



Bradfield Road, West Lindfield NSW 2070

## Certificate of Approval

### No 13/1/19

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 CSN910 FlexFlow Dimensional Measuring Instrument

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.

This approval has been granted with reference to document NMI R 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

#### CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 October 2015, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 13/1/19' and only by persons authorised by the submitter.

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.

**Special:**

Instruments are only approved for use for determination of the dimensions and volume of the smallest rectangular box that could contain an object, for the purposes of determining freight or postal charges.

The dimensions determined may also be used for the calculation (by peripheral equipment) of a volume and/or 'dimensional weight' (\*) value of the object, also for the purposes of determining freight or postal charges.

- (\*) A 'dimensional weight' value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume.

DESCRIPTIVE ADVICE

**Pattern:** approved 30 September 2010

- A METTLER TOLEDO model CSN910 FlexFlow dimensional measuring instrument.

Technical Schedule No 13/1/19 describes the pattern.

**Variant:** approved 26 November 2010

1. With a scale interval of 0.5 cm and a belt speed of up to 180 m/min.

Technical Schedule No 13/1/19 Variation No 1 describes variant 1.

FILING ADVICE

Certificate of Approval No 13/1/19 dated 1 November 2010 is superseded by this certificate, and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 13/1/19 dated 16 February 2011

Technical Schedule No 13/1/19 dated 1 November 2010 (incl. Test Procedure)

Technical Schedule No 13/1/19 Variation No 1 dated 16 February 2011 (incl. Notification of Change)

Figures 1 to 3 dated 1 November 2010

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



## TECHNICAL SCHEDULE No 13/1/19

**Pattern:** METTLER TOLEDO Model CSN910 FlexFlow Dimensional Measuring Instrument

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

### 1. Description of Pattern

A METTLER TOLEDO model CSN910 FlexFlow dimensional measuring instrument (Figure 1) which is approved for use for the determination of the linear dimensions of certain objects while they are in motion. Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

#### 1.1 Details

The pattern is approved for use for the determination of the linear dimensions of objects having maximum dimensions (i.e. length × width × height) of 250 × 120 × 150 cm and minimum dimensions 10 × 10 × 10 cm, with a scale interval of measurement ( $d$ ) of 1 cm and a belt speed ( $V_{\max}$ ) from 30 to 150 m/min.

The pattern converts the detected characteristics into the linear dimensions of the smallest rectangular box (parallelepiped – #) that would fully contain the object.

The pattern is approved for use in measuring the linear dimensions of opaque objects only; the dimensions determined may also be used for the calculation of volume and/or 'dimensional weight' value (\*) of the item (refer to the Special Conditions of Approval).

Objects may be measured statically by being positioned manually in the defined measurement area.

- (#) A rectangular box (parallelepiped) is a polyhedron having six faces that are parallel in pairs; each face is a parallelogram and adjacent edges are perpendicular.
- (\*) A '**dimensional weight**' value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume as calculated from the measured dimensions.

#### 1.2 Dimensioning Unit

The pattern includes a Cargoscan model CSN910 dimensioning unit mounted on a supporting frame above a belt-conveyor type load receptor (Figure 1 shows a typical conveyor arrangement). The dimensioning unit (Figures 1 and 3a) uses a laser rangefinder and optical scanner system with a rotating mirror used to deflect the light beam across the width of the measurement area. The optical scanner measures the reflected light, and with data from the pulse generator (see cl. **1.3 Pulse Generator**), this is analysed by the CPUs in the dimensioning unit to determine the linear dimensions of the object.

Measurement results are output to the CS2200LX indicator.

The system operates using Cargoscan version 1.6.x software.

### 1.3 Pulse Generator

The pulse generator pulses are used during the data analysis to measure the speed of the conveyor to determine length of the object. The pulse generator is attached to the underside of the conveyor and is fitted with a wheel that touches the conveyor. When the conveyor belt moves, the wheel rotates and pulses are generated that are counted by the CPU.

### 1.4 Indicator Unit

A METTLER TOLEDO model CS2200LX indicator (Figure 2) provides a 4 line alphanumeric LCD display for indication of measurement results. The indicator is also used to operate and configure the instrument and displays any error messages that occur during a measurement operation.

A typical error code display is shown in Figure 2b.

Indicator lamps may be fitted to signal when the system is operating, a measurement is in progress or an error has been detected.

### 1.5 Indications

The pattern is fitted with a model CS2200LX indicator however measurement data from the CSN910 is made available to other systems for indication and/or printing.

Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R129, *Multidimensional Measuring Instruments*, in particular as per the extract below.

