Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

# Certificate of Approval

# NMI 6/14G/33

Issued by the Chief Metrologist under Regulation 60
of the
*National Measurement Regulations 1999*

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

ESPERA-WERKE Model ES-R 1000 Automatic Catchweighing Instrument

submitted by ESPERA-WERKE GMBH
Moltkestrasse 17-33
47058 DUISBURG
GERMANY

**NOTE:** This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to documents NMI R 51, *Automatic Catchweighing Instruments*, dated August 2009, and NMI R 76, *Non-automatic weighing instruments, Parts 1 and 2*, dated October 2015.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

| Rev | Reason/Details | Date |
|---|---|---|
| 0 | Pattern and variant 1 to 2 approved – certificate issued | 16/10/19 |
| 1 | Figure 3 replaced – certificate issued | 21/08/20 |
| 2 | Variants 3 to 5 approved | 18/01/24 |

# CONDITIONS OF APPROVAL

## General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/14G/33' and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0B.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

## Special

Certain aspects of this instrument (in particular label printing formats) are able to be configured by the user. Whilst NMI believes that acceptable formats can be achieved for typical basic sales modes, it is also possible for the instrument to be configured to produce unacceptable formats, and use of some formats may be inappropriate for different sales modes. It is the responsibility of the user to ensure that acceptable and appropriate formats are used in any particular situation.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.

**Darryl Hines**
Manager
Policy and Regulatory
Services

TECHNICAL SCHEDULE No 6/14G/33

## 1. Description of Pattern approved on 16/10/19

An ESPERA-WERKE model ES-R 1000 class Y(a) automatic catchweighing instrument (Figure 1) which is approved for use to weigh objects dynamically.

Instruments have a price computing facility and are intended for use as weigh/price labellers.

### 1.1 Details

The instrument is a multi-interval class Y(a) automatic catchweighing instrument with a verification scale interval ($e_1$) of 0.001 kg up to 3 kg, with a verification scale interval ($e_2$) of 0.002 kg from 3 kg up to 6 kg, and with a verification scale interval ($e_3$) of 0.005 kg from 6 kg up to the maximum capacity of 10 kg. Instruments have a minimum capacity of 0.02 kg.

The instrument operates dynamically (package in motion on the weighing receptor) or statically (package stopped on the weighing receptor). The maximum belt speed of the weighing receptor is up to 1.34 m/s. The throughput is variable and depends on several factors, e.g. size of label, size of pack and weight of pack. The instrument has facilities to detect errors. If situations outside the limits occur, no weight value will be determined or recorded and no label will be printed.

Instruments have unit price to $2147.48/kg, price to $21474.80, a product look up (PLU) facility and an image and/or product description relating to PLU items may also be displayed.

Instruments may be fitted with data sockets (output interfacing capability) for the connection of peripheral and/or auxiliary devices, and for the external programming of PLU and labelling data.

Instruments may be fitted with the wind cover.

The pattern comprises:

- A terminal/indicator with a touch screen LCD display/keyboard, model ESC 13X5;
- A weighing module and conveyor system with associated controller, model ESW 27X5; and
- 1 to 5 printers, model ESD 52X5 (top printer) and/or model ESD 72X5 (bottom printer).

NOTE: For all module names with an X as wildcard to separate between variants of minor difference.

### 1.2 Zero

A zero-tracking device may be fitted.

The instrument has a semi-automatic zero-setting device with a nominal range of not more than 4% of the maximum capacity of the instrument, capable of setting zero to within ±0.25$e_1$.

The instrument has an automatic zero-setting device which operates periodically to zero the instrument. A message window appears periodically to generate information to draw attention to overdue zero-setting.

The initial zero-setting device has a nominal range of not more than 20% of the maximum capacity of the instrument.

## 1.3 Tare

A semi-automatic subtractive taring device of up to $Max_1$ capacity may be fitted. This device may only be activated (tare obtained) whilst the conveyors are stationary, however the value obtained may continue to be used when the instrument is set into automatic mode (conveyors operating).

