DANAK
PROD Reg. nr 7026

FORCE Certification

# EVALUATION CERTIFICATE

## No. 0200-WL-12109

| | |
|---|---|
| **Object name** | **ER500-F** |
| **Object type** | **A weight transmitter for an automatic gravimetric weighing instrument** |
| **Issued by** | **FORCE Certification**<br>EU - Notified Body No. 0200 |
| **In accordance with** | OIML R61:2017, WELMEC 7.2:2020 and WELMEC Guide 8.8:2017 on metrological aspects of automatic weighing instruments. |
| **Fractional factor ($p_i$)** | 0.5 (refer to 3.10.2.1 of EN 45501:2015). |
| **Issued to** | **Flintec UK Ltd.**<br>Caxton House<br>Caxton Place,<br>Pentwyn, Cardiff CF23 8HG<br>United Kingdom |
| **Manufacturer** | Flintec UK Ltd. |
| **In respect of** | Automatic gravimetric weighing instruments. |
| **Characteristics** | Suitable for an automatic gravimetric weighing instrument with the following characteristics:<br>Filling method: Single fill.<br>Reference class: Ref(0.5)<br>Maximum number of verification scale intervals: $n_i$ = 10,000 per interval/range<br>Minimum input voltage per VSI: ≥ 0.2 µV<br>The essential characteristics are described in the annex. |
| **Description and documentation** | The weight transmitter is described and documented in the annex to this certificate. |
| **Remarks** | Summary of tests involved: See the annex to this certificate. |

This evaluation certificate cannot be quoted in an EU type examination certificate without permission from the holder of the certificate mentioned above.

The annex comprises 6 pages.

**Issued on** **2022-01-13**

Jens Hovgård Jensen
2022-01-13

Digitally signed by Jens Hovgård Jensen
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Certification Manager

FORCE Certification references:
Task no.: 121-24186.90.40 and ID no.: 0200-WL-12108-1

**Signatory: Jens Hovgård Jensen**

# Descriptive annex

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# 1. Name and type of instrument

The weight transmitter is designated ER500-F. It is an electronic weight transmitter to be connected to a separate load receptor and capable of either transmitting the instant weight to an external controller.

# 2. Description of the construction and function

## 2.1 Construction

The electronic weight transmitter consists of two electronic boards: A main board bearing the microcontroller and all other components and a display board. The main board's power circuitry, microcontroller, analogue section, interface port and logic I/O.

The display has LED indication for: '-' (negative weight), Zero, NET, Stable and status of the three logic Inputs and the three logic Outputs. The weight display has 6 seven-segment digits. The weight unit (t, kg or g) is displayed at a separate label fixed to the inside of the transparent lid covering the entire display and keyboard.

The enclosure is made of ABS plastics intended for mounting on to a DIN rail and with pluggable screw terminals along the top and bottom for connection of power, load cell, various interface ports, voltage- and current outputs and logic I/O.

Behind the transparent lid at the front of the enclosure are 5 keys for operating the functions of the weight transmitter.

All instrument calibration and metrological setup data are stored in the non-volatile memory.

The weight transmitter is power supplied with 9 - 32 VDC, ≤ 4 W.

## 2.2 Devices

The weight transmitter may have the following devices:

- Selftest function
- Initial zero-setting (≤ 20% of Max)
- Semi-automatic zero setting (≤ 4% of Max)
- Zero tracking (≤ 4% of Max)
- Semi-automatic subtractive tare weighing
- Pre-set tare
- Recall of Gross indication when tare is active
- Determination of stability of equilibrium
- Indication of stability of equilibrium
- Multi-range and multi-interval function
- Checking of display
- Gravity compensation
- Traceable Access Counter
- Command via external device (PC)
- Net, Zero, Stable indicators
- Range in use indicators (multi-range variant)

### 2.3 Software

The software version is displayed during the start-up of the weight transmitter. (Alternating with the TAC number). The version format is xx.yy.zz, where x is the basic software family, while yy is version numbers for minor legally relevant changes and zz is changes and corrections not influencing the legal function of the software.

