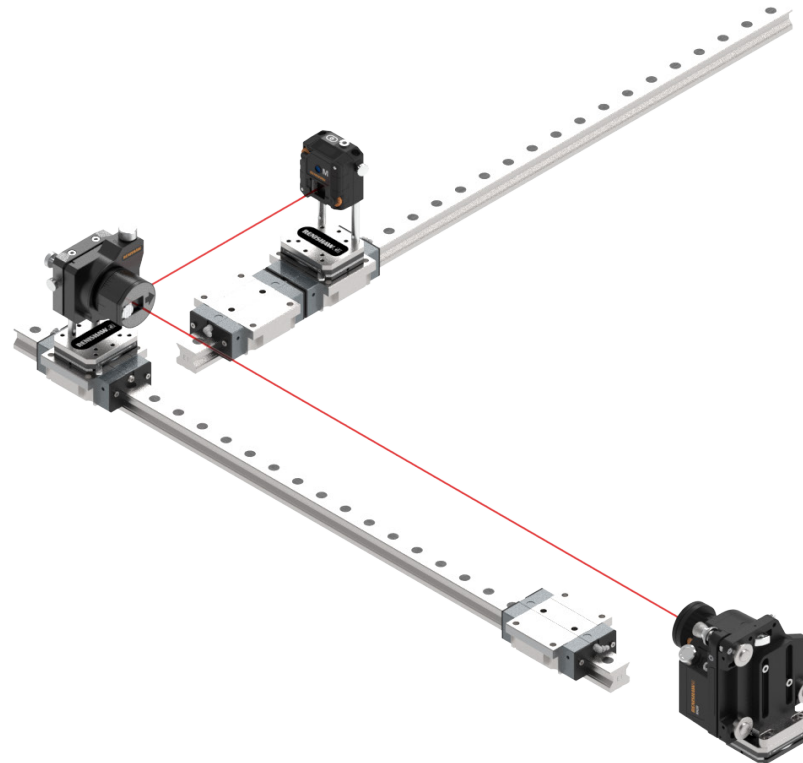


Squareness measurement using the XK20 pentaprism optic

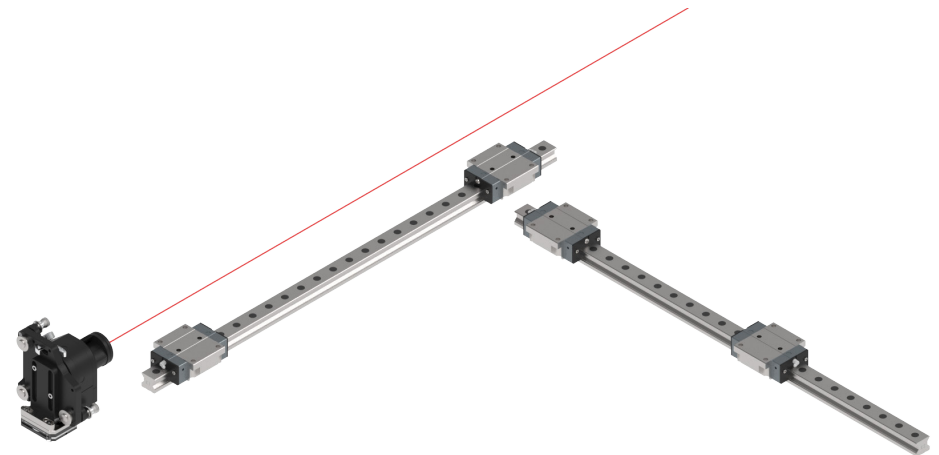
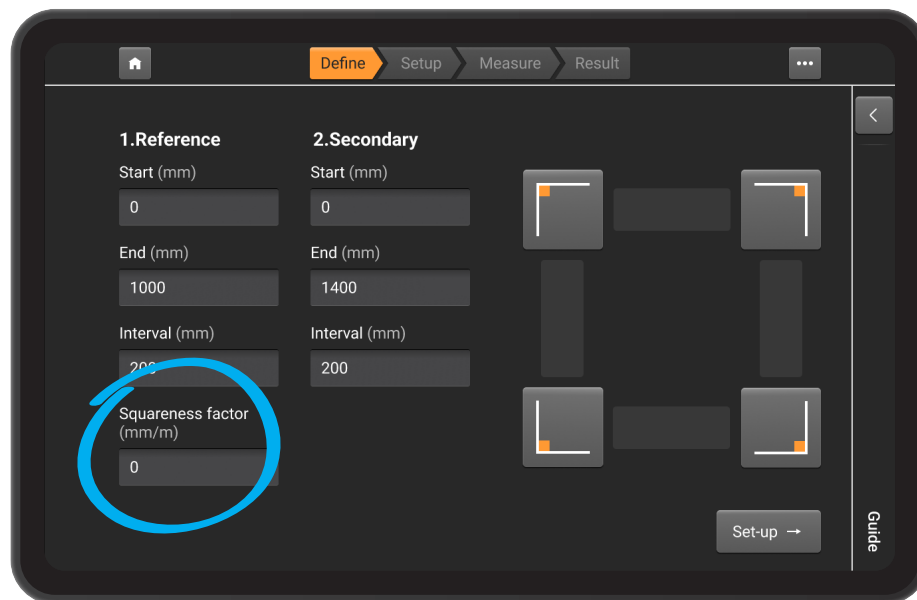


