



# Supplement to the Operating Manual FocusMonitor FM+ HPD

## 1 Operation of the device with a conventional measuring tip

The device can optionally be operated with a conventional measuring tip with pinhole aperture as used in the FM+ device.

- ▶ Read the information in this document before operating the device with a conventional measuring tip:
- Chapter 2 „Suitable conventional measuring tips“ on page 1
- Chapter 3 „Changing the rotating disk and inserting the conventional measuring tip“ on page 2
- Chapter 4 „Measuring with the LaserDiagnosticsSoftware LDS“ on page 7
- Chapter 5 „Distance of the pinhole aperture to the reference plane“ on page 8

## 2 Suitable conventional measuring tips

### **NOTICE**

#### **Damage / destruction of the device or the measuring tips**

The DFIG-PS+HPD detector is permanently installed in the device and must not be changed. The conventional measuring tips suitable for this detector can be exposed to lower power densities than the FS<sup>3</sup>.

- ▶ Operate the device only with the detector installed at the factory.
- ▶ Use only the suitable conventional measuring tips and observe their limit values.

The following conventional measuring tips are suitable for use in the FM+ HPD:

- NIR high div
- Diode

The specifications of the suitable measuring tips are included in the operating manual of the FocusMonitor FM+ measuring device (revision 03/2019 EN).

1. Go to the download section of the PRIMES website:  
<https://www.primes.de/en/support/downloads/operating-manuals.html>
2. Read chapters 18.2 to 18.4 (p. 47 – 51).



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### 3 Changing the rotating disk and inserting the conventional measuring tip



#### CAUTION

Burns due to hot components

Parts near the rotating unit can be hot due to scattered radiation.

- ▶ Do not change the rotating disk directly after a measurement.
- ▶ Let the device cool down for an adequate period of time. The cooling time varies depending on the laser power and the irradiation time.

#### NOTICE

Damage / destruction of the measuring tip

Touching the glass measuring tip of the FS<sup>3</sup> can lead to burn-in by the laser radiation at the points of contact. Burn-in lead to damage or cracking of the glass measuring tip.

The very small pinhole of the measuring tip can quickly become blocked by dirt particles or when touched with the bare hands.

- ▶ Do not touch the glass measuring tip of the FS<sup>3</sup> / the pinhole.
- ▶ Wear powder-free latex gloves during assembly and ensure that the environment is free of dirt and dust.

#### NOTICE

Damage / Destruction of the rotating unit

The rotation characteristics may change if screws other than those installed at the factory / supplied are used to fasten the rotating disk. This will affect the functionality of the device and lead to damage.

- ▶ Store a rotating disk and the associated screws carefully after removal. It must always be evident that the disk and screws belong together.
- ▶ When mounting a rotating disk, only use the screws installed at the factory / supplied.



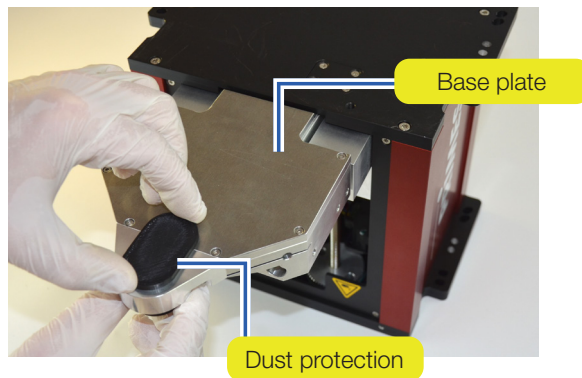
Even when operating with a conventional measuring tip, the device can only be used in standard installation and not in upside down installation. Therefore, observe the correct mounting position of the conventional measuring tip.



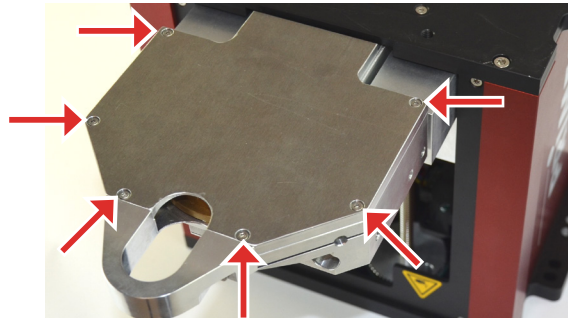
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1. Have the following ready:
  - Device with FS<sup>3</sup> installed (device switched off, connections removed)
  - Torx T8 and T10 screwdrivers (hexalobular internal profile)
  - Conventional measuring tip and associated rotating disk
  - Powder-free latex gloves
2. Put on the latex gloves.

