Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 13/1/26

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.

Datalogic Automation Model DM3610 Dimensional Measuring Instrument

submitted by Datalogic S.R.L
Via San Vitalino, 13
0012 Lippo di Calderara di Reno
ITALY

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.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	5/03/14
1	Pattern amended (equivalent encoders) – variant 1 approved – interim certificate issued	12/11/15
2	Pattern amended (including Descriptive Markings) – variants 1 to 4 approved – certificate issued	15/12/16
3	Variant 5 approved – certificate issued	26/06/17

Document History (cont…)

Rev	Reason/Details	Date
4	Variant 6 approved – Variant 7 provisionally approved – certificate issued	18/08/20
5	Pattern Amended (Submitted by) - Variant 1 amended (model correction) – Variant 7 approved – Variant 8 provisionally approved – certificate issued	09/06/22
6	Variants 1 to 3 and 7 Amended (software version), Variant 8 to 10 approved – certificate issued	19/05/26

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 13/1/26' 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.

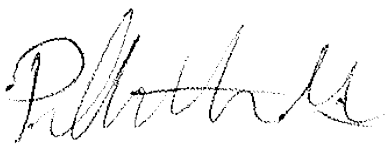
Special

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.

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 NMI 13/1/26

1. Description of Pattern approved on 5/03/14

A Datalogic Automation model DM3610 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.

Instruments are approved for use over a temperature range of −10 °C to +50 °C and must be so marked.

1.1 Details

The pattern is approved for use for the determination of the linear dimensions of rectangular box-shaped (parallelepiped (#), cuboidal) objects only having maximum dimensions (i.e. length × width × height) of 2500 × 1200 × 900 mm and minimum dimensions 50 × 50 × 50 mm, with a scale interval of measurement (*d*) of 5 mm and a belt speed (V_{max}) of up to 189 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).

(#) 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 System

The pattern includes a Datalogic model DM3610 dimensioning unit (Figure 2) mounted on a supporting frame above a belt-conveyor type load receptor (Figure 1 shows a typical conveyor arrangement). 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 central processing units (CPUs) in the dimensioning unit to determine the linear dimensions of the object.

Measurement results are output to the Datalogic model CD141 indicator (Figure 3).

1.3 Pulse Generator (Encoder)

The instrument uses a Photocraft model RH-P240AJ/8-30 encoder or equivalent (*) to measure the length of the object in combination with the DM3610. The encoder (tachometer) is fitted to the linear track, usually underneath where it can't be struck by packages and generates pulses based on the displacement of the track while the laser dimensioning head detects the object being measured.

(*) Equivalent' is defined to mean other proprietary equipment of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system

1.4 Local Indicator Unit

The Datalogic model CD141 indicator (Figure 3) provides a 2 line alphanumeric LCD local display for indication of measurement results. The indicator is also used to display any error messages that occur during a measurement operation.

1.5 Workstation

An optional computer running either Internet Explorer, Mozilla Firefox or Google Chrome can be installed to view the user interface or used to make configuration changes.

1.6 Indications

The pattern is fitted with a local indicator unit (Figure 3) however measurement data from the DM3610 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 pre-printed 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.

1.7 Software

(a) For Singulated Dimensioning:

The system operates using DM3610_RELEASE software:

DM3610_DSP Rev.1.4(7) Checksum = 9769FD1C96438C5AB910F725545FFDB3,
FPGA 0x3c40 Rev.5.21(0) Checksum = 61A92F0F152949924F17152E063A9236,
DM3610_LFT Rev.1.4(9) Checksum = 94092F384948235EB4E70E30667D8991

(b) For Non-Singulated Dimensioning:

The system operates using DM3610_RELEASE, software:

DM3610_DSP Rev.1.5(2) Checksum = 05BED285D4E48F30701374A32ECEA96,
FPGA0x3c40 Rev.6.19(0) Checksum = 80DBC646A9232FC00E385CC0E26E10FE,
DM3610_LFT Rev.1.5(2) Checksum = A4244AF0ADD423EF3E5F7DB14CF09A3E

1.8 Descriptive Markings

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

Manufacturer's mark, or name written in full	Datalogic Automation
Model designation	.....
Serial number of the instrument	.....
Year of manufacture	.....
Pattern approval mark	NMI 13/1/26
Maximum dimensions for each axis	*Max* ..... mm
Minimum dimensions for each axis	*Min* ..... mm
Scale interval	*d* = ... mm
Maximum belt speed	*Max* ..... m/sec or m/min
Minimum belt speed	*Max* ..... m/sec or m/min
Special temperature limits	−10 °C to +50 °C

(b) Instruments of the pattern and variant 1 carry one or more notices stating 'TO BE USED FOR RECTANGULAR BOX SHAPED OBJECTS ONLY', or similar wording.

1.9 Verification Provision

Provision is made for the application of a verification mark.

