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EC Type-Approval Certificate

No. DK 0199.553

825

NON-AUTOMATIC WEIGHING INSTRUMENT

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

In accordance with the requirements for the non-automatic weighing instrument of EC Council Directive 2009/23/EC.

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 825 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
Single interval or multi-interval
Verification scale interval: $e_i = Max_i / n_i$
Maximum number of verification scale intervals: $n_i = 10000$ for class III, $n_i = 1000$ 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.

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

The annex comprises 14 pages.

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Descriptive annex

Contents

1. Name and type of instrument and modules

The weighing instrument is designated Model 825, which is a system of modules consisting of an electronic indicator, connected to a separate load receiver 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 or multi-interval and an internal AC mains power supply.

2. Description of the construction and function

2.1 Construction

2.1.1 Indicator

Technical specifications are according to Section 3.1.

2.1.2 Enclosure, keyboard and display

The Model 825 is housed in a stainless steel enclosure 305 mm wide x 247 mm high x 95 mm deep. This enclosure can be mounted either on a vertical or horizontal surface and is designed to meet an IP 66 rating. It is designed primarily for industrial use, but may also be used in an office environment.

The Model 825 keyboard contains 52 membrane keys along with multiple programmable soft keys used to enter data and to control indicator functions.

The front panel of the indicator contains the keyboard and a display. The display consists of a 640 x 480 pixel matrix colour back lit LCD display. The display is 133 mm wide x 102 mm high and is backlit.

The bottom panel of the indicator contains 6 gland connectors and one access panel:

1 gland connector for the power cord

2 gland connectors for the load cell input from the load receptors

3 gland connectors for I/O including digital isolated inputs and outputs and serial I/O

1 sealed access panel for access to Ethernet and USB connectors
(removal of this panel reduces the enclosure rating from IP 66 to IP 32)

Electronics

The Model 825 weight-indicating instrument in its basic configuration uses three separate printed circuit boards; a main pc board, an operator interface pc board, and a scale input pc board. These three printed circuit boards contain all of the basic instrument circuitry. Additional option boards are available. One option board provides an additional load receiver input allowing the addition of up to eight more load receivers. The second option board can be one of several types that contain additional I/O circuitry like serial interfaces or digital I/O circuitry. The weight-indicator will accept a maximum of nine option boards in addition to the standard scale input board.

The main printed circuit board contains a total of ten I/O option board slots and handles the real time scale tasks. This board contains a Freescale Coldfire MCF5213 32-bit 80 MHz processor with 32 Kb of RAM, and 256 Kb of embedded flash memory. The operator interface board uses a Freescale Coldfire MCF5328 32-bit 240 MHz processor and handles the indicator's operating system, display, and graphic control functions. Included on this board are 32 Mb of RAM, 64 Mb of NAND flash memory, and 32 Mb of programming NOR flash memory. Each scale input pc board contains a Freescale MC9S08DZ 8-bit processor with 8 Kb of RAM, 60 Kb of flash, and 2 Kb of NOVRAM used for storage of setup and calibration parameters. The power supply is a universal switching type and can accept an input voltage of from 90 to 264 VAC 50 or 60 Hz. The indicator produces a load cell excitation voltage of 10.8 VDC.

2.1.3 Load receptors, load cells, and load receptor supports

Set out in Section 3.2.

2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Function

The Model 825 weight-indicating instrument is a microcontroller based electronic weight indicator that requires the external connection of one or more 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 indicator is powered from the power mains at 90 to 264 VAC 50 or 60 Hz.

The primary functions are described below:

2.2.1 Power-up

On power up the 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 the indicator will test all memory functions followed by a display test. The display tests consist of turning on all pixel elements for approximately one second followed by turning all of the pixel elements off for approximately one second. At the conclusion of the display test, the indicator displays the Cardinal logo and model number and software version. The test sequence may also be manually initiated by pressing the ASTERISK key followed by pressing the UNITS key.

