

Electronic-Scale V7 – Operating instructions



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Electronic-Scale – Operating instructions

- Please be aware that with ELECTRONIC SCALE you are holding a precision measuring instrument in your hands. Please treat it with the appropriate care and sensitivity!
- **Please read the attached operating manual in its entirety** and before you use the ELECTRONIC SCALE and follow the instructions given in it to avoid damaging it.
- **Important!** Give the electronics some time to react. Only press the next button after the display has changed. Otherwise it can lead to errors or, in the worst case, to freezing of the software.

Description of the measuring process without illustrations

(Description with illustrations from page 3)

Preparation:

1. Place test object / material on a flat, level surface.
2. Remove the measuring device from the wooden case and place on top of the test material.
3. Loosen the locking screw [15] (Picture 2) and move the measuring carriage [23] to a middle position.

Measuring:

For use without data transfer to an external device: mode 1.

For use with data transfer to an external device: mode 2

4. Turn on the device
 5. Choose measuring unit
 6. Choose mode
- Mode 1: display = MM/INCH [33]
 Mode 2: display = REF 1 [32]

7. Modus 1: -

Mode 2: Remove the protective insert from the data output [9] and insert the data cable in its place (LEDs underneath!). Operation and settings according to the instructions for use of the interface.

8. Focus the lens [8]

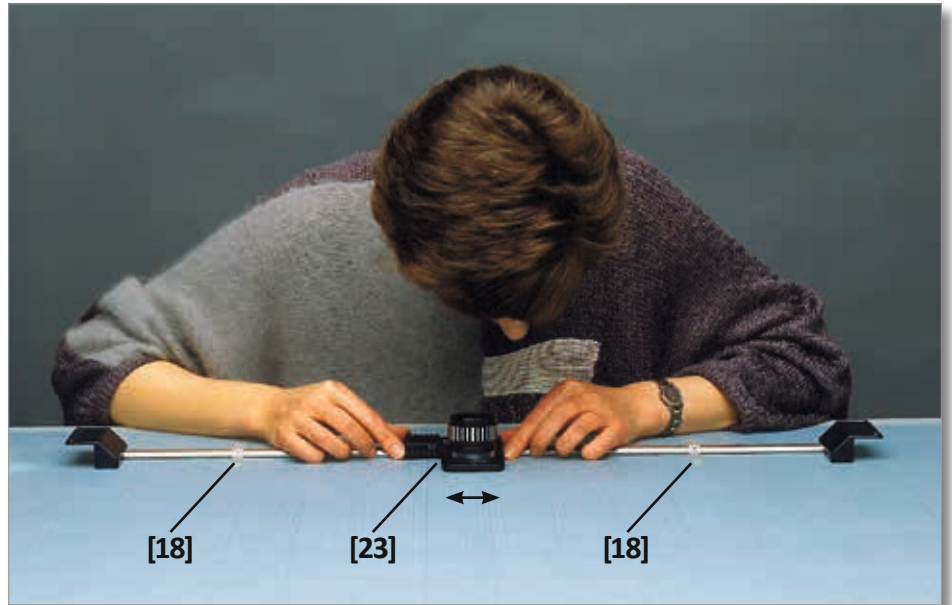
9. Align the Electronic Scale parallel to the measuring line using the positioning slides [18]. (If high precision is required, adjust the parallelity using the crosshairs of the scale plate).
10. Coarsely align with the (first) scale mark by sliding the measuring carriage [23] while looking through the lens.
11. Bring the fine-adjustment nut [13] to its middle position (the middle of the green tape should roughly correspond with the right edge of the casing).
12. Fix the locking screw [15] and turn the fine-adjustment nut [13] to move the measuring carriage [23] back and forth until the centre of the scale plate (crosshairs) corresponds with the scale mark. Caution! For high precision measurements always approach the scale mark from the same side (cancelling out switching differential).
13. Set display to «0.00»: gentle press on right button [1] = short / ~2 sec.

