



EU Type Examination Certificate

No. DK0199.629

B5 / B6

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 ETS Elektronik Tartı Sistemleri Sanayi ve Ticaret Limited Şirketi
Ikitelli Organize Sanayi Bölgesi Metal – İş Sanayi Sitesi 8. Blok No:8-10
Ikitelli - Başakşehir
Istanbul
TURKEY

In respect of Non-automatic weighing instrument designated B5 / B6 with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class III
Maximum capacity, Max: From 1 kg up to 15 000 kg
Verification scale interval: $e = \text{Max} / n$
Maximum number of verification scale intervals: $n \leq 3000$, 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 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 11 pages.

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Descriptive annex

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1. Name and type of instrument and modules

The weighing instrument is a system of modules consisting of an electronic indicator B5 / B6 connected to a separate load receptor. The instrument is a Class III, self-indicating weighing instrument with single-interval, supplied from external 220 VAC and an internal rechargeable battery.

The name of the instrument may be followed by alphanumeric characters for technical, legal or commercial characterization of the instrument.

The indicators consist of analogue to digital conversion circuitry, microprocessor control circuitry, power supply, keyboard, non-volatile memory for storage of calibration and setup 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 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 Indicator

The indicator is specified in Section 3.1.

Enclosures and keyboard

The indicator is housed in an enclosure made of ABS plastic.

The front panels of the indicator comprise of

- A 7-segment LED display having 6 digits and appropriate state indicators, or
- A 7-segment LCD display having 6 digits and appropriate state indicators
- a keyboard containing 6 keys used to enter commands or data into the weight indicator. Each key is identified with a name and/or pictograph.

Electronics

The instrument uses two printed circuit boards, a mainboard, and a simple display board.

All instrument calibration and metrological setup data are contained in non-volatile memory. The indicator is power supplied from 220 VAC, 50/60 Hz.

The indicator produces a load cell excitation voltage of 5 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 instrument is a microcontroller based electronic weight indicator that require the external connection of strain gauge load cell. The weight information appears in the digital display located on the front panel.

The indicator shall be set up to show the weight in kg.

The primary functions provided are detailed below.

2.2.1 Power on

At power up the indicator first performs a display test, then displays the digits '012345', followed by the maximum displayable weight, the software version and the battery voltage, after which normal weight display is shown.

2.2.2 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. The test routine turns on and off all of the display segments and light indicators to verify that the display is fully functional.

2.2.3 Display range

The weight indicator will display weight from –Max to Max (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 to turn on, indicating the display is at the centre of zero.

Semi-automatic zero-setting range: $\pm 2\%$ of Max.

Automatic zero-tracking range: $\pm 2\%$ of Max.

Initial zero-setting range: $\pm 10\%$ of Max.

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

2.2.5 Zero-tracking

The indicator 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 the weight is stable.

2.2.6 Combined semi-automatic zero-setting and tare

Pressing the “Zero/Tare” key, when the indication is stable, will enter the currently weight value either as a new zero – if within the zero-setting range – or as a tare weight value. If tare is active the NET annunciator is on.

2.2.7 Piece counting

The indicator has a mode for piece counting. A long press on the “PCS” key enters the mode for setting up the reference number of pieces, while a new press on “PCS” will start display of the actual count on the load receptor. The “C” key is used to leave the mode.

NOTE: The result of the piece counting is not a legal value,

2.2.8 Manual check weighing

The indicator can be set to check the actual weight against a high and a low limit by the user pressing “PACK” key.

2.2.9 Operator information messages

The weight indicator has a number of general and diagnostic messages, which are described in detail in the user’s guide.

2.2.10 Software version

The format of the software is YYMMDD and the approved version is 120504.

2.2.11 Battery operation

The indicator can be operated from the internal rechargeable battery.