2.2.3 Display range

The indicator displays 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 the zero annunciator to turn on indicating the display is at the centre of zero.

Zero setting range: 4 % of Max.
Initial zero setting range: ≤20% of Max.

Zero setting can only take place when the load receptor is not in motion.

2.2.5 Zero tracking

The weight indicators is 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 Model 825 can be configured to display in units of pounds, kilograms, grams, tonnes, ounces, and tons. A custom unit of measure can also be selected. However, only kilograms, grams, and tonnes are allowed.

2.2.7 Tare

The weight indicator is provided with a semi-automatic tare and 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

The preset or numeric tare feature 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, 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 time and date and identification, if selected, will also be transmitted. It is also possible 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 Display test

A self-test routine is initiated by pressing the ON / OFF key to turn the instrument off then pressing it again to turn the instrument ON or by pressing the ASTERISK key then pressing the UNITS key. The test routine consists of turning on all of the pixel elements in the display for approximately one second followed by turning them all off for approximately one second. After that, the Cardinal logo is displayed along with the model number of the indicator and the software version.

2.2.11 Time and date

The Model 825 weight indicator is equipped with 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.

2.2.12 Operator information messages

The weight indicator has a number of general and diagnostic messages, which are described in detail in the 825 Series Owner’s Manual.

2.2.13 Software version

The 825 indicator software is segregated into parts, where the legally relevant part is the software that includes boot loader, standard indicator and streaming of weighing results to RS232, while the application software apart from display of the weight (see Section 5.2 and 6.2) shall be non-legally relevant in order to be covered by this type approval certificate.

The software revision level is displayed during the power up sequence of the instrument as XX.YY.ZZZ where XX is the version of the legally relevant software and YY.ZZZ is the subversion not affecting the legally functions of the software part.

Software part	Present version	Approved versions of XX
Boot Loader	1.09.004	1.YY.ZZZ, for YY ≥ 09
Mainboard	1.20.003	1.YY.ZZZ, for YY ≥ 20
OS / Std. Apps	1.12.009	1.YY.ZZZ, for YY ≥ 12
Scale Input Board (SIB)	1.07.000	1.YY.ZZZ, for YY ≥ 07
DIO Board	0.05.000	0.YY.ZZZ, for YY ≥ 05
DAC Board	1.01.000	1.YY.ZZZ, for YY ≥ 01

2.2.14 Multi-interval feature

The weight indicator allows a maximum of three intervals.

2.2.15 Multi-point calibration feature

A maximum of three calibration points (one of which is at no-load or Min) may be used with the Model 825 to compensate for non-linearity within the system.

2.2.16 Electronic tally roll / Alibi memory

The Model 825 weight indicator is provided with an electronic tally roll feature to store weight and consecutive number for each weight transaction transmitted to an external computing peripheral. This data is stored in non-volatile memory and has a capacity of 7000 transactions. Once capacity has been reached subsequent transactions will replace the earliest transactions. The contents of the file can be displayed on the weight indictor's display screen.

2.2.17 High resolution weight display

This weight indicator is provided with a 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 Scale input cards

The Scale Input card allows additional load receiver to be connected to the indicator.

These cards are inserted into one or more of the available connectors on the main printed circuit board.

2.3.2 Input / output card

The optional I/O Card provides eight configurable digital input and output lines that can be used for special interfacing applications.

3. Technical data

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

3.1 Indicator

Type:	Model 825
Accuracy class:	III and IIII
Weighing range:	Single-interval or multi-interval (max 3 intervals)
Maximum number of Verification Scale Intervals:	10000 (class III), 1000 (class IIII)
Internal resolution:	>16,000,000 counts
Maximum tare effect:	-Max_1.
Fractional factor:	p'I = 0.5
Minimum input-voltage per VSI:	0.5 µV
Minimum signal voltage for dead load:	1 mV
Excitation voltage:	10.85 VDC
Analogue range:	1 to 40 mV
Circuit for remote sense:	Active
Minimum input-impedance:	25 ohms
Maximum input-impedance:	1100 ohms
Mains power supply:	90 - 260 VAC 50 or 60 Hertz
Peripheral interfaces:	Set out in Section 4

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

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: 491 m/mm^2

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

- Option 2:

Coefficient of temperature of the span error of the indicator: Es = 0.0043 [% / 25K]
Coefficient of resistance for the wires in the J-box cable: Sx = 0.0019 [% / ohm]

L/Amax = 295.86 / Sx * (emp / n – Es) [m / mm^2] 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) There is a 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 2009/23/EC.

