

Catenary Measuring Instruments FM5/ FM5 BT/ FM5.1 - Manual

1. Application

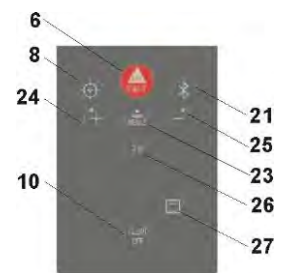
- Stagger (zigzag) measurement of the catenary, referring to the track mid-perpendicular
- Measurement of the height of the catenary, referring to the top of the rail
- Horizontal distances to the track (bridge height, steel-cable)/ *option: vertical distances (track to mast) -> FM5, FM5 BT*
- Tilt measurement (for conversion in track superelevation)
- *Option: BLUETOOTH® data transfer on PC / Tablet-PC -> FM5 BT*

2. Measuring preparation

- *Option* two-part measuring bar (pic. 1): assembly/ connection with 2 clamping levers (1)
- *Option* Universal-measuring bar: track width adjustment with clamping lever at the left and right leg
- Measuring bar (pic 2/ 2) position rectangular over the track, with stop (3) at a track rail
- Slide measuring instrument FM5 (4) with 4 feet in the guiding grooves of the measuring bar, operate coincidentally the spring loaded locating pin (5),

3. Catenary height measurement

- Switch on measuring instrument and activate laser with button ON/ DIST (6)/ knob (pic. 3/7) at instrument shows „Height“
- Press button digital pointfinder (8) and move measuring instrument on measuring bar, until the target catenary is on the display (pic. 3/9) in the reticle
- Press digital pointfinder (8) again: individual enlargement by fourfold zoom
- Press ON/ DIST (6) to start distance measurement – display shows value (pic. 3/9)
- Visibility of the red laser dot on the catenary can be improved by laser goggles
- Continuous measurement/ Laser: hold down button ON/ DIST (6) until the symbol (9) is shown in the display permanently; signalled with audible beep
- Repetitive pressing of the button ON/ DIST (6) stops continuous measurement/ last measuring value is shown
- Button CLEAR/ OFF (10): last action is changed back, long pressing of the button switches off the instrument



Keypad

- 6 ON (On/measuring)
- 8 Digital pointfinder
- 10 Clear/Off
- 21 Bluetooth *
- 23 Menu
- 24 Plus (+)
- 25 Minus (-)
- 26 Second function *
- 27 Storage/Memory

*only on the FM5 BT

4. Stagger/ zigzag measurement

- Can be executed when catenary is visible in the reticle on the display (9) and/ or the laser dot can be seen on the catenary, immediately before or after the height measurement
- Reading of the stagger measurement at the scale (pic 3/11) of the measuring bar at the measuring edge (12)
- *Option BLUETOOTH® data transfer, FM5 BT:* with horizontal laser beam (pic. 2/13), mirror-knob-position „Side“ (pic. 3/7) and distance measurement to the reference plate (pic. 2/14)

5. Distance middle of the track – leading edge of the mast (MVK-value)

- *FM5, FM5 BT:* Adjust mirror in the measuring instrument by knob (pic. 3/7) on „Side“
- Loosen clamping lever (pic. 2/15) at the front side of the measuring bar and put reference plate (pic. 2/14) down
- Slide measuring instrument with measuring edge (pic.3/12) on the measuring bar until the MVK- mark (pic. 4/ 16)
- Press button ON/ DIST (6), fix laser dot at the mast and measure distance

6. Tilting sensor / tilt measurement

- Permanent tilt display in the unit ° on the display (pic. 3/9) at the top on the right
- With tilting angle (°) and track with the track superelevation can be calculated (mm)

7. Lighting/Power supply

- Automatic display lightning at darkness
- Press button (pic. 4/18) for LED-lightning (pic. 3/17) of the scale (11) in the range of the measuring edge (12)
- For catenary lightning, fasten flashlight with holding device at groove of the measuring bar
- The battery symbol with state of charge is shown on the display (pic. 3/9) after switching on the measuring instrument
- *FM5, FM5 BT:* Female plug (pic. 4/19) for connecting power supply for charging NiMH- batteries 2x 1,2 V, more than two hours
- *FM5.1:* Lithium-Iron- batteries type AA, 2 x 1,5 V
- exchange batteries is possible after removing 4 screws of the battery cover (pic. 4/20) and according to operation manual DISTO™ D5 or D8

8. BLUETOOTH® data transfer

- *FM5 BT:* Activation of the measuring value/data transfer on a PC / Tablet-PC with button (21)
- Details of the function can be found in the manual on the used software
- Feinmess Dresden does not guarantee and support the free software of the pre-supplier

9. Security advice

- Laser class 2/ Do not look into the laser beam -> warning sticker (pic. 3/22)
- Execute regular control measurements/ measurement with turned measuring equipment by 180° (reverse test)
- Avoid mechanical damages and crashes
- Pay attention to cleanliness of optic and glass
- Avoid considerable temperature variations -> acclimation of the measuring instrument
- Further information can be found in the manual of Leica DISTO™ D5 or D8
- The operator is responsible for the intended use and operating safety of the equipment
- Repairs, tests and adjustments have to be executed by the manufacturer
- Inspection interval: 2 years (date according to inspection report and inspection tag on the instrument)