TRIMOS

USER'S MANUAL

V1 / V1+

750 50 0066 03

Swiss Measuring Instruments

Dear customer, congratulations on choosing a TRIMOS measuring instrument. For over 50 years, our products have built up an excellent reputation for quality, accuracy and durability. To ensure that you are completely satisfied with this product, please read these operating instructions carefully.

750 50 0066 03 Version 1.3 / 2025-03

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Swiss Measuring Instruments

TABLE OF CONTENTS

1. Safety instructions 3
1.1 Important information 3
1.2 General precautions 3
2. Presentation of the instrument 4
2.1 Instrument 5
2.2 Display 5
3. Setting up 6
3.1 Delivery 6
3.2 Installation 6
4. Start 7
4.1 Handwheels 7
4.2 Switching on 8
5. Main functions 9
5.1 Selecting the main measurement modes 9
5.2 Height measurement 9
5.3 Diameter and centre distance measurement (V1+) 10
5.4 Measurement in Min / Max / Delta mode (V1+) 12
6. Secondary Functions 14
6.1 Display zero/preset 14
6.2 References 14
6.3 Probe constant (V1+) 15
6.4 Data transfer 15
7. Configuration 17
8. After-sales service 20
8.1 Replacing the battery 20
8.2 Recycling electronic components 20
8.3 Claims / Repairs 20
8.4 Agents 20
9. Dimensions 21
9.1 V1/V1+ 21
9.2 V1+ G (Granite base) 22
10. Technical specifications 23
11. Declaration of conformity 24

1. SAFETY INSTRUCTIONS

1.1 Important information

To avoid damage due to incorrect handling, please read the following instructions carefully. TRIMOS accepts no responsibility for damage to the instrument caused by use not in accordance with this manual.

1.2 General precautions



Protection against electrostatic interference:
Static electricity can damage the instrument's electronic components. To prevent such damage, avoid contact with the ends of the connectors.



Under no circumstances should the measuring instrument be dismantled, in order to avoid impairing its functions or causing an accident.



Any work requiring the electronic box to be opened must be carried out by authorised personnel.



Do not expose the instrument, its components or accessories to rain or liquid splashes. Do not allow foreign objects to enter the instrument's connectors or openings.



Do not cover or wrap the display unit during operation. The enclosure must be adequately ventilated to prevent overheating.



If the instrument or any of its components should malfunction (no display, overheating, abnormal smell, smoke, etc.), switch off the instrument immediately, disconnect the power supply and contact your TRIMOS agent.



This is a precision instrument. Particular care must be taken throughout its service life. Particular attention should be paid to the following points:

- Use the instrument on a stable, smooth and perfectly clean measuring table.
- Avoid shocks. These could alter the properties of the instrument.
- Install the column away from vibrations.
- Avoid direct sunlight or excessive humidity.
- Avoid proximity to heating or air-conditioning equipment.
- Respect the specified climatic conditions.

2. PRESENTATION OF THE INSTRUMENT



2.1 Instrument

1. Interchangeable measurement insert
2. Carriage locking knob
3. Fine adjustment knob
4. Fine adjustment engagement lever (V1+)
5. Pre-load ring (for constant measuring force - V1+)
6. Crank handle for moving the measuring carriage
7. Connector for RS232/Wireless communication

2.2 Display

8. Status symbols (battery level, units, active modes, etc.),
9. Secondary display line
10. Main display line
11. Send data button
12 On/Off button
13. Display zero/preset
14. Function buttons
15. Navigation buttons

3. SETTING UP

3.1 Delivery

The standard packaging contains the following items:

1. Instrument



2. V1 : Scriber (TA-MI-122)
   V1+ : Ø6 mm ball-insert (TA-MI-121)



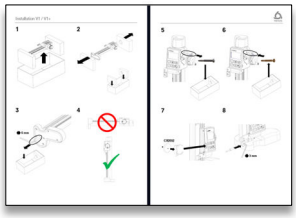
3 CR2032 battery



4. Carriage locking screw



5. Installation instructions (750 50 0067 00)



6. V1 : Declaration of conformity
   V1+ : Calibration certificate



For future transport, keep the original packaging and transport screws.
If the instrument has been stored at temperatures below 5°C, it is advisable to wait a few hours before unpacking it. This will prevent the formation of frost or condensation that could damage the sensitive parts of the instrument.