Guidance

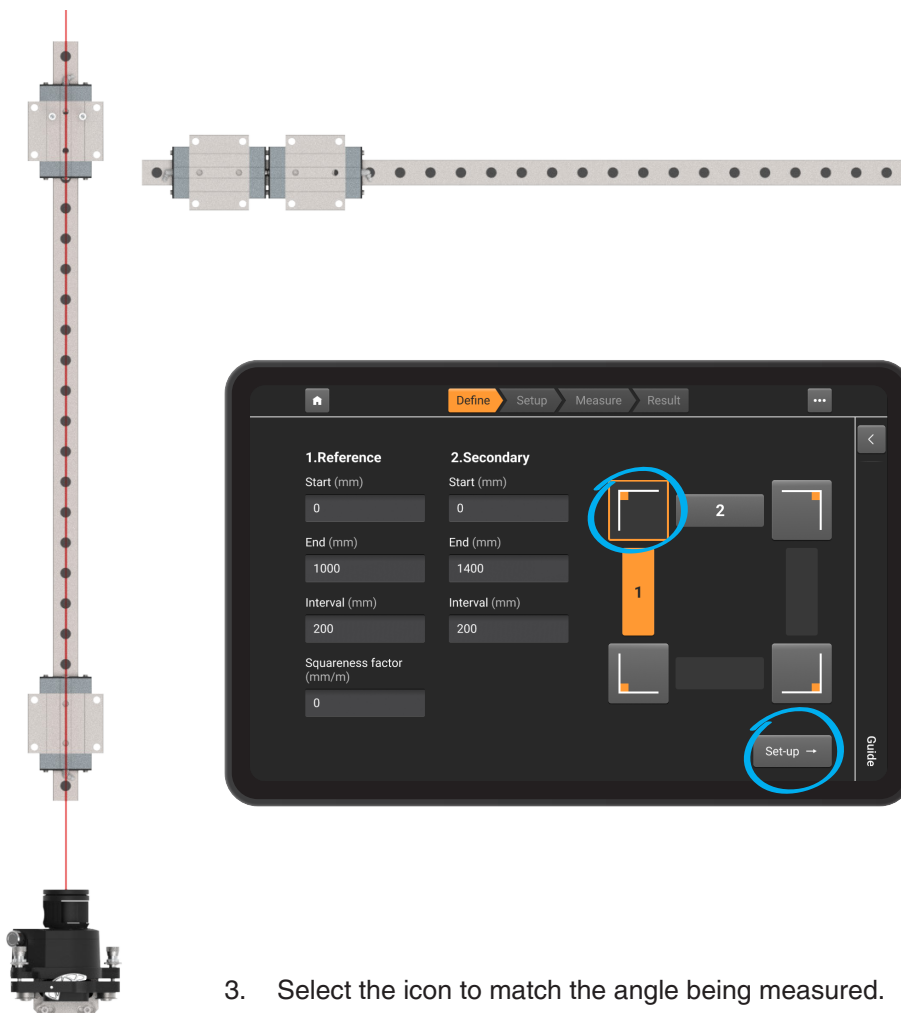
Below is a step by step guide of how to measure squareness using the Pentaprism optic.

If you require further information about this topic, refer to the *Squareness measurement using the XK20 pentaprism optic* application note (Renishaw part no. L-9971-9048).

The guidance below demonstrates this method in the horizontal plane.