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, Issue 6, 2014, No. 11), 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 listed below are certified 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 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 other authorised alternative according to Section 3.2.1
Drawings:	No. 3500-B089-0A and no. 3500-B018-0A (50,000 lb) No. 3500-B094-0A (100,000 lb).

3.2.4 Platforms

Construction in brief:	All-steel, aluminium, steel-reinforced concrete construction or hybrid construction of these materials, Bench, surface, pit or wall mounted
Reduction ratio:	1
Junction box:	Mounted in or on the platform
Load cells	Any R60 certified load cell according to Section 3.2.1 or 3.2.2
Drawings:	Various

3.2.5 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:	Any R60 certified load cell according to Section 3.2.1 or 3.2.2
Drawings:	Various

3.3 Composition of modules

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

3.4 Documents

The documents filed at DELTA (reference No. T203051) 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 receiver input is positioned on the scale input circuit board and is accessed through a gland connector on the bottom panel of the instrument enclosure.

4.1.2 Printer interface

A 3-terminal connector for the printer is positioned on the indicator’s 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 indicator’s main circuit board and is accessed through a gland connector on the bottom panel of the instrument enclosure.

4.1.4 Ethernet interface

An Ethernet connector is located behind an access panel on the indicator enclosure and is accessed by removal of the cover plate. This interface may be used when connecting to other peripheral devices.

4.1.5 USB interface

A USB interface is located behind an access panel on the indicator enclosure and is accessed by removal of the cover plate. This interface may be used to download files or to interface with other peripheral devices. The maximum cable length for this interface shall be 2.9 m.

4.1.6 Logic Level Inputs and Outputs

A 10-terminal connector is used for the Model 825. This connector is located on the optional I/O card. Access to the connector is made through a gland connector located on the bottom panel of the instrument enclosure.

4.2 Peripheral equipment

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

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

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 Application programs

Application software can only be downloaded when the indicator is in an unsealed condition. Loading of an application program will increment the audit trail event counter regardless of settings. Application software is not covered by this approval.

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.

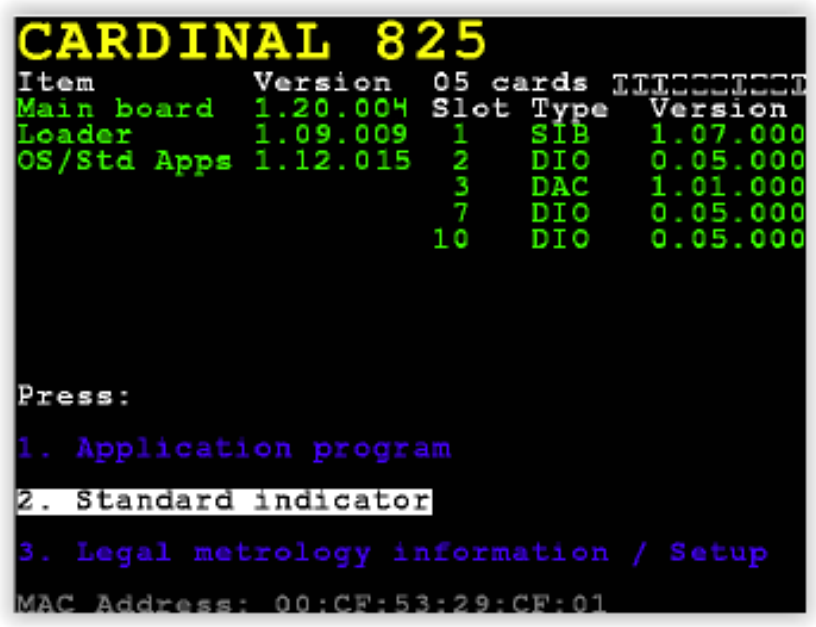
The composition of modules shall agree with Section 5.3.

