



We help ideas meet the real world

EC Type Examination Certificate

No. DK 0199.127 Revision 1

M101 / M202

MULTI-DIMENSIONAL MEASURING INSTRUMENT

Issued by DELTA Danish Electronics, Light & Acoustics
EU - Notified Body No. 0199

In accordance with the requirements for the automatic weighing instruments in Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on Measuring Instruments (MID).

Issued to SCALETRONIC A/S
Rugkærgaardsvej 52
2630 Tåstrup
Denmark

In respect of Multi-dimensional measuring instruments designated M101 and M202 for measuring cuboidal non-transparent objects with a maximum deviation from rectangular form of 10 %

The conformity with the essential requirements in annex 1 and the specific requirements in annex MI-009, section 1 & 4 of the Directive is met by the application of OIML R129:2000, OIML D11:2004 (EMC) and WELMEC Guide 7.2.

Note: This certificate is a revised edition which replaces previous revisions and extends the validation period of the certificate.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 9 pages.

DELTA
Venlighedsvej 4
2970 Hørsholm
Denmark

Tel. +45 72 19 40 00
Fax +45 72 19 40 01
www.delta.dk
VAT No. DK 12275110

Issued on 2016-01-26
Valid until 2026-01-26


Signatory: J. Hovgård

Descriptive annex

Contents		Page
1.	Name and type of instrument	2
2.	Description of the construction and function	2
2.1	Construction	2
2.2	Function	3
3.	Technical data	5
3.1	Model M101	5
3.2	Model M202	5
4.	Interfaces and peripheral equipment	5
4.1	Interfaces	5
5.	Approval conditions	6
5.1	Measurement functions other than non-automatic functions	6
5.2	Fastening of instrument	6
5.3	Environmental conditions	6
6.	Securing and location of seals and verification marks	6
6.1	Securing and sealing	6
6.2	Verification marks	6
7.	Location of CE mark of conformity and inscriptions	6
7.1	Identification plate	6
8.	Pictures	8

1. Name and type of instrument

The multi-dimensional measuring instruments are designated M101 and M202.

M101 is intended for scanning the volume of parcels passing the measuring instrument on a conveyer belt, while M202 is intended for scanning of pallets and big parcels transported through the measuring instrument on a roller band.

2. Description of the construction and function

2.1 Construction

2.1.1 Light curtains

The measurement instrument is configured with 2 light ray curtains (sender and receiver for infrared light) for the height and 2 light ray curtains for the width.

The signal from the light ray curtains are sent to a controller module (Banner MAC-1), which is serially connected to a standard PC with flat screen display.

The light ray curtains are scanning continuously utilising both straight scan and interlaced scan.

M101 uses Banner BMxL 3632, 96 beams light ray curtains.

M202 uses Banner BMxL 7216, 96 beams light ray curtains for height measurement and Banner BMxL 6016, 80 beams light ray curtains for width measurement.

2.1.2 Measurement of length

In M101, a pulse generator controls the speed of the conveyer belt, which transports the parcel through the dimensioner frame. A rubber wheel that is in touch with the conveyer is fitted with a metallic disc. The rotation of the disc is picked up by an inductive sensor, which transfers the generated pulses to the PC for calculation of length of the parcel based on the speed of the conveyer belt.

For M202 the metallic disc is placed directly on the driving roll of the roller conveyer, but apart from this the principle of measuring, the length is the same as for M101.

2.1.3 Display



The display is sectioned into four parts: Scale, Dimension, Registration, and Process.

1. Scale: Weighing is not a part of this type examination certificate.
2. Dimension: This section is under control of the legally relevant software.
3. Registration: Customised section.
4. Process: Shows operator messages and the state of the different parts of the transportation and parcel detection hardware

2.2 Function

The multi-dimensional measuring instruments use a standard PC with Windows operating system. The only input device connected to the PC during normal operation is a barcode scanner allowing the operator to enter a limited number of predefined commands.

To enter the maintenance and setup part of the instrument's program, a keyboard and a mouse shall be connected to the PC.

The primary functions provided are detailed below.

2.2.1 Test function

The light ray curtains are scanned all the time, and this way their correct functioning is controlled in the time between parcels.

2.2.2 Tag removing

The system disregards loose tape/paper ends (tags) when determining the size of the rectangular object. A tag is defined as a figure with a width of less than 60 mm protruding from any of the sides of the rectangular object.

2.2.3 Event counter

The system has an event counter, which is incremented by one each time the password protected set-up-mode is entered. There is no way of changing or manipulating the counter. It will count up to 9999 and then reset to 1.

The event counter is always shown on the display: "Cal. no.: xxxx".

2.2.4 Data storage device

The system is equipped with a data storage device in which all registered measurements are stored. It is a cyclic storage with enough capacity to hold the measured data for at least 62 days.

2.2.5 Maintain mode

The instrument has a special maintenance and setup mode. It can only be put into this mode by using a mouse or a keyboard not normally connected to the PC. Measurements cannot be performed in this mode.

