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EC Type Examination Certificate

No. DK 0199.499

47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01

AUTOMATIC CATCHWEIGHING INSTRUMENT

Issued by **DELTA Danish Electronics, Light & Acoustics**
EU - Notified Body No. 0199

In accordance with the requirements for the automatic weighing instrument of Directive 2004/22/EC of the European Parliament and Council on Measuring Instruments (MID).

Issued to **Flintab AB**
Kabelvägen 4
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SWEDEN

In respect of Automatic static weighing catchweigher designated 47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01 with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class Y(a)
Maximum capacity: Max ≤ 60 kg
Verification scale interval: e ≥ 0.002 kg
Maximum number of verification scale intervals: n ≤ 3000 (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 and the specific requirements in Annex MI-006, chapter I & II of the Directive 2004/22/EC is met by the application of OIML R51-1:2006, WELMEC Guide 7.2:2011, WELMEC Guide 8.16-1:2013 and OIML R76:2006.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 12 pages.

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Descriptive annex

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1. Name and type of instrument and modules

The automatic catchweighing instrument designated 47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01 is a static weighing catchweigher class Y(a). It consists of an electronic weighing indicator/transmitter type 47-11 and a separate load receptor with 1, 3 or 4 analogue load cells and made as a belt conveyor.

47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01 may be connected to a point of sale (POS) system with a Part or Evaluation Certificate

The metrological specifications for 47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01 appear from Section 3.1.

2. Description of the construction and function

2.1 Construction

2.1.1 47-11 base unit and displays

The specifications for the 47-11 base unit appear in Section 3.2.

Enclosures and keyboard

The 47-11 base unit is supplied in a steel enclosure. The version without display (47-11-01) is intended for vertical mounting inside a cash register line, and the display versions (47-11-02 / 47-11-03) are intended for panel mounting.
The 47-10P external display unit is housed in an aluminium enclosure.

The front panels of the 47-11-02 and 47-11-03 have a graphic LCD 128×64 pixels display with backlight having appropriate state indicators.

47-11-03 has a keyboard containing 17 keys used to enter commands or data into the weight indicator. Each key is identified with a name and/or pictograph.

The weight unit is integrated with the overlay of the front.

The 47-11P-01 is connected to the 47-10P external display unit, which comprises of:

- LCD display with 6 7-segment digits, dedicated unit, and appropriate state indicators.
- 4 push buttons located on the side of the enclosure. Each key is identified with a pictograph.

Electronics

The instrument uses a single printed circuit board, which contains all of the instrument circuitry.

All instrument calibration and metrological setup data are contained in non-volatile memory. The power supply accepts an input voltage of 10 - 24VDC.
The indicator produces a load cell excitation voltage of 5 V switch polarity (57 Hz).

2.1.2 Load cells

Set out in Section 3.3.

2.1.3 Load receptor

Set out in Section 3.4.

2.1.4 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Function

The primary functions provided are detailed below.

2.2.1 Functions and devices

The automatic weighing instrument has the following permitted functions and devices that are subject to the Measuring Instrument Directive:

- Power up test
- Initial zero setting device (±10 % of Max)
- Semiautomatic zero setting device (±2 % of Max)
- Zero tracking device (±2 % of Max) – disabled in automatic mode
- Automatic zero-setting (±2 % of Max) – only enabled in automatic mode
- No motion detection and indication
- Semi-automatic tare device – disabled in automatic mode
- Pre-set tare device – disabled in automatic mode and also in non-automatic mode, when this is used for direct sales to public
- Price calculation
- Extended resolution device – only enabled in test mode
- Data Storage Device (9,999,999 records)
- Real time clock
- Detection of significant fault
- Non-automatic weighing – disabled in automatic mode

2.2.2 Software version

The format of the software is PX.YY, where X is the main version of the software and YY is the sub-revision number used for minor software changes.

The approved version is P1.00.

