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# EVALUATION CERTIFICATE

**No. DK0199-R61-12.04**

**Object name** W..

**Object type** Family of weighing transmitter for automatic gravimetric filling instrument

**Issued by** DELTA Danish Electronics, Light & Acoustics

**In accordance with** OIML R61:2004,  
OIML D11:2004 section 12 and 13 with severity level 3  
WELMEC Guide 8.8:2008.

**Issued to** **Laumas Elettronica SRL.**  
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**Manufacturer** **Laumas Elettronica SRL.**

**Characteristics** A weighing transmitter suitable for supplying the digitized weight signal to the controller of an automatic gravimetric filling instrument.

**Description and documentation** The weighing transmitter is described and documented in the annex to this certificate.

**Remarks** Summary of tests involved: see annex.  
This evaluation certificate cannot be quoted in an EU type examination certificate without permission of the holder of the certificate mentioned above.

The annex comprises 8 pages.

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## Descriptive annex

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## 1. Name and type of instrument

The weighing transmitter is designated W.. It is an electronic non-automatic weighing indicator to be connected to a separate load receptor and transmitting the instant weight using RS232, RS485, Profibus, DeviceNet, CANopen or USB. The transmitter can be configured to single-interval, multi-range or multi-interval.

The name of the transmitters may have the designation “JOLLY” put in front and may be followed by alphanumeric characters for technical, legally or commercial characterisation of the instrument.

The transmitters 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.

## 2. Description of the construction and function

### 2.1 Construction

#### 2.1.1 W.. weighing transmitter.

W.. transmitters can be supplied either in desk type enclosure, stainless steel enclosure or panel type enclosure.

The obtainable specifications for a W.. controlled automatic gravimetric filling instrument is specified in Section 3.1.

The W.. transmitter is specified in Section 3.2.

#### 2.1.2 Load cells

Requirements to connected load cell(s) are set out in Section 3.3.

#### 2.1.3 Load receptor

Requirements to connected load receptor are set out in Section 3.4.

#### 2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

### 2.2 Functions

The instrument is a microcontroller based electronic weight transmitter that requires the external connection of strain gauge load cell(s). The weight information that is transmitted will also appear in the digital display located on the front panel and can be used for service purposes.

The primary functions provided are detailed below.

### 2.2.1 Zero-setting

The weight transmitter has the following zero-setting functions:

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

Automatic zero-tracking range: 4% of Max.

Initial zero-setting range: 20% of Max.

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

### 2.2.2 Zero-tracking

The weight transmitter is equipped with a zero-tracking feature, which operates over a range of 4% of Max and only when the transmitter is at zero and the weight is stable.

### 2.2.3 Operator information messages

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

### 2.2.4 Software version

The software version is displayed during the start-up of the transmitter.

The version format is xx.yy.zz, where xx is the legal version no., while yy and zz are major and minor version numbers for changes and corrections not influencing the legal function of the software.

The tested software version is 01.00.46.

## 3. Technical data

The following technical data apply for automatic gravimetric filling instruments based on the W.. weight transmitter:

### 3.1 W.. based automatic gravimetric filling instrument

Reference class:	0.2
Accuracy class:	0.2 or 0.5 or 1 or 2
Maximum capacity (Max):	= $n \times d$
Minimum capacity (Min):	= Minfill
Minimum filling (MinFill):	See tables below
Verification scale interval (d):	$\geq 0.1$ g
Minimum input voltage per verification scale interval:	0.2 $\mu$ V
Weighing range:	Single-interval, multi-range or multi-interval
Number of verification scale intervals:	$\leq 10000$ for $d = 0.2$ $\mu$ V $\leq 3000$ for $d = 1.0$ $\mu$ V
Number of loads per fill:	1
Maximum tare effect:	$\leq 100$ % of Max