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

6.2 Application software

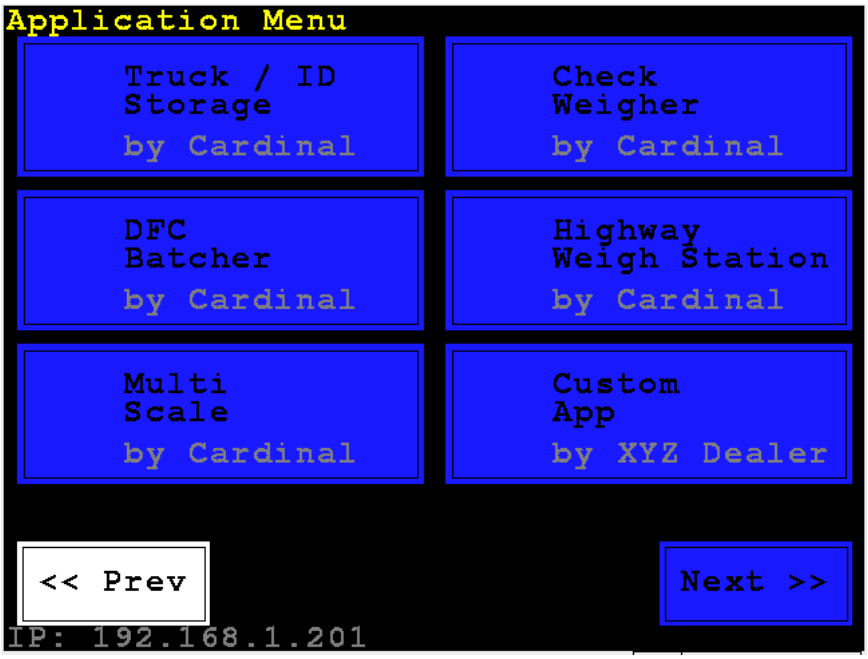
Use the following procedure to check for the presence of application software:

Turn the indicator off, wait a few seconds then turn the 825 indicator on. The screen will perform a self-test and display three options at the bottom of the screen. Within seven seconds, press the number 1 key to select the application program. Failure to press a key within this time will cause the automatic execution of the application program.



Start Up screen showing legally relevant software versions.

1) After selecting the application menu a screen similar to that shown below will be displayed. This is a list of all application programs resident. Select the application program of interest by either pressing the numeric key associated with it or touching the selection on the display screen with your finger.



Application menu screen showing available applications.

2) After the application program has started and a weight value is displayed, zero the weight display if necessary and place a load on the load-receiver platform. Record the value of this weight. Turn the indicator off.

3) Turn the power back on to the indicator and, when the display returns to the initial display shown in step 1, select the standard indicator selection by pressing the number 2 key or touching the selection on the screen.

4) After a short delay, the standard indicator screen will be displayed. Make sure the weight display is at zero then place the same load used in step 3 on the load-receiver platform. Compare this value with the value recorded in step 3. The two values must be identical to validate the application program.

5) To view the software version of the application program, start the application then select the HELP and then ABOUT keys.

Serial Weight Data Output:

1) If the application program transmits weight from the COM 2 or another serial interface on the indicator, a check should be made to verify its integrity. With the indicator executing the Application program, inspect the weight data transmitted (if any) from the serial port(s).

2) Using a display terminal or similar device, connect it to COM 3 and view the weight data transmitted from this protective interface. The weight data transmitted from COM 3 is the gross weight from the Standard program and must be identical to the gross weight transmitted from the Application program.

