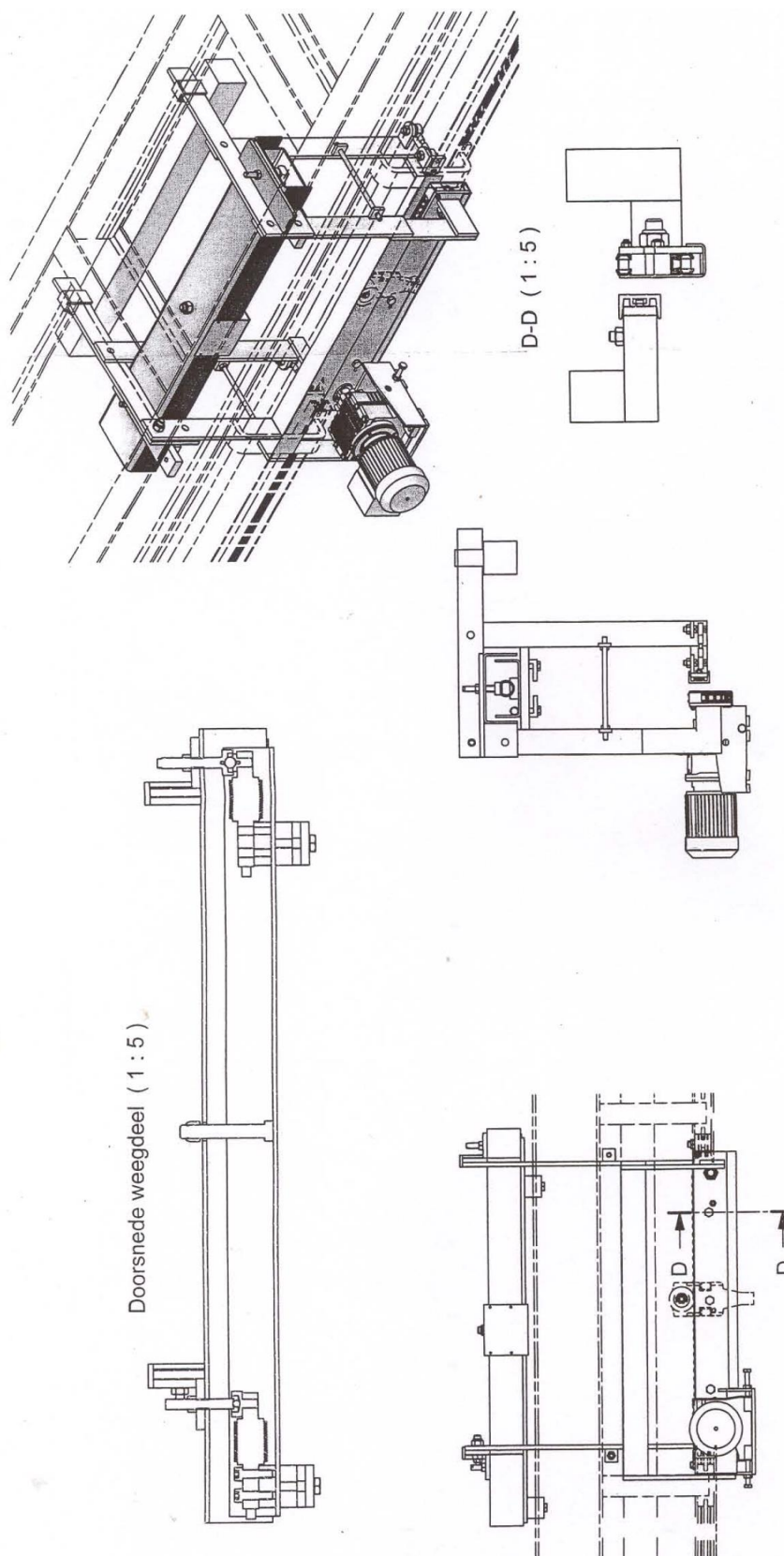
Figure 3: Overhead rail load receptor based on 4 load cells – model RL7000, mounted on top of I-beam with rail weigher drive below.