3. Technical data

The automatic catchweighing instrument has the following characteristics:

3.1 47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01

Type:	47-11-01 / 47-11-02 / 47-11-03 / 47-11P-01
Accuracy class:	Y(a)
Weighing range:	Single-interval
Weighing mode:	Static
Maximum capacity (Max):	≤ 60 kg
Minimum capacity (Min):	20 × e (class Y(a)), 5 × e when used for transport tariff
Number of Verification Scale Intervals (n):	≤ 3000
Verification scale interval (e):	≥ 0.002 kg
Maximum time between aut. Zero-setting:	60 minutes
Extra warm-up time:	None
Maximum tare effect:	-Max within display limits
Maximum belt/conveyor speed:	1.6 m/s
External mains power supply:	220 VAC
Electromagnetic class:	E2
Humidity:	Non-condensing
Temperature range:	-10° to 40° C
Peripheral interface:	Set out in section 4

3.2 47-11 base unit

47-11 base unit with display has the following characteristics as non-automatic weighing instrument:

Accuracy class:	III
Weighing range:	Single-interval
Maximum number of verification scale intervals (n):	10000
Maximum capacity (Max):	≤ 60 kg
Minimum capacity (Min):	20×e 5 × e when used for transport tariff
Minimum input voltage per VSI:	0.4 µV
Maximum capacity of interval or range (Max):	n × e
Verification scale interval, e =:	≥ 0.002 kg
Initial zero-setting range:	± 10 % of Max
Maximum tare effect:	100 % of Max
Fractional factor (pi):	0.5
Excitation voltage:	5 V switched polarity
Minimum input voltage:	0 mV
Maximum input voltage:	11 mV
Circuit for remote sense:	Active, (see below)
Minimum input impedance:	35 ohm
Maximum input impedance:	1200 ohm
Connecting cable to load cell(s):	See Section 3.2.1
Supply voltage:	10 - 24 VDC
Operational temperature:	-10 °C to +40 °C
Peripheral interface:	Set out in Section 4

3.2.1 Connecting cable between the 47-11 and junction box for load cell(s)

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 47-11.

3.2.1.2 6-wire system

Line:	6 wires, shielded
Maximum length:	4300 m/mm^2

3.3 Load cells

3.3.1 General acceptance of load cells

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

1) 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.

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 6, 2014), 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.

3.4 Load receptors

The weighing belt rests on a frame placed on one, three or four load cells.

The load cell(s) is mounted on the chassis of the weighing instrument. The chassis incorporates adjustable feet for levelling; however, the instrument is intended for fixed installation.

The weighing belt can vary depending on the maximum capacity of the system, whereas the weighing belt length is dependent upon maximum length of items to be weighed.

The weighing belt speed is fixed

3.5 Composition of modules

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

Reference: See Section 10.

The calculation program is obtainable by downloading at www.delta.dk/weighing.

3.6 Documents

The documents filed at DELTA (reference No. T209740) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The interface connectors are placed on the side of the 47-11 base.

The interfaces in 4.1.2 are characterised “Protective interfaces” according to paragraph 8.4 in the Directive and do not have to be secured.

4.1.1 Load cell interface

The 47-11 base can have a RJ45 connector for connection of the load cell signals from the load receptor platform.

4.1.2 Communication and I/O interfaces

- RS232*) / RS485
- RS232*)
- Ethernet TCP/IP*) (optional)
- USB (optional)
- Digital I/O (opto-isolated).

*) Can be used for connection of a POS system.

4.2 Peripheral equipment

Connection between the 47-11 and peripheral equipment is allowed by screened cable.

The instrument may be connected to any simple peripheral device with a CE mark of conformity.

5. Approval conditions

5.1 Connection of cables

All communication cables shall be shielded and the shield shall be properly EMC wise connected to the housing / connector in both ends.

5.2 Compatibility of modules

In case of composition of modules, WELMEC 2 (Issue 6) 2014, paragraph 11 shall be satisfied.

6. Special conditions for verification

The initial verification shall be performed according to OIML R51.

6.1 Composition of modules

The environmental conditions should be taken into consideration by the composition of modules for a complete weighing instrument.

The composition of modules shall agree with Section 5.2.

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 mark of the manufacturer or alternatively the verification mark of a notified body according to Directive 2004/22/EC.

7.1.1 47-11 base unit

Access to the configuration and calibration facility requires that a calibration push-button placed on the main board is activated. The calibration push-button can be accessed through a hole in the enclosure.

Sealing of this hole and of the cover of the enclosure - to prevent access to the calibration push-button and to secure the electronics against dismantling/adjustment - is accomplished with brittle plastic stickers.