3. Technical data

The B5 / B6 weighing instruments are composed of separate modules, which are set out as follows:

3.1 Indicator

The indicators have the following characteristics:

| | |
|--|----------------------------|
| Type: | B5 / B6 |
| Accuracy class: | III |
| Weighing range: | Single-interval |
| Maximum capacity (Max): | 1 kg to 15 000 kg |
| Minimum capacity (Min): | $20 \times e_1$ |
| Verification scale interval ($e =$): | ≥ 0.1 g |
| Maximum number of verification Scale intervals: | ≤ 3000 |
| Maximum tare effect: | -Max within display limits |
| Fractional factor: | $p'i = 0.5$ |
| Minimum input voltage per VSI: | 2.0 μ V |
| Excitation voltage: | 5 VDC |
| Circuit for remote sense: | not present |
| Minimum input impedance: | 350 ohm |
| Maximum input impedance: | 1100 ohm |
| Mains power supply: | 220 VAC, 50/60 Hz |
| Operational temperature: | -10 °C to +40 °C |
| Peripheral interface: | None |

3.1.1 Connecting cable between the indicator and the 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.

3.2 Load receptors, load cells, and load receptor supports

Movable 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 Platforms, weigh bridge platforms

Construction in brief: Steel cast iron or aluminium construction
Reduction ratio: 1
Load cells: Load cell according to Section 3.2.1
Drawings: Various

3.3 Composition of modules

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

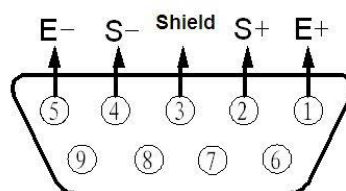
3.4 Documents

The documents filed at DELTA (reference No. T206050) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Load cell input

A 9-terminal D-sub connector for the load cell is positioned on the rear side of the enclosure. The load cell shall be connected as shown:



4.2 Communication and I/O interfaces

None.

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 HOLD function

The HOLD function shall be disabled.

5.3 UNIT function

The UNIT function shall be disabled as lb is not allowed as primary weight unit.

5.4 Counting operation is not approved for NAWI

The count shown as result of the counting function is not covered by this NAWI approval.

5.5 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 5.5.

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 a calibration jumper is removed.

Sealing of the indicator - to prevent access to the calibration jumper and to secure the electronics against dismantling/adjustment – is accomplished using a brittle sticker covering one of the assembly screws of the enclosure.

Sealing of load cell connection is accomplished either using brittle sticker(s) or with wire and seal.

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:

- Manufacturer's name and/or trademark
- Postal address of manufacturer
- model no.
- serial no.
- EU type examination certificate no.
- Max, Min, e =
- accuracy class
- electrical data

8.1.2.1 Load receptors

On a data plate:

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

9. Pictures



Figure 1 B5-LED indicator.



Figure 2 B5-LCD indicator.



Figure 3 B6-LED indicator.



Figure 4 B6-LCD indicator.



Figure 5 Sealing of B5 / B6 indicator.

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: DK0199.629

INDICATOR

A/D (Module 1)

Type: B5

Accuracy class according to EN 45501 and OIML R76:
Maximum number of verification scale intervals (n_{max}):
Fraction of maximum permissible error (mpe):
Load cell excitation voltage:
Minimum input-voltage per verification scale interval:
Minimum load cell impedance:
Coefficient of temperature of the span error:
Coefficient of resistance for the wires in the J-box cable:
Specific J-box cable-Length to the junction box for load cells:
Load cell interface:
Additive tare, if available:
Initial zero setting range:
Temperature range:
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:

| | |
|--|----------|
| Class _{ind} (I, II, III or IIII) | III |
| n_{ind} | 3000 |
| p_1 | 0,5 |
| U_{exc} [Vdc] | 5 |
| Δu_{min} [μV] | 2 |
| R_{Lmin} [Ω] | 350 |
| E_s [% / 25°C] | |
| S_x [% / Ω] | |
| (L/A) _{max} [m / mm ²] | |
| 4-wire (no sense) | |
| T^+ [% of Max] | 0 |
| IZSR [% of Max] | -10 / 10 |
| T_{min} / T_{max} [°C] | -10 / 40 |

LOAD RECEPTOR

(Module 2)

Type: TCS platform

Construction:

Platform

Fraction of mpe:
Number of load cells:
Reduction ratio of the load transmitting device:
Dead load of load receptor:
Non uniform distribution of the load:
Correction factor:

