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EC Type-Approval Certificate

No. DK 0199.438 Revision 1

A31P

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 OHAUS Corporation
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In respect of Non-automatic price computing weighing instrument designated A31P with variants of modules of load receptors and load cells. Accuracy class III, single-interval, dual-range or dual-interval. 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 45501:2015 and OIML R76:2006.

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 instruments

The weighing instruments designated A31P are self-indicating price computing scales of Class III with single-interval, dual-interval or dual-range, an external AC mains adapter, and an internal rechargeable battery (optional). The A31P is intended for direct sale to public.

The name of the instruments may have a designation put in front and may be followed by alphanumeric characters for technical, legal or commercial characterization of the instrument.

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

2. Description of the construction and function

2.1 Construction

Enclosure

The scales are housed in a plastic enclosure. The display is placed on the front together with the keyboard. A second display is placed on the rear side of the scales or on a pole. They are designed primarily for a shop or office environment, but may also be used in an industrial environment.

Keyboard

The A31P's keyboard contains 20 keys used to control the functions of the scale.

Display

The display comprises of:

- On the front: A 7-segment LCD-display with 6 digits for weight, 6 digits for unit price, 6 digits for price to pay, and appropriate LCD status indicators.
- On the rear side: A 7-segment LCD-display with 6 digits for weight, 6 digits for unit price, 6 digits for price to pay, and appropriate LCD status indicators.

Electronics

The instruments have the following printed circuit boards, one main board and two for the display boards.

Models

Max	e	N	Range / interval	Load cell type	Load cell Y value	Load cell Z value	E _{max}
3 kg	1 g	3000	Single-interval	1 pc. ZEMIC L6D C3	5000	3000	5 kg
6 kg	2 g	3000					10 kg
15 kg	5 g	3000					20 kg
30 kg	10 g	3000					35 kg
1.5/3 kg	0.5/1 g	3000/3000	Dual-range		10000	3000	5 kg
3/6 kg	1/2 g	3000/3000					10 kg
6/15 kg	2/5 g	3000/3000					20 kg
15/30 kg	5/10 g	3000/3000					35 kg
1.5/3 kg	0.5/1 g	3000/3000	Dual-interval		20000	7500	5 kg
3/6 kg	1/2 g	3000/3000					8 kg
6/15 kg	2/5 g	3000/3000		20 kg			
15/30 kg	5/10 g	3000/3000		35 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 scales. The weight information appears in the digital display. The instruments are available for operation from mains at 100 to 240 VAC 50/60 Hz using an external AC/DC adapter with 12 VDC output voltage and an optional internal 6V re-chargeable battery.

The primary functions provided are detailed below.

2.2.1 Power-up

On power-up, the scales will display the software version and then perform a display test. After that they will display the calibration counter and then automatically establish the current weight as a new zero reference.

2.2.2 Test function

On power-up, the scales will test all memory functions followed by a display test. The display test consists of first turning on all segments and indicators and later, after the display of the software version, they will count down the numeric digits from 9 to 0 with the decimal points turned on.

2.2.3 Display range

The scales will display weight from $-Max$ to Max (gross weight) within the limits of the display capacity.

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.

2.2.4.2 Zero-tracking

The scales are equipped with a zero-tracking feature, which operates over a range of $\pm 2\%$ of Max with a speed of $\pm 0.25 e_1/s$ and only when the scale is at gross zero and there is no motion in the weight display.

2.2.5 Tare

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

2.2.5.1 Semi-automatic tare

Pressing the "TARE" key will enter the current weight value as a tare value, unless tare is already active. The weight display will automatically change to the net weight display mode and turn on the NET annunciator.

If the scales are in W2 range when unloaded, the tare will be cleared automatically, or the 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.

The maximum tare effect of $T = -Max$ is on some models limited by the display capability (minus sign and 4 digits).

2.2.6 Price Look Up (PLU)

The scales have five keys for direct unit price look up (M1 – M5). In addition they have 100 indirect look up of unit prices using the PLU key and the numeric keys.

Each unit price look up can be set to price/kg or price/100g.

2.2.7 Calibration counter

The scales have a 3-digit calibration counter – displayed during power up – which increment each time the setup or calibration of the scales is changed.

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 are,

For single interval and dual-range: 1.01 or 1.02

For dual-interval: 1.02

2.2.10 Battery operation

The scale models supplied with 12 VDC from an external AC/DC adapter can be operated from an optional internal 6V rechargeable battery. The scales contain the circuitry necessary to recharge the battery when the scales are connected to the mains power.

3. Technical data

3.1 Scales

The A31P scales have the following characteristics:

Accuracy class:	III
Weighing range:	Single-interval, dual-interval or dual-range
Maximum number of Verification Scale Intervals:	≤ 3000 per interval/range
Maximum capacity (Max):	From 3 kg to 30 kg
Verification Scale Interval:	$e_i \geq 0.5$ g
Maximum tare effect:	$\leq -\text{Max}$, limited by display capability
Minimum input voltage per VSI:	1 μV
Excitation voltage:	5 VDC
Minimum load cell input impedance:	350 ohm
Maximum input impedance:	1000 ohm
Mains power supply:	12 VDC / 100 to 240 VAC, 50/60 Hz using external AC/DC adapter
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. T205602 and T211155) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The A31P may be equipped with a RS-232 interface for connection to a printer. This interface is characterised "Protective interfaces" according to paragraph 8.4 in the Directive.

4.2 Peripheral equipment

The instruments may be connected to any simple printer with a CE mark of conformity by a screened cable.

5. Approval conditions

5.1 Measurement functions other than non-automatic functions

Measurement functions that will enable the use of the instruments 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 scales.

When the instrument is sealed using a wire and seal, sealing of the access to the switch is accomplished by threading across drilled screw into the hole through which the switch is accessed. Sealing the enclosure is accomplished by securing the top and bottom housings with an additional cross drilled screw. A wire and seal must be installed through the holes in the cross drilled screws to prevent their removal (see Figure 2).

When the instrument is sealed using stickers, sealing of the access to the switch is accomplished by a sticker covering the hole through which the switch is accessed. Sealing the enclosure is accomplished by an additional sticker placed over the flat head screw that secures the top and bottom housings together (see Figure 3).

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 the last two digits of the year in which it was affixed is located on or next to the identification plate, which is located on the side of the scales.

8.1.2 Inscriptions

Near the display,

- Max_i , Min_i , and e_i

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

- Manufacturer's trademark
- Type designation
- Type approval number
- Max_i , min_i , e_i (optional)
- Accuracy class
- Tare
- Temperature range (optional)

Model no., serial no., electrical data, and other inscriptions.

Pictures



Figure 1 A31P scale.



Figure 2 Sealing of A31P with wire and seal.



Figure 3 Sealing of A31P with stickers.