Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S879

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.

Balancas Marques Model BM400P 10” AC Digital Indicator

submitted by Anmar Scales Pty Ltd
189 Northcorp Blvd
Broadmeadows VIC 3047

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 document 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 variants 1 to 6 approved – certificate issued	15/10/25

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S879' and only by persons authorised by the submittor.

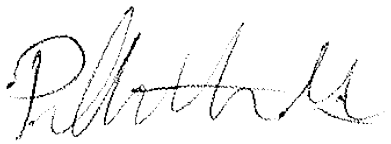
Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S879' in addition to the approval number of the instrument, and only by persons authorised by the submittor.

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 of Approval No S1/0B.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to an instrument incorporating the pattern approved herein shall be within the limits specified herein and in any approval documentation for the other components.

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



Phillip Mitchell
A/g Manager
Policy and Regulatory
Services

TECHNICAL SCHEDULE No S879

1. Description of Pattern approved on 15/10/25

A Balancas Marques model BM400P 10” AC digital indicator (Figure 1) which may be configured to form part of:

- A class (III) weighing instrument with a single weighing range of up to 6000 verification scale intervals; or
- A class (IIII) weighing instrument with a single weighing range of up to 1000 verification scale intervals; or
- A class (III) multi-interval weighing instrument with up to two partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 3000 verification scale intervals per partial weighing range; or
- A class (IIII) multi-interval weighing instrument with up to two partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 1000 verification scale intervals per partial weighing range.

The instrument has a plastic enclosure with a 10 inch LCD touchscreen display for display of the weight value.

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

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices (see clause 1.6 below).

TABLE 1 – Specifications

Maximum number of verification scale intervals	6000 (class (III)) 1000 (class (IIII))
Minimum sensitivity	0.3 µV / scale interval 0.54 µV / scale interval (A/D board V2)
Excitation voltage	5 V DC
Maximum excitation current	117 mA
Fraction of maximum permissible error	$p_i = 0.5$
Minimum load cell impedance	43 Ω
Maximum load cell impedance	1149 Ω
Measuring range minimum voltage	0.05 mV
Measuring range maximum voltage	20 mV
Maximum tare range	–(*Max* – *e*)
Operating temperature range	0 °C to +40 °C
Load cell connection	4 or 6-wire plus shield
Maximum value of load cell cable length per wire cross section (*)	753.8 m/mm^2 (6-wire only) 286.2 m/mm^2 (A/D board V2) (6-wire only)

(*) Additional connection cable between indicator and load cell or load cell junction box. In case a 4-wire connection is used, the load cells are connected directly without a junction box or lengthening the load cell(s) cable.

The instrument may be fitted with an alternative A/D board V2 with the specifications as shown in Table 1 above.

This approval does not include the use of the indicator as an automatic weighing instrument, unless specifically mentioned in a certificate of approval for such an instrument.

1.1 Zero

A zero-tracking device may be fitted.

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

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.

1.2 Tare

A semi-automatic subtractive taring device and a pre-set taring device, each of up to the maximum capacity of the instrument minus 1*e* (except for instruments configured as multi-interval instruments, in which case the maximum pre-set tare value is $Max_1 - 1e_1$), may be fitted.

1.3 Display Check

A display check is initiated whenever power is applied.

1.4 Power Supply

The power supply is 24 V DC supplied by an AC/DC mains adaptor.

Note: The AC/DC mains adaptor supplied for the instrument was a Marques model CHAD-T12024 (output: 24 V DC, 5 A) adaptor – the submittor should be consulted regarding the acceptability of alternative power supply units.

1.5 Additional Features

The indicator may have certain additional functions including level control (checking and set points) and dosage functions. The additional functions (other than the indications of measured mass, i.e. gross, tare, net, totals, displayed either on the indicator or on an auxiliary or peripheral device) are not approved for trade use.

The indicator may be fitted with self-service mode for traffic management and/or tariff payment facilities. Note: This certificate does not constitute or imply approval of the payment system.

Note: In particular circumstances (e.g. in regard to weighbridge or public weighbridge operation), Trade Measurement legislation or other NMI Certificates of Approval may impose requirements in regard to specific features, methods of operation, or records to be provided (and in what form).

Certain features of this instrument are able to be configured by the installer or user. Whilst NMI believes that an acceptable configuration can be achieved for typical basic modes of operation, it may also be possible for the instrument to be configured to produce unacceptable configurations, and use of some configurations may be inappropriate in different situations. It is the responsibility of the installer and user to ensure that the configuration is acceptable and meets relevant requirements for any particular situation.

1.6 Interfaces

The indicator may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 5.3.6 of document NMI R 76 (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 NMI General Supplementary Certificate of Approval 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 indicator or on an auxiliary or peripheral device, are not for trade use.