The instrument has a pre-set subtractive taring device of up to $Max_1$ capacity. Preset tare values are stored in association with product-look-up (PLU) items.

## 1.4 Operation

In dynamic weighing mode, a package to be weighed moves from the infeed and separator conveyors onto the weighing receptor conveyor and is weighed dynamically. After weighing, the package continues onto the outfeed conveyor where a label is then printed and applied to the object.

In static weighing mode, the package is pushed on the weighing receptor conveyor, then the weighing receptor conveyor stopped automatically to allow package to be weighted. The package is moved from weighing receptor conveyor to outfeed conveyor after the package is weighted. The operation is not interfered by the operator.

If the instrument is unable to obtain an acceptable weight reading, then printing is inhibited.

## 1.5 Terminal/Indicator

The terminal/indicator is fitted with a touchscreen LCD display which including the keyboard function. This is used to control the system and store data such as system parameters (e.g. conveyor speed, printing unit position and label format). It displays the weight (in kg). Instruments have unit price to $2147.48/kg, a product-look-up (PLU) facility and a separate ‘tare’ display.

## 1.6 Weighing Unit and Conveyor System

The weighing unit uses an ESPERA-WERKE model ESW 2705 weighing module which incorporate an HBM load cell model SP4M C6MR with 20 kg maximum capacity and an ESPERA model AD7195 Sigma-Delta-ADC A/D convertor module. The belt conveyor-type load receptor has a conveyor length of from 500 or 650 mm and a maximum width of 370 mm.

The conveyor system comprises an infeed and/or separator conveyor, the weighing unit/conveyor and an outfeed conveyor, with an associated electric motor and drive arrangement for each conveyor. Optical sensors are located along the conveyor path. The infeed conveyors space the objects to be weighed. The infeed conveyor may be fitted with the alignment device for centring the product. The alignment device may be adjusted automatically, manually or be removed.

## 1.7 Printing System

The printing system is comprised of up to 5 thermal printer units with associated electronics.

Please note the Special Condition of Approval regarding printing formats.

## 1.8 Descriptive Markings and Notices

Instruments shall carry the following markings:

| | |
|---|---|
| Manufacturer's mark, or name written in full | ESPERA-WERKE GMBH |
| Importer's mark, or name written in full | LINCO Food Systems |
| Model designation | ….. |
| Serial number | ….. |
| Accuracy class | Y(a) |
| Pattern approval mark | NMI 6/14G/33 |
| Maximum capacity | *Max* ...../...../…… g or kg #1 |
| Minimum capacity | *Min* ..... g or kg #1 |
| Verification scale interval | *e* = ...../...../…… g or kg #1 |
| Maximum subtractive tare | *T* = - ..... g or kg #2 |
| Maximum conveyor speed | …….. m/s |
| Electrical supply voltage | ……. V |
| Electrical supply frequency | ……. Hz |
| Working fluid pressure | ……. kPa |

#1 These markings are also shown near the display of the result if they are not already located there.

#2 This marking is required if *T* is not equal to *Max*.

## 1.9 Sealing Provision

The instrument has the following securing elements (Figure 2).

- The circuit housing can be sealed by means of applying lead and wire type seal with drilled screws.
- The access to the calibration switch within the circuit housing can be sealed by a destructible label.

## 1.10 Software

Software versions is 03.00.xxxx and it can be checked by pressing the 'i' button on the main display (Figure 3).

NOTE: xxxx represents non-legally relevant parts of software.

## 1.11 Verification Provision

Provision is made for the application of a verification mark.

## 1.12 Interface

Instruments may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 4.2.4 of document NMI R51 (the basic intent of which is that it shall not be possible to alter weighing results via the interfaces).

Any measurement data output from the instrument or its interfaces shall only be used for trade in compliance with Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

Indications other than the indications of measured mass (i.e. gross, tare, net, totals) displayed either on the instrument or on an auxiliary or peripheral device, are not for trade use.

Instruments may be fitted with the following interfaces.

- Ethernet;
- USB;
- EtherCAT;
- RS232;
- Digital and analogue inputs/outputs.