Temperature range: -10° to 40° C  
 Weighing mode: static  
 Electromagnetic class: E2  
 Humidity: Non-condensing  
 Extra warm-up time: 41 min for d = 0.2  $\mu$ V  
 18 min for d = 1.0  $\mu$ V  
 Maximum time between automatic zero-setting: 103 minutes

Minimum filling's (MinFill) dependency of verification scale interval (d) and accuracy class X(x) for a verification scale interval of 0.2  $\mu$ V.

d [g]	Accuracy class							
	X(0.2)		X(0.5)		X(1)		X(2)	
	d	[kg]	d	[kg]	d	[kg]	d	[kg]
0.1	67	0.0067	27	0.0027	14	0.0014	7	0.0007
0.2	67	0.0134	27	0.0054	14	0.0028	7	0.0014
0.5	67	0.0335	27	0.0135	14	0.0070	7	0.0035
1	133	0.133	27	0.027	14	0.014	7	0.007
2	200	0.400	54	0.108	14	0.028	7	0.014
5	399	1.995	80	0.400	27	0.135	7	0.035
10	399	3.99	160	1.60	40	0.40	14	0.14
20	399	7.89	160	3.20	80	1.60	20	0.40
50	599	29.95	160	8.00	80	4.00	40	2.00
100	599	59.9	240	24.0	80	8.0	40	4.0
200	599	119.8	240	48.0	120	24.0	40	8.0
≥ 500	599		240		120		60	

Minimum filling's (MinFill) dependency of verification scale interval (d) and accuracy class X(x) for a verification scale interval of 1.0  $\mu$ V.

d [g]	Accuracy class							
	X(0.2)		X(0.5)		X(1)		X(2)	
	d	[kg]	d	[kg]	d	[kg]	d	[kg]
0.1	56	0.0056	22	0.0022	11	0.0011	6	0.0006
0.2	56	0.0112	22	0.0044	11	0.0022	6	0.0012
0.5	56	0.0280	22	0.0110	11	0.0055	6	0.0030
1	111	0.111	22	0.022	11	0.011	6	0.006
2	167	0.334	22	0.044	11	0.022	6	0.012
5	333	1.665	67	0.335	22	0.110	6	0.030
10	333	3.33	133	1.33	33	0.33	11	0.11
20	333	6.66	133	2.66	67	1.34	17	0.34
50	500	25.00	133	6.65	67	3.35	33	1.65
100	500	50.0	200	20.0	67	6.7	33	3.3
200	500	100.0	200	40.0	100	20.0	33	6.6
≥ 500	500		200		100		50	



### 3.2 Weight transmitter

The weight transmitter has the following characteristics:

Type:	W..
Accuracy class:	III
Weighing range	Single-interval, multi-range or multi-interval (2 or 3)
Maximum number of verification scale intervals (n)	10000
Minimum input voltage per VSI	0.2 $\mu$ V
Maximum capacity of interval or range (Max <sub>i</sub> ):	$n_i \times e_i$
Verification scale interval, $e_i =$	Max <sub>i</sub> /n <sub>i</sub>
Initial zero-setting range:	$\pm 10$ % of Max
Maximum tare effect:	100 % of Max
Fractional factor ( $\rho_i$ )	0.5
Excitation voltage	5 VDC
Circuit for remote sense	Active, (see below)
Minimum input impedance	43 ohm
Maximum input impedance	1200 ohm
Connecting cable to load cell(s):	See Section 3.1.1
Supply voltage:	12 - 24 VDC, or 230 VAC
Operating temperature range:	-10° C to +40° C
Peripheral interface:	Set out in section 4

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

##### 3.2.1.1 4-wire system

Line	4 wires, shielded
Maximum length	The certified length of the load cell cable, which shall be connected directly to the Weight transmitter.