14. Loosen the locking screw [15] and coarsely align with the second scale mark by moving the measuring carriage [23]. Stop the device slipping by gently placing a free hand on it.
15. Fix the locking screw [15] and turn the fine-adjustment nut [13] to move the measuring carriage [23] back and forth until the centre of the scale plate (crosshairs) corresponds with the scale mark. **Caution!** For high precision measurements always approach the scale mark from the same side.
16. Mode 1: note the measured value /display value
 Mode 2: send the measured value /display value to the external device by shortly pressing button [1].
17. Carry out further measurements according to these directions or turn off the device: gentle press on right button [1] until «OFF» is shown (~5 sec.).
 Mode 2: first switch to mode 1 and then turn off.
18. Place the Electronic Scale in the wooden case (see page 7).

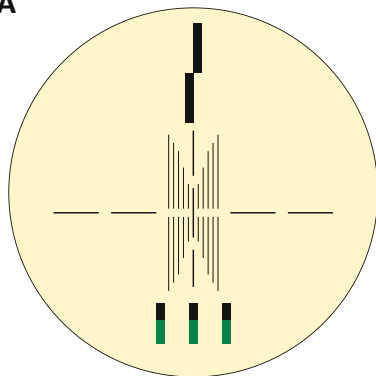
Electronic-Scale – Operating instructions

Pre-conditions for precise measurements

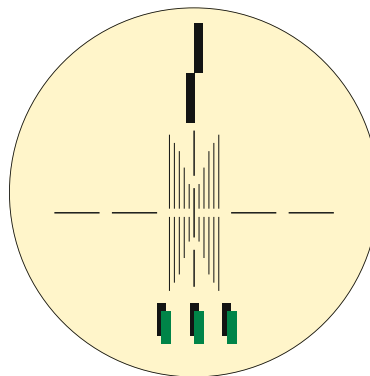
- flat surface
- the object should be accommodated to the ambient temperature and humidity and stabilized in this environment sufficiently
- stable conditions (ideal = 20°C)
Attention:
 - radiant heat of illuminations
 - body temperature of the person using the scale
- take into consideration the accuracy of the measuring instrument, the deviation of single measurements and the co-efficients of expansion of different materials



A



correct



wrong

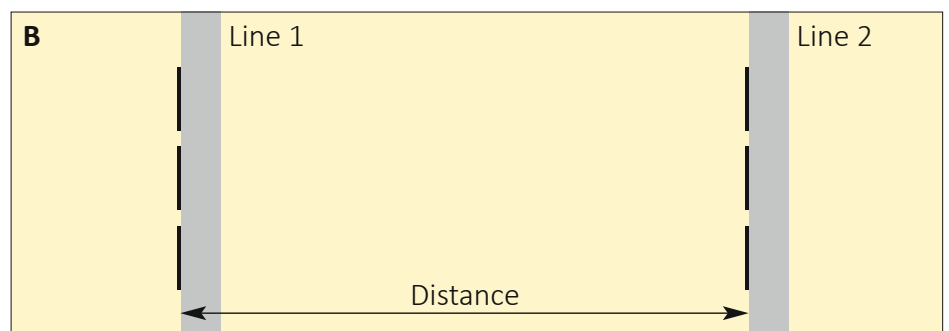
Using the scaleplate

The arrangement of lens markings offers a variety of possibilities:

Checking parallax (A)

Parallax indicators will tell you whether you are looking straight into the lens. This may be important if you are measuring off contact.

Using the center line (B)