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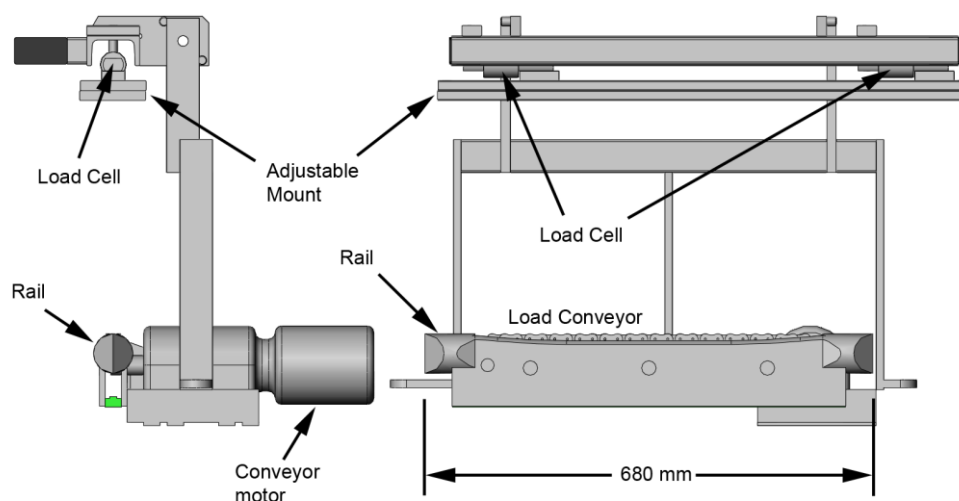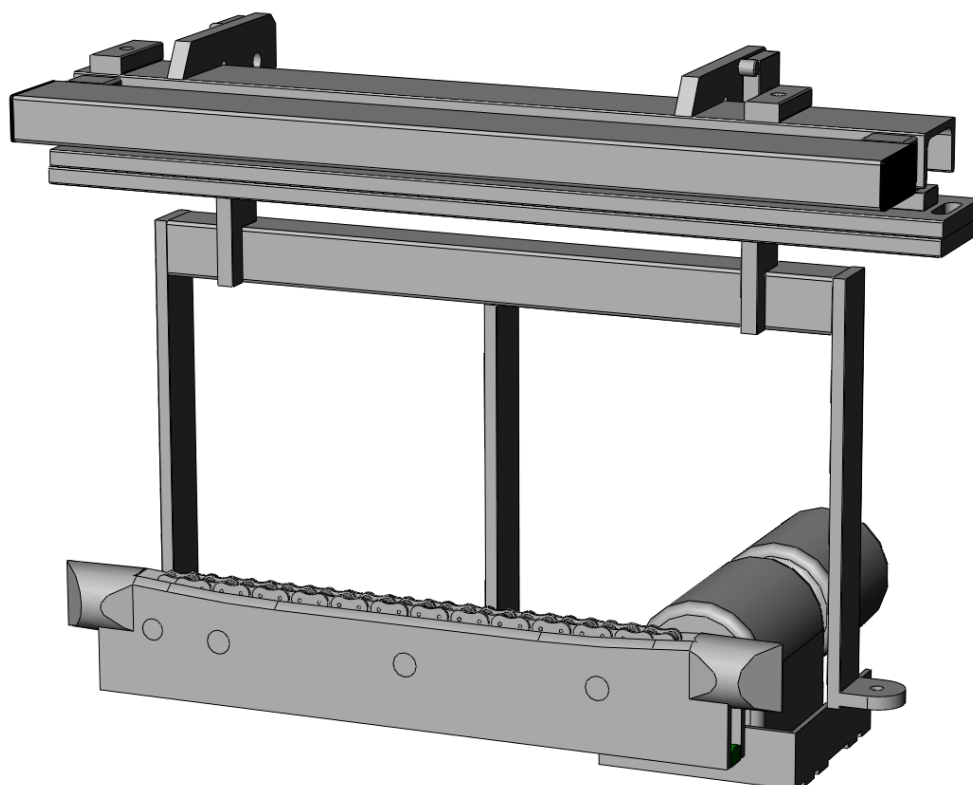
Figure 4 Overhead rail load receptor based on 2 load cells – model 3424.

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Figure 5 Overhead rail load receptor with 2 load cells - model 1357

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:	0200-MID-04685	

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:		RL7000	
Construction:			Overhead track		
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]		35	
Non uniform distribution of the load:		NUD [% of Max]		50	
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$			1,95	

LOAD CELL	ANALOG (Module 3)	Type:		SLB-1000lb-BH-C3	
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]		0,0087	
Rated capacity:		E_{max} [kg]		454	
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:			D09-97.01 Rev.2		

COMPLETE WEIGHING INSTRUMENT — Single-interval

Manufacturer:	Marel ehf	Type:	M2400-P03-OHTS-RL7000		
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]		300	
Number of verification scale intervals:		n		3000	
Verification scale interval:		e [kg]		0,1	
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,17	
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$ [μV/e]		1,54	
Cross-section of each wire in the J-box cable:		A [mm²]		0,22	
J-box cable-Length:		L [m]		18	
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 =	7000
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	4500
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	0
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	26,25
$v_{min} * \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - ($v_{min} * \sqrt{N} / R$) =	0,021
or (if v_{min} is not given)				Alternative solutions:	↑ ↓
$(E_{max} / n_{LC}) * (\sqrt{N} / R)$	<=	e	(WELMEC 2: 7)	e - ((E_{max} / n_{LC}) * ($\sqrt{N} / R$)) =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	0,94
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) =	8
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) =	307,8

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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