Instruments may be fitted with RS232, USB and Ethernet interfaces.

1.7 Two Baseworks Facility (only for trucks weighing mode)

The indicator may be configured to display for two baseworks individually and the arithmetic sum of the gross weight value of two baseworks simultaneously where two baseworks (load receptors) are connected to a single Balancas Marques model BM400 digital indicator. (e.g. the two individual base work are displayed as “Total 1/2” and “Total 2/2”, the sum is displayed as “Total”).

Where the indicator is able to provide a summed indication, the instrument shall operate such that:

- The “Total” value displayed as the summed indication shall equal the mathematical sum of the measurement values displayed for each load receptor being summed.
- The scale interval of the summed value shall be of a value to suit the sum of the scale intervals of the baseworks being summed and the summed result. The summing indicator shall be able to display all possible combinations of the scale intervals of all primary indicators, e.g. where the primary indicators are dual range 20 kg and 50 kg, the summing indicator must be able to indicate 70 kg, therefore the summing indicator will need a scale interval of 10 kg.
- The summed value shall not be displayed if two baseworks are in different operational modes (e.g. if “Total 1/2” displays the gross value, and “Total 2/2” displays the net value).
- All weight displays in the system shall display the same units of measurement (e.g. all kg or all t).
- The summed indication (and any print-out of summed indication) shall be blank or show ‘- - - - -' if any of the component values are below zero, or above their individual maximum capacities (Max + 9e), or have any other error.
- Neither the tare nor the pre-set tare device is operational.
- The zeroing device may operate on all baseworks/displays (if all baseworks/displays are within the zero range).

Note regarding identification of baseworks:

Where two baseworks are connected to and displayed by the indicator, there shall be a clear identification and correspondence between each value and

its corresponding basework. This may require additional markings (e.g. to identify baseworks as '1/2' and '2/2').

1.8 Verification Provision

Provision is made for the application of a verification mark.

1.9 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Balancas Marques
Name or mark of manufacturer's agent	Anmar Scales Pty Ltd
Indication of accuracy class	(III) or (IIII)
Maximum capacity	*Max* ..... kg #1
Minimum capacity	*Min* ..... kg #1
Verification scale interval	*e* = ... kg #1
Maximum subtractive tare	*T* = − ……. kg #2
Special temperature limits	0 °C to 40 °C
Serial number of the instrument	…….
Pattern approval mark for the indicator	NMI S879
Pattern approval mark for other components	..... #3

#1 These markings are shown in the electronic markings field above the display of the result.

Note:

"Access code" shall be entered for adjustment of the values on the marking "Max…, Min…, e=…".

For the indicator connected with two baseworks and the summing function is activated, two markings "Max…, Min…, e=…" shall be shown.

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

#3 May be located separately from the other markings.

In addition, instruments not greater than 100 kg capacity carry a notice stating NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

Note:

For multi-interval instruments the markings shall be as above, with the exception that the 'Maximum capacity' and 'Verification scale interval' shall be marked for both interval ranges, e.g. as follows:

Maximum capacity	Max …. / …. kg
Verification scale interval	*e* = ….. / ….. kg

1.10 Software

The legally relevant software is designated ETMETRO v1.0 and is identified by a checksum number 0xD619.

The instructions for accessing the software version and the checksum are as follows.

- Press the MARQUES logo at top left corner of the display
- Select the Application tab on the information window. The software version number and the checksum are displayed.

1.11 Sealing Provision

Provision is made for access to the calibration switch within the instrument to be sealed by the use of destructible adhesive labels placed over the access hole(s) to the calibration switch and over the screw on the side of the instrument housing as shown in Figures 4a, 4b and 4c.

2. Description of Variant 1 approved on 15/10/25

The Balancas Marques model BM400 10” AC (Figure 1) which is similar to the pattern but having a metal enclosure.

3. Description of Variant 2 approved on 15/10/25

The Balancas Marques model BM400P 15” AC (Figure 2) which is similar to the pattern but having a 15 inch touchscreen display.

3.1. Power supply

The instrument operates from mains AC power (230 VAC, 50/60 Hz).

4. Description of Variant 3 approved on 15/10/25

The Balancas Marques model BM400 15” AC (Figure 2) which is similar to variant 2 but having a metal enclosure.

5. Description of Variant 4 approved on 15/10/25

The Balancas Marques model BM400P 15” AC Relays (Figure 2) which is similar to variant 2 and fitted with an additional I/O board (4 digital inputs/outputs and analogue output: 4-20 mA).

6. Description of Variant 5 approved on 15/10/25

The Balancas Marques model BM400 TOWER 10” AC (Figure 3) which is similar to variant 1 but having the display mounted on a column and with an inbuilt printer.