## 2. Description of Variant 1 approved on 16/10/19

Other models of the ES-R 1000 series of automatic catchweighing instruments using the weighing systems described for the pattern but having different conveyors and one or more printing units – the last two digits of the model number refer to the printing units, for example the model ES-R 1002 has two printing units above the conveyor while the model ES-R 1011 has one printing unit above and another below the conveyor.

## 3. Description of Variant 2 approved on 16/10/19

The pattern and variant 1 maybe configured to single range instrument with the specification listed in table 1.

Table 1

| Maximum Capacity *Max* (kg) | Minimum Capacity *Min* (kg) | Verification scale interval *e* (g) | Maximum Conveyor Speed (m/s) |
|---|---|---|---|
| ≤ 3 | 0.020 | 1 | 1.34* |
| ≤ 6 | 0.040 | 2 | 1.00* |
| ≤ 10 | 0.100 | 5 | 0.75* |

Note: * The instrument may operate with a maximum weighing conveyor speed up to the value in Table 1.

## 4. Description of Variant 3 approved on 18/01/24

The ES-R 1000 series multi-interval automatic catchweighing instruments which are similar to the pattern but fitted with an ESPERA model ESW2715 weighing module and in certain capacity as listed in Table 2.

Table 2

| Weighing Module | Maximum Capacity ($Max_1$/$Max_2$) (kg) | Minimum Capacity (*Min*) (kg) | Verification scale interval ($e_1$/$e_2$) (g) | Maximum Conveyor Speed (m/s) | Load Receptor Size (mm x mm) | HBM/HBK Load Cell |
|---|---|---|---|---|---|---|
| ESW 2715 | 6/8 | 0.04 | 2/5 | 1.34* | 650 x 360 | SP4MC6MR 20 kg |

Note: * The instrument may operate with a maximum weighing conveyor speed up to the value in Table 2. The conveyor speed varies according to the package weight.

## 5. Description of Variant 4 approved on 18/01/24

The ES-R 1000 series multi-interval automatic catchweighing instruments (Figure 4) which are similar to the pattern but fitted with an ESPERA model 346040 A/D convertor module and in certain capacities as listed in Table 3.

Instruments have unit price to $99999.99/kg, price to $9999999.99, and a product look up (PLU) facility.

The instrument comprises:

- A terminal/indicator with a touch screen LCD display/keyboard, model ESC 13X5;
- A weighing module and conveyor system with associated controller, model ESW 27X5; and
- 1 to 8 printers, model ESD 52X5 (top printer) and/or model ESD 72X5 (bottom printer).

NOTE: For all module names with an X as wildcard to separate between variants of minor difference.

Instruments may be fitted with up to 8 top and/or bottom thermal printer units with associated electronics. Please note the Special Condition of Approval regarding printing formats.

The instrument may be fitted with an automatically positioned side guide.

Table 3

| Weighing Module | Maximum Capacity ($Max_1/Max_2/Max_3$) (kg) | Minimum Capacity (*Min*) (kg) | Verification scale interval ($e_1/e_2/e_3$) (g) | Maximum Conveyor Speed (m/s) | Load Receptor Size (mm x mm) | HBM/HBK Load Cell |
|---|---|---|---|---|---|---|
| ESW 2705 | 3/6/10 | 0.02 | 1/2/5 | 1.34* | 500x360 | SP4MC6MR 20 kg |
| ESW 2715 | 6/8 | 0.04 | 2/5 | 1.34* | 650x360 | SP4MC6MR 20 kg |
| ESW 2725 | 1.5/3 | 0.01 | 0.5/1 | 1.30 | 500x360 | SP4MC6MR 15 kg |

Note: * The instrument may operate with a maximum weighing conveyor speed up to the value in Table 3. The conveyor speed varies according to the package weight.

### 5.1 Static Mode

The instrument may be used as a multi-interval class (III) self-indicating price-computing non-automatic weighing instrument/labeller when in a static mode in which the conveyors do not operate.

Instruments are marked ‘NOT FOR TRADING DIRECT WITH THE PUBLIC’, or similar wording.