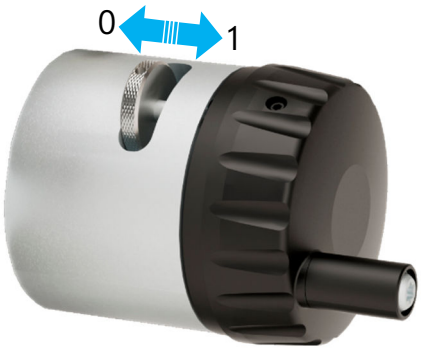
3.2 Installation

Follow the start-up instructions supplied with the instrument (Doc. 750 50 0067 00).

4. START

4.1 Handwheels

4.1.1 V1



The V1 handwheel has a fine adjustment wheel. To engage the fine adjustment, slide the wheel to the right (Pos. ***1***). Then simply adjust the position precisely by turning the wheel with your thumb.

Always return the wheel to its neutral position (***0***) after fine adjustment. Operating the handwheel with the fine adjustment engaged may damage its mechanism.

4.1.2 V1+



The V1+ handwheel allows probing with constant measuring force and fine adjustment of the carriage position.

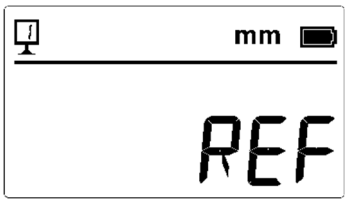
Probing:
To take a measurement, use the handwheel to move the carriage until the insert is slightly in contact with the surface to be measured. Then turn the pre-load ring (***1***) in measuring direction until its stop.

Fine adjustment:
To engage the fine adjustment, lift the lever (***2a***). The carriage will lock into position. Then adjust the height using the thumbwheel (***2b***).

4.2 Switching on

1 To switch the instrument on, press the ***On/Off*** button.
To switch it off, press the same button until the instrument switches itself off.





2 The instrument asks you to pass the reference. To do this, slowly move the measuring carriage from bottom to top. As soon as the reference has been detected, the display starts counting.



5. MAIN FUNCTIONS

5.1 Selecting the main measurement modes

The ***Function button*** is used to select the 3 main measurement modes (V1+).



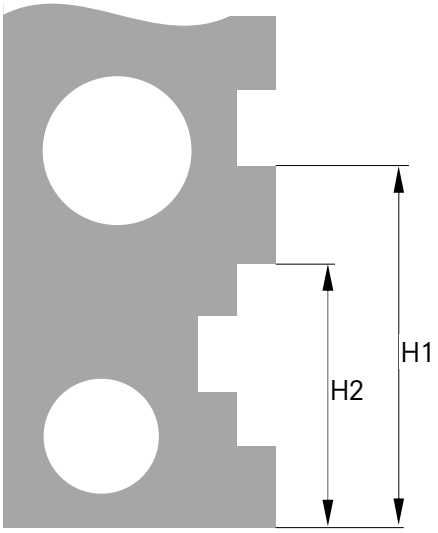
Height

Diameter/Centerline

Min/Max/Delta

5.2 Height measurement

H1 = Downward height measurement ( )
H2 = Upward Height measurements ( )



1 Select the height measurement mode.

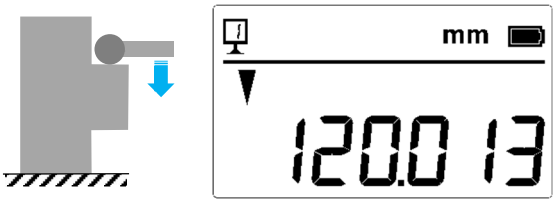




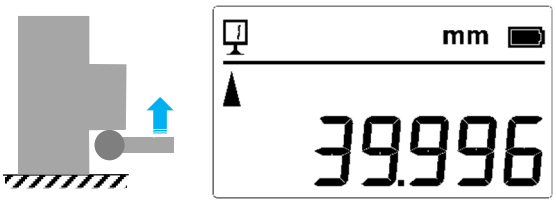
2. Probe a reference surface, then set the display to zero (§ 6.1).





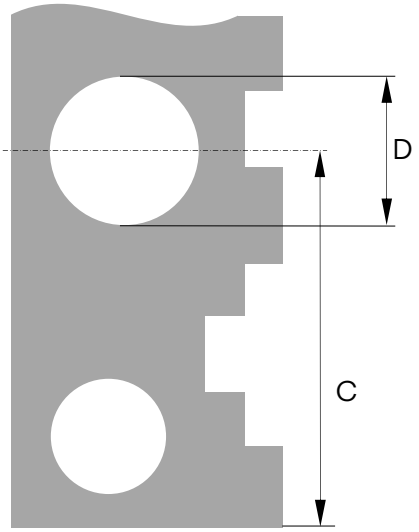


3. Probe the surface to be measured. The required value is displayed (V1+: as soon as the measuring force has been applied).