The approved software version is 01.01.zz.

## 3. Technical data

### 3.1 Weight transmitter

| | |
|---|---|
| Type: | ER500-F |
| Reference class: | Ref(0.5) |
| Accuracy class: | 0.5, 1 or 2 |
| Single-interval, multi-range or multi-interval | |
| Maximum number of verification scale intervals($n_i$): | $\leq 3 \times 10000$ |
| Minimum input voltage per verification scale (d): | $\geq 0.2$ µV |
| MinFill: | see tables below. |
| Extra warm-up time: | 3 minutes |
| Maximum time between automatic zero-setting: | 120 minutes |
| Excitation voltage: | 5 VDC |
| Maximum subtractive tare: | Max |
| Minimum input impedance for load cells: | 43 Ohm |
| Maximum input impedance for load cells: | 1200 Ohm |
| Electromagnetic class: | E2 |
| Load cell interface: | 4-wire or 6-wire |
| Supply voltage: | 9-32 VDC - not to be supplied from DC mains. |
| Temperature range. | -15 °C to +55 °C |
| Maximum cable length between ER500 and junction box | 1533 m/mm$^2$ |

**MinFill for 0.2 µV ≤ d < 0.4 µV**

| d | X(0.5) | | X(1) | | X(2) | |
|---|---|---|---|---|---|---|
| [g] | d | [g] | d | [g] | d | [g] |
| 0,1 | 281 | 28,1 | 70 | 7 | 18 | 1,8 |
| 0,2 | 561 | 112,2 | 70 | 14 | 18 | 3,6 |
| 0,5 | 842 | 421 | 70 | 35 | 18 | 9 |
| 1 | 1683 | 1683 | 140 | 140 | 18 | 18 |
| 2 | 1683 | 3366 | 210 | 420 | 18 | 36 |
| 5 | 1683 | 8415 | 420 | 2100 | 35 | 175 |
| 10 | 2525 | 25250 | 420 | 4200 | 105 | 1050 |
| 20 | 2525 | 50500 | 420 | 8400 | 105 | 2100 |
| 50 | 2525 | 126250 | 630 | 31500 | 105 | 5250 |
| 100 | 2525 | 252500 | 630 | 63000 | 158 | 15800 |
| 200 | 2525 | 505000 | 630 | 126000 | 158 | 31600 |
| 500 | 2525 | 1262500 | 630 | 315000 | 158 | 79000 |

**MinFill for 0.4 µV ≤ d < 0.8 µV**

| d | X(0.5) | | X(1) | | X(2) | |
|---|---|---|---|---|---|---|
| [g] | d | [g] | d | [g] | d | [g] |
| 0,1 | 141 | 14,1 | 35 | 3,5 | 9 | 0,9 |
| 0,2 | 141 | 28,2 | 35 | 7 | 9 | 1,8 |
| 0,5 | 281 | 140,5 | 35 | 17,5 | 9 | 4,5 |
| 1 | 421 | 421 | 35 | 35 | 9 | 9 |
| 2 | 842 | 1684 | 70 | 140 | 9 | 18 |
| 5 | 842 | 4210 | 210 | 1050 | 9 | 45 |
| 10 | 842 | 8420 | 210 | 2100 | 18 | 180 |
| 20 | 1263 | 25260 | 210 | 4200 | 53 | 1060 |
| 50 | 1263 | 63150 | 315 | 15750 | 53 | 2650 |
| 100 | 1263 | 126300 | 315 | 31500 | 53 | 5300 |
| 200 | 1263 | 252600 | 315 | 63000 | 79 | 15800 |
| 500 | 1263 | 631500 | 315 | 157500 | 79 | 39500 |