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, section 2.3 of the Directive 2009/23/EC.

7.1.1 Indicator

The 825 indicator provides an audit trail record for securing. At verification the value of the audit trail counter is written on the inscription plate or on a brittle plastic sticker - sealed with a verification mark - next to it.

If the value of the audit trail counter differs from the one written at verification time, the seal of the indicator is broken.

7.1.2 Indicator - load cell connector - load receptor

Securing of the indicator, load receptor, and load cell combined is done by one of the following ways:

- Sealing of the access to the interior of the enclosure of the indicator with brittle plastic sticker(s).

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.

7.1.3 Junction box for load cells

Access to the junction box, if any, is prevented by use of lead 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.

7.2 Verification marks

7.2.1 Indicator

A green M-sticker and a sticker with verification marks may be placed on the front of the indicator or on its inscription plate.

7.2.2 Printers used for legal transactions

Printers covered by this type of approval and other printers according to Section 4.2 shall not bear a green M-sticker, although they are used for legal transactions, as a complete legal measuring instrument shall only bear one green M-sticker.

7.2.3 Non-verified peripheral equipment

If such equipment is connected to the weighing instrument, it shall bear a red M-sticker.

8. Location of CE mark of conformity and inscriptions

8.1 Indicator

8.1.1 CE mark

A sticker with the CE mark of conformity and year of production is located on the identification plate which is located on the side of the enclosure.

8.1.2 Inscriptions

Manufacturer's trademark and 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 =, accuracy class

On the inscription plate - a single brittle plastic sticker - located on the side of the weight indicator:

- Max, Min, e =
- T = Max_1, PT = Max_1 (for multi-interval scale)
- Certificate No., accuracy class
- Model No., Serial No., electrical data and other inscriptions

8.2 Load receptors

On a data plate:

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

In special cases the load receptor bears the serial number of the indicator on its data plate.