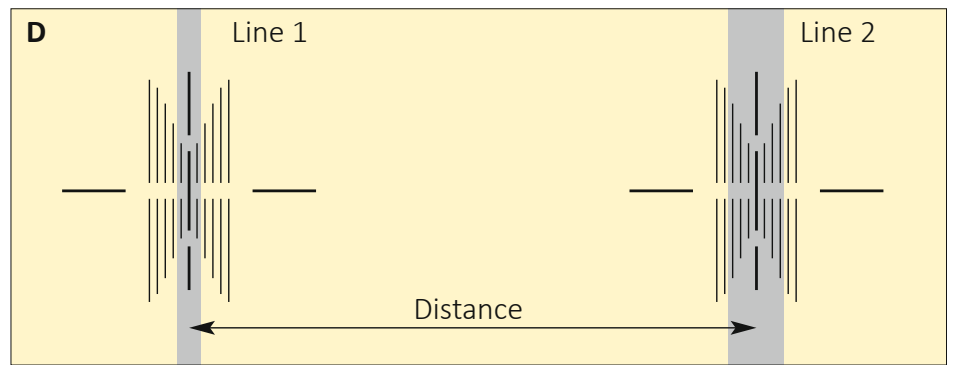
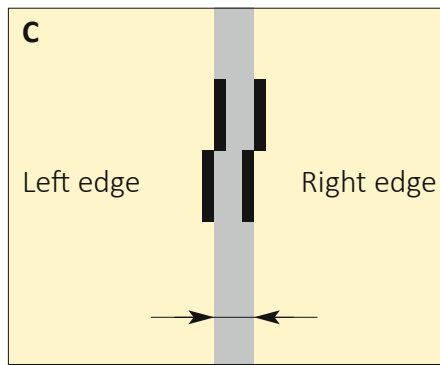


Using the special markings (C)

Special markings are provided to check the thickness of lines by aligning either line edge to the upper and lower brim of the special markings.

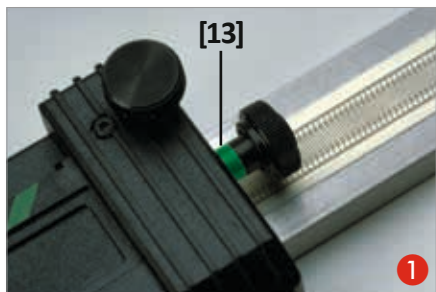
Using the symmetric image balance (D)

Symmetrical balanced images measure the distance between lines up to 1 mm wide by visually centering the line containing a symmetric image.



Using the fine-adjustment

- 1 Preparation: Coarse alignment (move the carriage by hand), the green tape of the fine-adjustment nut [13] has to be centered (approx. 1.5 mm have to be visible);
- 2 Tighten the locking screw [15] of the clamp slide;
- 3 Fine alignment by turning of the fine-adjustment nut [13].



Microscope

- 10 Cleaning the scale plate of the microscope (with cotton)

Mounting the microscope [42]:

- 11 type «ESM»: using the stand [43]
- 12 13 type «ES»: using the adapter [41]



Storage instructions

Unpacking / packing:

Please retain the box and all transport cushioning (pieces of foam) for return (repair / calibration).

Storage / transport:

When not in use, and for transportation, place the Electronic Scale into the case as follows: Slide posi-

tioning slider [18] outwards to the handles, turn magnifying glass [8] downwards to its lowest possible height, move measuring carriage [23] completely to the left and fix with clamping screw [15]!

Maintenance

Precautions

- Do not expose to any electrical fields or voltages

- Do not damage the scale surface
- Protect from cold, heat and moisture
- Avoid contact to fluids
- Use only «ENAVIT-N» for cleaning
- For installing the scale into a device, contact your dealer

Checking period

It is recommended to check the accuracy of the device regularly, e.g.: once a year.

Changing the battery

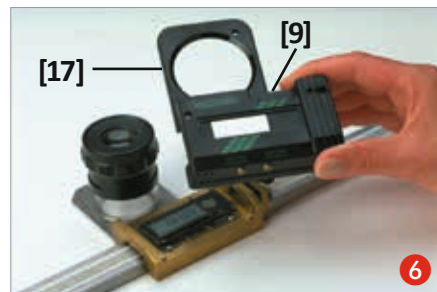
- 4 Remove the locking screw [15]



- 5 Remove the screws (3 pcs.)
- 6 Remove the casing [17], remove the protective insert [9]
- 7 Remove the battery



- 8 Insert new battery («+»-pole looking upwards)
- 9 Mount casing [17] and insert end cap [9] afterwards.



Trouble shooting guide

How to take care if...

- ...the carriage does not run smoothly

- ...«impossible» values are displayed?

Clean the guide rail [24] with petroleum ether and cloth along its entire length. Then spray some ENAVIT-N care spray on to another cloth* and use it to distribute the care spray over the surface of the bar *(clean and lint-free)

The protective film created in this way prevents moisture (e.g. from sweaty hands or breathing) from disturbing the electronics.

