DANAK
PROD Reg. nr 7026

FORCE Certification

EU Type Examination Certificate

No. 0200-MID-11881

ILERPES ILOC

AUTOMATIC GRAVIMETRIC FILLING INSTRUMENT

Issued by **FORCE Certification**
EU - Notified Body No. 0200

In accordance with the requirements in Directive 2014/32/EU of the European Parliament and Council.

Issued to **Técnicas Mecánicas Ilerdenses S.L.**
Pol. Ind. Camí dels Frares, C\Alcarràs parcel 66.2
25190 Lleida
Spain

In respect of An automatic gravimetric filling instrument designated ILERPES ILOC working as a single fill weigher with variants of modules of load receptors, load cells and peripheral equipment.
Reference accuracy class 0.2
Maximum Fill: 25 kg
Verification scale interval: d = 10 g
(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 & III of the Directive 2014/32/EU is met by the application of OIML R61-1:2004, section 12 & 13 of OIML D11:2004 and WELMEC Guide 7.2

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

The annex comprises 12 pages.

Issued on **2021-11-30**
Valid until **2031-11-30**

Jens Hovgård Jensen
2021-11-30

Digitally signed by Jens Hovgård Jensen
jhje@force.dk
Certification Manager

FORCE Certification references:
Task no.: 121-23440.90.10 and ID no.: 0200-MID-11881-1

Signatory: Jens Hovgård Jensen

Descriptive annex

Contents

1. Name and type of instrument and modules

The automatic gravimetric filling instrument designated ILERPES ILOC is a single-fill weigher manufactured by Técnicas Mecánicas Ilerdenses S.L.

The instrument is a self-indicating filling instrument with single-interval consisting of a weighing transducer type LDU 78.1 version 3, a VIPA type SLIO-015PN, a VIPA touch screen operator's panel type 67K-RRJ0-EB, and a load receptor.

The modules appear from the sections 3.2, 3.3 and 3.4; the principle of the composition of the modules is set out in the sections 6.1 and 10.

2. Description of the construction and function

2.1 Construction

2.1.1 Weighing transducer

The weighing transducer LDU 78.1 version 3 is an analogue to digital converter and data processing unit converting the analogue load cell signal to a digital weight. The module is described in details in Evaluation Certificate DK0199-.R61-10.10

2.1.2 PLC

The PLC is a type SLIO-015PN from VIPA. It receives the weight from the weighing transducer over a RS485/RS422 serial interface and control the feeding system and discharging using its I/O interfaces. The PLC communicates with the operator's panel using a serial communication interface.

2.1.3 Operator's panel

The operator's panel is a type 67K-RRJ0-EB touch screen display. The software running on it defining the user interface is stored in the ROM of the touch panel.

2.1.4 Load cells

Set out in Section 3.3.

2.1.5 Load receptor

Set out in Section 3.4.

2.1.6 Interfaces and peripheral equipment

Set out in Section 4.

2.2 Functions

2.2.1 Functions and devices

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

- Initial zero setting device (≤ 20 % of Max)
- Automatic zero-setting device (≤ 4 % of Max)
- Semi-automatic subtractive tare balancing device
- Automatic subtractive tare balancing device
- Extended indication device.
- Target (Preset) value device

2.2.2 Software

The software versions are displayed at start-up.

The approved firmware version of the weighing transducer is 02.xx, where xx ≥ 46.

The software of the PLC is protected by a checksum

The approved software for the PLC is version 1.01 with checksum 26AA1213311B.

3. Technical data

The automatic weighing instruments and its modules are set out as follows:

3.1 ILERPES ILOC automatic gravimetric filling instrument

Type:	ILERPES ILOC
Reference class:	0.2
Accuracy class:	0.2 or 0.5 or 1 or 2
Filling method:½	single fill
Maximum capacity (Max):	40 kg
Maximum fill (MaxFill):	25 kg
Rated minimum fill (MinFill):	20 kg
Minimum capacity (Min):	= Minfill
Verification scale interval (d):	10 g
Weighing range:	Single-interval
Number of Verification Scale Intervals (n):	≤ 4000
Maximum tare effect:	≤ 100 % of Max
Maximum rate of operation:	≤ 2800 fills/hour, but to be determined at initial verification
Minimum input voltage per verification scale (d):	≥ 0.67 µV
Minimum input impedance for load cells:	87.5 Ohm
Maximum input impedance for load cells:	1150 Ohm
Temperature range:	-10° to +40° C
Electromagnetic class:	E2
Humidity:	Non-condensing
Maximum time between automatic zero-setting:	105 minutes
Warm-up time:	16 minutes
Mains power supply:	400 VAC or 230 VAC, 50 Hz or 60 Hz
Peripheral interface:	Set out in Section 4

