



Australian Government

National Measurement
Institute

Bradfield Road, West Lindfield NSW 2070

Notification of Change

Supplementary Certificate of Approval No S456

Change No 1

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

The following changes are made to the approval documentation for the
Mettler Toledo Model IND310 Digital Indicator

submitted by Mettler Toledo Limited
 Unit 3, 220 Turner Street
 Port Melbourne VIC 3207.

- A. In Supplementary Certificate of Approval No S456 dated 6 May 2005:
1. The Condition of Approval referring to the review of the approval should be amended to read:
 “This approval becomes subject to review on 1 May **2015**, and then every 5 years thereafter.”
 2. The FILING ADVICE should be amended by adding the following:
 “Notification of Change No 1 dated 13 May 2011”
- B. In Technical Schedule No S456 dated 6 May 2005, the TEST PROCEDURE should be replaced by the following:
 “Instruments shall be tested in accordance with any relevant tests specified in the national inspection 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 $e_1, e_2 \dots$, apply e_1 for zero adjustment, and maximum permissible errors apply $e_1, e_2 \dots$, as applicable for the load.”

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

A handwritten signature in black ink, consisting of a series of loops and flourishes, positioned to the right of the signature text.



Australian Government
**National Measurement
Institute**

12 Lyonpark Road, North Ryde NSW 2113

Supplementary Certificate of Approval
No S456

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

Mettler Toledo Model IND310 Digital Indicator

submitted by Mettler Toledo Limited
220 Turner 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.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 May 2010, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S456 and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S456' in addition to the approval number of the instrument.

It is the submitter'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.

The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

DESCRIPTIVE ADVICE

Pattern: approved 29 April 2005

- A Mettler Toledo model IND310 digital indicator.

Technical Schedule No S456 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Supplementary Certificate of Approval No S456 dated 6 May 2005
Technical Schedule No S456 dated 6 May 2005 (incl. Table 1 and Test Procedure)
Figures 1 and 2 dated 6 May 2005



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

A handwritten signature in black ink, appearing to be 'J. G. T.', written in a cursive style.

TECHNICAL SCHEDULE No S456

Pattern: Mettler Toledo Model IND310 Digital Indicator

Submittor: Mettler Toledo Limited
220 Turner Street
Port Melbourne VIC 3207

1. Description of Pattern

A Mettler Toledo model IND310 digital mass indicator (Table 1 and Figure 1) which may be configured to form part of:

- A weighing instrument with a single weighing range of up to 10 000 verification scale intervals;
- A multi-interval weighing instrument with up to three partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 10 000 verification scale intervals per partial weighing range; or
- A multiple range weighing instrument with up to three weighing ranges, in which case it is approved for use with up to 10 000 verification scale intervals per weighing range.

The changeover between weighing ranges is automatic. The range in use is indicated by '→| x |←' being displayed, where x is a number, 1 – 3.

The instrument has a liquid crystal display (LCD) including provision for display of the weight value and for alphanumeric information/menus.

A display in the form 'Δ Δ x' (where x is a number) appears at the top right of the indication. The number x designates the basework/indication that has been selected for display. For example 'Δ Δ 1' indicates that the corresponding basework (scale 1) has been selected – the weight displayed will be that of scale 1. Refer also to clause **1.6 Two Baseworks Facility**.

Note: In some modes of operation of the instrument the Δ Δ x symbol is written on the display as Δ x Δ (e.g. Δ 2 Δ instead of Δ Δ 2).

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

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.

The connected basework(s) may use approved Mettler Toledo 'DigiTOL', 'Powercell' or 'MTX' type load cells, using a 'Powercell' connection board. In these cases, the maximum number of verification scale intervals (VSI) applicable is determined by the number of VSI given in the approval documentation for the load cells used.

Alternatively, basework(s) using conventional analog strain gauge type load cells may be connected to this indicator using a single or dual analog to digital (A/D) board. In this case the specifications below in Table 1 apply.