5.3 Diameter and centre distance measurement (V1+)

D = Diameter measurement (⌀)
C = Centre distance measurement (⊕)



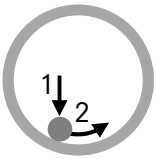
1. Zero on a reference plane.

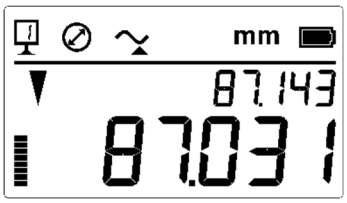


2. Select the diameter / centre distance measurement mode.

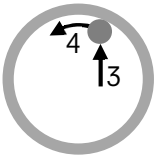


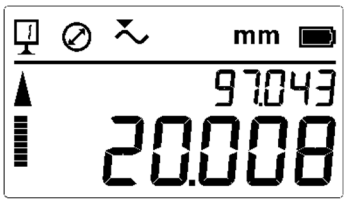
3a. **Internal diameter**
Position the insert into the bore and probe downwards close to the reversal point (1), applying the measuring force. Move the workpiece or instrument sideways to the insert to determine the reversal point (2). This is confirmed by the display flashing and a beep.



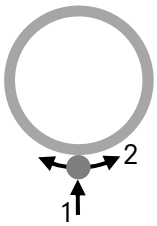


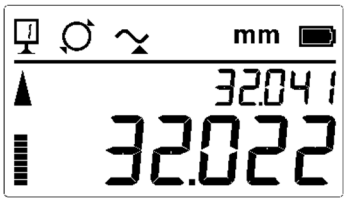
4a. Then probe near the reversal point on the opposite side of the diameter (3). Move the workpiece or instrument sideways to the insert to determine the reversal point (4).



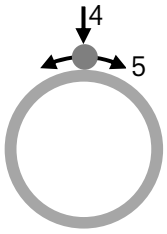


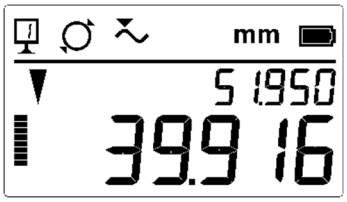
3b. **External diameter**
Place the insert under the cylindrical part and probe as close as possible to the reversal point (1) by applying the measuring force. Move the part or the instrument sideways to determine the reversal point (2).
This is confirmed by the display flashing and a beep.



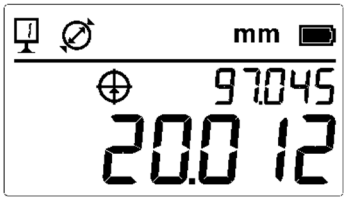


4b. probe as close as possible to the reversal point on the opposite side of the diameter (4). Move the workpiece or instrument sideways to determine the reversal point (5).

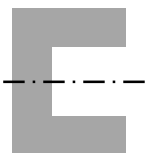




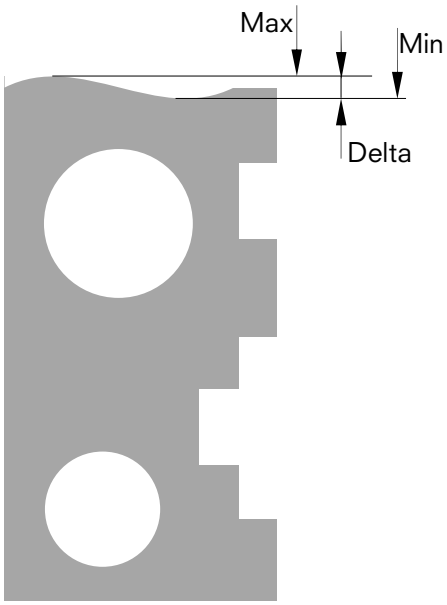
5. When the insert is released, the display will remain frozen on the centre distance (1st line) and diameter (2nd line) values.
To take a new measurement, repeat the above procedure.



Measuring simple centre distances
This mode can also be used to measure simple centre distances. Simply probe downwards and then upwards without looking for a reversal point. The centre distance and distance values will be displayed as above.