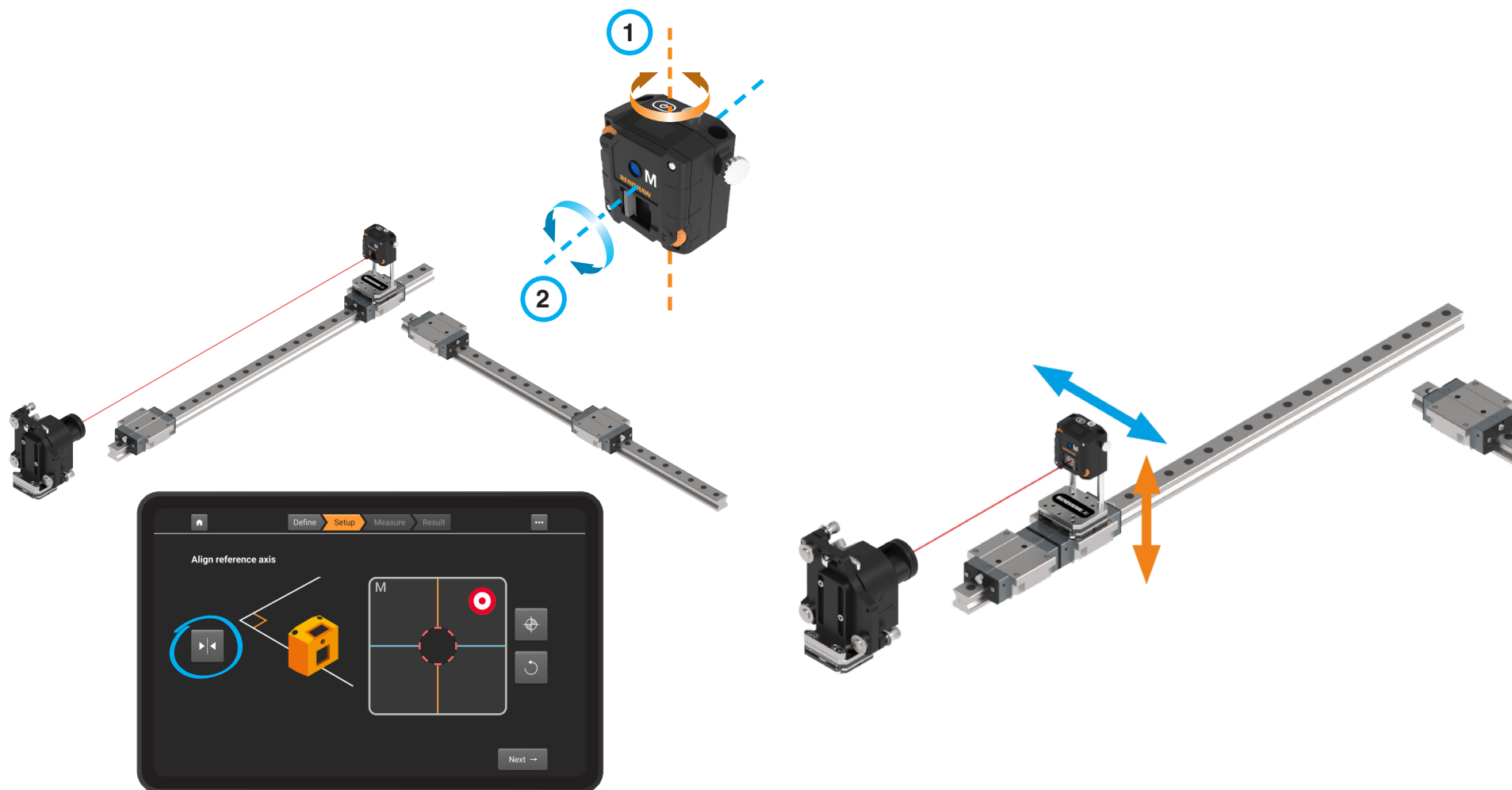
1. Enter the test information, including the squareness factor for the pentaprism optic. This information is located on the calibration certificate.
2. Place the Launch unit at the end of the reference rail, with the fixed beam pointing along the rail.



3. Select the icon to match the angle being measured. Select the reference rail. The software will set the secondary rail automatically. Then tap 'Set up'.