3. Turn the device upside down so that the base plate of the traversing carrier is facing upwards.
4. Remove the dust protection.



5. Remove the 6 T8 countersunk screws from the base plate.
6. Remove the base plate.

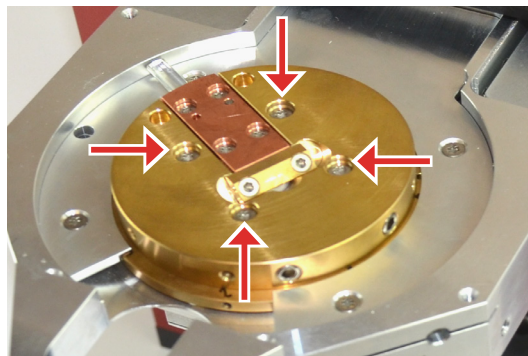


7. Carefully identify the squarely arranged 4 T10 countersunk screws on the FS<sup>3</sup>.



The other screws must never be opened!

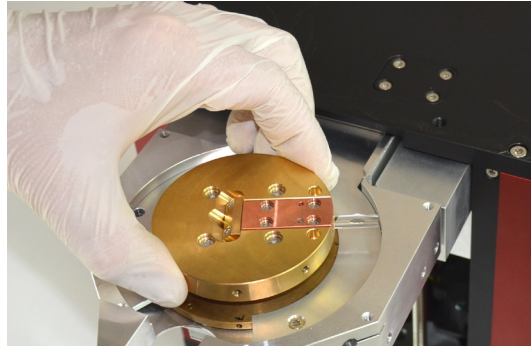
8. Remove the 4 T10 countersunk screws.





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- Carefully lift the FS<sup>3</sup> vertically upwards out of the rotating unit.

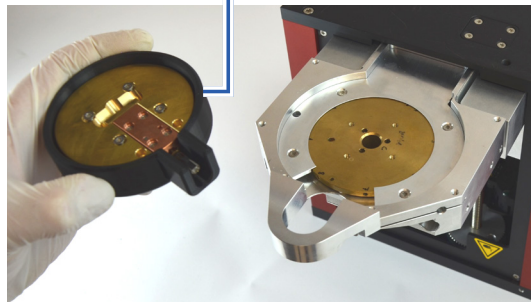


- Store the rotating disk and the associated screws carefully. If possible, use the Primes storage tray for this purpose.



The glass measuring tip of the FS<sup>3</sup> must always be protected from touch and dirt. It must always be evident that the disk and screws belong together.

Storage tray



- Have the conventional measuring tip and the corresponding rotating disk ready. The cover and retaining plate of the rotating disk must face upwards.



The pinhole is placed at the pointed end of the curved side. Any contact with the pinhole should be avoided!

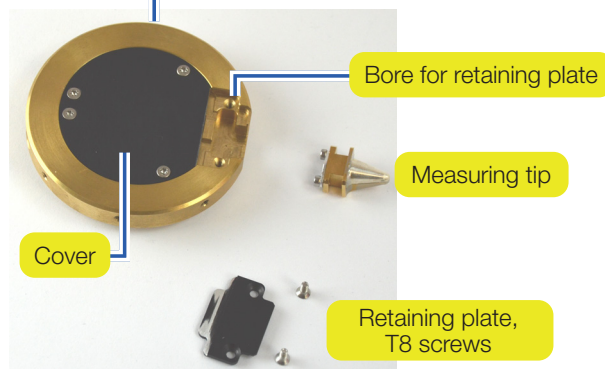
Rotating disk

Bore for retaining plate

Measuring tip

Cover

Retaining plate,  
T8 screws



Pinhole



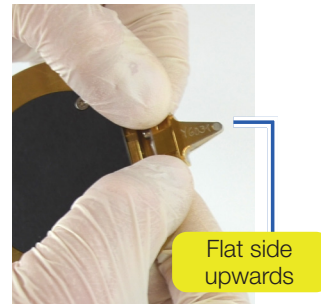


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14. Insert the measuring tip so that the flat side is facing upwards.