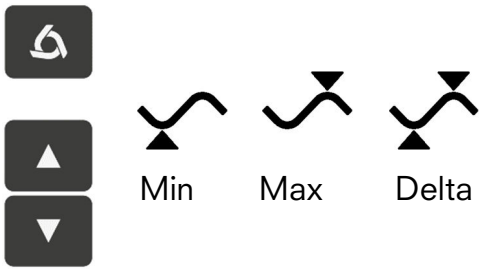


5.4 Measurement in Min / Max / Delta mode (V1+)



Max = Measurement of the maximum value ( )
Min = Measurement of the minimum value ( )
Delta = Difference between maximum and minimum ( )

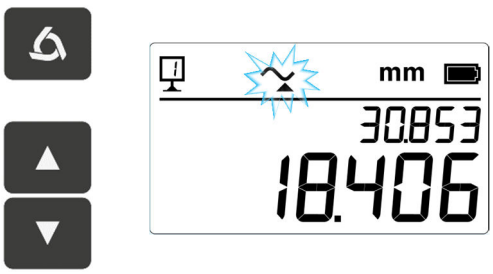
Measurements in Min, Max and Delta mode are always taken with the insert in contact with a surface.
They can be used to determine the following values:
Min: Minimum value of the measured surface
Max: Maximum value of the measured surface
Delta: Difference between the maximum and minimum value



To select Min, Max or Delta measurement mode, press the ***Function key.***
You can navigate between these modes using the ***navigation keys.***

5.4.1 Measurement in Min or Max mode

1. Select the Min or Max function. The corresponding indicator shows which mode is active.

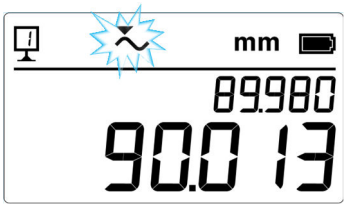


2. Probe the surface to be measured. As soon as the measuring force is applied, the display initialises the 2 lines at the position of the surface being measured. Then move the insert or the part along the area to be analysed. The 1st line on the display shows the current position. The 2nd line shows the minimum or maximum value reached.





Min

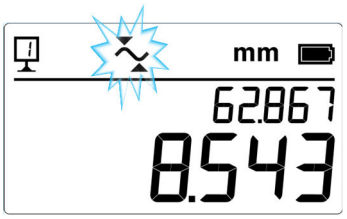


Max

5.4.2 Delta mode measurement

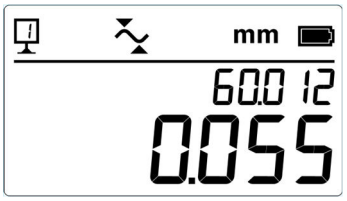
1. Select the Delta function. The corresponding indicator shows the active mode.





2. touch the surface to be measured and move the probe or part along the area to be analysed. The 1st line on the display shows the current position of the probe. The 2nd line shows the difference between the maximum and minimum (=Delta) measured.





Delta

6. SECONDARY FUNCTIONS

6.1 Display zero/preset

Reset to zero
Press the ***Zero/Preset*** button briefly to reset the display to 0.00.



Preset
Pressing and holding the ***Zero/Preset*** button initializes the display to the preset value of the current reference.


>2 s

Note (V1+) :
In diameter and centre distance mode, a zero/preset will be performed on the last measured centre distance.
In Min or Max mode, a zero/preset will be performed on the last Min or Max value measured.

6.2 References

Using references allows measurements to be taken from predefined points of origin (=references). The current reference is shown at the top left of the display.

To change the reference, switch to height measurement and press the following button for 2 seconds.


>2 s



Then use the ***Navigation key*** to select the desired reference.





Confirm by pressing and holding the reference change button again.

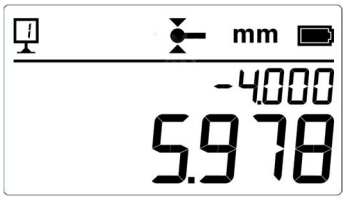

>2 s

6.3 Probe constant (V1+)

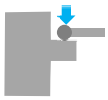
The probe constant allows the diameter of the ball to be taken into account for bidirectional measurements. It is factory-programmed for the standard insert TA-MI-122 (Ø6 mm ball).

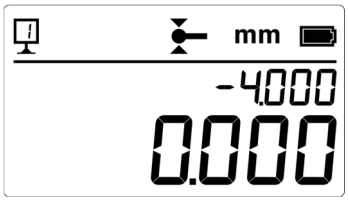
1. To set a new constant, press the following button for 2 seconds.
   The first line of the display shows the size of the setting gauge. The second line shows the value of the probe constant.





