EU Type Examination Certificate

No. 0200-MID-11966

LIBRA XXX

DISCONTINUOUS TOTALIZING AUTOMATIC WEIGHING 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 2004/22/EC of the European Parliament and Council of March 31, 2004 on Measuring Instruments (MID).

Issued to	**Systemy Sterowania i Ważenia"VAR-MC", M.Chwierut, Z.Garczarek Spółka Jawna** Ul.Żółkiewskiego 3, 63-400 Ostrów Wlkp POLAND

In respect of A discontinuous totalizing automatic weighing instrument designated **LIBRA XXX** with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class: 0.2, 0.5, 1 or 2
Maximum capacity, Max = $n \times e$
Totalization scale interval: $d_t \geq 20$ g
Number of verification scale intervals: $n \leq 3000$ for single-interval
(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 MI-006, chapter I & III of the Directive 2004/22/EC is met by the application of OIML R107-1:2007, section 12 & 13 of OIML D11:2004, WELMEC Guide 7.2:2011, and WELMEC Guide 8.16-3:2014.

Note: This certificate is a revised edition of DK0199.502 revision 1.

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

The annex comprises 11 pages.

Issued on	**2021-12-10**
Valid until	**2025-01-14**

FORCE Certification references:
Task no.: 121-35178.90.10 and ID no.: 0200-MID-11966-1   **Signatory: Jens Hovgård Jensen**

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Descriptive annex

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1.   Name and type of instrument and modules

The automatic weighing instrument designated LIBRA XXX is a discontinuous totalizing automatic weighing instrument (totalizing hopper weigher) consisting of a VM-WC1 weighing controller connected to a separate load receptor, to the feeding control and peripheral equipment such as printers or other devices, as appropriate.

The instrument is a self-indicating weighing instrument with single-interval.

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

2.   Description of the construction and function

2.1   Construction

2.1.1   VM-WC1 weighing controller

The VM-WC1 weighing controller of the LIBRA XXX discontinuous totalizing automatic weighing instrument consists of,

IB IL SGI 1/CAL analogue data processing device
This DIN rail module from Phoenix contains load cell connector, A/D conversion and also the calibration jumper of the weighing controller.
The module is specified in Section 3.2.

ILC 1xx PLC
This plc from Phoenix is a DIN rail mounted module is the controlling module of VM-WC1 and is connected to the IB IL SGI1/CAL module, to digital I/O modules for feeding control and RS485 modules for communication with the operator's panel.
It has an Ethernet interface used for viewing the stored records of the Data Storage Device of the controller.

Operator's panel
The operator's panel consists of a Schneider dot-matrix display, type XBT RT511 and 12 keys for operating the controller.

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.

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2.2 Functions

The display is used to display other information than weight during setup and adjustment. During the display of other information, the weighing mode is still operative.

The main functions are described 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)

- Semiautomatic zero setting device (max 4 % of Max)

- Zero tracking device (max 4 % of Max)

- Automatic zero setting device (max 4 % of Max)

- Stability detection and indication

- Tare weighing mode (full/empty weighing)

- Stop mode (for check and verification purpose)

- Extended resolution device (for test and verification purpose)

- Data storage device

- Detection of significant fault

2.2.2 Software

The software version of LIBRA XXX's weighing controller is displayed on the operator's panel at start-up.

The approved software version of the LIBRA XXX firmware is 4.42.

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3. Technical data

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

3.1 LIBRA XXX Discontinuous totalizing automatic weighing instrument

Type:	LIBRA XXX
Accuracy class:	0.2, 0.5, 1 or 2
Weighing range:	Single-interval
Maximum capacity (Max):	$= n \times d_t$
Minimum capacity (Min):	$\geq 20\ \%$ of Max
Totalization scale interval (d_t):	≥ 20 g
Number of Verification Scale Intervals (n):	≤ 3000
Maximum tare effect:	$\leq 100\ \%$ of Max
Temperature range:	-10 °C to 40 ° C
Weighing mode:	Static
Electromagnetic class:	E2
Humidity:	Non-condensing
Peripheral interface:	Set out in Section 4

3.2 IB IL SGI 1/CAL

The A/D module has the following characteristics:

Weighing range:	Single interval
Maximum number of Verification Scale intervals:	3000
Fractional factor:	$p'i = 0.5$
Minimum input voltage per VSI:	1.5 µV
Excitation voltage:	5 VDC
Circuit for remote sense:	Present
Minimum input impedance:	58 ohm
Maximum input impedance:	1100 ohm
Operating temperature range:	-10 °C to +40 °C

3.2.1 Connecting cable between the indicator and a junction box for load cell(s), if any

Cable between indicator and junction box: 6 wires (sense), shielded

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

- Option 1: 992 m/mm²

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

- Option 2:

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Coefficient of temperature of the span error of the indicator: Es = 0.0084 [% / 25K].