1.10 Sealing Provision

Provision is made for sealing the calibration adjustments in software using an audit trail which records adjustments. The Audit trail is accessed and viewed from within the workstation.

Provision is also made for sealing the DM3610 model Dimensioning System by means of sealing wire applied through sealing tabs on both sides of the dimensioning unit housing (Figure 4).

2. Description of Variant 1 — **approved on 12/11/15 amended on 19/05/26**

The pattern may also be known as DM3610-1200 which operates Singulated Dimensioning software and DM3610-2200 which operates Non-Singulated Dimensioning software.

The software identification is Measurement head versions 1.4.x.x, 1.5.x.x, 1.6.x.x or 1.7.x.x.

3. Description of Variant 2 **approved on 15/12/16**
amended on 19/05/26

With a DM3610-3200 instrument which is similar to the pattern but has two DM3610 dimensioning units (Figure 5).

The DM3610-3200 is approved to measure objects with the same details as in clause 1.1 however it may also measure irregular shaped objects. The DM3610-3200 converts the detected characteristics into the linear dimensions of the smallest rectangular box (parallelepiped – #) that would fully contain the object.

The DM3610-3200 software operates Measurement head versions 1.6.x.x or 1.7.x.x and Controller PC version 1.0.x.x, 1.1.x.x or 1.2.x.x

The variant may also be known as the model DM3610-3201.

The variant is not required to carry the notice described in clause 1.8(b)

(#) 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.

4. Description of Variant 3 **approved on 15/12/16**
amended on 19/05/26

With a DM3610-4200 which is similar to variant 2 and is approved for use for the determination of the linear dimensions of objects having maximum dimensions (i.e. length × width × height) of 2500 × 1600 × 1000 mm.

The DM3610-4200 software operates Measurement head version 1.7.x.x and Controller PC version 1.1.x.x or 1.2.x.x

The variant is not required to carry the notice described in clause 1.8(b)

5. Description of Variant 4 **approved on 15/12/16**

The pattern and variants replacing the Pulse Generator of clause 1.3 with a Datalogic model PGD100 Optical Sensor or equivalent (*). The optical sensor detects the movement moment of the conveyor belt and is used to measure the length of the object in combination with the dimensioning unit. The optical sensor may be used with cross belt or tilt tray conveyors.

(*) Equivalent' is defined to mean other proprietary equipment of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system.

6. Description of Variant 5 **approved on 26/06/17**

The pattern and variants 1 to 4 operating Measurement head version 1.8.x.x software and variants 2 to 4 operating Controller PC version 1.3.x.x software.

7. Description of Variant 6 **approved on 18/08/20**

For systems operating the applicable software as described in Variant 5, the systems may be configured having maximum dimensions (i.e. length × width × height) of 2500 × 1200 × 1200 mm.

8. Description of Variant 7 provisionally approved on 18/08/20 approved on 09/06/22 amended on 19/05/26

The pattern and variants 1 to 5 operating Measurement head version 1.9.x.x software and variants 2 to 6 operating Controller PC version 1.4.x.x or 2.0.x.x software.

Systems of this variation may be configured having maximum dimensions (i.e. length × width × height) of 4000 × 1600 × 1200 mm and minimum dimensions (i.e. length × width × height) of 50 × 50 × 20 mm, with a scale interval of measurement (*d*) of 5 mm for length and width and 2 mm for height and a maximum belt speed (V_{max}) of up to 198 m/min.

9. Description of Variant 8 provisionally approved on 09/06/22 approved on 19/05/26

With the models described in Table 1 to operate with objects overlapping in order on the conveyor and with the minimum spacing described.

Models may also be configured with additional dimensioning units for increased performance (*) and additional management functions.

Note: Additional management functions may include object properties other than the linear dimensions of the objects measured. Object properties other than linear dimensions are not approved for trade use.

(*) Additional dimensioning units do not change the metrological characteristics as described in the pattern or variants for these models.

TABLE 1

Model	Limitation of use	Minimum spacing between objects	Number of dimensioning units
DM3610-1200	Opaque, rectangular only	20 mm (#)	1
DM3610-2200	Opaque, rectangular only	0 mm (##)	1
DM3610-3200	Opaque, Irregular objects	25 mm (#)	2
DM3610-4200	Opaque, Irregular objects	25 mm (#)	2
DM3610-3200	Opaque, Irregular objects	0 mm (###)	3 to 4
DM3610-4200	Opaque, Irregular objects	0 mm (###)	3 to 4

(#) with multiple objects in horizontal or vertical order overlapping on the conveyor

(##) with multiple objects touching

(###) For touching objects where one or more corners differ by ≥ 25mm.

10. Description of Variant 9 approved on 19/05/26

The pattern and variants operating Measurement head version 1.9.x.x software and operating Controller PC version 2.2.x.x software.