TABLE 1 – Specifications

Maximum number of verification scale intervals	10 000 or 10 000 per range
Minimum sensitivity	0.9 μ V/scale interval
Excitation voltage	10 V DC
Maximum excitation current	229 mA (per basework)

1.1 Zero

Zero may be automatically corrected to within $\pm 0.25e$ whenever the instrument comes to rest within $0.5e$ of zero or whenever power is applied (in the case of multi-interval or multiple range configurations e in this sentence refers to e_1). It has a nominal range of not more than 4% of the maximum capacity of the instrument.

The instrument has a semi-automatic zero-setting device (to set the instrument to within $\pm 0.25e$ of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

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

1.2 Tare

The instrument has provision for subtractive semi-automatic and pre-set tare devices of up to maximum capacity (except for instruments configured as multi-interval instruments, in which case the maximum pre-set tare value is Max_1).

Pre-set tare values may be stored and recalled, and may be associated with product or item look-up tables.

1.3 Display Check

A display check is initiated whenever power is applied.

Software identification information is displayed immediately following start-up.

1.4 Power Supply

The instrument operates from mains AC power (110–240 V AC nominal).

1.5 Linearisation Facility

Instruments are fitted with a linearisation correction facility having up to four correction points.

1.6 Two Baseworks Facility

Up to two baseworks may be connected to the indicator. These baseworks may be either of a type using approved Mettler Toledo 'DigiTOL', 'Powercell' or 'MTX' type load cells (using one or two 'Powercell' connection boards), or may use conventional approved analog strain gauge type load cells (using a single or dual A/D board). Alternatively one basework of each type may be used (using a 'Powercell' connection board, and an A/D board).

Note: Each load cell connection board contains a memory device so that calibration parameters of the platform can be stored. However it should be noted that if the indicator is replaced or repaired, reverification/certification of the instrument is required.

Individual weight display

Up to two baseworks may be connected to a single IND310 digital indicator.

The 'selection of scales' key ($\Delta \Delta$) is used to select either basework (' $\Delta \Delta 1$ ' or ' $\Delta \Delta 2$ '). Refer to clause 1. **Description of Pattern** regarding the indication of which indication is selected.

Note: In the case of this feature, each basework/combination shall be clearly identified to correspond to the appropriate scale display shown on the indicator. That is, there shall be a clear correspondence between the basework identification and the scale selected indication (shown by illumination of ' $\Delta \Delta 1$ ', etc.). Trade measurement authorities may require additional markings or signs to ensure that these relationships are clear.

When two baseworks are connected to a single IND310 indicator it is NOT possible for a summing function to be selected in which the combined weight on the platforms is displayed.

1.7 Data Storage Memory

The indicator may contain memory for the storage of weighing results.

For each weighing, weighing results together with identification including date and time are stored into the storage device.

The use of this feature for trade use is subject to the agreement of the applicable trade measurement authority. In any case, data from the storage device shall only be used for trade if the format of the output complies with General Supplementary Certificate No S1/0/A.

1.8 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 shall only be used for trade if the data and its format comply with General Supplementary Certificate No S1/0/A.

One or more of the following interface options may be fitted:

- Interfaces compatible to various control/communication protocols (e.g. Ethernet);
- Serial RS 232, RS 422, RS 485 or 20 mA current loop interfaces for the connection of peripheral devices; and
- A keyboard may be connected to the indicator for convenient data entry. Relevant functions (such as tare and zero setting) may be possible via corresponding remote commands.

1.9 Additional Features (Truck Weighing Functions)

The model IND310 indicator may be provided with certain other features and pre-set operational arrangements (by way of additional software packages) for the weighing of trucks.

These functions include provision for 'truck and product' identification data and pre-set tare values to be stored in memory.

The truck weighing functions provide for:

- simple vehicle weighing, where the gross weight of a vehicle is determined by a single weighing;
- first/second weighing, where a vehicle is weighed before and after a loading or unloading operation;
- single pass weighing, where the net weight of a vehicle is determined from the gross weighing operation and the application of a pre-set tare value; and
- function keys programmed to perform various functions (such as accessing and searching stored vehicle, item, product or client information).