2. Then probe **downwards** in the gauge.
   The 2nd line changes to 0.000.

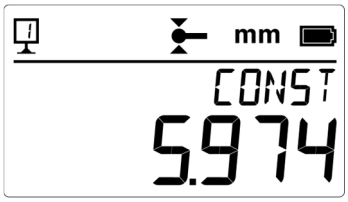




3. Then probe the gauge in **upward** direction.
   The 2nd line shows the value of the new constant.

   Note:
   More details about the setting gauge: See configuration (§ 7) :





6.4 Data transfer

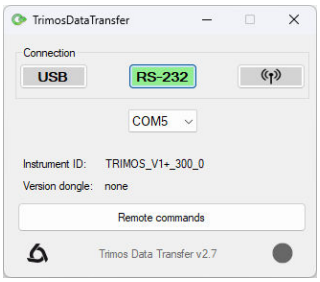
The instrument has an RS232 communication port.
The connector is located on the right-hand side of the measurement carriage. It allows conventional connection to external devices with RS232 interfaces.



RS232 cable
Use the RS232 cable ref. Trimos TA-EL-112.



Software
TrimosDataTransfer software is available free of charge from www.trimos.com, in the relevant product section.
Any other RS232 communication software can be used.



Data format (according to Opto-RS)

- Speed: 4800 baud
- ASCII code: 7 bits
- Parity: even
- Stop bits : 1
- Handshake : without

The format of the value sent corresponds to the numerical value of the display in ASCII characters.

Note (V1+) :
In diameter/center distance mode, the 2 values are sent simultaneously. They are separated by an EOT (End Of Transmission).

Procedure for sending data

1 Connect the RS232 cable to the serial port on the instrument and to the PC.
2 Start and configure the communications software.
3 Press the ***Send data button***.



7. CONFIGURATION

To enter the configuration menu, press the ***Function key*** for 2 seconds.

Simply press the ***Function key to*** confirm your choice and move on to the next menu.

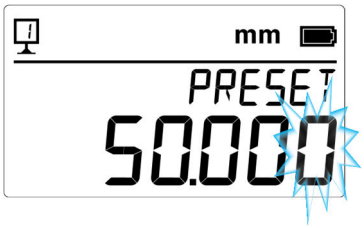

> 2 s

To exit the configuration menu, press the ***Function key*** again for 2 seconds.

Preset
A preset value can be saved for each reference. This value will be assigned to the current reference (§ 6.2).

1. Select the PRESET menu. The last digit of the value flashes.
2. A short press on one of the ***Navigation keys*** changes the digit value.
3. A long press on one of the ***Navigation keys*** moves to the next/previous digit.
4 When the desired preset value has been entered, confirm by moving on to the next menu or exit the configuration menu using the ***Function key***.

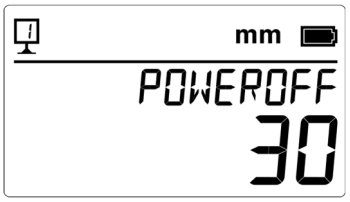

(>2 s)





Automatic instrument switch-off
The POWEROFF menu is used to save the battery. To set the time after which the instrument will switch off if it has been inactive, select the value (in minutes) using the ***Navigation keys***.



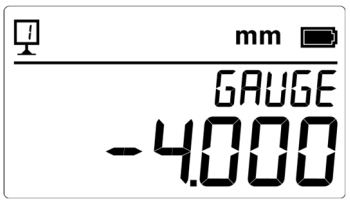


Note:
If the value is zero, automatic switch-off is disabled.

Reference gauge size (V1+)
The size of the setting gauge can be set in the GAUGE menu. To set the value, proceed in the same way as in the PRESET menu.

Note:
A negative value means that the gauge is measured externally. In contrast, a positive value indicates that the gauge is measured internally.


(>2 s)



Resolution
Select the desired resolution (=number of digits after the decimal point) using the ***Navigation keys***.





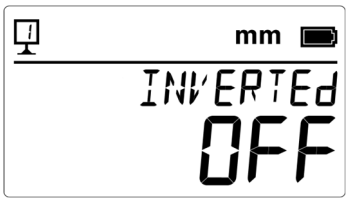
Unit of measurement
Use the ***Navigation keys*** to select the unit of measurement.