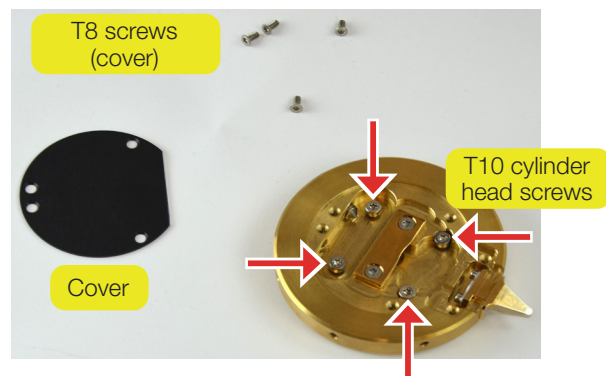
The device can only be used if the measuring tip is mounted the right way round.



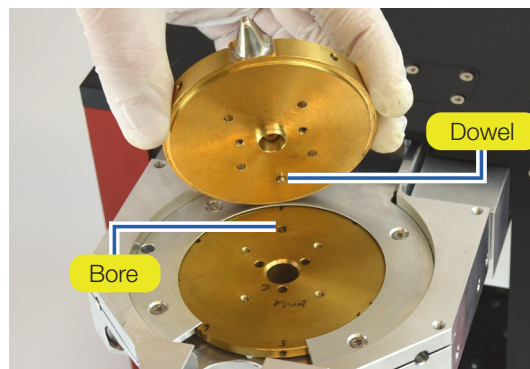
15. Remove the 4 T8 countersunk screws from the cover of the rotating disk.
16. Remove the cover.
17. Remove the squarely arranged 4 T10 cylinder head screws from the rotating disk.



The other screws must never be opened!



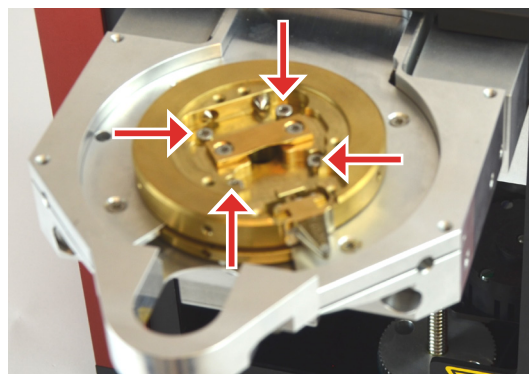
18. Hold the rotating disk against the rotating unit so that the dowel is above the bore.
19. Place the rotating disk on the rotating unit. The dowel must engage so that the rotating disk fits tightly.



20. Insert the 4 T10 cylinder head screws and fasten them hand-tight.



Only the screws supplied may be used to fasten the rotating disk!







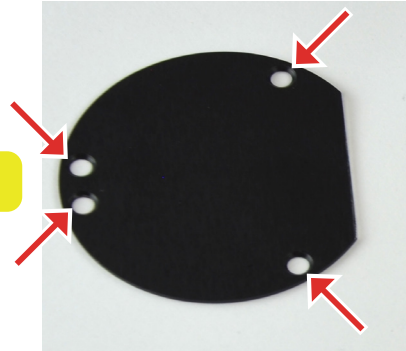
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21. Insert the cover into the rotating disk.



On the exterior there are conical bores.

22. Insert the 4 T8 countersunk screws and fasten them hand-tight.



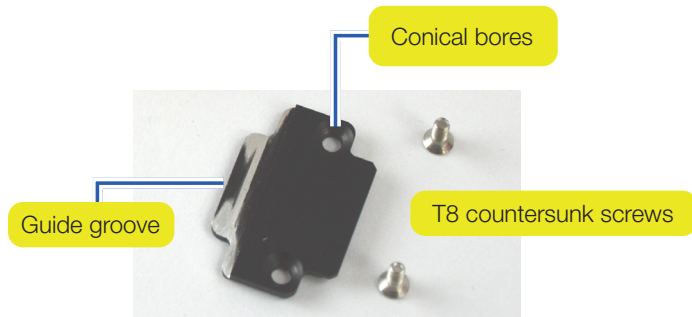
23. Place the guide groove of the retaining plate at a slight angle under the cover of the rotating disk.