Coefficient of resistance for the wires in the J-box cable: Sx = 0.0050 [% / ohm].

L/Amax = 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

3.3.1 General acceptance of load cells

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

1) A test certificate (EN 45501) or a respective OIML Certificate of Conformity (R60) is 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

The load receptors are fixed installed.

3.4.1 Bin, tank, and hopper load receptors

Construction in brief:	Load cell assemblies each consisting of a load cell stand assembly to support one of the mounting feet bin, tank or conveyor etc.
Reduction ratio:	1
Junction box:	Mounted in, on or near the dead load.
Load cell: :	Any R60 certified load cell according to Section 3.2.1.
Drawings	Various

3.5 Feeding

The feeding system is gravity feeding. The feeding system has only coarse feeding.

3.6 Composition of modules

In case of composition of modules, EN 45501 paragraph 3.5 and 4.12 shall be satisfied.

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3.7 Documents

The documents filed at DELTA (reference No. T209783) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

4.1.1 Load cell interface

The instrument has a 6-wire load cell interface for connection to the junction box for load cells.
A screened cable shall be used, and the cable shield shall be connected to the enclosure of LIBRA in the metallic glance of the enclosure.

4.1.2 Digital I/O interface (internal)

The instrument has digital inputs and digital outputs, which are used to control the gates of the hopper.

4.1.3 RS485 (internal)

The ILC 1xx PLC is equipped with RS485 module used for communication with the operator's panel.

4.1.4 Ethernet interface

The Ethernet interface can be used for all available data output facilities of the instrument, including display of the contents of the data storage device on a PC using a standard internet browser.
The Ethernet cable used shall be shielded and the shield shall be connected to the enclosure of LIBRA in the metallic glance of the enclosure.
The Ethernet interface is characterised "Protective interface" according to Annex I, paragraph 8.1 in Directive 2004/22/EC.

4.2 Peripheral equipment

The instrument may be connected to any simple peripheral device with a CE mark of conformity.

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5. Approval conditions

5.1 Compatibility of modules

Composition of modules, WELMEC 2 (Issue 6) 2014 paragraph 11 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 5.1.

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

6.2 Data storage device

When the automatic weighing instrument is used for applications that can be regarded as non-repeatable, the LIBRA shall either be configured with internal alibi storage device or be connected to a printer.

6.3 Integral verification

The automatic weighing instrument can be used for integral verification as it can be set up to have interruption of the automatic operation with pre-discharge (gross) interrupt and post-discharge (tare) interrupt.

7. Securing and location of seals and verification marks

7.1 Securing and sealing

Seals shall bear the verification mark of a notified body according to ANNEX F of the Directive 2004/22/EC or alternative mark of the manufacturer according to ANNEX D of the Directive 2004/22/EC.

7.1.1 Weighing controller

The calibration jumper must be installed between connector PSa and PSb on the IB IL SGI 1CAL module in order to protect the configuration and calibration parameters from being changed. When the jumper is installed the PS indicator of the module lighted.

The screw in the cover of IB IL SGI 1/CAL shall be sealed using a brittle sticker.

7.1.2 Connection to load receptor

The connector for load cell on IB IL SGI 1/CAL is also sealed by the above sealing.

7.1.3 Junction box for load cells

Access to the junction box for analogue load cells shall be prevented by the use of lead wire seals or by sealing it with brittle plastic stickers.

7.1.4 Peripheral interfaces

All peripheral interfaces are "protective"; they neither allow 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.

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7.2 Verification marks

A metrological M-sticker and a sticker with verification mark are to be placed on 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 to be located visible on the instrument.