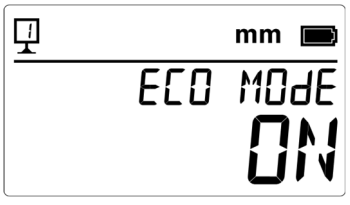
Invert measurement direction
This menu is used to define the measurement direction.
OFF: Positive direction from bottom to top (default)
ON : Positive direction from top to bottom



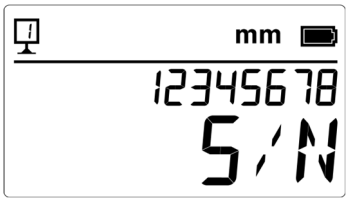


Economy mode
This menu optimises battery life. When activated, the display freezes after a few seconds of inactivity. Simply moving the carriage a few tenths of a millimetre is enough to reactivate the display. When the mode is deactivated, the display does not freeze.
ON: Economy mode activated (default)
OFF: Economy mode deactivated

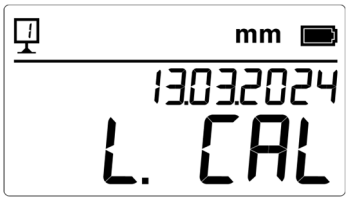




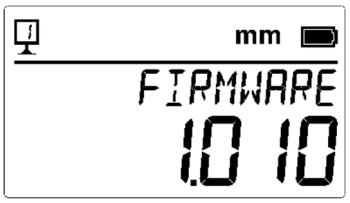
Serial number
This menu displays the serial number.



Date of last calibration
The date of the last calibration is displayed in ***dd.mm.yyyy*** format.



Firmware version
This menu displays the firmware version.



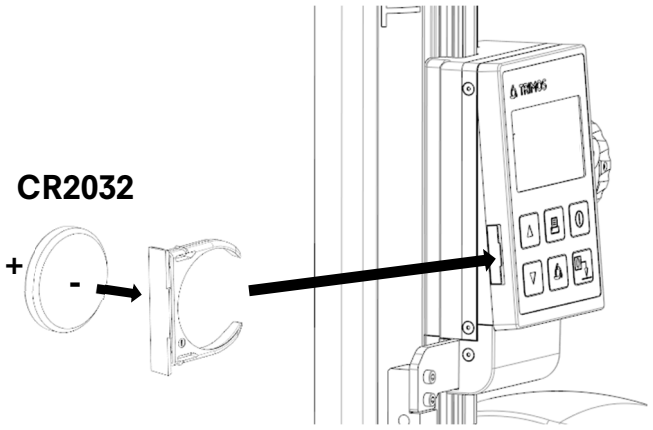
8. AFTER-SALES SERVICE

8.1 Replacing the battery

The battery is located in a compartment on the left-hand side of the display.

Model : CR2032

Ref Trimos : 3705 0002



8.2 Recycling electronic components



Disposal of Waste Electrical and Electronic Equipment (WEEE) applicable throughout the European Union and other European countries with separate collection programs.
This symbol, found on the product or its packaging, indicates that it should not be treated as household waste. It should be handed over to an official collection point for the recycling of electrical and electronic equipment. A correct recycling of this product will help to preserve the environment and the natural resources. For more detailed information about the recycling of this product, please contact your local authorities or your TRIMOS dealer.