On the exterior there are conical bores.

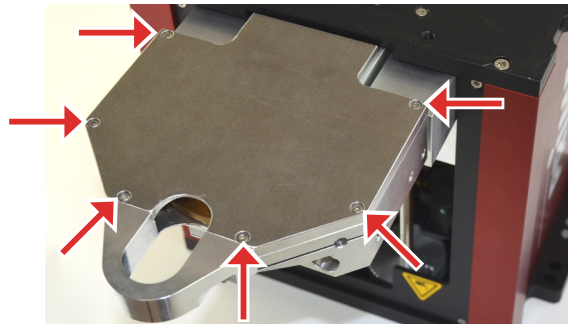
24. Press the retaining plate down.

25. Insert the 2 T8 countersunk screws and fasten them hand-tight.



26. Insert the base plate.

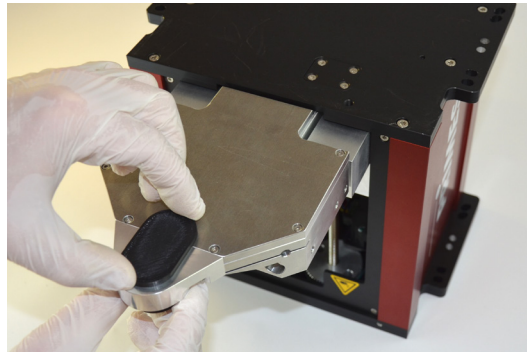
27. Insert the 6 T8 countersunk screws and fasten them hand-tight.



28. Insert the dust protection.



The top side with the TOP marking must face downwards.



29. Turn the device upside down.



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## 4 Measuring with the LaserDiagnosticsSoftware LDS

Note the following supplementary information to the operating manual when measuring with the LDS.

### Different z-positions of the detected focus

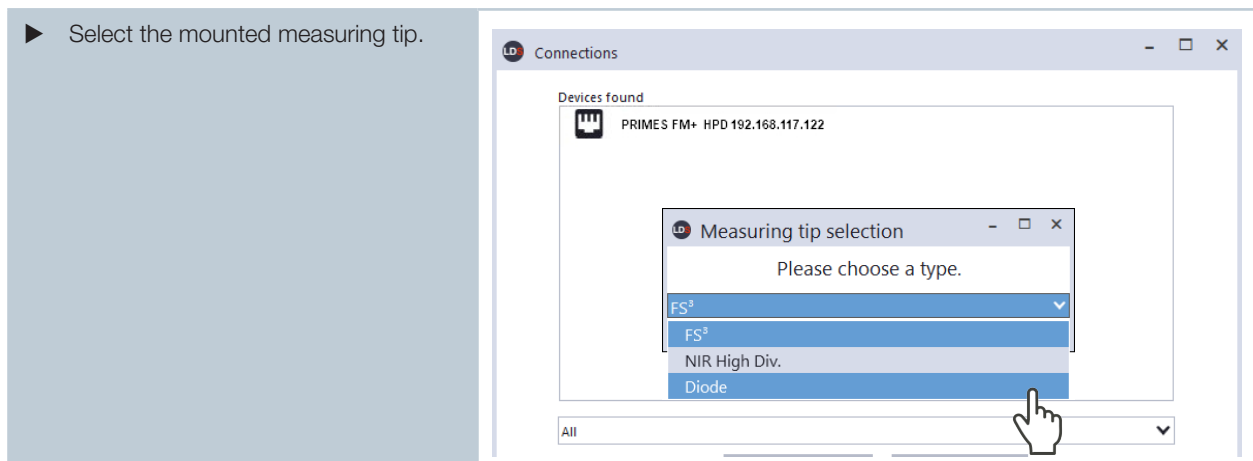
When measuring with a conventional measuring tip, the imaged plane is approx. 2.4 mm lower than when measuring with the FS<sup>3</sup>. The beam focus is then measured correspondingly higher.