11. Description of Variant 10 approved on 19/05/26

The maximum dimensions (i.e. length × width × height) may be configured to a value of less than or equal to the maximum dimensions specified for each axis of the pattern or variants.

The minimum dimensions (i.e. length × width × height) may be configured to a value of greater than or equal to the minimum dimensions specified for each axis of the pattern or variants.

The scale interval of measurement (*d*) for each axis of measurement may be configured with the values shown in Table 2:

TABLE 2

Measurement Axis	**Scale Interval (d)**
Length	5 mm, 10 mm, or 20 mm
Width	5 mm, 10 mm, or 20 mm
Height	2 mm, 5 mm, 10 mm, or 20 mm

Descriptive markings shall be updated to reflect the maximum and minimum dimension and scale interval configured for each instrument.

TEST PROCEDURE No 13/1/26

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

Note: Refer to clause **1.6 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 Errors

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

Instruments shall be tested as follows:

(a) Test objects shall be used, in the shape of rectangular boxes with known linear dimensions such that each axis (i.e. length × width × height) is tested for at least five dimensions between and including the minimum and maximum dimensions (approximately) specified on the instrument nameplate. Each test object shall be non-sound absorbing, rigid and with flat faces and well-defined edges. All adjacent faces and edges shall be perpendicular to each other. The dimensions shall be equal to N × *d* and the lengths shall be known to an uncertainty equal to or better than ±1/5 of the maximum permissible error, which is equal to the scale interval (*d*). N is a whole number.

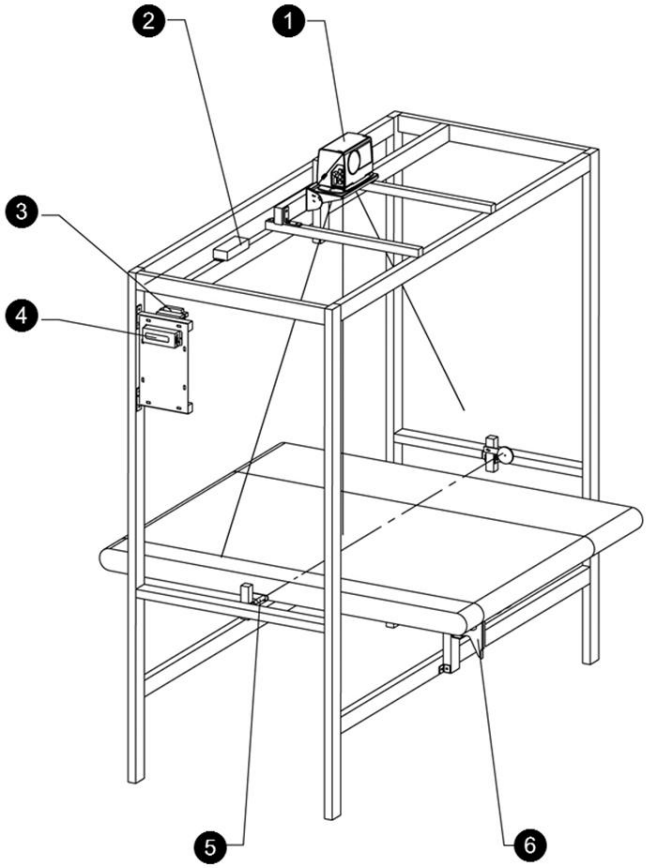
(b) Carry out at least three test runs for each length, varying position and orientation across the receptor. Each measurement shall be within the maximum permissible error.

(c) Check that instruments are marked in accordance with clause **1.8 Descriptive Markings**.

FIGURE 13/1/26 – 1

The DM3610 Dimensioning System includes:

1. DM3610 Dimensioner
2. Power Supply
3. CBX100 Connection Box
4. 40 Character Display (Optional)
5. S60 Photoelectric Sensor (Optional)
6. Pulse Generator (Tachometer)