8.3 Claims / Repairs

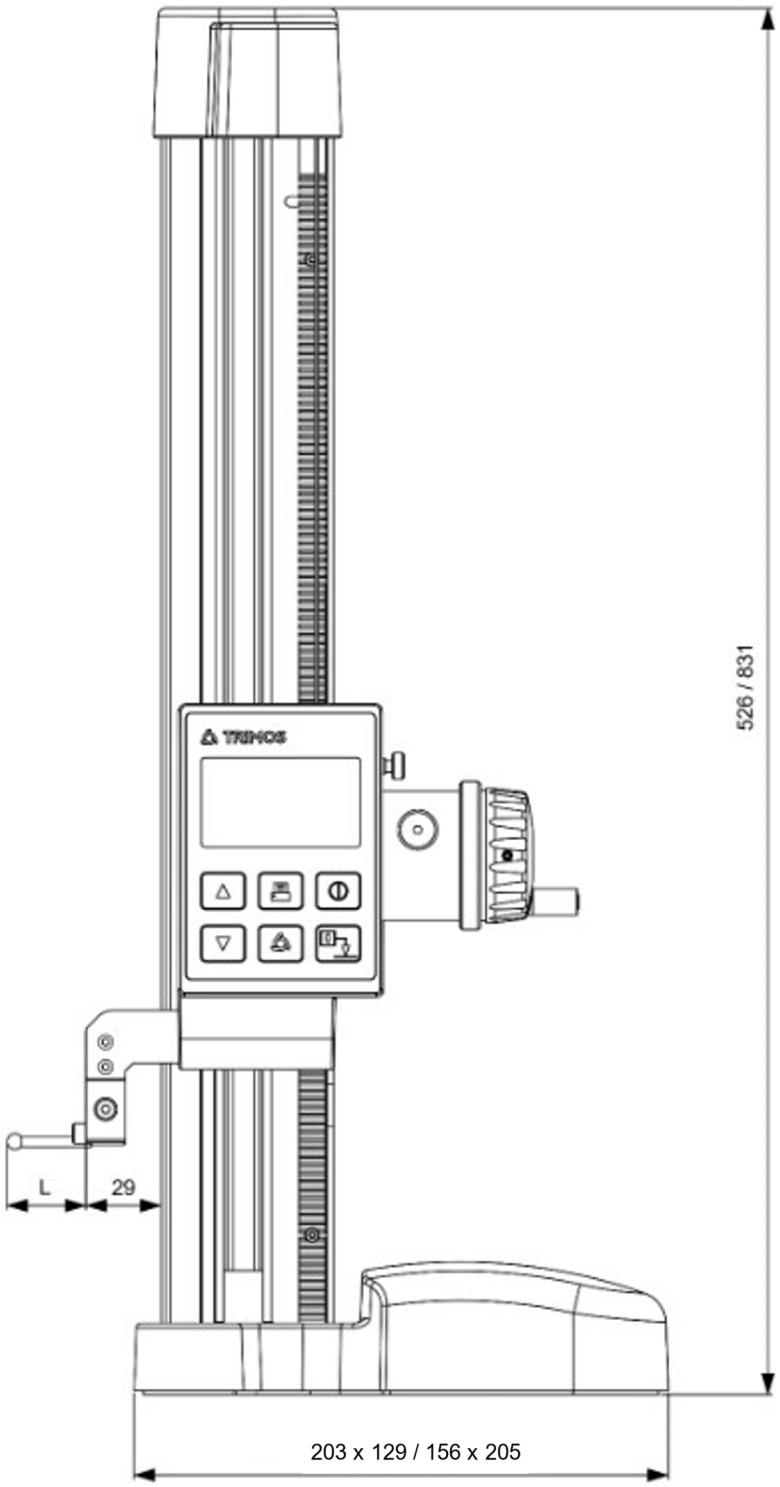
If you have any problems, please contact your TRIMOS dealer.
Use the original packaging for transport.

8.4 Agents

The official list of TRIMOS distributors can be found on the website www.trimos.com.