9. Pictures

Figure 1 Model 825 Front Panel

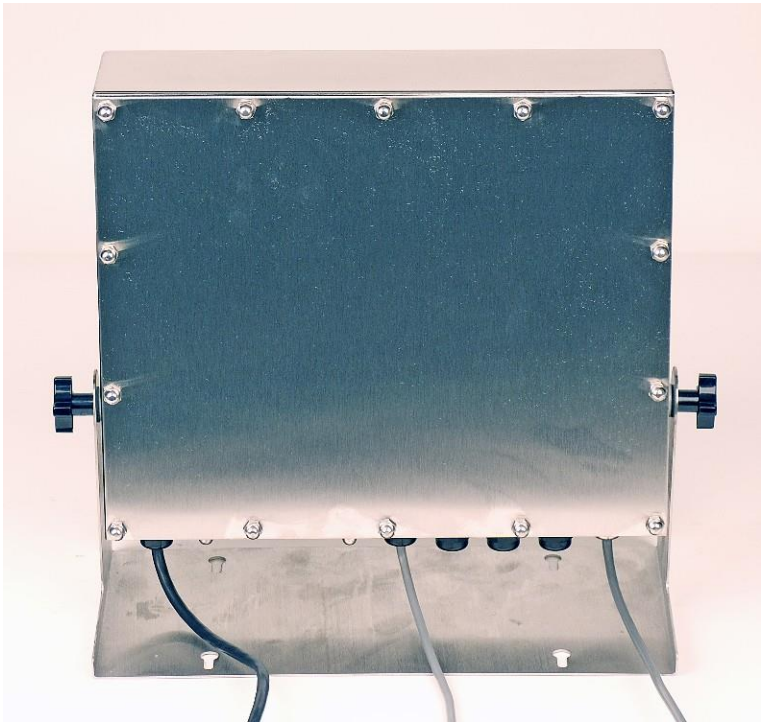


Figure 2 Model 825 Rear Panel

10. Composition of modules – an example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, multi-interval

Certificate of EU Type-Approval N°: TAC: DK0199.553

INDICATOR A/D (Module 1)	Type:	825				
Accuracy class according to EN 45501 and OIML R76:		$Class_{ind}$ (I, II, III or IIII)		III		
Maximum number of verification scale intervals (r_{max} or lower):		n_{ind}		10000		
Fraction of maximum permissible error (mpe):		p_1		0,5		
Load cell excitation voltage:		U_{exc}	[Vdc]	10,85		
Minimum input-voltage per verification scale interval:		Δu_{min}	[µV]	0,25		
Minimum load cell impedance:		R_{Lmin}	[Ω]	25		
Coefficient of temperature of the span error:		Es	[% / 25°C]			0,0043
Coefficient of resistance for the wires in the J-box cable:		Sx	[% / Ω]			0,0019
Specific J-box cable-Length to the junction box for load cells		$(L/A)_{max}$	[m / mm²]			498
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:	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]	3		
Non uniform distribution of the load:		NUD	[% of Max]	20		
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$			1,33		
LOAD CELL ANALOG (Module 3)	Type:	LOC				
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:		$(E_{min} / E_{max}) * 100$	[%]	1		
Minimum dead load output return:	($DR_{\%}$ = 50 / Z)	$DR_{\%}$	[% of Emax]	0,0014		
Temperature range:		T_{min} / T_{max}	[°C]	-10	/	40
Test report (TR) or Test Certificate (TC/OIML) as appropriate		TC2318				
COMPLETE WEIGHING INSTRUMENT		Multi-interval				
Manufacturer: Cardinal	Type:	825 + 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
Maximum capacity for each partial weighing range:		Max_1 / Max_2 / Max_3	[kg]	300	600	1500
Number of verification scale intervals for each weighing range		n_1 / n_2 / n_3		3000	3000	3000
Verification scale interval for each weighing range		e_1 / e_2 / e_3	[kg]	0,1	0,2	0,5
Utilisation ratio of the load cell	$\alpha = (Max_i / E_{max}) * (R / N)$			0,15	0,30	0,75
Input voltage (from the load cels):	$\Delta_u = C * U_{exc} * \alpha * 1000 / n$		[µV/e]	1,09	2,17	5,43
Cross-section of each wire in the J-box cable:		A	[mm²]	>>>>>>>>>>>>>>>>>>		0,22
J-box cable-Length to the junction box for load cells		L	[m]	>>>>>>>>>>>>>>>>>>		20
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	
p_i	<=	1	(R76: 3.5.4.1)	1 - pi =	>>>>>>>>>>>>>>>>>>		0,0
n_i	<=	n_{max} for the class	(R76: 3.2)	n_{max} for the class - n_i =	7000	7000	7000
n_i	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n_i =	7000	7000	7000
n_i	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n_i =	0	0	0
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	6,25	<<<<<<<<<<<<<<<<	
$v_{min} \cdot \sqrt{N} / R$	<=	e_i	(R76: 4.12.3)	e_i - (v_{min} * $\sqrt{N}$ / R) =	0,000	0,100	0,400
or (if v_{min} is not given)				Alternative solutions: ↑ ↓			
$(E_{max} / n_{LC}) \cdot (\sqrt{N} / R)$	<=	e_i	(WELMEC 2: 7)	e_i - ((E_{max} / n_{LC}) * ($\sqrt{N}$ / R)) =			
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	0,84	1,92	5,18
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	>>>>>>>>>>>>>>>>>>		63
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	>>>>>>>>		3132
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) =	>>>>>>>>>>>>>>>>>>		1,3
$DR_{\%}$	<=	50 * e_i / Max	(WELMEC 2: 6b)	(50 * e_i / Max) - $DR_{\%}$ =	0,0019	<<<<<<<<<<<<<<<<	
or (if DR% is not given)				Alternative solutions: ↑ ↓			
Max / e_i	<=	n_{LC}	(WELMEC 2: 6b)	n_{LC} - (Max / e_i) =			

Signature and date:

Conclusion . . . . . ***PASSED***

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