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EVALUATION CERTIFICATE

No. DK0199-R76-14.11

Instrument type RW / RWS / RWP / ROW

Test item device Non-automatic Weighing Indicator

Issued by DELTA Danish Electronics, Light & Acoustics

Issued in accordance with the requirements in WELMEC Guide 8.8:2011 "Guide on the General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments"

In accordance with EN 45501:1992/AC:1993 and
WELMEC Guide 2.1:2001
OIML R76:2006,
WELMEC Guide 8.8:2008.

Fractional factor (p_i) 0.5 (refer to 3.5.4 of the standard).

Issued to Tscale Electronics Mfg. (Kunshan) Co., Ltd.
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CHINA

Manufacturer Tscale Electronics Mfg. (Kunshan) Co., Ltd.

In respect of A family of non-automatic weighing indicators tested as a module of a weighing instrument.

Description and documentation The weighing indicators of this family are described and documented in the annex to this certificate.

Remarks This evaluation certificate cannot be quoted in a NAWI EC type approval certificate without permission of the holder of the certificate mentioned above.

The annex comprises 5 pages.

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1. Name and type of instrument

The indicators RW / RWS / RWP / ROW are a family of weighing indicators suitable to be incorporated in non-automatic weighing instruments, class III or class IIII, single-interval, dual-range or dual-interval.

2. Description of the construction and function

2.1 Construction

Enclosures and keyboard

The indicators are housed in an enclosure made of either ABS plastic (model RW / RWP / ROW) or stainless steel (Model RWS).

The front panels of the indicator comprise of

- LCD display with backlight having appropriate state indicators and 6 digits (22 mm high)
- a keyboard containing 5 keys used to enter commands or data into the weight indicator, plus a key for turning the indicator on/off. Each key is identified with a name and/or pictograph.

Electronics

The instruments use a single printed circuit board, which contains all of the instrument circuitry. The metrological circuitry for the models of weight indicator is identical.

All instrument calibration and metrological setup data are contained in non-volatile memory. The power supply accepts an input voltage of 9 - 12 VDC from the external power adapter with input from 100 - 240 VAC 50/60 Hz. The indicator produces a load cell excitation voltage of 5 VDC.

Software

The indicators have software separation. The version of the legally relevant software is 1.10, while the version of the non-legally relevant application software is 1.xx, where xx can be 00 to 99.

The application software version is displayed during the power-up sequence of the instrument.

The legally relevant software version can be displayed by pressing the G/N key during the test at power-up.

Sealing

The RW / ROW indicators have an internal calibration jumper, while RWS and RWP can either have an internal calibration jumper or a calibration switch accessible through a hole in the enclosure. Sealing of the cover of the enclosure - to prevent access to the calibration jumper / switch and to secure the electronics against dismantling/adjustment - is accomplished with either brittle plastic stickers or using wire and seal.

2.2 Function

The devices are a microprocessor based electronic weighing indicators for connection of strain gauge load cells.

List of devices:

- Self-test
- Determination and indication of stable equilibrium
- Initial zero-setting ± 10 % of Max
- Semi-automatic zero-setting ± 2 % of Max

- Automatic zero-tracking ± 2 % of Max
- Indication of zero
- Semi-automatic subtractive tare
- Acting upon significant fault
- Weighing unstable samples
- Check weighing
- Totalisation
- Extended indication
- Gravity compensation

3. Technical data

3.1 Indicator

Type:	RW / RWS / RWP / ROW
Accuracy class:	III or IIII
Weighing range:	Single-interval, multi-range (2 ranges), or multi-interval (2 intervals)
Number of verification scale intervals (n):	≤ 6000 for class III single-interval, ≤ 3000 for class III multi-range and multi-interval ≤ 1000 for class IIII
Minimum input voltage per VSI	1 μ V
Maximum capacity of interval (Max_i):	$n_i \times e_i$
Verification scale interval, $e_i =$	Max_i / n_i
Initial zero-setting range:	± 10 % of Max
Maximum tare effect:	100 % of Max
Fractional factor (π):	0.5
Excitation voltage:	5 VDC
Circuit for remote sense:	Present on the model with 7-terminal connector
Minimum input impedance:	87 ohm
Maximum input impedance:	1200 ohm
Connecting cable to load cell(s):	See Section 3.1.1
Supply voltage:	12 VDC / 100 - 240 VAC, 50 Hz using external adapter, optional 7.2 V internal battery
Operating temperature range:	Min / Max = -10 °C / + 40 °C
Peripheral interface(s):	See Section 4

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

3.1.1.1 4-wire system

Line:	4 wires, 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

Line:	6 wires, shielded
Maximum length:	282 m/mm ²

4. Interfaces

4.1 Load cell interface

Refer to Section 3.1.1.

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

- There is a respective 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.
- 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, section 11), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to EN 45501 has been performed.
- 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.
- The load transmission must conform to one of the examples shown in the WELMEC 2.4 Guide for load cells.

4.2 Peripheral interfaces

The indicator may be equipped with one or more of the following protective interfaces that have not to be secured.

- RS-232C

The peripheral interfaces are characterised "Protective interfaces" according to paragraph 8.4 in the Directive.

5. Conditions for use

Legal use of the indicator for automatic weighing is not allowed with reference to this evaluation certificate.

A totalised weight is not a legal value.

6. Location of seals and inscriptions

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. The seals shall be placed as shown in EC type-approval certificate DK0199.423.

Location of CE mark of conformity:

The CE mark of conformity is placed on the overlay on the rear side of the device.

Inscription on the overlay:

Max_i, Min_i, e_i =

Other inscriptions to be on the inscription plate:

Manufacturer's name and/or logo, Type, accuracy class, Temperature. -10 °C / +40 °C (optional), Evaluation Certificate No. DK0199-R76-14.11 (optional). Part No, Supply voltage.

7. Tests

The indicator has been tested according to OIML R76-1:2006, EN 45501:1992 and WELMEC 2.1 Guide for testing of indicators.

Examination / tests

Temperature tests: 20 / 40 / -10 / 5 / 20 (tested at minimum input-voltage sensitivity)
Temperature effect on no-load indication (tested at minimum input-voltage sensitivity)
Stability of equilibrium
Repeatability
Warm-up time
Voltage variations
Short time power reductions
Electrical bursts
Electrostatic discharges
Immunity to radiated electromagnetic fields
Damp heat, steady state
Span stability
Checklist
Maximum load cell cable length and impedance of cable to load cell
Load cell interface measurements with interruptions of the sense circuit

The test item fulfilled the maximum permissible errors at all tests.

8. Documentation

Contents of the technical documentation held by the notified body:

8.1 Product specification

- Manuals and descriptions
- Drawings
- Electronic schematics
- PCB layout

8.2 Examination report

OIML R76 report no. DANAK-1914341

8.3 Test results

OIML R76 report no. DANAK-1913578,
OIML R76 report no. DANAK-1914341.