##### 3.2.1.2 6-wire system

Line	6 wires, shielded
Maximum length	1315 m/mm <sup>2</sup>
Maximum resistance per wire	22.2 ohm

### 3.3 Load cells

The W.. weighing transmitter may only be used with load cell(s) that fulfil the following general acceptance of 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 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 5, 2009), 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 Weight transmitter 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 W.. weighing Weight transmitter may only be used with a load receptor that has a load transmission device in accordance with the standard solutions shown in WELMEC Guide 2.4:2001.

### 3.5 Composition of modules

Composition of modules to an automatic gravimetric filling instrument using W.. shall satisfy WELMEC 2 (Issue 5) 2009, paragraph 11.

## 4. Interfaces and peripheral equipment

### 4.1 Interfaces

The weight transmitter is equipped with one or more of the following protective interfaces:

- RS232C
- RS485, Profibus, DeviceNet and CANopen
- USB
- Digital output
- Digital input
- Analogue input
- Analogue output
- Wire-less

The interfaces are characterised "Protective interfaces" according to Section 8.1 in the Directive 2004/22/EC annex I and do not have to be secured.

## 5. Approval conditions

### 5.1 Compatibility of modules

In case of composition of modules, WELMEC 2 (Issue 5) 2009, 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.

## 7. Securing and sealing of W.. transmitter

### 7.1 Securing and sealing

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

#### 7.1.1 Transmitter

Access to the configuration and calibration facility requires that a calibration jumper is installed on the main board, or that the operator types first a password and the key looked up on a special key card delivered by the manufacturer.

The Weight transmitters have also an event counter, which increments each time the configuration is changed.

Sealing of the cover of the enclosure - to prevent access to the calibration jumper and to secure the electronics against dismantling/adjustment - is accomplished with brittle plastic stickers. The sticker is placed so access to opening the enclosure is prohibited.

Alternatively can the metal cover - covering the analog circuits - on the mainboard be secured with a brittle plastic sticker. This together with the fact that the serial number of the indicator is non-erasable stored on the mainboard for display on request, is sufficient to ensure the electronics against exchange.

#### 7.1.2 Weight transmitter - load cell connector - load receptor

Securing of the Weight transmitter, load receptor, and load cell combined is done in one of the following ways:

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

For W200IP64, W200IP67 WINOX and WINOXTAB this is not necessary if the enclosure is sealed.



### 7.1.3 Junction box for load cells

A junction box for load cells shall be sealed against opening with wire and seal or brittle plastic sticker(s).

## 8. Tests performed

Tests carried out for this evaluation certificate on Laumas Elettrica's weight transmitter W..

Test	Type	Accredited lab.
Temperature effect on sensitivity with minimum weighing range and input impedance of 87 / 350 Ohm (20, 40, -10, 5 and 20 °C)	WDOS	DELTA
Temperature effect on no-load indication with minimum weighing range and input impedance of 87 Ohm (20, 40, -10, 5 and 20 °C)	WDOS	DELTA
Damp heat, steady state	WDOS	DELTA
Repeatability	WDOS	DELTA
Warm-up time	WDOS	DELTA
Span stability	WDOS	DELTA
Cable length between the Weight transmitter and junction box	WDOS	DELTA
Stability of equilibrium	WDOS	DELTA
EMC immunity tests are performed with a load cell of 350 Ohm		
Voltage variations (OIML D11:2004, severity level 3)	WDOS	DELTA
Electrical bursts (OIML D11:2004, severity level 3)	WDOS	DELTA
Surge (OIML D11:2004, severity level 3)	WDOS	DELTA
Electrostatic discharge (OIML D11:2004, severity level 3)	WDOS	DELTA
Radiated electromagnetic fields (OIML D11:2004, severity level 3)	WDOS	DELTA
Conducted electromagnetic fields (OIML D11:2004, severity level 3)	WDOS	DELTA
WELMEC Guide 2.8 re-examination to OIML R61:2004	WDOS	DELTA

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

## 9. Documentation

Contents of the technical documentation held by the notified body in technical file T201644: