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# EC Type-Approval Certificate

## No. DK 0199.255 Revision 1

### S29

#### 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** Taiwan Scale Mfg. Co., Ltd.  
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Taipei  
TAIWAN

**In respect of** Non-automatic weighing instrument designated S29 with variants of modules of load receptors and load cells.  
Accuracy class III, single-interval or multi-interval (2 intervals)  
Maximum capacity, Max: From 3 kg up to 30 kg  
Verification scale interval:  $e_i = \text{Max}_i / n_i$   
Maximum number of verification scale intervals:  $n_i \leq 3000$ .  
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 45501:1992/AC:1993.

**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 8 pages.

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## Descriptive annex

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## 1. Name and type of instrument

The weighing instruments designated S29 is a self-indicating scale of Class III with single-interval or multi-interval (2 intervals), an external AC mains adapter, and an internal rechargeable battery (optional). When equipped with two displays S29 may be used for direct sale to public.

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

## 2. Description of the construction and function

### 2.1 Construction

#### Enclosure

The scale is housed in a stainless steel enclosure. The display is placed on the front together with the keyboard. An optional display may be placed on the rear side of the scale. As it is designed to be waterproof, it is intended to be used in shops as well as industrial environments.

#### Keyboard

The S29's keyboard contains 3 keys used to control the functions of the scale.

#### Display

The display comprises of either,

- Front: a 7-segment LCD-display with white LED backlight 25 mm high with 5 digits, minus sign and appropriate status indicators.
- Rear: an optional 7-segment LCD-display with white LED backlight 20 mm high with 6 digits and appropriate status indicators.

or,

- Front: a 7-segment LED-display 0.56 inch high with 6 digits, minus sign and appropriate status indicators.
- Rear: an optional 7-segment LED-display 0.56 inch high with 6 digits and appropriate status indicators.

#### Electronics

The instrument has the following printed circuit boards, one main board and one or two for the display boards.

#### Models

Max	e	N	No of Load cells	Load cell type	E <sub>max</sub>
3 kg	1 g	3000	1	L6D	5 kg
6 kg	2 g	3000			8 kg or 10 kg
15 kg	5 g	3000			20 kg
25 kg	10 g	2500			35 kg or 50 kg
30 kg	10 g	3000			35 kg or 50 kg
3/6 kg	1/2 g	3000/3000			8 kg or 10 kg
6/15 kg	2/5 g	3000/3000			20 kg
15/25 kg	5/10 g	3000/2500			35 kg or 50 kg
15/30 kg	5/10 g	3000/3000			35 kg or 50 kg

Other models are allowed, if their technical data are in accordance with chapter 3, and they fulfil the requirements in sections 3.1 and 5.2.

## 2.2 Function

The weight indicating instruments are microcontroller based electronic price computing scales. The weight information appears in the digital display. The instruments are available for operation either from mains at 230 VAC 50 Hz using an external AC/DC adapter with 9 - 12 VDC output voltage and an optional internal 6V rechargeable battery or from dry battery cells.

The primary functions provided are detailed below.

### 2.2.1 Power-up

On power-up, the weight indicator will first display the model and the software version for 2 seconds and then perform a display test. After that it will automatically establish the current weight as a new zero reference.

### 2.2.2 Test function

On power-up, the weight indicator will test all memory functions followed by a display test. The display test consists of counting up the numeric digits from 0 to 9.

### 2.2.3 Display range

The weight indicators will display weight from -Max (tare function) to Max +9e (gross weight).

### 2.2.4 Zero-setting

Zero-setting range:  $\pm 2\%$  of Max.

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

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

#### 2.2.4.1 Semi-automatic zero-setting

Pressing the ZERO key causes a new zero reference to be established and ZERO annunciator to turn on, indicating that the display is at the centre of zero.

### 2.2.5 Zero-tracking

The indicators are equipped with a zero-tracking feature which operates over a range of  $\pm 2\%$  of Max and only when the indicator is at gross zero and there is no motion in the weight display.

### 2.2.6 Tare

The instrument models are provided with a semi-automatic subtractive tare.

#### 2.2.6.1 Semi-automatic tare

Pressing the "TARE" key will enter the currently weight value as the new tare weight value. The weight display will automatically change to the net weight display mode and turn on the NET annunciator. 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.

### 2.2.7 Unit

Pressing the "TARE" and "ZERO" keys simultaneously will toggle the weighing until between kg and g.

### 2.2.8 Operator information messages

The weight display can show a number of general and diagnostic messages which are described in detail in the User's Manual.

### 2.2.9 Software version

The software revision level is displayed during the power-up sequence of the instrument. The approved software version is 1.00.

### 2.2.10 Battery operation

The scale models supplied with 9 - 12 VDC from an external AC/DC adapter can be operated from an optional internal 6V rechargeable battery. The scale contains the circuitry necessary to recharge the battery, when the indicator is connected to the mains power.

The remaining scale models are supplied from 4 dry batteries size D.

## 3. Technical data

### 3.1 Scales

The S29 scale has the following characteristics:

Accuracy class:	III
Weighing range:	Single-interval or multi-interval (2 intervals)
Maximum number of Verification Scale Intervals:	$\leq 3000$ pr. interval
Maximum capacity Max):	from 3 kg to 30 kg
Verification Scale Interval:	$e_i \geq 1$ g
Maximum tare effect:	$\leq -\text{Max}$
Minimum input voltage per VSI:	1 $\mu\text{V}$
Excitation voltage:	5 VDC
Minimum load cell input impedance:	350 ohm
Maximum input impedance:	1000 ohm
Mains power supply:	9 - 12 VDC / 230 VAC, 50 Hz using external AC/DC adapter, or 4 dry cell batteries size D (depending on model)
Operational temperature:	-10 °C to +40 °C
Peripheral interface:	Set out in section 4

### 3.2 Load cells

#### 3.2.1 ZEMIC L6D load cell

The ZEMIC L6D C3 load cell can be selected according to the table in section 2.1.

#### 3.2.2 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 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 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 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.

### **3.3 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. A530926) are valid for the weighing instruments described here.

## **4. Interfaces and peripheral equipment**

### **4.1 Interfaces**

The S29 scale has no interfaces.

## **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 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 5.2.

## **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 Scale**

Access to the configuration and calibration facility is achieved by a calibration switch accessed through a hole in the bottom of the enclosure of the scale (inside the battery box).

Sealing of the access to the switch is accomplished by a sticker covering the hole through which the switch is accessed.

Sealing of the enclosure is accomplished by either seal and wire through hole in two of the assembly screws of the enclosure (see fig.3 method A”) or by an additional sticker covering one of the assembling screws of the enclosure (see fig.3 method B”).

## 7.2 Verification marks

A green M-sticker and a sticker with verification marks on or next to the inscription plate placed on the side of the scale.

## 8. Location of CE mark of conformity and inscriptions

### 8.1 Scale

#### 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 scale.

#### 8.1.2 Inscriptions

Manufacturer's trademark, type designation,  $\max_i$ ,  $\min$ , and  $e_i$  shall be located near the display(s).

On a label located on the side of the scale enclosure:

- Manufacturer's trademark
- type designation
- $\max_i$ ,  $\min$ ,  $e_i$
- tare
- temperature range
- model no., serial no., electrical data and other inscriptions

## 9. Pictures

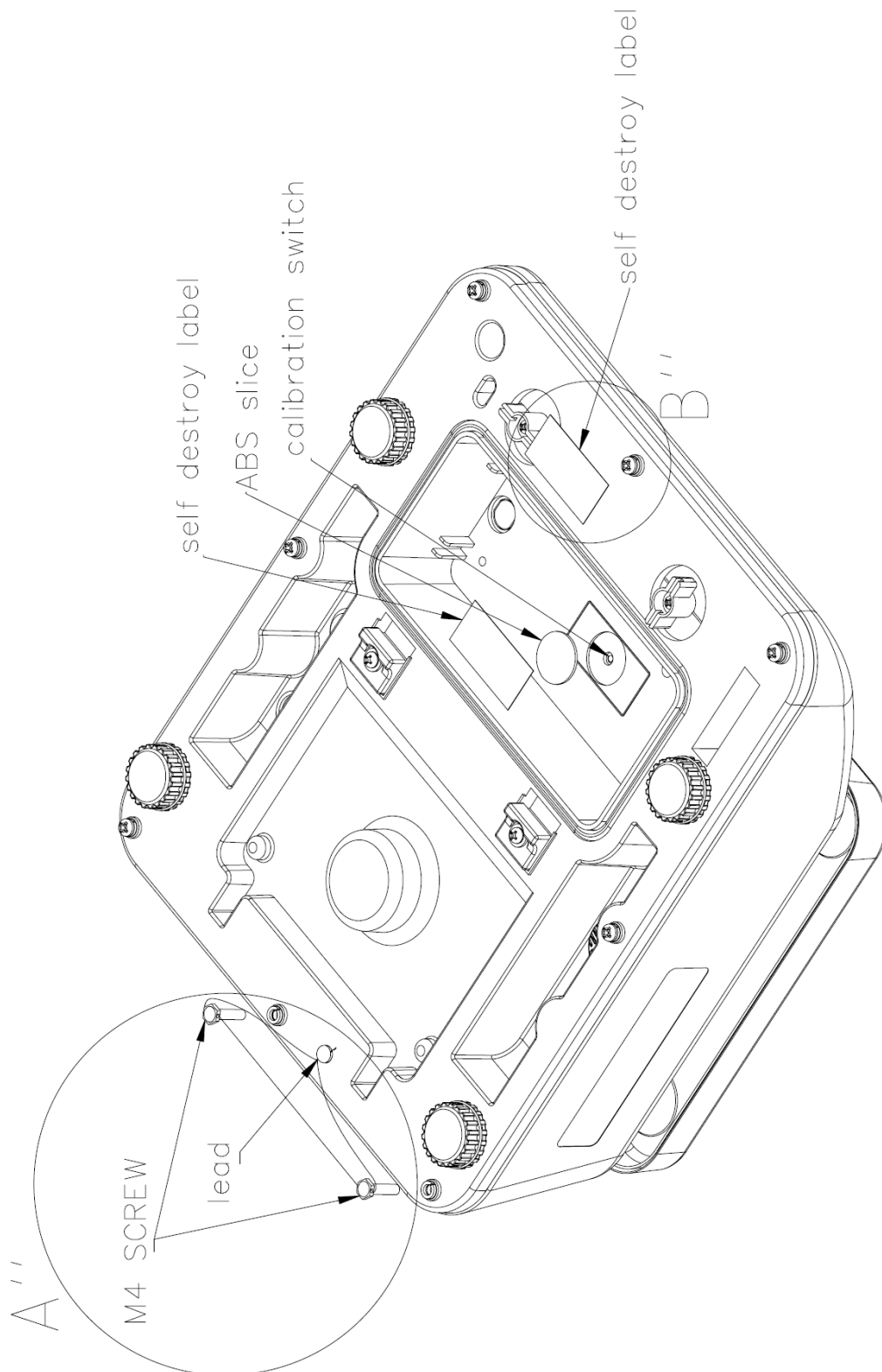


**Figure 1** S29 scale with LCD display.



**Figure 2** S29 scale with LED display.





**Figure 3** Sealing of S29.  
(seal enclosure by either method A'' or method B'')