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EU Type Examination Certificate

No. DK 0199.387 Revision 3

205 / 210 / 210-FE / 212G / 212GX

NON-AUTOMATIC WEIGHING INSTRUMENT

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

In accordance with the requirements in Directive 2014/31/EU of the European Parliament and Council.

Issued to **Cardinal Scale Manufacturing Company**
203 East Daugherty
P.O. Box 151
Webb City, MO 64870
USA

In respect of Non-automatic weighing instrument designated 205 / 210 / 210-FE / 212G / 212GX with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class III and IIII
Maximum capacity, Max: From 1 kg up to 999,999 kg
Verification scale interval: e = Max / n
Maximum number of verification scale intervals: n = 10000 for class III, n = 1000 for class IIII (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 of the Directive is met by the application of the European Standard EN 45501:2015 and OIML R76:2006.

Note: This certificate is a revised edition which replaces previous revisions.

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

The annex comprises 19 pages.

Issued on **2016-10-19**
Valid until **2023-08-22**

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Descriptive annex

Contents

1. Name and type of instrument and modules

The weighing instrument is designated the 200 series, which is a system of modules consisting of an electronic indicator connected to a separate load receptor and peripheral equipment such as printers or other devices, as appropriate. The instrument is a Class III or IIII, self-indicating weighing instrument with single-interval and an internal AC mains power supply. The weight indicating instrument is available in one of eight models:

Model 205 a desk or wall mount instrument with basic keyboard.
Model 210 a desk or wall mount instrument with full function keyboard.
Model 210-FE a wall mount instrument with full function keyboard.
Model 212G a wall mounted instrument with full function keyboard.
Model 212GX a wall mounted instrument with full function keyboard.

The indicators consist of analogue to digital conversion circuitry, microprocessor control circuitry, power supply, keyboard, non-volatile memory for storage of calibration and weight data, and a weight display contained within a single enclosure.

The modules appear from Sections 3.1, 3.2.1 and 3.2.2; the principle of 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 Indicator

The indicator is specified in Section 3.1.
Different versions may be found in the following:

Enclosures and keyboard

The Models 205 and 210 are housed in stainless steel enclosures 229 mm wide x 178 mm high x 70 mm deep. The Model 210-FE is housed in a stainless steel enclosure 381 mm wide x 246 mm high x 79 mm deep, while the Models 212G and 212GX are housed in a polycarbonate enclosure 287 mm wide x 229 mm high x 108 mm deep. These enclosures can be mounted either on a vertical or horizontal surface and are designed to meet an IP66 rating and can be exposed to water and dust. They are designed primarily for industrial use, but may also be used in an office environment.

The front panels of the indicators comprise:

- A 7-segment red LED display 14.2 mm in height with a total of six digits and appropriate status indicators (Models 205 and 210) or

  a 7-segment red LED display 63.5 mm high with a total of six digits and three digit sixteen segment LED display 20 mm in height used for annunciators (Model 210-FE) or

  a 15-segment LCD display 20.3 mm high with a total of 12 digits and appropriate status indicators (Model 212G) or

  a 15-segment LCD display 50.4 mm high with a total of 6 digits and appropriate status indicators (Model 212GX)

- A keyboard containing either 7 keys (Model 205) or 22 keys (Models 210 and 210-FE) or 24 keys (Model 212G and 212GX) used to enter commands or data to the weight indicator. Each key is identified with a name and / or pictograph.

The rear panel of the indicators enclosure contain the following:

- A mains voltage power cord, detachable except for the Model 210-FE.
- A gland connector for access to the load cell input terminal block located inside the enclosure.
- A gland connector for cable access to the two serial data interfaces (RS232, USB).
- A gland connector for cable access to the optional analogue output board or optional data interface.
- A gland connector for cable access to the command input terminal block and / or preset weight comparator logic-level output.

Electronics

All models use a single printed circuit board, which contains all of the instrument circuitry. The Models 212G and 212GX have a second printed circuit board to hold the display.
The metrological circuitry for all seven models of weight indicator is identical.
Two option boards are available. One option board provides an analogue output, while the second option board provides a data interface. The weight-indicating instrument will accept only one option board.

The weight indicating instruments use an Atmega 2560 microcontroller, which has 256kb of flash program memory, 8kb of static RAM and 4kb of EEPROM. All instrument calibration and metrological setup data is contained in non-volatile memory. The power supply is a universal switching type and can accept an input voltage of from 100 to 240 VAC 50/60 Hz or of 12 - 24 VDC. The indicators produce a load cell excitation voltage of 9.4 VDC.