7.9.1 Any printed ticket or displayed indication shall include sufficient information to identify the transaction, for example:

- (a) dimensions: length (*L*), width (*W*) and height (*H*);
- (b) volume (vol);
- (c) weight (Wt) if the instrument includes a weighing instrument;
- (d) dimensional weight (Dim Wt ... kg or DW ... kg);
- (e) dimensional tare (DT ... kg);
- (f) conversion factor (F);
- (g) quantity for charging, for example dimensions, vol or DW ... kg;
- (h) price rate and price; and
- (i) date, transaction number or other identification of the object.

*Note 1:* Icons may be used to identify indications.

*Note 2:* When the customer is not present during the measurement process the above information need not be displayed or printed out at the time but shall be available on request.

*Note 3:* The price interval and the price rate shall comply with the national regulations applicable for trade.

7.9.2 A printed ticket shall also contain the following printed or preprinted information:

- (a) that the dimensions and/or volume shown are those of the smallest rectangular box that fully encloses the object; and
- (b) that the dimensional weight is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume or dimensions.

## 1.6 Descriptive Markings and Notices

- (a) Instruments carry the following markings (in the vicinity of the indicating device):

Manufacturer's mark, or name written in full	METTLER TOLEDO A/S
Model designation	.....
Serial number of the instrument	.....
Year of manufacture	.....
Pattern approval mark	13/1/19
Maximum dimensions for each axis	<i>Max</i> ..... cm
Minimum dimensions for each axis	<i>Min</i> ..... cm
Maximum belt speed	Max ..... m/min
Minimum belt speed	Max ..... m/min
Scale interval	<i>d</i> = ..... cm

- (b) Instruments carry one or more notices stating REFLECTIVE OR TRANSPARENT ITEMS CANNOT BE MEASURED, and ITEMS MUST BE PLACED WITH LARGEST AND MOST STABLE SURFACE DOWN, or similar wording.

## 1.7 Verification Provision

Provision is made for the application of a verification mark.

## 1.8 Sealing Provision

Provision is made for sealing the calibration adjustments in software using an audit trail which records adjustments.

Provision is also made for sealing the CSN910 dimensioning unit by means of sealing labels applied over edges of the enclosure (Figures 3a and 3b).

In addition, the pulse generator is sealed as shown in Figure 3c, in accordance with the manufacturer's instructions.

## TEST PROCEDURE

Note: Refer to clause **1.5 Indications** – Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

### Maximum Permissible Error at Verification

The maximum permissible errors are specified in Schedule 12 of the *National Trade Measurement Regulations 1999*.

The maximum permissible error at verification/~~certification~~ is:

$\pm 1.0$  cm for lengths from the minimum length to any value up to and including the maximum length capacity of the instrument.

Instruments shall be tested as follows:

- (a) Test objects shall be used of known lengths such that each axis (i.e. length  $\times$  width  $\times$  height) is tested for at least five dimensions between and including the minimum and maximum lengths specified on the instrument nameplate. Each test object shall be rigid and with well-defined edges to simulate the edges of a rectangular box. The lengths shall be known to an uncertainty equal to or better than  $\pm 1/5$  of the maximum permissible error, which is equal to the scale interval ( $d$ ).
- (b) Carry out at least three test runs for each length, varying position and orientation across the receptor. Each measurement shall be within the maximum permissible error.
- (c) Check that instruments are marked and carry one or more notices in accordance with clause **1.6 Descriptive Markings and Notices**.

TECHNICAL SCHEDULE No 13/1/19

VARIATION No 1

**Pattern:** METTLER TOLEDO Model CSN910 FlexFlow Dimensional Measuring Instrument

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

**1. Description of Variant 1**

The pattern fitted with a photoelectric sensor added to the conveyor is now approved for use to measure objects with minimum dimensions of 5 × 5 × 5 cm with a scale interval of measurement ( $d$ ) of 0.5 cm and a belt speed ( $V_{\max}$ ) of up to 180 m/min.

NOTIFICATION OF CHANGE

In Technical Schedule No 13/1/19 dated 1 November 2010;

- (a) the 1<sup>st</sup> paragraph of clause **1.1 Details** should be amended by changing the belt speed reference to read:

“...and a belt speed ( $V_{\max}$ ) **of up to 150 m/min.**”

- (b) the TEST PROCEDURE should be amended by changing the 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs of text under the heading to **Maximum Permissible Error at Verification** to read, as follows:

“The maximum permissible error at **verification** is:

$\pm 1.0 d$  for lengths from the minimum length to any value up to and including the maximum length capacity of the instrument.”