Specifications:

Resolution: 0.01mm/0.0005"

Repeat accuracy: 0.01 mm

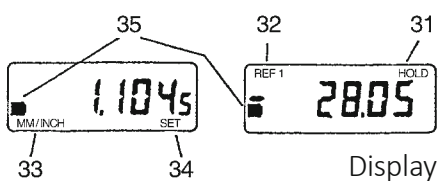
Error range

up to 500 mm = 0.03 mm

up to 800 mm = 0.04 mm

up to 1000 mm = 0.05 mm

Using the electronics



- **Turn ON**
short, gentle press on right button f [1].
- **Changing the mode**
Press left button [2] until the indicators change [32] / [33] (~2 sec.).
Mode 1:
Display = MM/INCH [33]
Mode 2: Display = REF 1 [32]
- **Resetting (reset the display)**
... in mode 1: short, gentle press on right button [1].
... in mode 2 «REF 1»: gentle press on right button [1] until «0.00» is shown (~2 sec.).

up to 1300 mm = 0.08 mm

up to 1500 mm = 0.10 mm

Measurement units: metrical(mm) and british (inch)

Power supply:

1 lithium battery 3V,
type CR2032, capacity 190 mAh
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- **Changing the unit**
MM <=> INCH
nur in Modus 1 möglich:
kurzer, sanfter Druck auf linken Knopf [2].
- **Daten senden**
only possible in mode 1:
short, gentle press on left button [2].
Standby
The device automatically enters standby after ~2 min.
– to activate from standby:
short, gentle press on right button [1] or move the measuring carriage [23].
- **Turn OFF**
only possible in mode 1:
gentle press on right button [1] until «OFF» is shown (~5 sec.)