2.1.2 Load receptors, load cells and load receptor supports

Set out in Section 3.2.

2.1.3 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Functions

The weight indicating instruments are microcontroller based electronic weight indicators that require the external connection of strain gauge load cells. The weight information appears in the digital display located on the front panel and may be transmitted to peripheral equipment for recording, processing or display.

The primary functions provided are detailed below.

2.2.1 Power up

On power up, the weight indicator will perform a display test, then show the instrument model number followed by the software revision level for three seconds. After that it will display the current weight using either the previously established zero reference or, if configured to do so, will automatically establish the current weight as a new zero reference.

2.2.2 Test function

On power up of the indicator will test all memory functions followed by a display test. The display test consists of turning on all horizontal segments followed by turning on all vertical segments and decimal points then turning on all annunciators. Each test segment takes about one second.

At the conclusion of the display test, the indicator displays the model number and software version. The test sequence, including the display of "C" numbers, may be manually initiated by pressing the ASTERISK key followed by pressing the UNITS key.

2.2.3 Display range

The weight indicators will display weight from –99,999e to Max+9e (gross weight) within the limits of the display capacity.

2.2.4 Zero-setting

Pressing the "ZERO" key causes a new zero reference to be established and ZERO annunciator (→0← or ZERO) to turn on indicating the display is at the centre of zero.

Semi-automatic zero-setting range: 4% of Max.
Automatic zero-tracking range: 4% of Max.
Initial zero-setting range: 4% of Max.

Zero-setting is only possible when the load receptor is not in motion.

2.2.5 Zero-tracking

The indicators are equipped with a zero-tracking feature, which operates over a range of 4% of Max and only when the indicator is at gross zero and there is no motion in the weight display.

2.2.6 Units

The UNITS key may be used to select the units in which the weight is displayed. The selected unit of measure is indicated in the weight display. The indicators can be configured to display in units of kilogram, gram and ton.

2.2.7 Tare

All instrument models are provided with a semi-automatic subtractive tare, while only Models 210, 210-FE, 212G, and 212GX have a keyboard preset tare feature.

2.2.7.1 Semi-automatic tare

When the semi-automatic tare feature has been selected, pressing the TARE key will enter the currently displayed weight value as the new tare weight value. The weight display will automatically change to the net weight display mode and turn the NET annunciator on. This tare value can be cleared by pressing the TARE key when there is no load on the load receptor. This tare entry cannot take place if the load receptor is in motion or if a print operation is taking place.

2.2.7.2 Preset (numeric) tare

Only the Models 210, 210-FE, 212G and 212GX have a preset or numeric tare feature, which allows the manual entry of a known tare value. Press the appropriate numeric keys to enter the known tare weight then press the TARE key. When the TARE key is pressed, the numeric value entered will be accepted as the new tare weight and the display will automatically enter the net weight display mode as indicated by turning the NET annunciator on. The tare value entered must agree with the verification scale interval, e.

2.2.8 Net / Gross indication

Once a valid tare weight, other than zero, has been stored, the weight display can be switched from a gross weight only display to a net weight display mode by pressing the NET / GROSS key. Each time the key is pressed, the display will alternate between the net and gross display modes.

2.2.9 Printing

A printer may be connected to the selected serial data port. In the net display mode, all models of weight indicators will transmit the gross, tare, and net weights to the printer each time the PRINT key is pressed. In the gross mode, only the gross weight is transmitted. The Models 210, 210-FE, 212G and 212GX will also transmit the time and date and identification, if configured to do so. All models of weight indicators can be programmed to include additional data in the form of customer name or number on the printed record. The print will not take place, if the load receptor is not stable, if the gross weight is less than zero, if the weight exceeds Max or during data entry from the keyboard.

2.2.10 Time and date

Only the Models 210, 210-FE, 212G and 212GX weight indicators have a time and date feature. To view and / or reset the time and date, press the TIME / DATE key. The time and date settings can be viewed and / or reset using the numeric and ENTER keys. The time and date information are retained in battery-backed memory and will continue to be stored during power outages.

2.2.11 Operator information messages

All models of the weight indicator have a number of general and diagnostic messages, which are described in detail in the 200 Series Owner's Manual.

2.2.12 Software version

The software revision level is displayed during the power up sequence of the instrument.
The approved software versions are 3.0.x and 3.1.x.
Version 3.0.x does not include data storage device.

2.2.13 High resolution weight display

All models of weight indicators are provided with the high resolution display feature where the weight is displayed in increments of one tenth e. The high resolution mode can only be enabled while the instrument is in the calibration mode.

2.3 Available options

2.3.1 Analogue Output Card

The Analogue Output Card provides an analogue representation of the displayed weight using a 14-bit D/A converter. The output is provided in both a 0 to 10 volt and 4 to 20 mA format. The outputs are accessed via a terminal block within the instrument enclosure.

2.3.2 Data Interface Card

The Data Interface Card provides a second interface option for special interface types that may be required by the application. This card and the analogue output card are mutually exclusive.

2.3.3 Data Storage Device

The USB interface board provides a data storage device (also called alibi memory or electronic tally roll) using the Micro SD card on the interface board.
When a XT command is received by the indicator on a serial communication interface, it will respond with the displayed weight, an index number, and information about weight unit and gross/net. A record with these data protected by a checksum is also stored on the Micro SD card.
The stored weight record can be recalled on the indicator using the index number.

3. Technical data

The weighing instruments are composed of separate modules, which are set out as follows:

3.1 Indicator

The indicators have the following characteristics:

Type:	200 Series (Models 205, 210, 210-FE, 212G and 212GX)
Accuracy class:	III and IIII
Weighing range:	Single-interval
Maximum number of Verification scale intervals	10000 (class III). 1000 (class IIII)
Internal resolution:	> 100,000 counts
Maximum tare effect:	-Max
Fractional factor:	p'i = 0.5
Minimum input voltage per VSI:	0.5 µV
Excitation voltage:	9.4 VDC
Minimum signal voltage for dead load:	1 mV
Maximum analogue range:	1 to 40 mV
Circuit for remote sense:	active
Minimum input impedance:	44 ohm
Maximum input impedance:	1100 ohm
Mains power supply:	100-240 VAC, 50/60 Hz or 12 - 24 VDC
Operational temperature:	-10 °C to +40 °C
Peripheral interface:	Set out in Section 4

3.1.1 Connecting cable between the indicator and load cell(s) / junction box for load cell(s)

3.1.1.1 4-wire system

Cable between indicator and load cell(s):	4 wires (no sense), shielded
Maximum length:	the certified length of the load cell cable, which shall be connected directly to the indicator.

3.1.1.2 6-wire system

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

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

- Option 1: 292 m/mm²

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 = 0.0035 [% / 25K]
Coefficient of resistance for the wires in the J-box cable: Sx = 0.0041 [% / 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.

3.2 Load receptors, load cells, and load receptor supports

Removable platforms shall be equipped with level indicators.

3.2.1 General acceptance of modules

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

1) A part/test certificate (EN 45501) or OIML Certificate of Conformity (R60) respectively 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.

3.2.2 Load cells

The load cells, which are set out below are approved as modules in the weighing instrument:

Manufacturer	Load cell type
Cardinal	SCA
Cardinal	CB6
Cardinal	TSP
Cardinal	SB
Cardinal	TB
Cardinal	LFB
Cardinal	DB

3.2.3 Platforms, weigh bridge platforms

Construction in brief:	All-steel or steel-reinforced concrete construction, surface or pit mounted
Reduction ratio:	1
Junction box:	Mounted in or on the platform
Load cells:	Cardinal SCA, DB or according to Section 3.2.1
Drawings:	No. 3500-B089-0A, no. 3500-B018-0A (50,000 lb).
	No. 3500-B094-0A (100,000 lb)

3.2.4 Bin, tank, hopper, and non-standard systems

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

3.3 Composition of modules

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

3.4 Documents

The documents filed at DELTA (reference No. T204778) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The interfaces are characterised “Protective interfaces” according to paragraph 8.4 in the Directive.

4.1.1 Load cell interface

A 7-terminal connector for the load cell is positioned on the instrument circuit board and is accessed through a gland connector on the rear panel of the instrument enclosure.

4.1.2 Printer Interface

A 3-terminal connector for the printer is positioned on the instrument circuit board and is accessed through a gland connector on the rear panel of the instrument enclosure.

4.1.3 Serial I/O Interface

A 4-terminal connector providing a bi-directional RS232 compatible interface is positioned on the instrument circuit board and is accessed through a gland connector on the rear panel of the instrument enclosure. For all models this serial interface can be configured for USB or RS232, but not both.

4.1.4 USB interface

The indicators have one or two USB interfaces, when provided with the optional USB interface board.

4.1.5 Ethernet interface

The indicators have an Ethernet interface, when provided with the optional Ethernet interface board.