7.1.2 Junction box for load cells

A load cell junction box shall be secured by use of wire and seal or by tamper evident labels, unless the serial numbers of the load cells are marked on the inscription plate.

7.1.3 Cable from junction box

The connector on the cable between indicator and junction box shall be secured by use of wire and seal or by tamper evident labels.

7.1.4 Data plate

The data plate is located on a visible part of the instrument. It is secured, either by sealing or by being of a form such that it is destroyed when removed. If the data plate is sealable, it shall be possible to apply a control mark to it.

7.1.5 Peripheral interfaces

All peripheral interfaces are “protective”; they neither allow manipulation with weighing data or legal setup, nor change of the performance of the weighing instrument in any way that would alter the legality of the weighing.

7.2 Verification marks

7.2.1 Indicator

A metrological M shall be placed next to the CE mark on the inscription plate.

The sticker with verification marks may be placed on or next to the inscription plate or on the front of the indicator.

7.2.2 Printers used for legal transactions

Printers covered by this type approval and other printers according to Section 4.2, which have been subject to the conformity assessment procedure, shall not bear a separate marking in order to be used for legal transactions.

8. Location of CE mark of conformity and inscriptions

8.1 CE mark and metrological M

A CE mark of conformity grouped together with space for the metrological M and year of production according to EC Directive 2004/22/EC article 17 shall be located on the identification plate.

8.2 Inscriptions

The instrument shall bear the following inscriptions:

- Manufacturer's trademark and / or name
- Type designation
- Serial number
- Max, Min and e (these shall additionally be duplicated near the display unless the description plate is located near the display)
- Accuracy class
- Belt conveyer speed
- Maximum parcel length
- Temperature range: -10°C / +40°C
- Electromagnetic class: E2
- Humidity: Non-condensing
- Supply voltage
- Type examination certificate number

These inscriptions shall be visible when the instrument is in its regular operating position.

9. Pictures

Figure 1 Example of the static weighing automatic checkweigher built into a self-service cash register line.