#### 5.1.1 Zero

A zero-tracking device may be fitted.

The initial zero-setting device of the pattern has a nominal range of not more than 20% of the maximum capacity of the instrument.

The instrument has automatic and semi-automatic zero-setting devices with a nominal range of not more than 4% of the maximum capacity of the instrument. The automatic zero-setting device operates only when the instrument has been stable below zero for at least 5 seconds.

### 5.1.2 Tare

A semi-automatic subtractive tare device and/or a keyboard-entered pre-set subtractive tare device, each of up to $Max_1$ capacity, may be fitted.

Pre-set tare values may be associated with product look up (PLU) items.

### 5.1.3 Descriptive Markings and Notices

Instruments carry additional markings:

| | |
|---|---|
| Indication of accuracy class |  |
| Maximum capacity | *Max* ...../...../…… g or kg #1 |
| Minimum capacity | *Min* ..... g or kg #1 |
| Verification scale interval | *e* = ...../...../…… g or kg #1 |
| Maximum subtractive tare | *T* = - ..... kg or g #2 |

#1 These markings shall be shown near the display of the result.

#2 This marking is required if T is not equal to Max.

Instruments are marked ‘NOT FOR TRADING DIRECT WITH THE PUBLIC’, or similar wording.

## 5.2 Software

The scale software version (A/D convertor) is designated 04.10.xxxx; and the terminal software version is designated 20.xxx.xx, where xx or xxx represents non-legally relevant changes.

The software versions and numbers can be seen by pressing the ‘i’ button at the bottom right of the display.

## 5.3 Sealing Provision

Access to allow changing of set-up parameters including calibration parameters is protected by a dongle and a specific password of the dongle.

The instrument is sealed by recording the audit trail counters on verification.

The instrument automatically increments a configuration and/or calibration value (audit trail number) each time the instrument is re-configured and/or calibrated.

The value of the counter may be recorded on a destructible adhesive label attached to the instrument (e.g. as Software lock event counter XXX).

Any subsequent alteration to the calibration or configuration will be evident as the recorded values and the current counter values will differ.

The instructions for accessing the audit trail and adjustment status are as follows (starting from the normal weighing mode):

- Press the ‘i’ button at the bottom right of the display. The non-resettable software lock counter and adjustment status are displayed.
- Press the ‘Secured parameters’ button. The scale secured parameters logbook (audit trail) (Figure 5) is displayed.
- If the adjustment status is in the ‘LOCK’ position, the instrument will display green status ‘saved’ (Figure 6). In this case the instrument may be verified.
- Otherwise the instrument will display red status ‘not saved’ in which case the instrument should not be verified until the instrument has been correctly locked.

## 6. Description of Variant 5 approved on 18/01/24

The ES-E 1000 series multi-interval automatic catchweighing instruments (Figure 4) fitted with an ESPERA model 346040 A/D convertor and a weighing module in certain capacities as listed in Table 4.

Instruments have unit price to $99999.99/kg, price to $9999999.99, and a product look up (PLU) facility.

The instrument comprises:

- A terminal/indicator with a touch screen LCD display/keyboard, model ESC 22X5;
- A weighing module and conveyor system with associated controller, model ESW 25X5; and
- 1 to 4 printers, model ESD 53X5 (top printer).

NOTE: For all module names with an X as wildcard to separate between variants of minor difference.

Instruments may be fitted with up to 4 top and/or bottom thermal printer units with associated electronics. Please note the Special Condition of Approval regarding printing formats.

The instrument may be fitted with an automatically positioned side guide.

The instrument is approved for use over a temperature range of 0 °C to +40 °C, and must be so marked.