The z-positions determined in different measurements are only directly comparable if the measurements were performed with the same type of measuring tip (conventional or FS<sup>3</sup>). In all measuring modes, the **Advanced** tab contains the **Move to focus of selected caustic** option. This option can only be used if the selected caustic measurement was performed with the FS<sup>3</sup>.

### Measuring tip selection

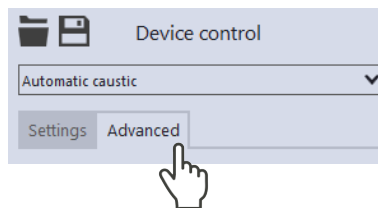
After clicking the **Connect to device** button, the **Measuring tip selection** dialog opens.



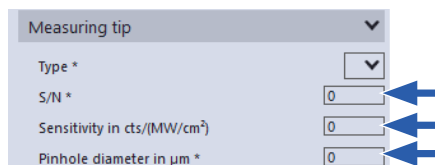
### Setting the parameters of the conventional measuring tip

In all measuring modes, the parameters of the conventional measuring tip can be set in the **Advanced** tab.

1. Click on the **Advanced** tab.



2. In the lower area of the tab, open the **Measuring tip** dropdown area.
3. Enter the properties of the measuring tip in the input fields.



The information is on the packaging of the measuring tip.



5 Distance of the pinhole aperture to the reference plane

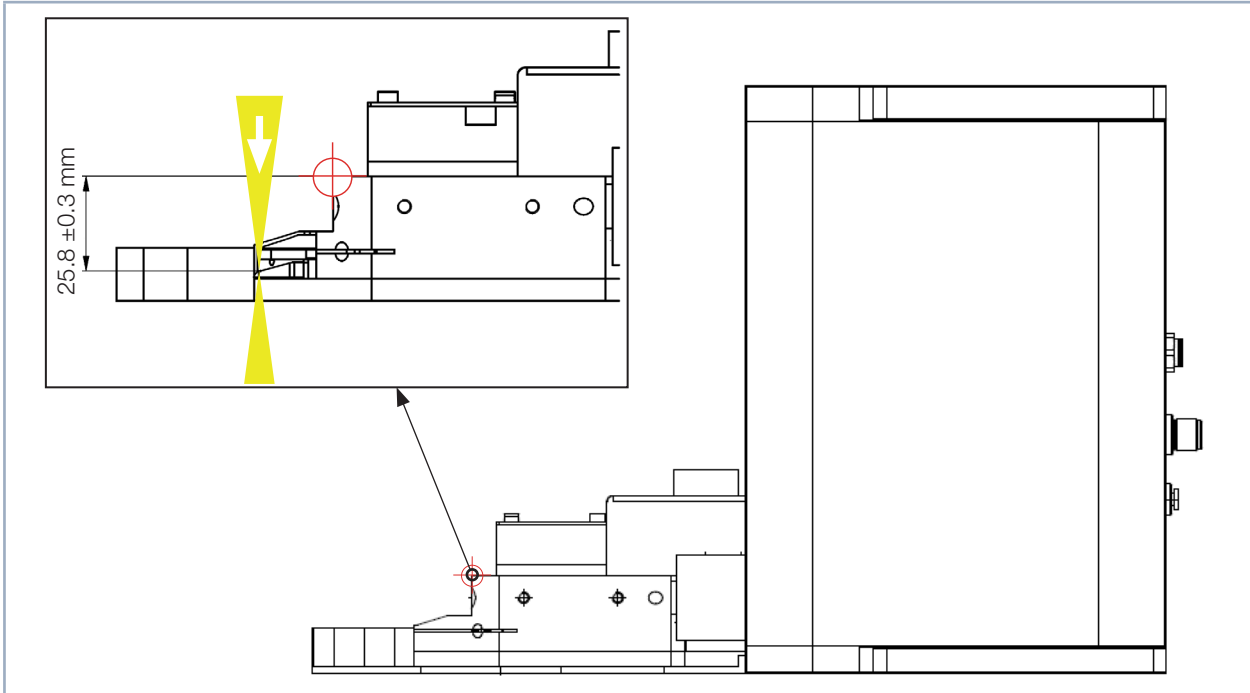


Fig. 5.1: Distance of the pinhole aperture to the reference plane on the traversing carrier