**MinFill for 0.8 µV ≤ d**

| d | X(0.5) | | X(1) | | X(2) | |
|---|---|---|---|---|---|---|
| [g] | d | [g] | d | [g] | d | [g] |
| 0,1 | 71 | 7,1 | 18 | 1,8 | 6 | 0,6 |
| 0,2 | 71 | 14,2 | 18 | 3,6 | 6 | 1,2 |
| 0,5 | 71 | 35,5 | 18 | 9 | 6 | 3 |
| 1 | 141 | 141 | 18 | 18 | 6 | 6 |
| 2 | 211 | 422 | 18 | 36 | 6 | 12 |
| 5 | 421 | 2105 | 35 | 175 | 6 | 30 |
| 10 | 421 | 4210 | 105 | 1050 | 11 | 110 |
| 20 | 421 | 8420 | 105 | 2100 | 17 | 340 |
| 50 | 632 | 31600 | 105 | 5250 | 33 | 1650 |
| 100 | 632 | 63200 | 158 | 15800 | 33 | 3300 |
| 200 | 632 | 126400 | 158 | 31600 | 33 | 6600 |
| 500 | 632 | 316000 | 158 | 79000 | 50 | 25000 |

# 4. Interfaces

## 4.1 Load cell interface

The connector pins for load cell connection are located on the bottom of the enclosure.

## 4.2 Communication and I/O interfaces

The weight transmitter is equipped with the following interfaces,

- RS-232
- RS-422/485
- USB
- Ethernet
- 3 logical inputs
- 3 logical output
- Analogue outputs

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

# 5. Inscriptions

The data plate shall bear the following legends:

- The number of this Evaluation Certificate
- Manufacturer’s mark or name
- Serial number

# 6. Securing and sealing

Access to the set-up and calibration facility requires that a calibration jumper is removed from the main board. The jumper can be accessed from the outside, top part of the housing.

The weight transmitter has also a Traceable Access Counter, which increment each time the calibration or legal part of the set-up has been changed.

The sealing of the calibration jumper, which also prevents the housing from being dismantled - is accomplished with a brittle plastic sticker. The sticker is placed across the opening designated 30 behind which the calibration jumper is located.

The electronics of the weight transmitter shall be sealed against dismantling/adjustment using tamper-evident stickers or by wire and seal.

# 7. Tests

The weight transmitter has been tested according to EN 45501:2015, OIML R76-1:2006, and OIML D11:2004 section 12 and 13 with severity level 3.
By that it also fulfils electromagnetic class E2 of MID (2014/32/EU).
The NAWI test results were re-examined against OIML R61:12017 according to annex F of OIML R61-2:2017

The tested ER500-F had software version number: 1.01.02

The following tests were performed with the weight transmitter connected to a load cell simulator or to a weighing platform.

**Examination / tests**

| | |
|---|---|
| Temperature tests: 20/55/-15/5/20 (tested at minimum input-voltage sensitivity) | |
| Temperature effect on no-load indication | |
| Temperature effect on span | |
| Repeatability | |
| Tare | |
| Warm-up time | |
| Voltage variations | |
| Electrical bursts | (power supply lines 2 kV, I/O and data lines 1 kV) |
| Surge | (power supply lines 2 kV) |
| Electrostatic discharges | |
| Immunity to radiated electromagnetic fields | (10 V/m) |
| Immunity to conducted electromagnetic fields | (10 V) |
| Damp heat, steady state | |
| Span stability | |
| Examination of construction | |
| Maximum load cell cable length and impedance of cable to load cell | |
| Re-examination against OIML R61:2017 | |

**The test item fulfilled the maximum permissible errors at all tests.**

# 8. Documentation

Contents of the technical documentation held by the notified body:

## 8.1 Product specification

- Manual
- Schematics
- PCB layout

## 8.2 Test & Examination report

Type examination report no. 121-24186.10, 66 pages.
Type examination report no. 121-24186.10-2, 55 pages.