(NUD = 0 is acceptable)

| | |
|---|------|
| p_2 | 0,5 |
| N | 1 |
| $R = F_M / F_L$ | 1 |
| DL [% of Max] | 5 |
| NUD [% of Max] | 0 |
| $Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$ | 1,15 |

LOAD CELL

ANALOG (Module 3)

Type: Zemic H8C

Accuracy class according to OIML R60:
Maximum number of load cell intervals:
Fraction of mpe:
Rated output (sensitivity):
Input resistance of single load cell:
Minimum load cell verification interval: ($v_{min} = 100 / Y$)
Rated capacity:
Minimum dead load, relative:
Temperature range:
Test report (TR) or Test Certificate (TC/OIML) as appropriate:

| | |
|--|----------|
| Class _{LC} (A, B, C or D) | C |
| n_{LC} | 3000 |
| p_3 | 0,7 |
| C [mV / V] | 2 |
| R_{LC} [Ω] | 350 |
| $v_{min} \%$ [% of E _{max}] | 0,005 |
| E_{max} [kg] | 2000 |
| (E_{min} / E_{max}) * 100 [%] | 0 |
| T_{min} / T_{max} [°C] | -10 / 40 |

D09-06.09

COMPLETE WEIGHING INSTRUMENT

Single-interval

Manufacturer:

ETS Elektronik Tart

Type: B5 platform scale

Accuracy class according to EN 45501 and OIML R76:
Fractions: $p_1 = p_1^2 + p_2^2 + p_3^2$:
Maximum capacity:
Number of verification scale intervals:
Verification scale interval:
Utilisation ratio of the load cell:
Input voltage (from the load cells):
Cross-section of each wire in the J-box cable:
J-box cable-Length:
Temperature range to be marked on the instrument:
Peripheral Equipment subject to legal control:

| | |
|--|------|
| Class _{WI} (I, II, III or IIII) | III |
| p_1 | 1,0 |
| Max [kg] | 1500 |
| n | 3000 |
| e [kg] | 0,5 |
| $\alpha = (Max / E_{max}) * (R / N)$ | 0,75 |
| $\Delta u = C * U_{exc} * \alpha * 1000 / n$ [$\mu V / e$] | 2,50 |
| A [mm ²] | |
| L [m] | |
| T_{min} / T_{max} [°C] | |

| Acceptance criteria for compatibility | | | Passed, provided no result below is < 0 | | |
|---|----|--|--|---|----------------|
| Class _{WI} | <= | Class _{ind} & Class _{LC} (WELMEC 2: 1) | Class _{WI} | : | PASSED |
| p_1 | <= | 1 (R76: 3.5.4.1) | 1 - p_1 | = | 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 | = | 0 |
| n | <= | n_{LC} (R76: 4.12.2) | n_{LC} - n | = | 0 |
| E_{min} | <= | DL * R / N (WELMEC 2: 6d) | (DL * R / N) - E_{min} | = | 75 |
| $v_{min} * \sqrt{N} / R$ | <= | e (R76: 4.12.3) | $e - (v_{min} * \sqrt{N} / R)$ | = | 0,400 |
| or (if v_{min} is not given) | | | Alternative solutions: | | |
| (E_{max} / n_{LC}) * (\sqrt{N} / R) | <= | e (WELMEC 2: 7) | $e - ((E_{max} / n_{LC}) * (\sqrt{N} / R))$ | = | 0,50 |
| Δu_{min} | <= | Δu (WELMEC 2: 8) | $\Delta u - \Delta u_{min}$ | = | 0 |
| R_{Lmin} | <= | R_{LC} / N (WELMEC 2: 9) | (R_{LC} / N) - R_{Lmin} | = | 0 |
| L / A | <= | (L / A) _{max} ^{WI} (WELMEC 2: 10) | (L / A) _{max} ^{WI} - (L / A) | = | Not applicable |
| 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) | $E_{max} - (Q * Max * R / N)$ | = | 275,0 |

Signature and date:

Conclusion PASSED

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