Table 4

| Weighing Module | Maximum Capacity ($Max_1/Max_2$) (kg) | Minimum Capacity ($Min$) (kg) | Verification scale interval ($e_1/e_2$) (g) | Maximum Conveyor Speed (m/s) | Load Receptor Size (mm x mm) | HBM/HBK Load Cell |
|---|---|---|---|---|---|---|
| ESW 2505 | 1.5/3 | 0.01 | 0.5/1 | 0.7 | 430 x 360 | SP4MC6 10 kg |
| ESW 2515 | 3/6 | 0.02 | 1/2 | 0.7 | 430 x 360 | SP4MC3 15 kg |
| ESW 2525 | 6/15 | 0.04 | 2/5 | 0.7* | 430 x 360 | SP4MC6 50 kg |
| ESW 2535 | 6/15 | 0.04 | 2/5 | 1.0* | 650 x360 | SP4MC6 50 kg |

Note: * The instrument may operate with a maximum weighing conveyor speed up to the value in Table 4. The conveyor speed varies according to the package weight.

### 6.1 Static Mode

The instrument may be used as a multi-interval class (III) self-indicating price-computing non-automatic weighing instrument/labeller when in a static mode in which the conveyors do not operate.

Instruments are marked ‘NOT FOR TRADING DIRECT WITH THE PUBLIC’, or similar wording.

#### 6.1.1 Zero

A zero-tracking device may be fitted.

The initial zero-setting device of the pattern has a nominal range of not more than 20% of the maximum capacity of the instrument.

The instrument has automatic and semi-automatic zero-setting devices with a nominal range of not more than 4% of the maximum capacity of the instrument. The automatic zero-setting device operates only when the instrument has been stable below zero for at least 5 seconds.

### 6.1.2 Tare

A semi-automatic subtractive tare device and/or a keyboard-entered pre-set subtractive tare device, each of up to $Max_1$ capacity, may be fitted.

Pre-set tare values may be associated with product look up (PLU) items.

### 6.1.3 Descriptive Markings and Notices

Instruments carry additional markings:

| | |
|---|---|
| Indication of accuracy class | (III) |
| Maximum capacity | *Max* ...../...../…… g or kg #1 |
| Minimum capacity | *Min* ..... g or kg #1 |
| Verification scale interval | *e* = ...../...../…… g or kg #1 |
| Maximum subtractive tare | *T* = - ..... g or kg #2 |
| Special temperature limits | 0°C to +40°C |

#1 These markings shall be shown near the display of the result.

#2 This marking is required if T is not equal to Max.

Instruments are marked ‘NOT FOR TRADING DIRECT WITH THE PUBLIC’, or similar wording.

## 6.2 Software

The scale software version (A/D convertor) is designated 04.10.xxxx; and the terminal software version is designated 20.xxx.xx, where xx or xxx represents non-legally relevant changes.

The software versions and numbers can be seen by pressing the ‘i’ button at the bottom right of the display.

## 6.3 Sealing Provision

Access to allow changing of set-up parameters including calibration parameters is protected by a dongle and a specific password of the dongle.

The instrument is sealed by recording the audit trail counters on verification.

The instrument automatically increments a configuration and/or calibration value (audit trail number) each time the instrument is re-configured and/or calibrated.

The value of the counter may be recorded on a destructible adhesive label attached to the instrument (e.g. as Software lock event counter XXX).

Any subsequent alteration to the calibration or configuration will be evident as the recorded values and the current counter values will differ.

The instructions for accessing the audit trail and adjustment status are as follows (starting from the normal weighing mode):

- Press the ‘i’ button at the bottom right of the display. The non-resettable software lock counter and adjustment status are displayed.

- Press the ‘Secured parameters’ button. The scale secured parameters logbook (audit trail) (Figure 5) is displayed.
- If the adjustment status is in the ‘LOCK’ position, the instrument will display green status ‘saved’ (Figure 6). In this case the instrument may be verified.
- Otherwise the instrument will display red status ‘not saved’ in which case the instrument should not be verified until the instrument has been correctly locked.