4.1.6 Logic Level Inputs

A 10-terminal connector providing logic-level inputs for the Zero, Tare, Gross, Print, Units, Start, Stop and * (asterisk) functions is positioned on the instrument circuit board and is accessed through a gland connector on the rear panel of the instrument enclosure.

4.1.7 Logic Level Outputs

A 10-terminal connector providing logic-level outputs for either Over, Under and Accept for the check weigher feature or for eight preset weight comparators. Access to the connector is made through a gland connector located on the rear panel of the instrument enclosure.

4.1.8 Analogue Output

When provided with the optional analogue output, a 3-terminal connector provides both 0 to 10 volts and 4 to 20 mA analogue representations of the displayed weight. These terminals are positioned on the option card connected to the main printed circuit board and accessed through a gland connector on the rear panel of the instrument enclosure.

4.2 Peripheral equipment

The cables used for connection between the indicator and peripheral equipment shall be shielded. When using USB cables these shall have an built-in ferrite.

The instrument may be supplied with any of the following peripheral equipment:

4.2.1 Cardinal P220 Thermal Label Printer

The Cardinal P220 Thermal Label Printer is a RS232 serial driven label printer. It has a self-test facility, which provides information of the software version and setup of the printer.

4.2.2 Cardinal P400 Dot Matrix Ticket Printer

The Cardinal P400 Dot Matrix Ticket Printer is a RS232 serial driven ticket printer. It has a self-test facility, which provides information of the software version and setup of the printer.

4.2.3 Cardinal P500 Printer

The Cardinal P500 Printer is a RS232 serial driven tally roll printer. It is equipped with automatic paper out detection, which signals an error to a lamp on the front panel of the printer and also to the indicator, if the printer runs out of paper. The printer has an on / off power switch, a key for paper feed and a key for switching between on-line and off-line. The printer is powered by a mains adapter for 230 VAC / 12 VDC or 110 VAC / 12 VDC.

5. Approval conditions

5.1 Measurement functions other than non-automatic functions

Measurement functions that will enable the use of the instrument as an automatic weighing instrument are not covered by this type approval.

5.2 Totalised weight is not a legal value

When using the totalisation function creating a sum of several weighing results, this sum is only informative, as it is not a legal value.

5.3 Counting operation is not approved for NAWI

Piece counting is not covered by this approval.

5.4 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 5.4.

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

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 2014/31/EU.

7.1.1 Indicator and load cell connector

Access to the configuration and calibration facility requires that the internal calibration switch is pressed and released again.
On the models 205, 210, and 210-FE this is accomplished by removing the calibration switch screw from the rear panel on the instrument enclosure and inserting a small screwdriver or similar device into the opening and pressing the calibration switch button. Sealing of the access to the switch is accomplished with a lead wire seal. The wire is passed through the hole in the head of the calibration switch screw and an adjacent hole drilled through a nut.
On models 212G and 212GX access to the switch requires opening of the enclosure. Sealing of the access to the switch is accomplished with a lead wire seal.

7.1.2 Indicator – load cell connector – load receptor

Securing of the indicator, load receptor and load cell combined is done the following way:

- The load cell connector is positioned next to the calibration switch on the mainboard and therefore secured by the same cover using brittle stickers or by wire and seal.

In special cases where the place of installation makes it impossible to use the above sealing:

- Inserting the serial number of the load receptor as part of the principal inscriptions contained on the indicator identification label.
- The load receptor bears the serial number of the indicator on its data plate.

7.1.3 Junction box for load cells

Access to the junction box, if any, is 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 the performance of the weighing instrument in any way, that would alter the legality of the weighing.

7.2 Verification marks

7.2.1 Indicator

A green M-sticker shall be placed next to the CE mark on the inscription plate.

The sticker with verification marks may be placed on or next to the inscription plate or on the front of the indicator.

7.2.2 Printers used for legal transactions

Printers covered by this type approval and other printers according to Section 4.2, which have been subject to the conformity assessment procedure, shall not bear supplementary metrological marking in order to be used for legal transactions.

8. Location of CE mark of conformity and inscriptions

8.1 Indicator

8.1.1 CE mark

CE mark and supplementary metrological marking shall be applied to the scale according to article 16 of Directive 2014/31/EU.

8.1.2 Inscriptions

Manufacturer’s trademark and/or name and the type designation is located on the front panel overlay.

Indelibly printed on a brittle plastic sticker located on the front panel overlay:

- Max, Min, e =

On the inscription plate which is located visible on the enclosure of the weight indicator:

- Manufacturer’s name and/or logo, postal address of manufacturer, model no., serial no., type examination certificate no., accuracy class, electrical data and other inscriptions.