7. Description of Variant 6 approved on 15/10/25

The Balancas Marques model BM400 TOWER 15” AC (Figure 3) which is similar to variant 5 but having a 15 inch touchscreen display.

The instrument operates from mains AC power (230 VAC, 50/60 Hz).

TEST PROCEDURE No S879

Instruments should 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*.

For multi-interval and multiple range 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.

FIGURE S855 – 1

Balancas Marques Model BM400 10” AC Digital Indicator (Pattern and Variant 1)

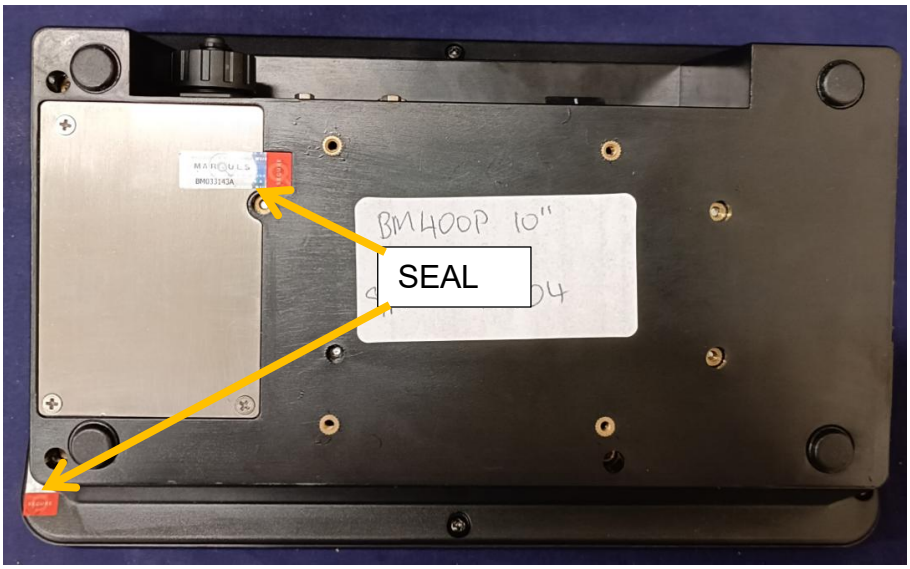
FIGURE S855 – 2

Balancas Marques Model BM400P 15” AC Digital Indicator (Variants 2 to 4)

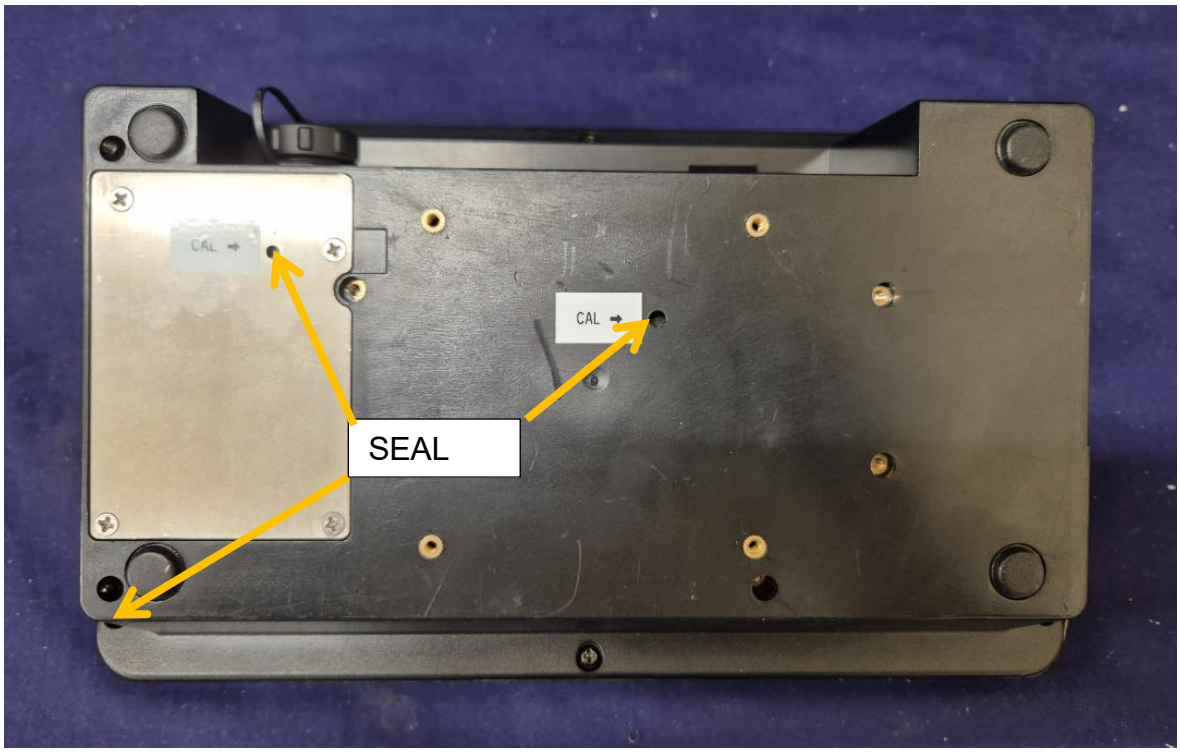
FIGURE S855 – 3

Balancas Marques Model BM400 TOWER Digital Indicator (Variants 5 to 6)