Figure 2 47-11 base unit

Figure 3 47-11 display

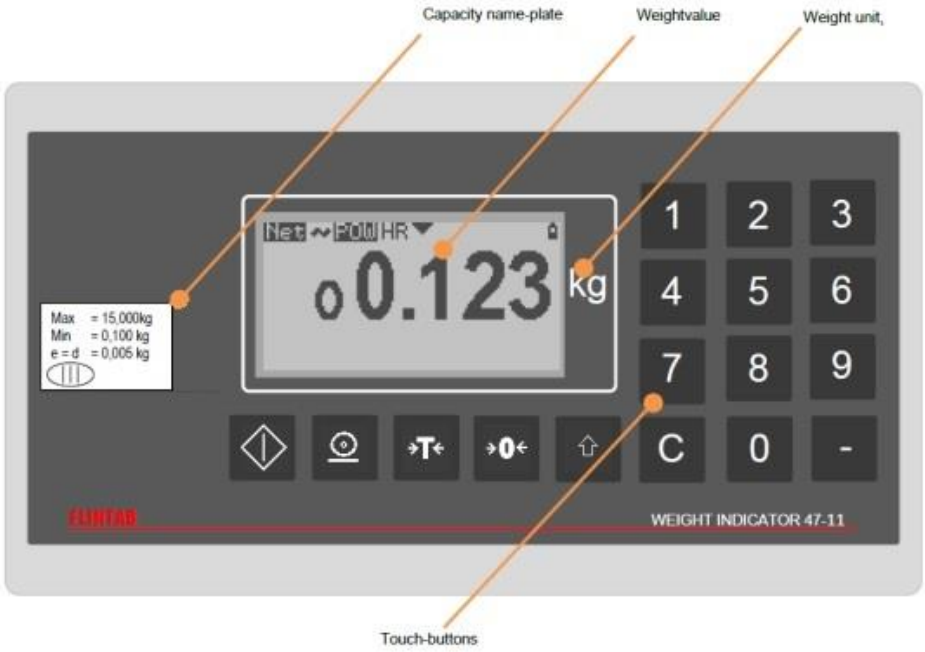

Figure 4 47-11 display with keyboard

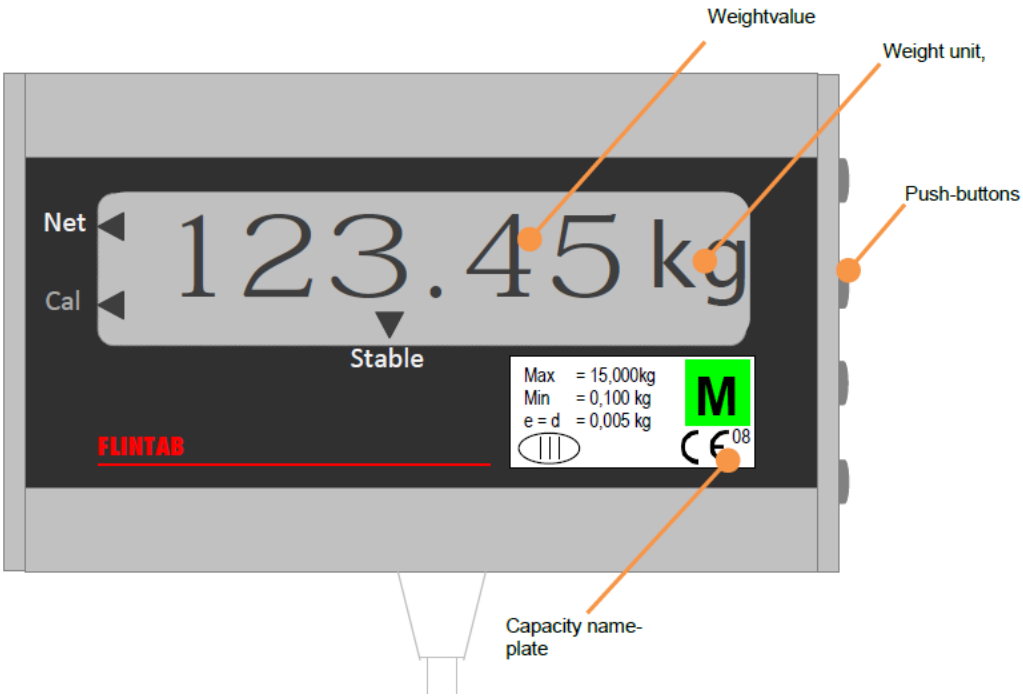

Figure 5 47-10P external display

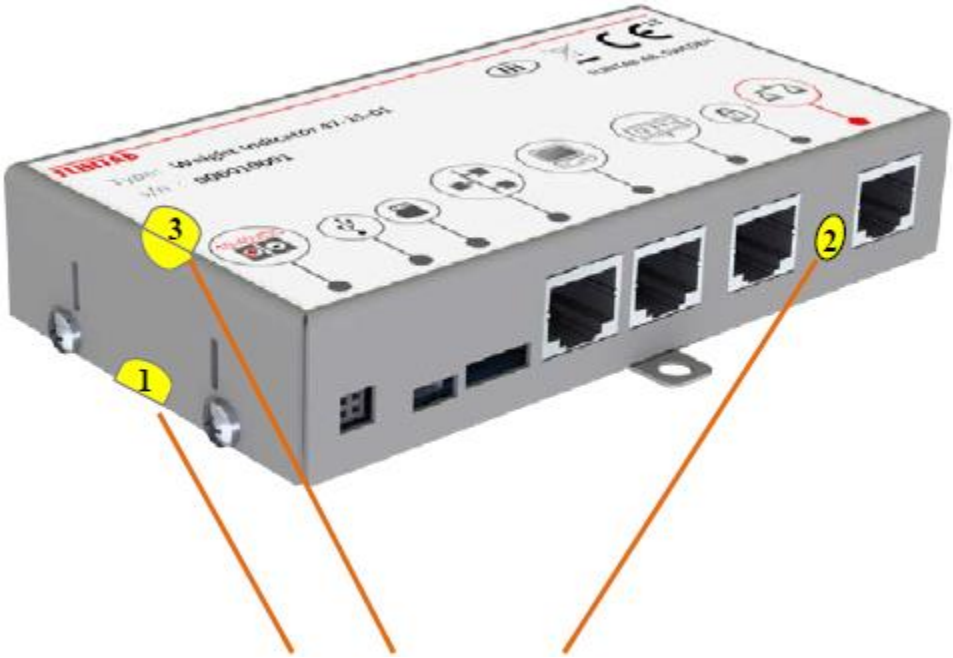

Figure 6 47-11 base unit with sealing position of 1 enclosure, 2 calibration push-button and 3 base unit marking.