Notes: The use of these features may or may not be appropriate in different situations. The acceptability in any particular situation must be assessed in-situ and may require consultation with the appropriate trade measurement authority. In some situations it may be necessary for a print-out of the weighing result to be produced for the method of operation to be considered acceptable. In such situations General Supplementary Certificate No S1/0/A should be consulted.

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.

1.10 Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Mettler Toledo
Indication of accuracy class	Ⓜ
Maximum capacity (for each range)	<i>Max</i> kg #1
Minimum capacity (for each range)	<i>Min</i> kg #1
Verification scale interval (for each range)	<i>e</i> = kg #1
Maximum subtractive tare	<i>T</i> = - kg #2
Serial number of the instrument	.....
Pattern approval mark for the indicator	NMI S456
Pattern approval mark for other components	..... #3

#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*.

#3 May be located separately from the other markings.

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

For multi-interval and multiple range instruments the markings shall be as above, with the exception of the following (examples are for instruments with two partial ranges):

(i) For multi-interval instruments;

Maximum capacity	<i>Max</i>/..... kg #1
Verification scale interval	<i>e</i> =/..... kg #1

(ii) 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
<i>Max</i>	.... kg	.... kg
<i>Min</i>	.... kg	.... kg
<i>e</i> =	.... kg	.... kg

For instruments using the two basework facility (clause 1.6), markings shall be provided for each basework. For example, in the case of an instrument with two multiple range baseworks, the following would be an acceptable tabulation of *Max*, *Min* and *e* values.

	△ ▽ 1		△ ▽ 2	
Range	→|1|←	→|2|←	→|1|←	→|2|←
<i>Max</i>	.... kg	.... kg	.... kg	.... kg
<i>Min</i>	.... kg	.... kg	.... kg	.... kg
<i>e</i> =	.... kg	.... kg	.... kg	.... kg

1.11 Verification/Certification Provision


Provision is made for the application of a verification/certification mark.

1.12 Sealing Provision

The use of at least two destructible adhesive labels, one at each side of the instrument case, enables the calibration adjustments to be sealed (Figure 2).

However, to ensure that the instrument is sealed, it is also important that the calibration switch within the indicator has been correctly set, so that access to the instrument menus that allow calibration adjustments is prevented.

This can be checked by the following procedure:

- (a) Commence with the indicator switched on in normal weighing mode.
- (b) Press the down arrow key ('v') a number of times until the symbol  appears on the bottom line of the display.
- (c) Press the button directly below this symbol.
- (d) A drop down menu will appear with various items, some of which may have [+] displayed alongside them indicating that they can be expanded to show sub menus.
- (e) Use the up and down keys to move through the menu items, and the right key ('>') to expand sub menus.
- (f) In particular, ensure that the 'Setup' menu within the 'IND310' menu is expanded. An item 'Scale' will appear below 'Setup'.
- (g) If the item 'Scale' has [+] directly to its left, then the calibration and related metrological settings are NOT protected.
- (h) If the item 'Scale' does not have [+] directly to its left, then the calibration and related metrological settings are protected. In this case the placing of destructible adhesive labels as shown in Figure 2 will adequately seal the instrument.

Note: Changing the position of the internal switch after item (g) will not necessarily ensure protection of settings. The procedure (a) to (h) should be repeated to determine whether protection is enabled.

TEST PROCEDURE

Instruments should be tested in conjunction with any ~~tests specified in the approval documentation for the instrument to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the Uniform Test Procedures.~~