FIGURE 13/1/19 – 1



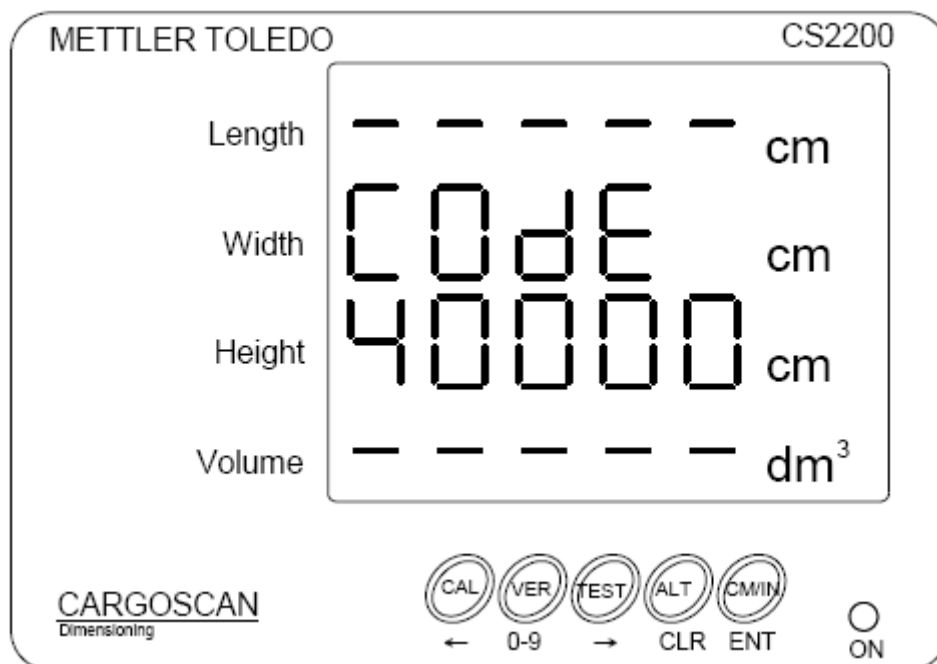
METTLER TOLEDO Model CSN910 FlexFlow Dimensional Measuring Instrument



FIGURE 13/1/19 – 2



(a) Typical Display of a METTLER TOLEDO Model CS2200LX Indicator

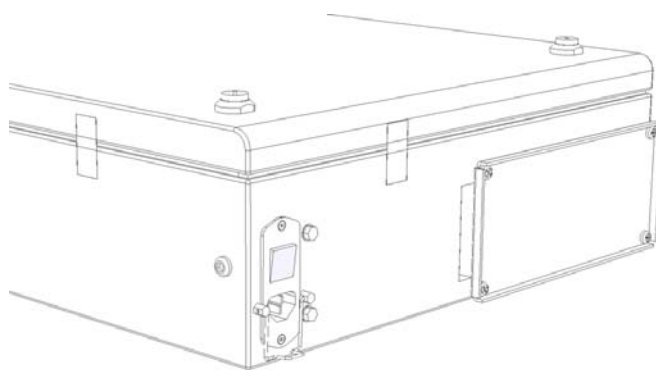


(b) Typical Error Code Display

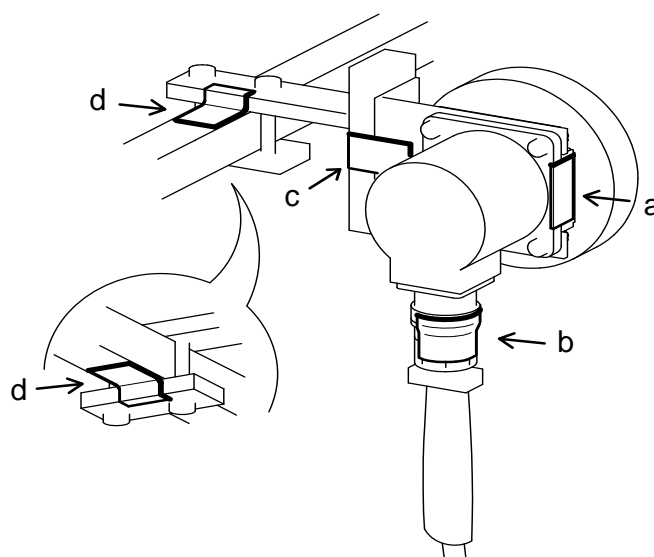
FIGURE 13/1/19 – 3



(a) Typical Model CSN910 Dimensioning Unit



(b) Typical Sealing of CSN910 Dimensioning Unit



(c) Typical Sealing of Pulse Generator (as per manufacturer's instructions)