8.1.2.1 Load receptors

On a data plate:

- Manufacturer's name, type, serial number, capacity

Left to the manufacturer’s choice as provided in Section 7.1.2:

- Serial no. of the indicator

9. Pictures

Figure 1 Model 205 Front panel

Figure 2 Model 205 Rear panel

Figure 3 Model 210 Front panel

Figure 4 Model 210 Rear panel

Figure 5 Model 210-FE Front panel

Figure 6 Model 210-FE Rear panel

Figure 7 Model 212G Front panel

Figure 8 Model 212GX Front panel

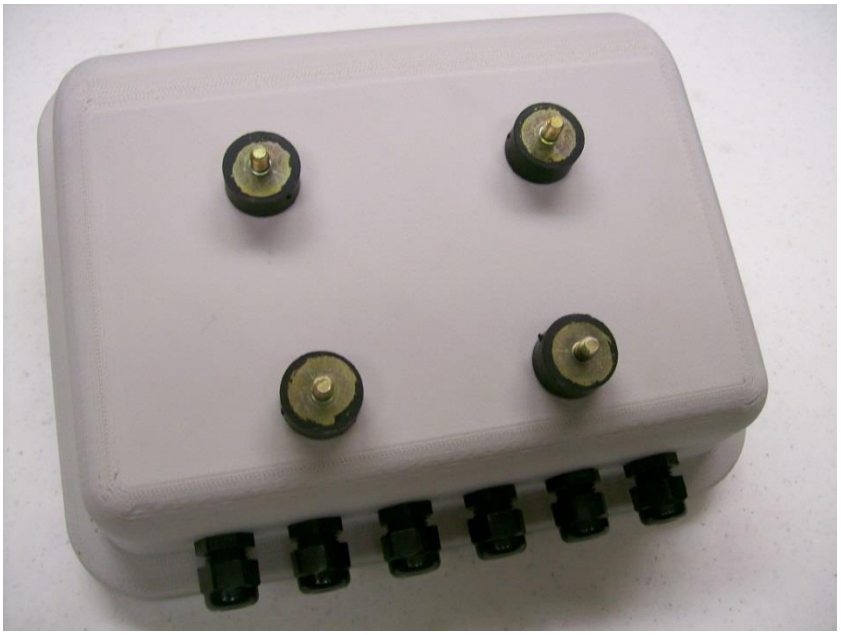

Figure 9 Model 212G / 212GX Rear panel

Figure 10 Sealing of Model 212G / 212GX with wire and seal.

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: DK0199.387

INDICATOR A/D (Module 1)		Type:	210			
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}		10000		
Fraction of maximum permissible error (mpe):		p_1		0,5		
Load cell excitation voltage:		U_{exc}	[Vdc]	9,4		
Minimum input-voltage per verification scale interval:		Δu_{min}	[µV]	0,5		
Minimum load cell impedance:		R_{Lmin}	[Ω]	44		
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]	292		
Load cell interface:			6-wire (remote sense)			
Additive tare, if available:		T^+	[% of Max]	0		
Initial zero setting range:		IZSR	[% of Max]	-2	/	2
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:	FH 4' x 5'			
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]	10		
Non uniform distribution of the load:		NUD	[% of Max]	20		
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^* + NUD) / 100$			1,32		
LOAD CELL ANALOG (Module 3)		Type:	TB-500-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]	350		
Minimum load cell verification interval:	($v_{min\%} = 100 / Y$)	$v_{min\%}$	[% of Emax]	0,01		
Rated capacity:		E_{max}	[kg]	500		
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:			TC: DK0199.R60.10			
COMPLETE WEIGHING INSTRUMENT			Single-interval			
Manufacturer: Cardinal		Type:	210 + FH			
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]	1500		
Number of verification scale intervals:		n		3000		
Verification scale interval:		e	[kg]	0,5		
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,75		
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$	[µV/e]	4,70		
Cross-section of each wire in the J-box cable:		A	[mm²]	0,5		
J-box cable-Length:		L	[m]	100		
Temperature range to be marked on the instrument:	Not required	T_{min} / T_{max}	[°C]			
Peripheral Equipment subject to legal control:			Cardinal P500 printer			

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 =	7000
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	0
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	37,5
$v_{min} * \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * √N / R) =	0,400
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)	$\Delta u - \Delta u_{min}$ =	4,20
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	44
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	92
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) =	5,0

Signature and date:

Conclusion . . . . . PASSED

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