Maximum Permissible Errors at Verification/Certification

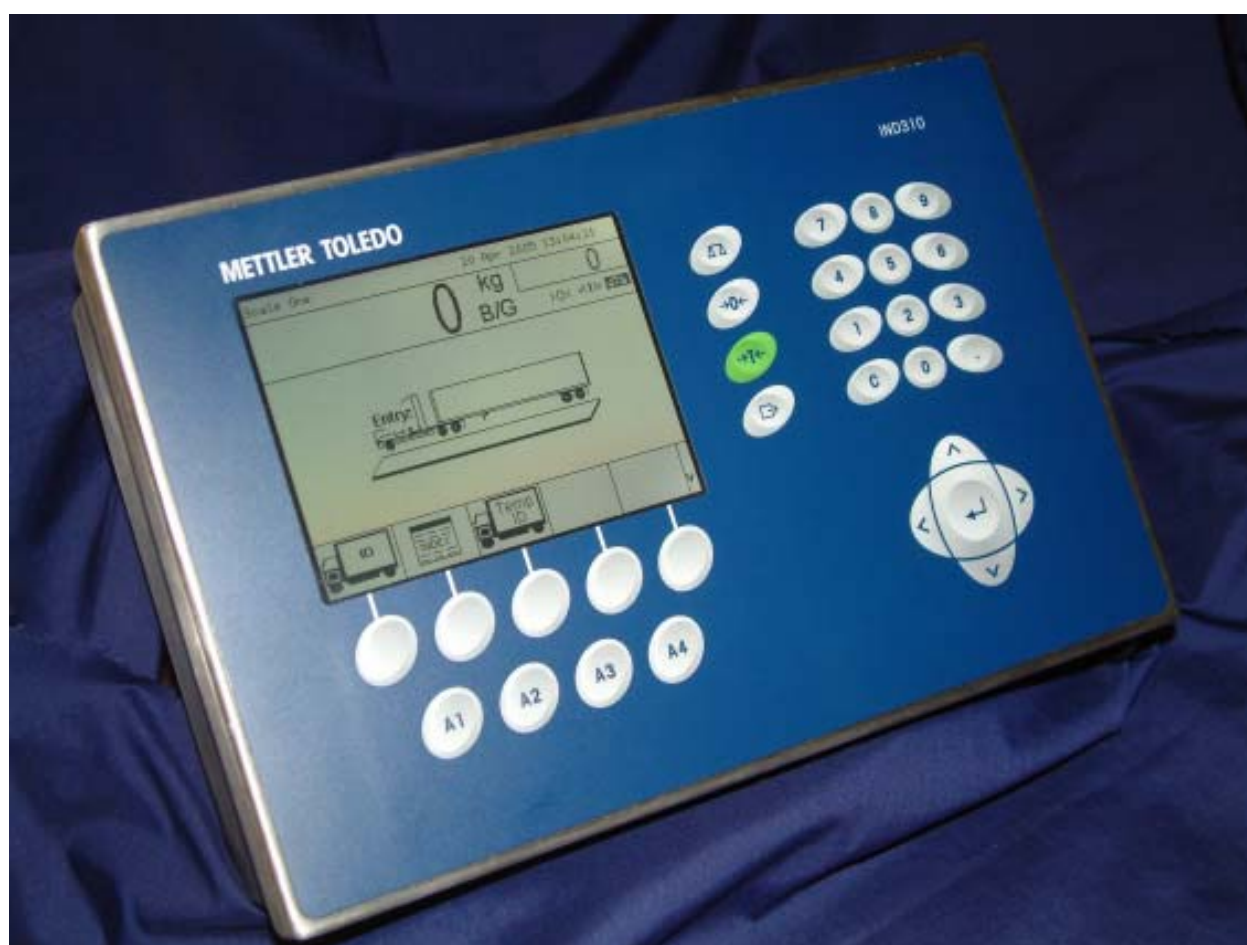
For single range instruments, the maximum permissible errors for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- ~~$\pm 0.5e$ for loads $0 \leq m \leq 500$;~~
- ~~$\pm 1.0e$ for loads $500 < m \leq 2\,000$; and~~
- ~~$\pm 1.5e$ for loads $2\,000 < m \leq 10\,000$.~~

For multi-interval and multiple range instruments with verification scale intervals e_1, e_2, \dots , apply e_1 for zero adjustment, and for maximum permissible errors apply e_1, e_2, \dots , as applicable for the load.