10. Composition of modules - example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval

Certificate of EU Type-Approval N°: TAC: DK0199.502

INDICATOR A/D (Module 1)		Type:	47-11 base unit		
Accuracy class according to EN 45501 and OIML R76:		$Class_{ind}$ (I, II, III or IIII)		III	
Maximum number of verification scale intervals (n_{max}):		n_{ind}		10000	
Fraction of maximum permissible error (mpe):		p_1		0,5	
Load cell excitation voltage:		U_{exc}	[Vdc]	5	
Minimum input-voltage per verification scale interval:		Δu_{min}	[µV]	0,4	
Minimum load cell impedance:		R_{Lmin}	[Ω]	35	
Coefficient of temperature of the span error:		Es	[% / 25°C]		
Coefficient of resistance for the wires in the J-box cable:		Sx	[% / Ω]		
Specific J-box cable-Length to the junction box for load cells:		$(L/A)_{max}$	[m / mm²]	4300	
Load cell interface:			6-wire (remote sense)		
Additive tare, if available:		T^+	[% of Max]	0	
Initial zero setting range:		IZSR	[% of Max]	-10 /	10
Temperature range:		T_{min} / T_{max}	[°C]	-10 /	40
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:					
LOAD RECEPTOR (Module 2)		Type:			
Construction:			Platform		
Fraction of mpe:		p_2		0,5	
Number of load cells:		N		4	
Reduction ratio of the load transmitting device:		$R=F_M / F_L$		1	
Dead load of load receptor:		DL	[% of Max]	10	
Non uniform distribution of the load:		NUD	[% of Max]	20	
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$			1,4	
LOAD CELL ANALOG (Module 3)		Type:	PBW		
Accuracy class according to OIML R60:		$Class_{LC}$ (A, B, C or D)		C	
Maximum number of load cell intervals:		n_{LC}		3000	
Fraction of mpe:		p_3		0,7	
Rated output (sensitivity):		C	[mV / V]	2	
Input resistance of single load cell:		R_{LC}	[Ω]	415	
Minimum load cell verification interval:	($v_{min\%}$ = 100 / Y)	$v_{min\%}$	[% of Emax]	0,01333	
Rated capacity:		E_{max}	[kg]	5,675	
Minimum dead load, relative:		$(E_{min} / E_{max}) * 100$	[%]	0	
Temperature range:		T_{min} / T_{max}	[°C]	-10 /	40
Test report (TR) or Test Certificate (TC/OIML) as appropriate:			D09-03.03		
COMPLETE WEIGHING INSTRUMENT			Single-interval		
Manufacturer: Flintab AB		Type:	47-11-02 static aut. Catchweigher		
Accuracy class according to EN 45501 and OIML R76:		$Class_{WI}$ (I, II, III or IIII)		III	
Fractions: $p_i = p_1^2 + p_2^2 + p_3^2$:		p_i		1,0	
Maximum capacity:		Max	[kg]	6	
Number of verification scale intervals:		n		3000	
Verification scale interval:		e	[kg]	0,002	
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,26	
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$	[µV/e]	0,88	
Cross-section of each wire in the J-box cable:		A	[mm²]	0,22	
J-box cable-Length:		L	[m]	3	
Temperature range to be marked on the instrument:	Not required	T_{min} / T_{max}	[°C]		
Peripheral Equipment subject to legal control:					

Acceptance criteria for compatibility				Passed, provided no result below is < 0	
$Class_{WI}$	<=	$Class_{ind}$ & $Class_{LC}$	(WELMEC 2: 1)	$Class_{WI}$:	PASSED
pi	<=	1	(R76: 3.5.4.1)	1 - pi =	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 =	7000
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	0
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	0,15
$v_{min} * \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * $\sqrt{N}$ / R) =	0,000
or (if v_{min} is not given)				Alternative solutions: ↑ ↓	
$(E_{max} / n_{LC}) * (\sqrt{N} / R)$	<=	e	(WELMEC 2: 7)	e - $((E_{max} / n_{LC}) * (\sqrt{N} / R))$ =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	$\Delta u - \Delta u_{min}$ =	0,48
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	69
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	4286
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) =	3,6

Signature and date:

Conclusion . . . . . PASSED

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