Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S653

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.

Mettler Toledo Model IND231 Digital Indicator

submitted by Mettler-Toledo Limited
Level 1, 191 Salmon Street
Port Melbourne VIC 3207

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 & variant 1 approved – certificate issued	4/04/14
1	Pattern amended & NMI R 76 updated to 2015 edition	12/04/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S653' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S653' 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 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*.

Darryl Hines
Manager
Policy and Regulatory
Services

TECHNICAL SCHEDULE No S653

1. Description of Pattern

approved on 4/04/14
amended on 12/04/24

A Mettler Toledo model IND231 digital mass indicator (Figure 1a and Table 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 (III) weighing instrument with a single weighing range of up to 1000 verification scale intervals; or
- A class (III) multiple range weighing instrument with up to two weighing ranges, in which case it is approved for use with up to 3000 verification scale intervals per weighing range; or
- A class (III) multiple range weighing instrument with up to two weighing ranges, in which case it is approved for use with up to 1000 verification scale intervals per weighing range.

  The changeover between weighing ranges is automatic.

The instrument has a plastic enclosure with a dot graphic LCD for display of the weight value.

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 or 3000 per range (class (III))
	1000 (class (III))
Minimum sensitivity	0.5 µV / scale interval
Excitation voltage	5 V DC
Maximum excitation current	57 mA
Fraction of maximum permissible error	$p_i = 0.5$
Minimum load cell impedance	87 Ω
Maximum load cell impedance	1200 Ω
Measuring range minimum voltage	0 mV
Measuring range maximum voltage	15 mV
Maximum tare range	-100% Max
Operating temperature range	-10°C to +40°C
Load cell connection	4-wire or 6-wire shielded
Maximum value of load cell cable length per wire cross section (*)	3911 m/mm^2 (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.

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 tare device of up to the maximum capacity of the instrument may be fitted.

1.3 Display Check

A display check is initiated whenever power is applied.

1.4 Power Supply

The power supply may be 85 – 240 VAC mains power and/or a 7.2 V NiMH rechargeable battery pack.

1.5 Additional Features

The indicator also has certain additional functions (e.g. counting, animal weighing, over/under functions). The additional functions are not approved for trade use.

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 R76 (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 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 RS-232/RS422/RS485 serial data interfaces, USB interface, and may also have digital inputs/outputs.

1.7 Linearisation Facility

Instruments are fitted with a linearisation correction facility having one correction point.

1.8 Software

The software is designated 1.xx.yyyy where xx.yyyy refers to the identification of non-legally relevant software.

The software version and number can be seen (Figure 1b) in the switch-on display sequence (when the power is first applied to the instrument).

1.9 Verification Provision

Provision is made for the application of a verification mark.

1.10 Sealing Provision

Provision is made for access to the calibration switch within the instrument to be sealed either using a 'lead and wire' or similar type seal with a drilled screw or use of a destructible adhesive label over the securing screw as shown in Figure 2.

1.11 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Mettler Toledo	
Indication of accuracy class	 or 	
Maximum capacity (for each range)	*Max* ..... kg	#1
Minimum capacity (for each range)	*Min* ..... kg	#1
Verification scale interval (for each range)	*e* = ... kg	#1
Maximum subtractive tare	*T* = - ..... kg	#2
Serial number of the instrument	…….	
Pattern approval mark for the indicator	NMI S653	
Pattern approval mark for other components	.....	#3

#1 These markings are shown near the display of the result.

#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 multiple range instruments, the maximum capacity, minimum capacity and verification scale interval for each range shall be marked, with an indication of the range to which they apply, e.g.

Range	>|1|<	>|2|<
Max	…. kg	…. kg
Min	…. kg	…. kg
e =	…. kg	…. kg

2. Description of Variant 1 **approved on 4/04/14**

The Mettler Toledo model IND236 (Figure 3) which is similar to the pattern but having a stainless steel housing.

TEST PROCEDURE No S653

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

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

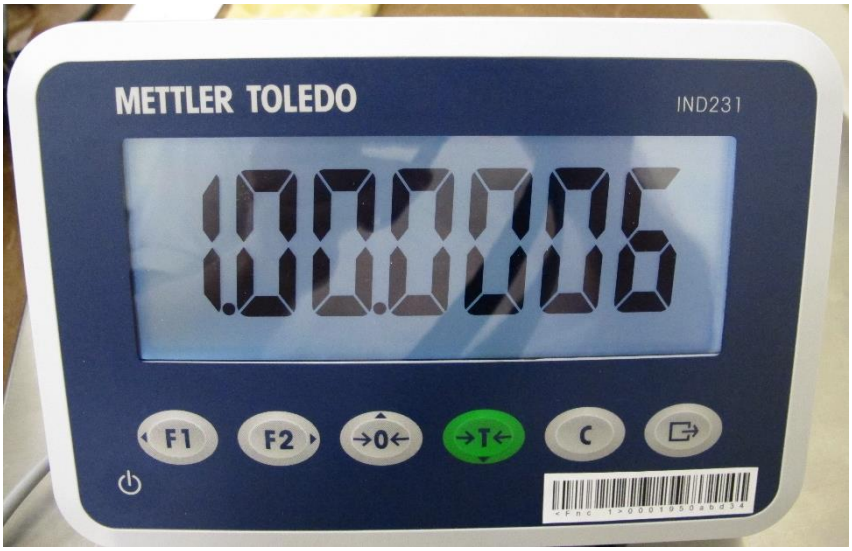
Maximum Permissible Errors

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.

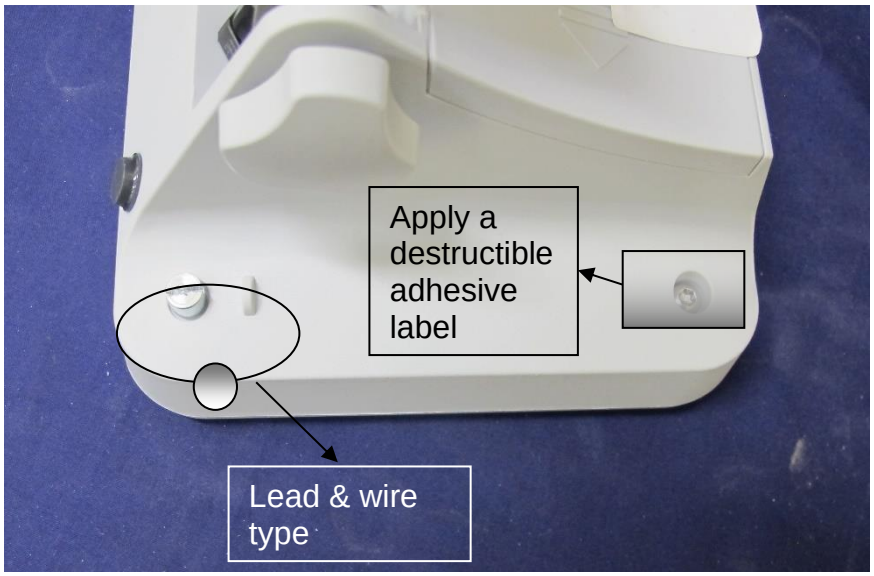
FIGURE S653 – 1

(a) Mettler Toledo Model IND231 Digital Indicator



(b) Mettler Toledo Model IND231 Digital Indicator
(Showing Typical Software Version Number)

FIGURE S635 – 2



Typical Sealing of Mettler Toledo Model IND 231 Digital Indicator

FIGURE S653 – 3

Mettler Toledo Model IND236 Digital Indicator

~ End of Document ~