TEST PROCEDURE No 6/14G/33

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

**Maximum Permissible Errors**

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

**Tests**

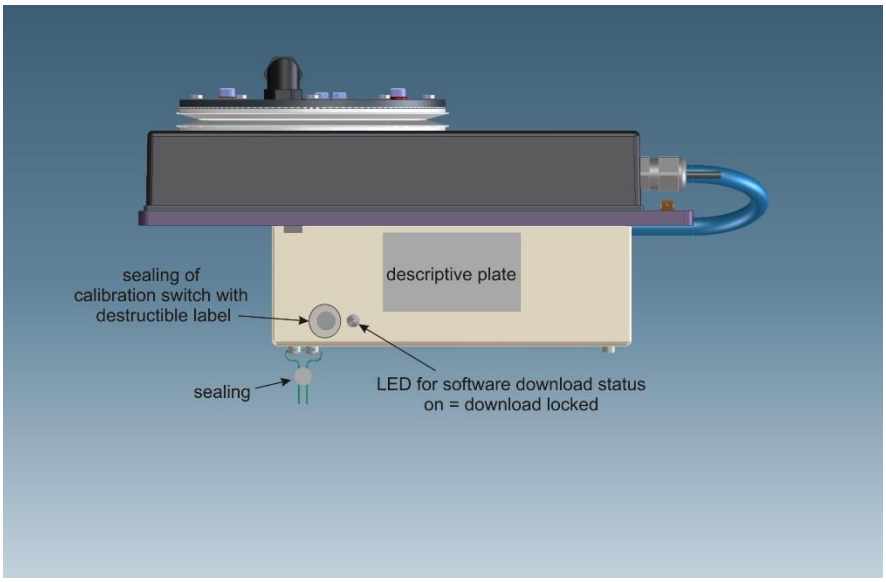
For multi-interval instruments with verification scale intervals of $e_1$, $e_2$ …, apply $e_1$ for zero adjustment, and maximum permissible errors apply $e_1$, $e_2$ …, as applicable for the load.

Ensure the instruments are only being used within the special temperature limits stated elsewhere in this Technical Schedule.