3.2 LDU 78.1 version 3 weighing transducer

Type:	LDU 78.1 version 3
Maximum capacity (Max):	n × d
Verification scale interval (d):	≥ 0.3 µV
Weighing range:	Single-interval
Number of Verification Scale Intervals (n):	≤ 10000
Maximum tare effect:	≤ 100 % of Max
Temperature range:	-15° to +55° C
Electromagnetic class:	E2
Humidity:	Non-condensing
Excitation voltage:	5 VDC
Analogue range:	±11 mV
Minimum input impedance:	87.5 ohm
Maximum input impedance:	1150 ohm
Mains power supply:	12-24 VDC for input impedance ≥ 350 ohm 12-14 VDC for input impedance < 350 ohm
Peripheral interface:	Set out in Section 4

3.2.1 Connecting cable between the A/D module and the junction box for load cell(s), if any

3.2.1.1 4-wire system

Maximum length	The certified cable length for the load cell.
Line	4 wires, shielded

3.2.1.2 6-wire system

Line	6 wires, shielded

Option 1:

Maximum length	2243 m/mm^2
Maximum resistance per wire	37.9 Ohm

In case the (n) for the weighing instrument is less than (n_{max}) mentioned above, the following applies:

Option 2:

Coefficient of temperature of the span error of the indicator: Es = 0.0004 % / 25°K
Coefficient of resistance for the wires in the J-box cable: Sx = 0.0006 % / ohm

L/A_{max} = 295.86 / Sx * (emp / n - Es) [m / mm²] in which emp = p'i * mpe * 100 / e

From this, the maximum cable length for the weighing instrument may be calculated with regard to (n) for the actual configuration of the instrument.

Reference: WELMEC 2.1, annex 5.

3.3 Load cells

3.3.1 General acceptance of load cells

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

1) There is a respective Part / Evaluation / Test Certificate (EN 45501:2015) or an OIML Certificate of Conformity (R60:2000 or R60:2017) issued for the load cell by a Notified Body responsible for type examination under Directive 2014/31/EU

2) The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules ((EN 45501:2015 annex F), 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 EN 545501 document, or the like, at the time of EU verification or declaration of EU 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

3.4.1 Bin, tank, and hopper load receptors

Construction in brief	Load cell assemblies each consisting of a load cell stand assembly to support one of the mounting feet bin, tank or conveyor etc.
Reduction ratio	1
Junction box	Mounted in, on or near the dead load.
Load cell	Any R60 certified load cell according to section 3.2.1.
Drawings	Various.

3.5 Composition of modules

In case of composition of modules, EN 45501 annex F shall be satisfied.

3.6 Documents

The documents filed at FORCE (reference No. T200092) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

The automatic weighing instrument shall have no accessible communication interfaces for communication to external equipment.

5. Approval conditions

5.1 Tolerances for preset target

It is the responsibility of the instrument owner that the in-service tolerance for the instrument is not exceeded. This includes the instrument owner's, or the by him selected user's, setting of tolerances for preset target.

6. Special conditions for verification

6.1 Composition of modules

The composition of modules shall agree with Section 5.2.

An example of a declaration of conformity document is shown in Section 10.

6.2 Maximum rate of operation

The maximum rate of operation shall be determined as part of the initial verification.

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 or 4 of the Directive 2014/32/EU.

7.1.1 Weighing transducer

7.1.1.1 Securing of calibration data

The calibration and configuration parameters are secured by a non-resetable event counter. The maximum count of the event counter is 65535.

The current value of the event counter can be displayed on the operator's panel.