8.1.1 CE mark and metrological M

A CE mark of conformity followed by the metrological M and year of production within a rectangle shall be located on the identification plate.
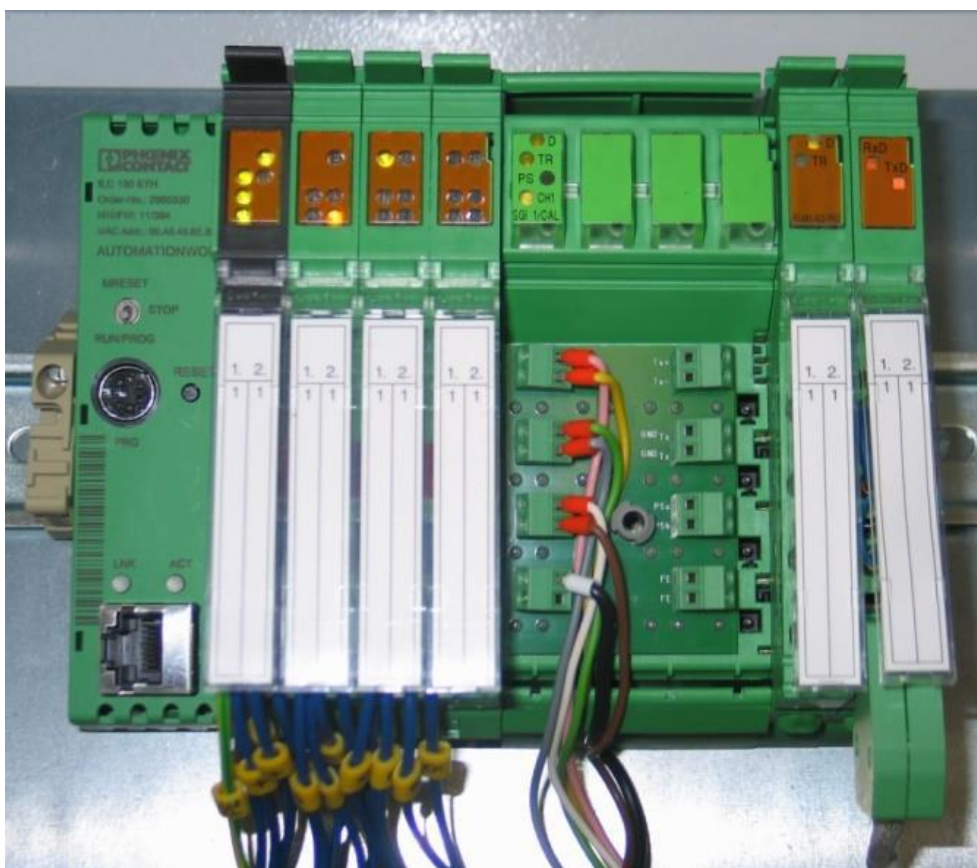
8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name

- Type designation

- Serial number

- Accuracy class

- Max, Min and d_t (these shall additional be duplicated near the display unless the description plate is located near the display)

- Minimum totalized load Σ_{min}

- Control scale interval d

- Temperature range: -10 °C / +40 °C

- Electromagnetic class: E2

- Humidity: Non-condensing

- Type examination certificate number.

- Electrical supply voltage and frequency

- Pneumatic pressure

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9. Pictures

Figure 1 Start-up display of LIBRA XXX.

Figure 2 LIBRA XXX's Phoenix PLC with I/O modules and IB IL SGI 1/CAL module.

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Figure 3 LIBRA XXX discontinuous totalizing automatic weighing instrument.

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10.   Composition of modules – an example

COMPATIBILITY OF MODULES
Ref.: WELMEC 2
Non-Automatic Weighing Instrument, single-interval.

Certificate of EU Type-Approval Nº:			TAC:	0200-MID-11966	

INDICATOR	A/D (Module 1)	Type:	IB IL SGI 1/CAL		
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}		3000	
Fraction of maximum permissible error (mpe):		p_1		0,5	
Load cell excitation voltage:		U_{exc} [Vdc]		5	
Minimum input-voltage per verification scale interval:		Δu_{min} [µV]		1,5	
Minimum load cell impedance:		R_{Lmin} [Ω]		55	
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]	600		
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:			
Construction:		Hopper			
Fraction of mpe:		p_2		0,5	
Number of load cells:		N		3	
Reduction ratio of the load transmitting device:		$R = F_M / F_L$		1	
Dead load of load receptor:		DL [% of Max]		50	
Non uniform distribution of the load:		NUD [% of Max]		20	
Correction factor:		$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$		1,8	

LOAD CELL	ANALOG (Module 3)	Type:	Scaime F60X300 C3 5e		
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]		350	
Minimum load cell verification interval:	($v_{min\%} = 100 / Y$)	$v_{min\%}$ [% of Emax]		0,02	
Rated capacity:		E_{max} [kg]		362	
Minimum dead load, relative:		$(E_{min} / E_{max}) * 100$ [%]		0,67	
Temperature range:		T_{min} / T_{max} [°C]	-10	/	40
Test report (TR) or Test Certificate (TC/OIML) as appropriate:					

COMPLETE WEIGHING INSTRUMENT			Single-interval		
Manufacturer:	SSiW "VAR-MC" M.Chwierut, Z.Garczarek S.J.	Type:	LIBRA 300		
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		1500	
Verification scale interval:		e [kg]		0,2	
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,28	
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$ [µV/e]		1,84	
Cross-section of each wire in the J-box cable:		A [mm²]		0,22	
J-box cable-Length:		L [m]		10	
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 =	8500
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	1500
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	1500
E_{min}	<=	DL * √N / R	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	47,5746
v_{min} * √N / R	<=	e	(R76: 4.12.3)	e - (v_{min} * √N / R) =	0,075
or (if v_{min} is not given)				Alternative solutions: ↑ ↓	
$(E_{max} / n_{LC}) * (√N / R)$	<=	e	(WELMEC 2: 7)	e - ((E_{max} / n_{LC}) * (√N/ R)) =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	0,34
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	62
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	555
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) =	182,0

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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