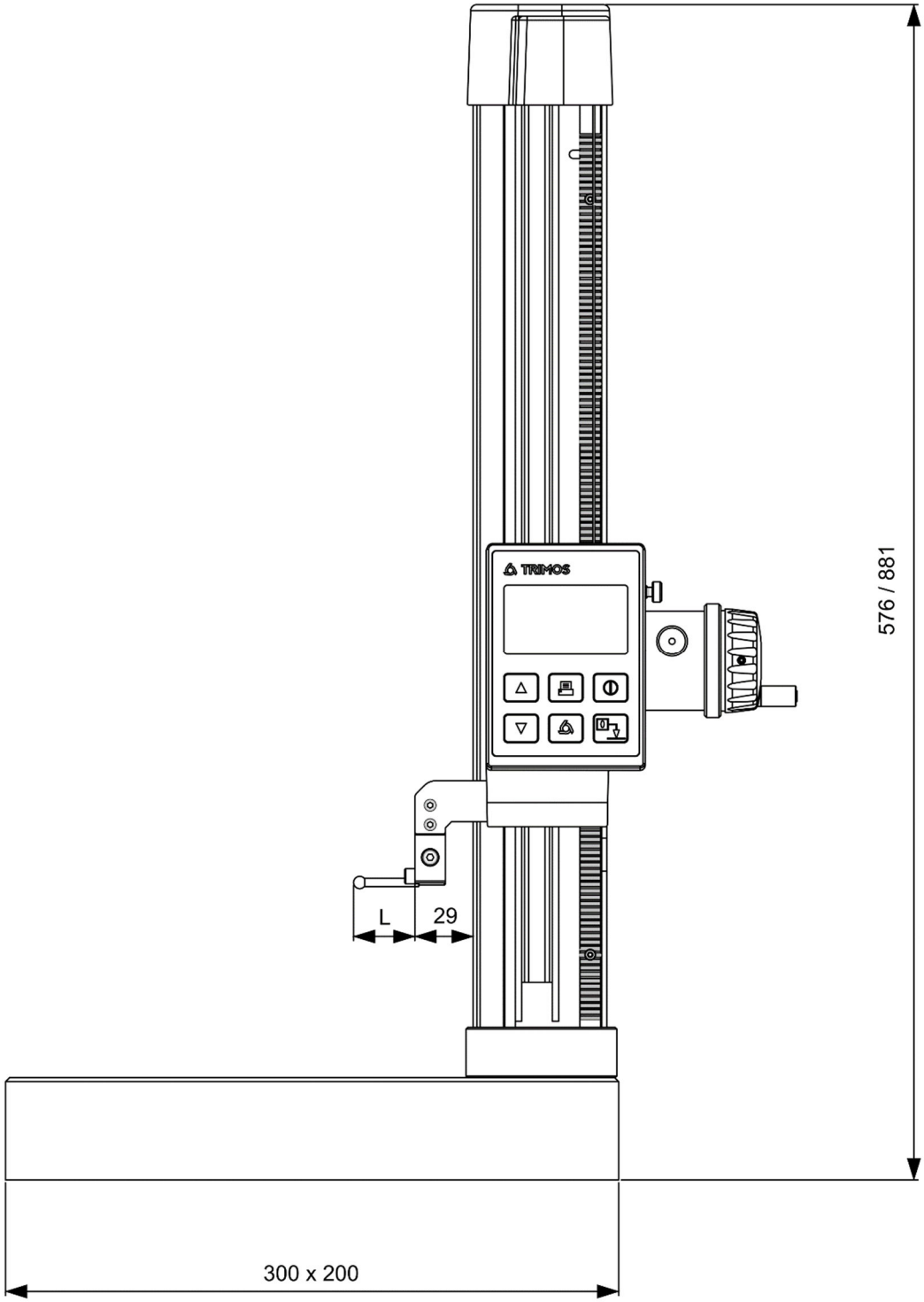
9. DIMENSIONS

9.1 V1/V1+



L: Depends on the insert used.

9.2 V1+ G (Granite base)



L: Depends on the insert used.

10. TECHNICAL SPECIFICATIONS

V1		300	600
Measuring range	mm (in)	306 (12)	611 (24)
Max. permissible errors, B_{MPE}	µm	18	30
Repeatability, R_{MPE} (2s)	µm	10	
Maximum resolution	mm (in)	0.01 (0.001)	
Measuring force	N	-	
Autonomy	h	2000	
Interface		RS232	
Max. travel speed	mm/s	1500	
Operating temperature	°C	+10 ÷ +40	
Storage temperature	°C	-10 ÷ +40	
Relative humidity (storage and use)	HR	5 ÷ 75 % (non-condensing)	
Weight (steel base)	kg	7	8

V1+		300	600
Measuring range	mm (in)	306 (12)	611 (24)
Max. permissible errors, B_{MPE}	µm	15	25
Repeatability, R_{MPE} (2s)	µm	5 (Ø: 10)	
Maximum resolution	mm (in)	0.001 (0.0001)	
Measuring force	N	3	
Autonomy	h	2000	
Interface		RS232	
Max. travel speed	mm/s	1500	
Operating temperature	°C	+10 ÷ +40	
Storage temperature	°C	-10 ÷ +40	
Relative humidity (storage and use)	HR	5 ÷ 75 % (non-condensing)	
Weight (steel base)	kg	7	8
Weight (granite base)	kg	13.4	15

The above values were determined in accordance with ISO 13225 using the TA-MI-121 insert.
R_{MPE} is defined as 2 times the standard deviation (2s) over a series of 20 height measurements.

11. DECLARATION OF CONFORMITY

DECLARATION DE CONFORMITE
KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

CE

TRIMOS déclare que les instruments de mesure
TRIMOS erklärt, dass die Messgeräte
TRIMOS declares that the measuring instruments

V1-300	**V1+-300**	**V1+-300G**
V1-600	**V1+-600**	**V1+-600G**

sont conformes aux directives suivantes :
mit folgenden Richtlinien übereinstimmen :
conforms with the following directives :

CEM / EMV / EMC :	**EN 61326-1:2013** IEC 61326-1:2012 (ed2.0) FCC 47, part 15, Class B
Sécurité / Sicherheit / Safety :	**IEC 61010-1**

Patrice Kemper, CEO
Renens, 2024-03-13

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