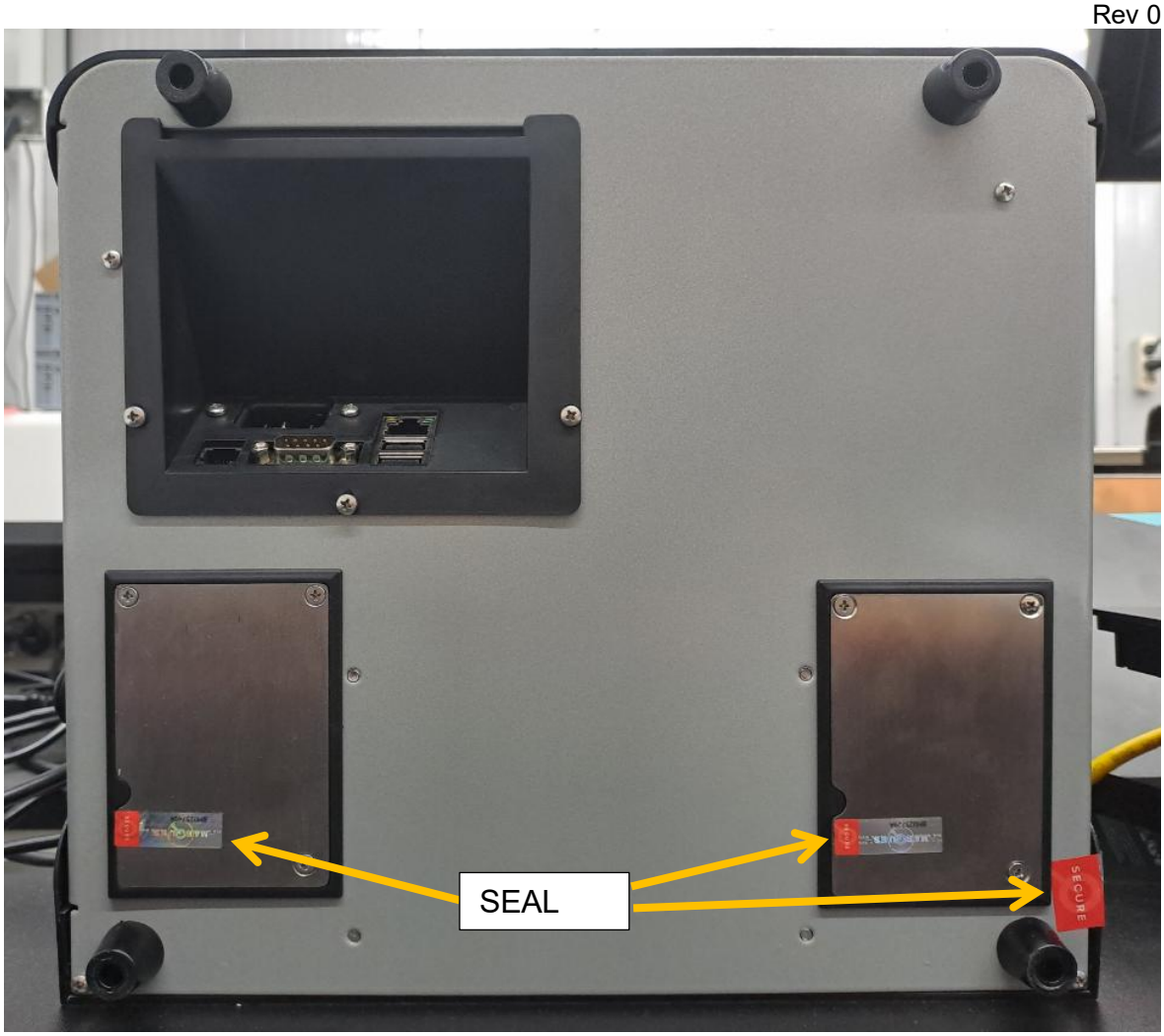
FIGURE S855 – 4



(a) Sealing of Model BM400 Series Indicators With One Basework



(b) Sealing of Model BM400 Series Indicators with Two Baseworks



(c) Sealing of Model BM400 Tower Series Indicators with Two Baseworks

Typical Sealing Methods

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