2.2.6 Operator information messages

The instrument has a number of general and error messages which are described in the manual.

In the dimension section of the display are the following text indicators, which are on when the background is red.

Tag	A loose tape/paper end is registered and disregarded in the dimensions. The measurement result is registered.
Min	At least one dimension is below minimum. The measurement result is registered, but marked as below minimum.
Max	At least one dimension is above maximum or the object is outside the defined scan area. The measurement result is rejected.
Error	The measurement system cannot handle the object. The measurement result is rejected.
Non-Rect	The object's rectangular area is larger than 110 % of the area.

2.2.7 Power-down

The instrument is equipped with a UPS to ensure correct power-down of the PC in case of failure in the supply from the 230 VAC power network.

2.2.8 Software version

The software version is shown at the top of the display during normal operation of the instrument. The tested software version is 2.00.

3. Technical data

The multi-dimensional measuring instrument has the following characteristics:

3.1 Model M101

Type:	M101
Scale interval (d):	10 mm
Minimum object size (L×W×H):	200×100×100 mm
Maximum object size (L×W×H):	1200×880×880 mm
Conveyer speed:	20 m/min.
Capacity:	1200 parcels/hour at 1 m conveyer length
Power supply:	230 VAC, 50 Hz
Electromagnetic class:	E2
Temperature range:	-10°C to +40°C
Humidity:	Non-condensing
Diameter tacho wheel:	100 mm
Laser type:	Class 1, unconditional safe
Principle of measurement:	Optical, cutting light beams
Peripheral interface:	Set out in section 4

3.2 Model M202

Type:	M202
Scale interval (d):	20 mm
Minimum object size (L×W×H):	300×200×200 ¹⁾ mm
Maximum object size (L×W×H):	3000×1500×1800 ¹⁾ mm
Conveyer speed:	12 m/min.
Capacity:	480 parcels/hour at 1.5 m conveyer length
Power supply:	230 VAC, 50 Hz
Electromagnetic class:	E2
Temperature range:	-10°C to +40°C
Humidity:	Non-condensing
Diameter driving roll:	80 mm
Laser type:	Class 1, unconditional safe
Principle of measurement:	Optical, cutting light beams
Peripheral interface:	Set out in section 4

¹⁾ The height measuring range can be offset through an initial offset of the light curtains.

4. Interfaces and peripheral equipment

4.1 Interfaces

The interfaces are characterised "Protective interfaces" according to paragraph 8.4 in the Directive.

4.1.1 RS-232C interface

Serial interface for connection of scanner, printer etc.

4.1.2 Digital I/O interface

Digital input/output for control of the operation of the measuring instrument.

4.1.3 USB interface

A USB interface for connection of camera used for parcel documentation.

4.1.4 Modem interface

Used for remote service, when the system is in maintain mode.

4.1.5 Ethernet interface

Used for data communication in connection with forwarding of already stored parcel information.

5. Approval conditions

5.1 Measurement functions other than non-automatic functions

Measurement functions that will enable the use of the instrument as an automatic weighing instrument are not covered by this type approval.

5.2 Fastening of instrument

The instrument and the support for the conveyer system shall be fastened to the floor.

5.3 Environmental conditions

The instrument is approved to be placed indoors in location with non-condensing humidity.

6. Securing and location of seals and verification marks

6.1 Securing and sealing

Seals shall bear the verification mark of a notified body according to ANNEX F of the Directive 2004/22/EC or alternative mark of the manufacturer according to ANNEX D of the Directive 2004/22/EC.

6.1.1 Mechanical sealing

The identification plate shall be secured against removal with a brittle plastic sticker.

Wheel speed measurer and inductive sensors: A brittle plastic sticker is placed over “head”, nuts and surface so that the sensor and the wheel cannot be removed without breaking the seal.

6.1.2 Electronic securing

The value of the event counter is written onto a brittle plastic sticker, which is placed on the data plate of the instrument.

The securing is regarded as broken, if the displayed value of the event counter – “Cal. No. xxxx” – differs from the number written on the identification plate.

6.2 Verification marks

A green M-sticker and a sticker with verification marks are to be placed on the data plate of the instrument.

7. Location of CE mark of conformity and inscriptions

7.1 Identification plate

All inscriptions for the instrument shall be placed on the identification plate, which is located on the dimensioner frame.

7.1.1 CE mark

A sticker with the CE mark of conformity and year of production is located on the identification plate.

7.1.2 Inscriptions

The identification plate shall bear the following inscriptions,

- Manufacturer's trademark and/or name
- Type designation
- Serial number
- d, Min, and Max for each dimension
- Conveyer speed
- Temperature range: -10 / +40 °C
- Electromagnetic class: E2
- Humidity: Non-condensing
- Object shape: Rectangular parallelepiped, non-transparent
- Type examination certificate number

8. Pictures



Figure 1 Model M101





Figure 2 Model M202