To indicate the sealed status of the event counter, the inscribed count of the event counter shall be written on the inscription plate or on a label, which is then placed on the inscription plate and then sealed by partially covering it with an official sealing label.

7.1.1.2 Sealing of electronic boards

The LDU 78.1 version 3 shall be protected against exchange by a sealing label covering the head of one of the screws used for fastening the board, or for fastening the enclosure covering the board.

7.1.1.3 Sealing of load cell connector

The connection of the cable from the junction box / the load cell is done with a sealing label.

7.1.2 Sealing of the VIPA SLIO-015PN PLC

The memory card of the VIPA SLIO-015PN PLC shall be secured against removal / exchange with a sealing label.

The communication cable to the operator's panel shall be secured with a sealing label.

All communication connectors except those for communication with the weighing transducer and with the operator's panel shall be secured against use with sealing labels.

7.1.3 Sealing of operator's panel

The operator's panel shall be protected against exchange by a sealing label. Its connection cable to the PLC shall likewise be sealed by a sealing label.

All other communication interfaces shall be sealed against use.

7.1.4 Sealing of junction box for load cells

The junction box shall be sealed against opening.

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.

8. Location of CE mark of conformity and inscriptions

8.1 Identification plate

All inscriptions for the instrument shall be placed on the identification plate, which shall be located on a visible place on the instrument.

8.1.1 CE mark and metrological M

A CE mark of conformity and year of production grouped together with space for the metrological M shall be located on the identification plate.

8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's trademark and / or name
- Postal address of manufacturer
- Type designation
- Serial number
- Accuracy class
- MaxFill, Minfill, Max, Min, and d (these shall additional be duplicated near the display unless the description plate is located near the display)
- Maximum rate of operation
- Kind of material(s) to be weighed
- Temperature range: -10 / +40 °C
- Electromagnetic class: E2
- Humidity: Non-condensing
- Type examination certificate number
- Value of event counter (see section 7.1.1.1)

9. Pictures

Figure 1: Operator's touch screen panel – extended view.

Figure 2: Operator's touch screen panel – simple view.

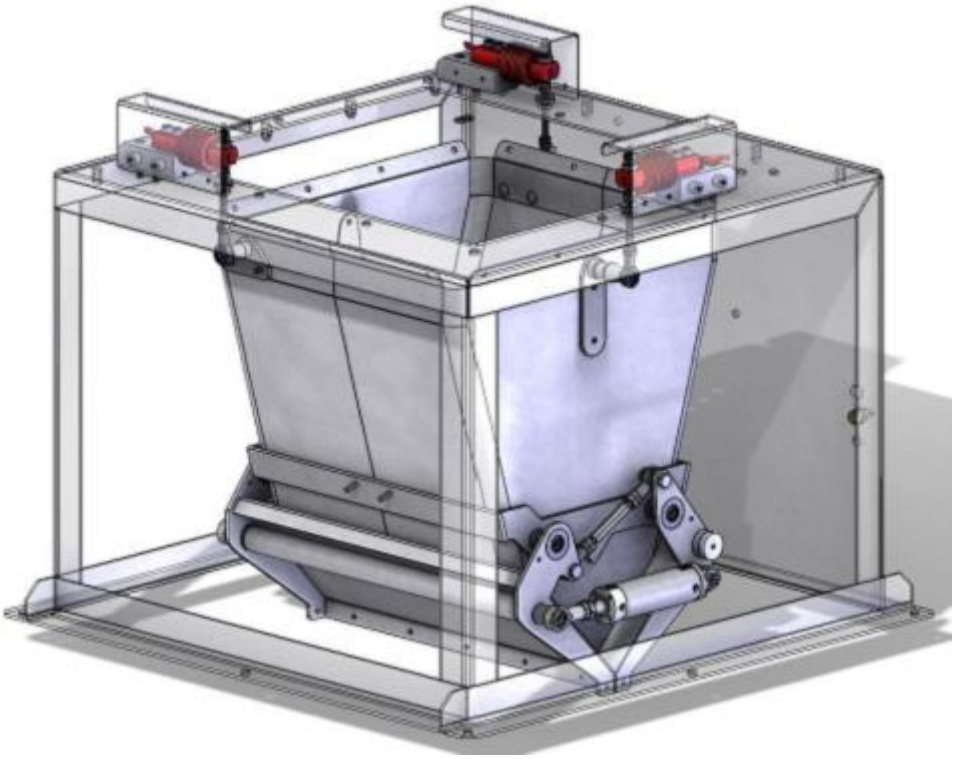

Figure 3: Load receptor bin for net weighing

Figure 4. Control rack of ILERPES iLOC.