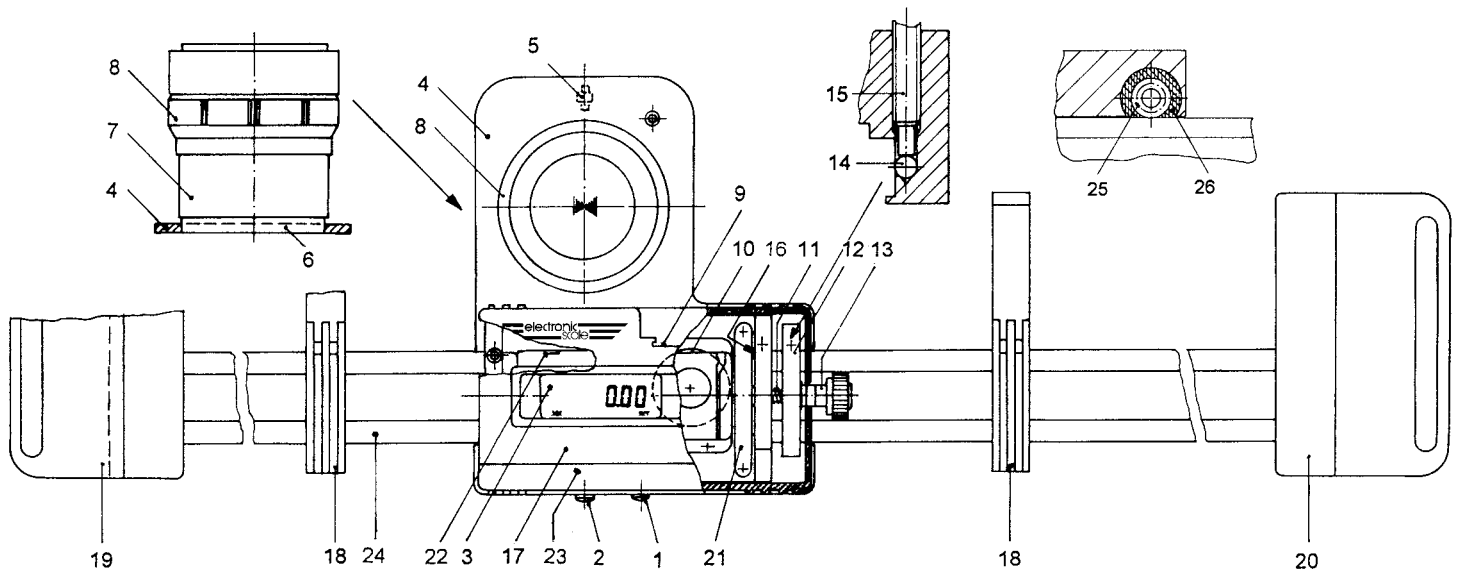
Battery life: approx. 4000 h

Operating temperature: +10°C to +40°C

Data output: RS232 compatible

Guarantee: 1 year

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Designation of parts

- | | |
|---|------------------------------|
| 1. Button [1] : ON/OFF, reset, hold/send data | 12. Clamp slide |
| 2. Button [2] : mm/inch toggle, mode selection | 13. Fine adjustment nut |
| 3. Display (LCD) | 14. Ball |
| 4. Support | 15. Locking screw |
| 5. Roller | 16. Plate: serial number |
| 6. Scale plate (standard or PCB) | 17. Casing |
| 7. Acrylic glass ring | 18. Positioning slide |
| 8. Lens 10x | 19. Left handle |
| 9. RS-232 data output, protective insert | 20. Right handle |
| 10. Battery | 21. Wiper for capacity strip |
| 11. Spring | 22. Reset opening |
| | 23. Measuring carriage |
| | 24. Guide rail |
| | 25. Ball bearing |
| | 26. Wiper for ball bearing |

Display:

- 31. Indicator: memory function «HOLD»
- 32. Indicator: Mode 2 «REF 1»
- 33. Indicator: function of button **[2]**
- 34. Indicator: function of button **[1]**
- 35. Indicator: end of battery life

Accessories:

- 41. Adapter
- 42. Microscopes 25x or 50x
- 43. Stand for microscope

Possible error messages and their resolution

When the Electronic Scale is used for a long time, one of the following error messages may appear on the display:

ERR 0 = Sensor error
e.g. moisture on the scale, under the electronics
or false relative position of the electronics to the capacitive band

ERR 3 = Data overflow
is either triggered by a voltage error, e.g. brief current surge with electronics switched off – static discharge
or by a count that was triggered but not stopped, e.g. if a contact to the capacitive band was missing – if for example the car is driven out over the end of the scale with the electronics switched off

Remedy = Wipe off bar and/or reset the electronics by removing and reinserting the battery.
If this does not help, send Electronic Scale to be repaired

Applying „Enavit n“

- To prevent damages please avoid the ELECTRONIC SCALE being exposed to any hostile environment!
- For maintenance it does not need a lot of the preservative-spray ENAVIT N, do not apply too much of it at once! Best is to simply spray the liquid onto a rag by pressing the head of the bottle once or twice (not more!). Then apply and distribute the preservative-liquid by moving the rag over the steel rod without pressure.
- Do not put the used cloth into the wooden storage case!

Unpacking / packing:

Please check the package for damage and immediately report any to the carrier (photographs!). Please take care not to insert blade too deeply into the cardboard when unpacking. Make a note of how the device is packed and keep the original packaging (box and all transport cushions and foam parts) for possible transportation (e.g. return for repair or calibration).



Storage/ transportation:

When not being used, or for transportation, place Electronic Scale into case as follows:

1. Slide positioning slide **[18]** outwards on to the handles
2. turn magnifier **[8]**, without tightening it, downwards to the lowest possible level,
3. move measuring slide **[23]** left into the bay provided for it and
4. fasten with clamping screw **[15]**!
5. Close wooden case

Please use the original packaging for any transportation (repair / calibration)!

Data cable OPTO-USB-0 for Electronic Scale

The data cable we use is a USB keyboard interface and measuring tool cable in a single device. The power is supplied via the USB interface. No driver file is required for the USB interface. The USB interface is detected as a keyboard. Terminators such as Enter or Tab etc. can be set on the USB interface and are automatically sent at the same time. Other settings such as language, separator and timer are possible. Data button on the measuring tool for data transmission or by timer. The data cable can be used for Windows 10 and is backwards compatible.

