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EC Type Examination Certificate

No. DK 0199.400

47-20-0x

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
S-553 02 Jönköping
SWEDEN

In respect of Automatic catchweighing instrument designated 47-20-0x with variants of modules of load receptors, load cells and peripheral equipment.
Accuracy class Y(a) or Y(b)
Maximum capacity: Max ≤ 75 kg
Verification scale interval: e ≥ 0.01 kg
Maximum number of verification scale intervals: n ≤ 1500 (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 and WELMEC Guide 8.16-1:2006.

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

The annex comprises 11 pages.

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Signatory: J. Hovgård

DELTA
Venlighedsvej 4
2970 Hørsholm
Denmark

Tel. (+45) 72 19 40 00
Fax (+45) 72 19 40 01
www.delta.dk
VAT No. DK 12275110

DANAK
PROD Reg. nr 7026

Descriptive annex

Contents

1. Name and type of instrument and modules

The automatic catchweighing instrument designated 47-20-0x is a dynamic catchweigher class Y(a) or Y(b). It consists of an electronic weighing indicator type 47-20 and a separate load receptor with 1, 3 or 4 analogue load cells and made as a belt or roller conveyor.

The metrological specifications for 47-20-0x appear from the sections 3.1.

2. Description of the construction and function

2.1 Construction

2.1.1 47-20 weighing indicator

The module is specified in Section 3.2.

Weight indicator 47-20 is a 4 channel high speed instrument with a 4.3” touch screen interface. The load cell interface can be connected with, up-to, 4 separate scales or transducers simultaneously. Thereby enabling the instrument to either operate as several individual indicators, as one single indicator with or without corner adjustment functions, or a single indicator with other compensation interfaces. The instrument also has several interfaces for communication or digital signal exchange (I/O).

The 47-20 can however only be connected to one load receptor, when used in an automatic catchweigher.

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) – disabled in automatic mode
- 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
- Pre-set tare device

- Extended resolution device
- Data Storage Device (9,999,999 records)
- Real time clock
- Detection of significant fault

2.2.2 Software version

The 47-20 has two software versions, one for the indicator (the legally relevant software) and one for the base application (the non-legally relevant software).

The software versions are displayed at power up.

The approved indicator software version is 2.0.

The tested base application software was 1.0.

3. Technical data

The automatic catchweighing instrument has the following characteristics:

3.1 47-20-0X

Type:	47-20-0x
Accuracy class:	Y(a) or Y(b)
Weighing range:	Single-interval
Maximum capacity (Max):	≤ 75 kg
Minimum capacity (Min):	20 × e (class Y(a)), 10 × e (class Y(b)) 5 × e when used for transport tariff
Number of Verification Scale Intervals (n):	≤ 1500 (class Y(a)), ≤ 1000 (class Y(b))
Verification scale interval (e):	≥ 0.01 kg
Maximum time between aut. Zero-setting:	9.6 minutes
Extra warm-up time:	8 minutes
Maximum tare effect:	-Max within display limits
Maximum belt/conveyor speed:	1.6 m/s
External mains power supply:	12 VDC
Electromagnetic class:	E2
Humidity:	Non-condensing
Temperature range:	-10° to 40° C
Peripheral interface:	Set out in section 4

3.2 47-20 weighing indicator

Type:	47-20
Independent A/D channels:	4
Weighing range:	Single-interval, multi-interval
Maximum capacity (Max_i):	$n_i \times e_i$
Minimum capacity (Min_i):	$20 \times e_1$ (class III), $10 \times e_1$ (class IIII)
Number of Verification Scale Intervals (n):	≤ 10000 or $\leq 3 \times 4000$
Verification scale interval (e_i):	Max_i / n_i
Maximum tare effect:	-Max
Fractional factor:	pi = 0.5
Minimum input-voltage per VSI:	1.0 µV
Excitation voltage:	10 Vdc

Minimum input-impedance:	75 ohm
Maximum input-impedance:	1200 ohm
Circuit for remote sense:	present, using 6-wire cable to junction box
External mains power supply:	12 VDC
Temperature range:	-10° to 40° C
Peripheral interface:	Set out in section 4

3.2.1 Connecting cable between the 47-20 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 47-20.

3.2.1.2 6-wire system

Line:	6 wires, shielded
Maximum length:	500 m/mm^2

3.3 Load cells

The following load cell can be used.

Manufacturer	Model
Flintec	SB6

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 90/384/EEC.

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.

3.4 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 However, the design ensures that a minimum weighing time is always obtained.

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. T204914) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The interface connectors are placed on the rear side of the 47-20 unit.

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 47-20 unit can be equipped with up to 4 individual load receptor interfaces.

4.1.2 Communication and I/O interfaces

- RS232 / RS485
- RS232
- Fieldbus
- Ethernet
- USB (host)
- USB (slave)
- Digital I/O (opto-isolated).