Figure 5. Sealing of LDU 78.1 weighing transducer, the memory card of the PLC and the access to communication terminals of the PLC by a sealed protective metal cover.

Figure 6

7. Sealing of 67K-RRJ0-EB and its interfaces

10. Composition of modules – an example

COMPATIBILITY OF MODULES

Ref.: WELMEC 2

Non-Automatic Weighing Instrument, single-interval.

Certificate of EU Type-Approval N°: TAC: 0200-MID-11881

INDICATOR A/D (Module 1)	Type:	LDU 78.1 version 3			
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]	0,3	
Minimum load cell impedance:		R_{Lmin}	[Ω]	87,5	
Coefficient of temperature of the span error:		Es	[% / 25°C]		0,0004
Coefficient of resistance for the wires in the J-box cable:		Sx	[% / Ω]		0,0006
Specific J-box cable-Length to the junction box for load cells:		$(L/A)_{max}$	[m / mm²]		3501
Load cell interface:				4-wire (no sense)	
Additive tare, if available:		T^+	[% of Max]	0	
Initial zero setting range:		IZSR	[% of Max]	-2 /	2
Temperature range:		T_{min} / T_{max}	[°C]	-15 /	55
Test report (TR), Test Certificate (TC) or OIML Certificate of Conformity:		DK0199-R61-10.10			
LOAD RECEPTOR (Module 2)	Type:				
Construction:				Bucket	
Fraction of mpe:		p_2		0	
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]	75	
Non uniform distribution of the load:		NUD	[% of Max]	20	
Correction factor:	$Q = 1 + (DL + T^+ + IZSR^+ + NUD) / 100$			1,97	
LOAD CELL ANALOG (Module 3)	Type:	SENSOCAR FX-1			
Accuracy class according to OIML R60:		$Class_{LC}$ (A, B, C or D)		C	
Maximum number of load cell intervals:		n_{LC}		4000	
Fraction of mpe:		p_3		0,7	
Rated output (sensitivity):		C	[mV / V]	2	
Input resistance of single load cell:		R_{LC}	[Ω]	390	
Minimum load cell verification interval:	($v_{min\%}$ = 100 / Y)	$v_{min\%}$	[% of Emax]	0,00667	
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:		E-97.02.C09			
COMPLETE WEIGHING INSTRUMENT				Single-interval	
Manufacturer: TMI	Type:	ILERPES iLOC			
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		0,9	
Maximum capacity:		Max	[kg]	40	
Number of verification scale intervals:		n		4000	
Verification scale interval:		e	[kg]	0,01	
Utilisation ratio of the load cell:		$\alpha = (Max / E_{max}) * (R / N)$		0,27	
Input voltage (from the load cells):		$\Delta_u = C * U_{exc} * \alpha * 1000 / n$	[µV/e]	0,67	
Cross-section of each wire in the J-box cable:		A	[mm²]	0,22	
J-box cable-Length:		L	[m]	20	
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 =	0,1
n	<=	n_{max} for the class	(R76: 3.2)	n_{max} for the class - n =	6000
n	<=	n_{ind}	(WELMEC 2: 4)	n_{ind} - n =	6000
n	<=	n_{LC}	(R76: 4.12.2)	n_{LC} - n =	0
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) =	0,004
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)	$\Delta u - \Delta u_{min}$ =	0,37
R_{Lmin}	<=	R_{LC} / N	(WELMEC 2: 9)	(R_{LC} / N) - R_{Lmin} =	43
L / A	<=	$(L / A)_{max}^{WI}$	(WELMEC 2: 10)	$(L / A)_{max}^{WI}$ - (L / A) =	8957
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) =	23,7

Signature and date:

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

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