Datalogic Automation Model DM3610 Dimensional Measuring Instrument

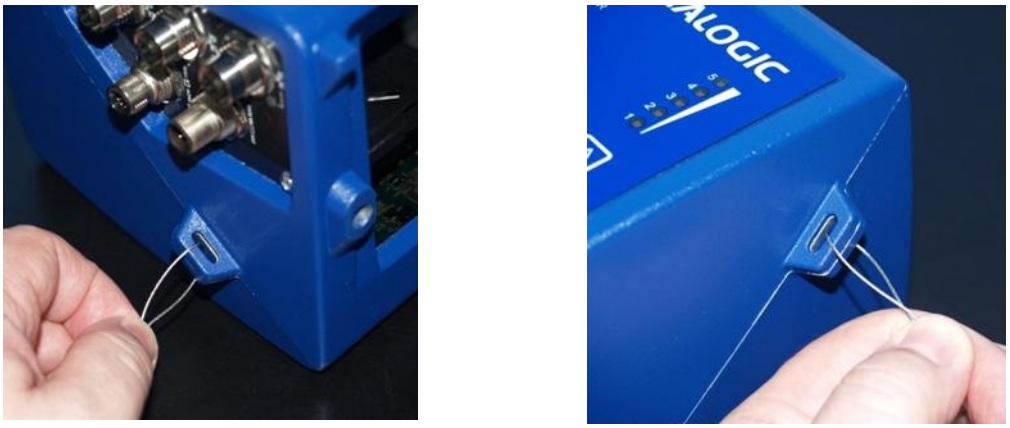
FIGURE 13/1/26 – 2

Datalogic Model DM3610 Dimensioning Unit

FIGURE 13/1/26 – 3

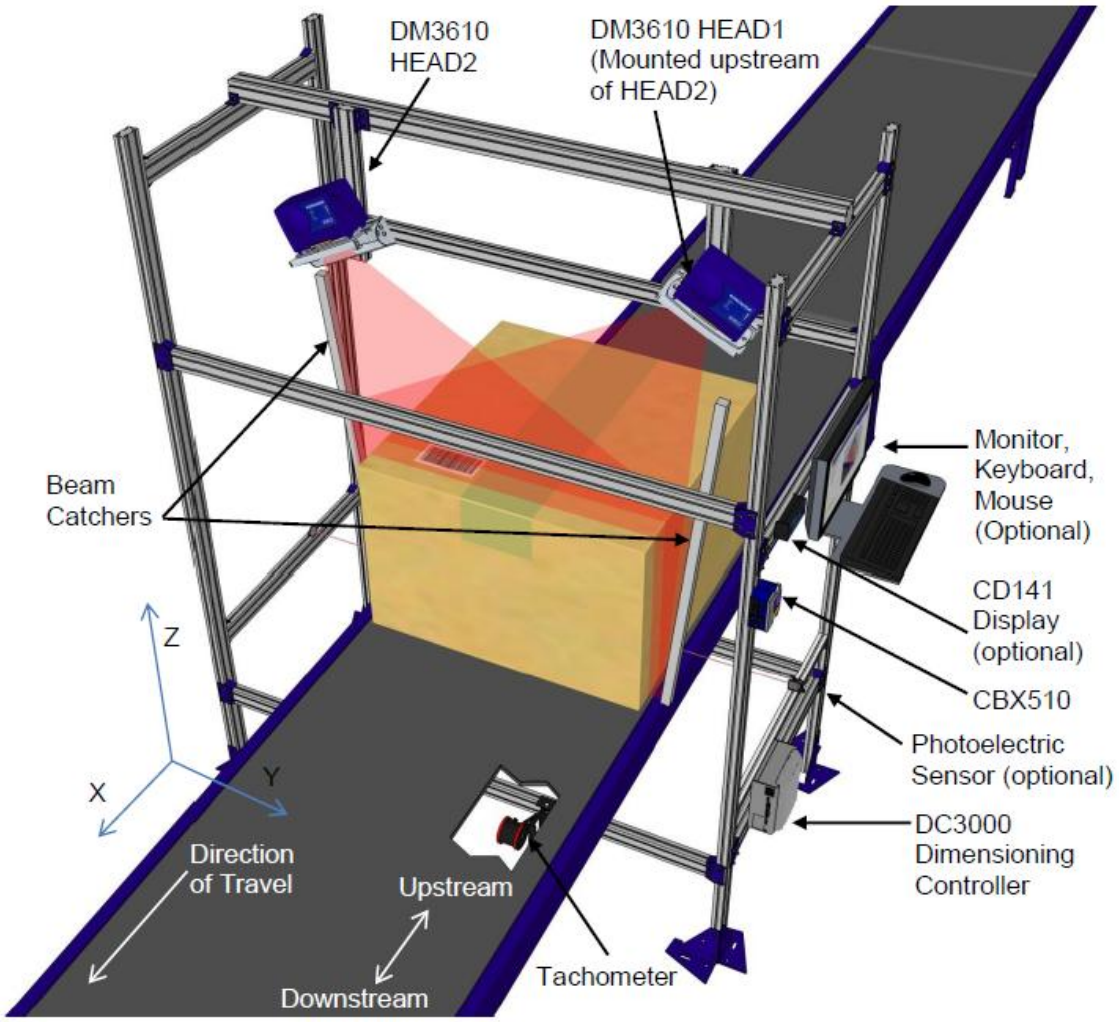
Typical Display of Datalogic Model CD141 Remote Indicator Unit

FIGURE 13/1/26 – 4



Showing Typical Mechanical Sealing Provision on the DM3610

FIGURE 13/1/26 – 5



Datalogic Model DM3610-3200 and DM3610-4200 Dimensional Measuring Instrument (Variants 2 & 3)

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