4.2 Peripheral equipment

Connection between the 47-20 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 5) 2009, 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 47-20 indicator

The weight indicator 47-20 requires that a “calibration push-button” is pressed prior to allowing adjustment of meteorological parameters such as full-scale, zero point etc. The push-button has protected access, and can only be accessed through a hole on the back panel of the instrument. By sealing this hole, any change of calibration data cannot be done without detection.

The operator can also exit calibration mode (and return to normal operating mode) by pressing the push-button once again while calibration mode is activate.

Each time calibration mode is enabled; the TAC (TraceableAccessCounter) will be incremented. The current TAC counter is displayed in the scale parameters area; this counter is not affected by a factory reset.

The enclosure of the indicator shall be sealed against opening with wire and seal or with tamper evident labels.

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 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 47-20-0x automatic catchweigher with inlet and outlet bands

Figure 2 47-20 weighing indicator - panel mount

Figure 3 47-20 weighing indicator – desktop or wall mount

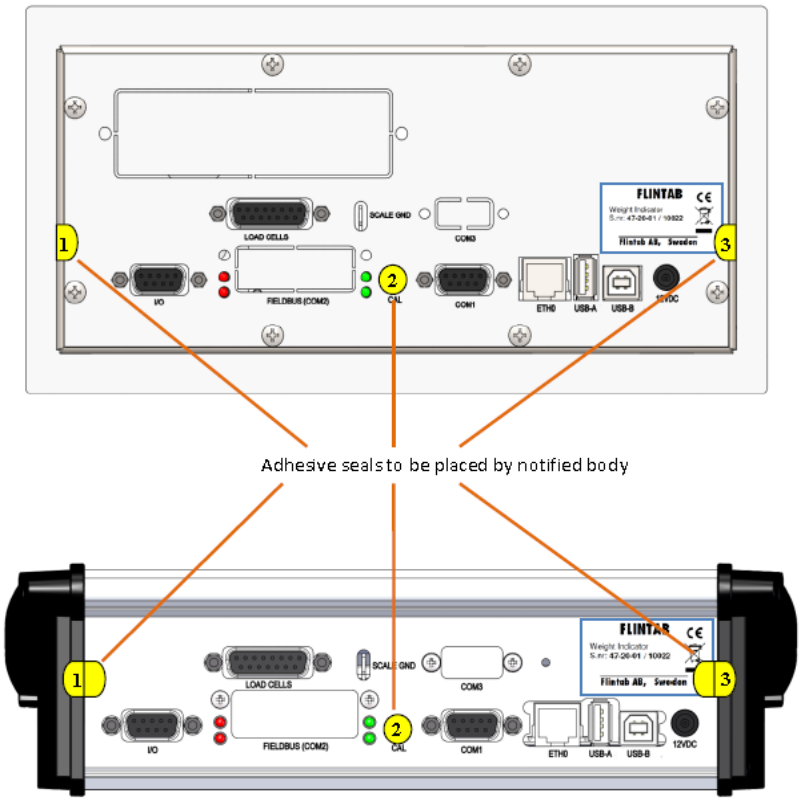

Figure 4 Sealing of the indicator

10. Composition of modules - example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval

Certificate of EU Type-Approval N°: TAC: DK0199.400

INDICATOR A/D (Module 1)		Type:	47-20			
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]	10	
Minimum input-voltage per verification scale interval:			Δu_{min}	[µV]	1	
Minimum load cell impedance:			R_{Lmin}	[Ω]	75	
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]	500	
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:	Belt conveyor			
Construction:			Conveyor mounted-on			
Fraction of mpe:			p_2		0,5	
Number of load cells:			N		3	
Reduction ratio of the load transmitting device:			$R=F_M / F_L$		1	
Dead load of load receptor:			DL	[% of Max]	200	
Non uniform distribution of the load:			NUD	[% of Max]	20	
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$				3,3	
LOAD CELL ANALOG (Module 3)		Type:	Flintec SB6			
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]	1100	
Minimum load cell verification interval:	$(v_{min\%} = 100 / Y)$		$v_{min\%}$	[% of Emax]	0,0098	
Rated capacity:			E_{max}	[kg]	50	
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:			D09-97.04			
COMPLETE WEIGHING INSTRUMENT			**Single-interval**			
Manufacturer: Flintab AB		Type:	47-20-0x			
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]	15	
Number of verification scale intervals:			n		1500	
Verification scale interval:			e	[kg]	0,01	
Utilisation ratio of the load cell:	$\alpha = (Max / E_{max}) * (R / N)$				0,10	
Input voltage (from the load cells):	$\Delta_u = C * U_{exc} * \alpha * 1000 / n$			[µV/e]	1,33	
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 =	8500
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	8500
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	1500
E_{min}	<=	DL * R / N	(WELMEC 2: 6d)	(DL * R / N) - E_{min} =	10
$v_{min} * \sqrt{N} / R$	<=	e	(R76: 4.12.3)	e - (v_{min} * √N / R) =	0,002
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}) * (√N / R)) =	
Δu_{min}	<=	Δu	(WELMEC 2: 8)	Δu – Δu_{min} =	0,33
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	292
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	486
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) =	33,5

Signature and date:

Conclusion . . . . . ***PASSED***

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