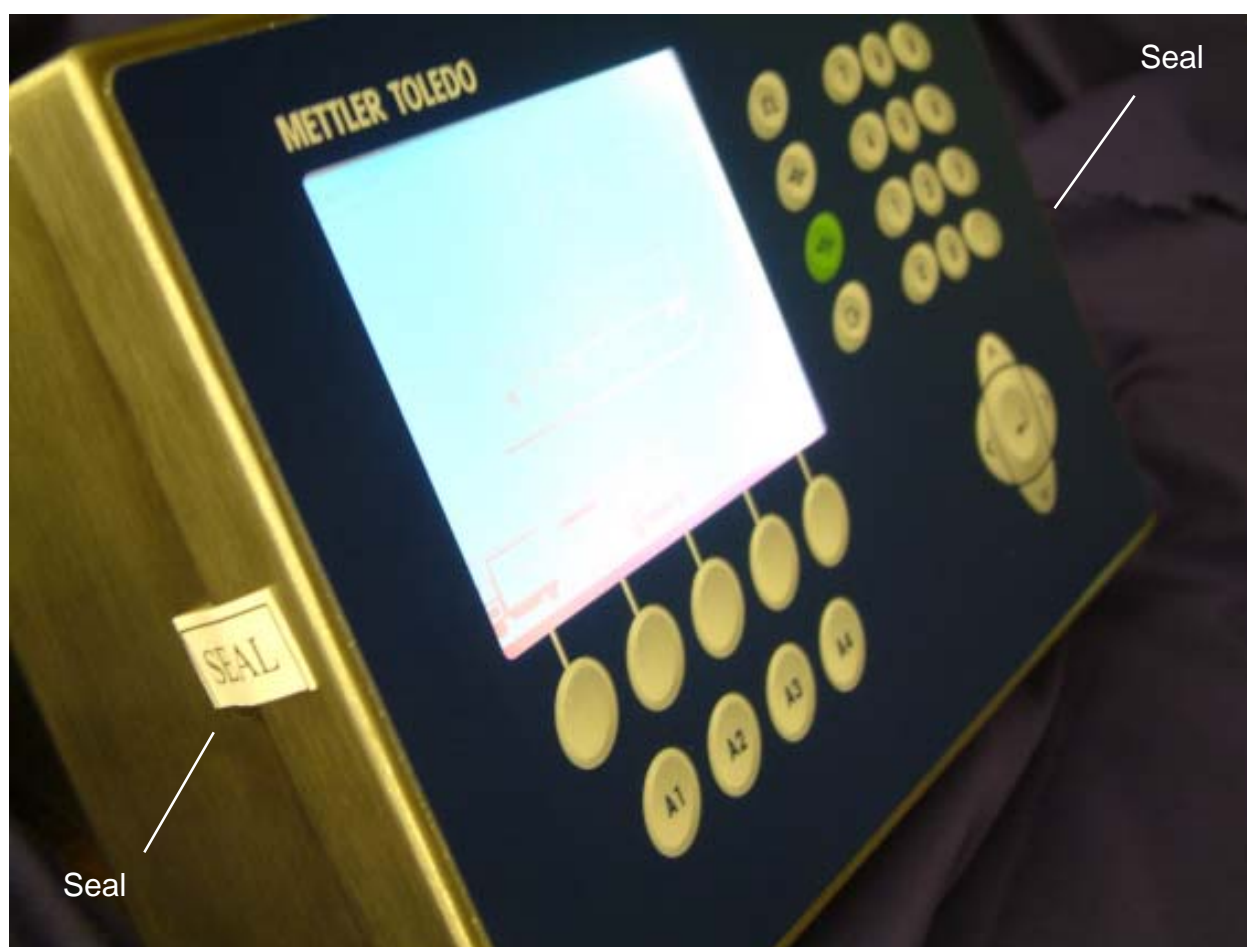
FIGURE S456 – 1



Mettler Toledo Model IND310 Digital Indicator

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FIGURE S456 – 2



Showing Sealing – Seal Both Sides of Indicator