FIGURE 6/14G/33 – 1

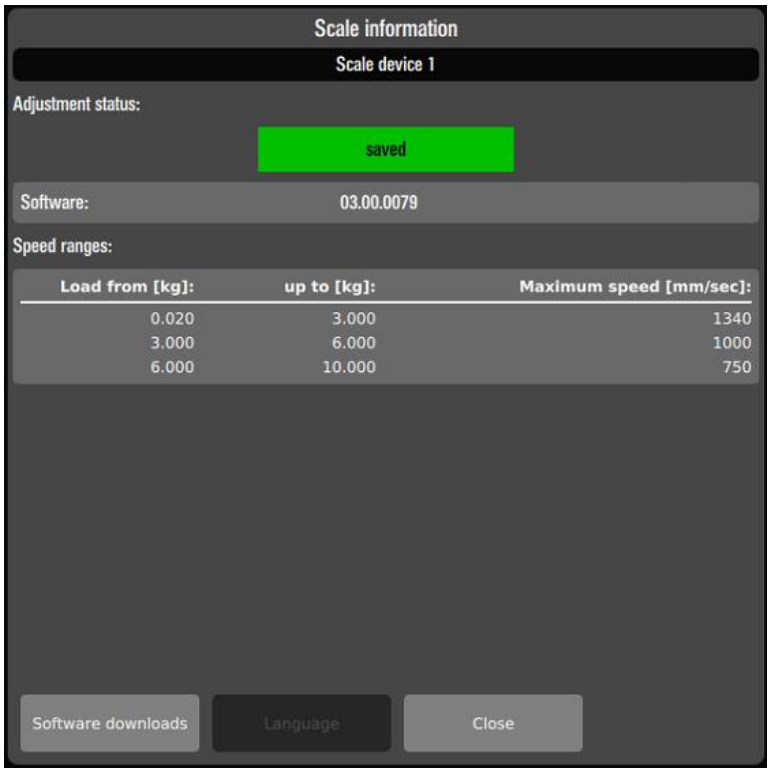
Model ES - R1011

FIGURE 6/14G/33 – 2




Typical Mechanical Sealing

FIGURE 6/14G/33 – 3

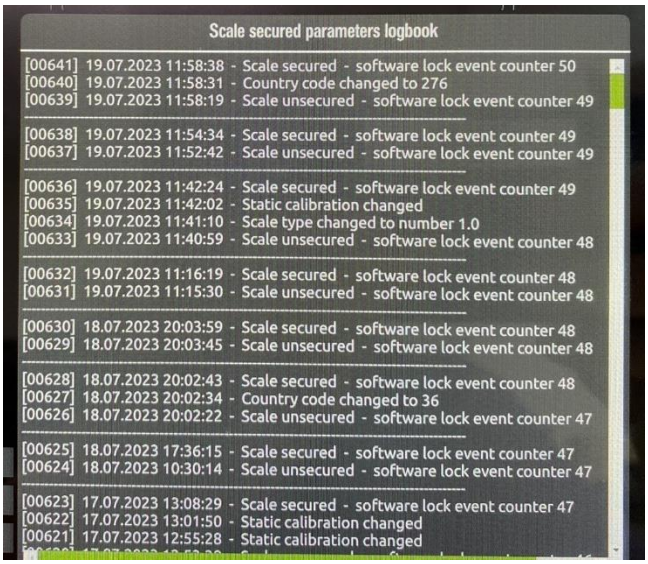



Software identification

FIGURE 6/14G/33 – 4

Model ES – E 1000 Series Instruments

FIGURE 6/14G/33 – 5

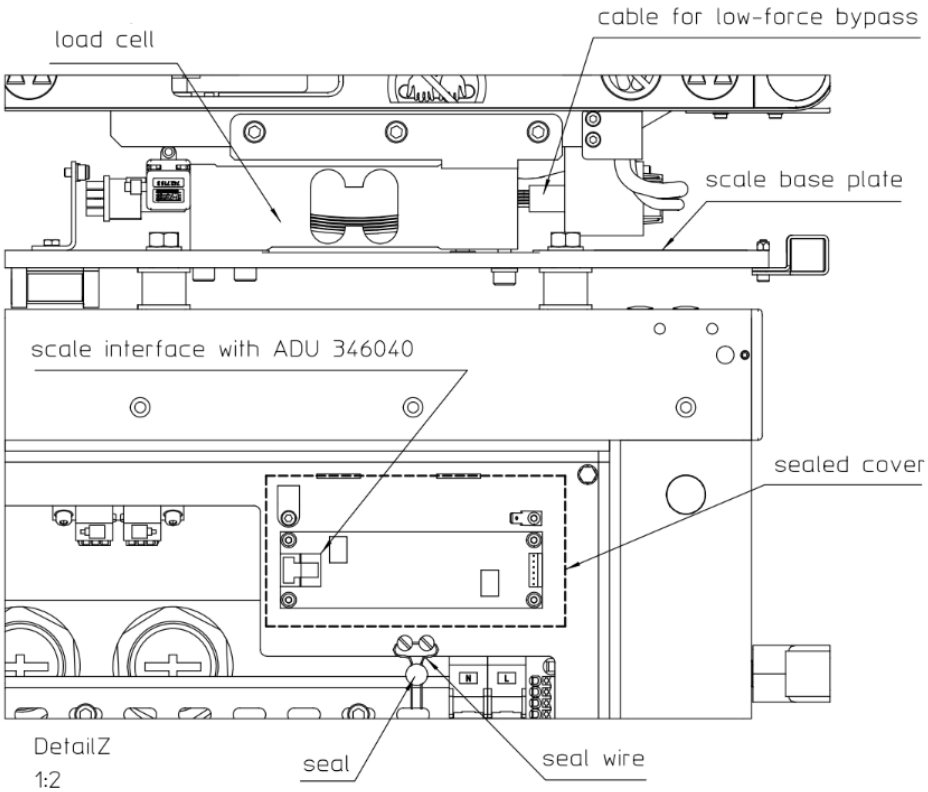



Typical Audit Trail

FIGURE 6/14G/33 – 6


Typical Sealing Status

FIGURE 6/14G/33 – 7




Typical Mechanical Sealing of A/D-Converter of ES – E 1000 Series Instruments

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