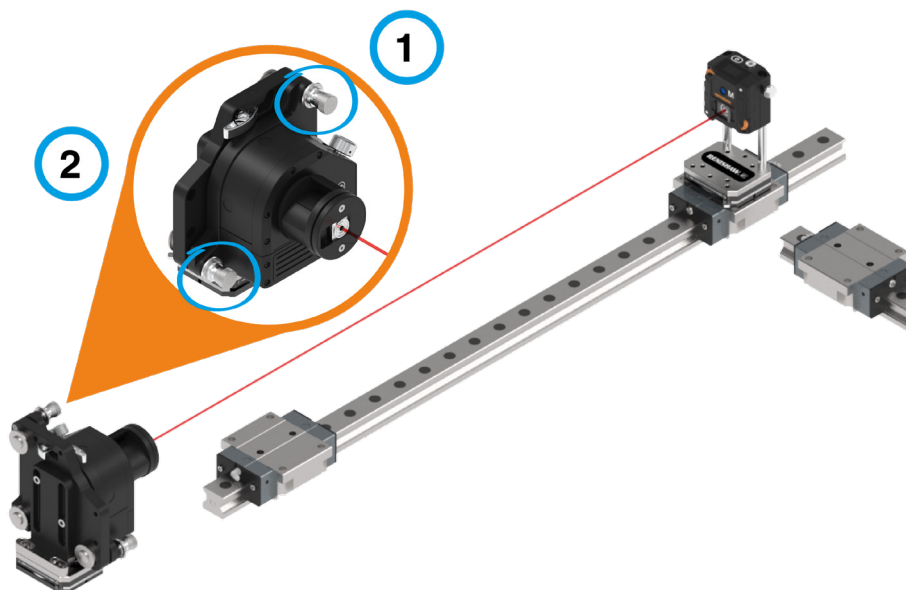
4. Connect the M unit.



5. Place the M unit on the reference rail carriage. Tap the icon to change the orientation (1) of the M unit, so it faces the same direction as the hardware setup. The software will automatically set the M unit's inclination (2) in relation to gravity.

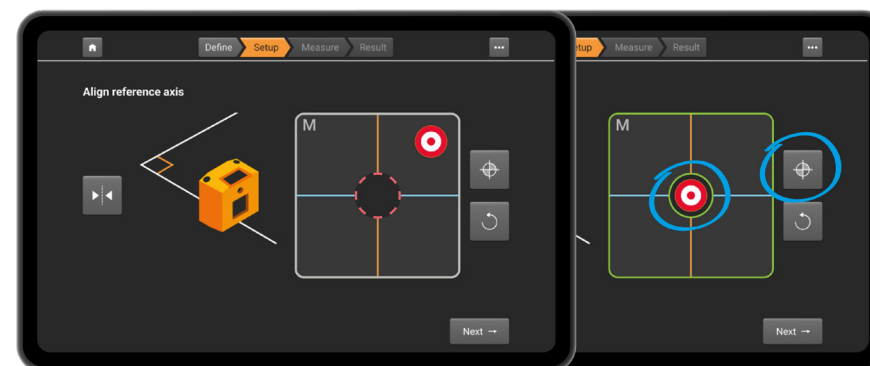
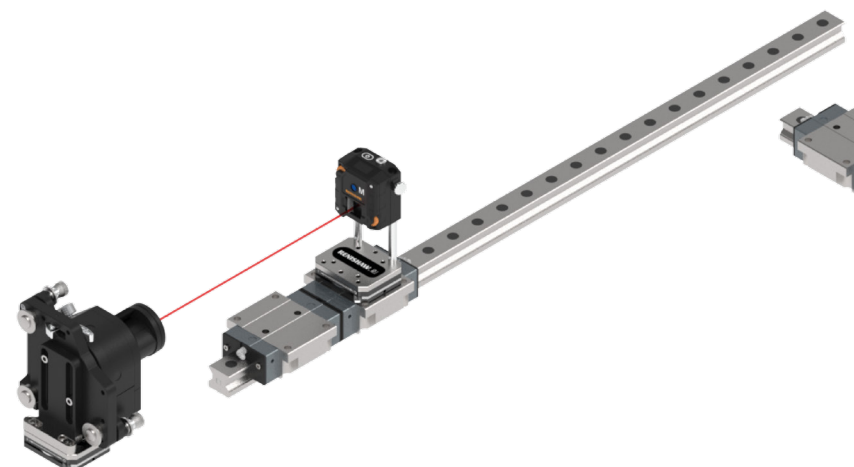
6. Slide the M unit on the carriage to the start of the rail. Close the shutter and translate until the beam is on the centre of the target.

NOTE: In vertical squareness, the inclination (2) of the M unit in relation to gravity must be set manually.

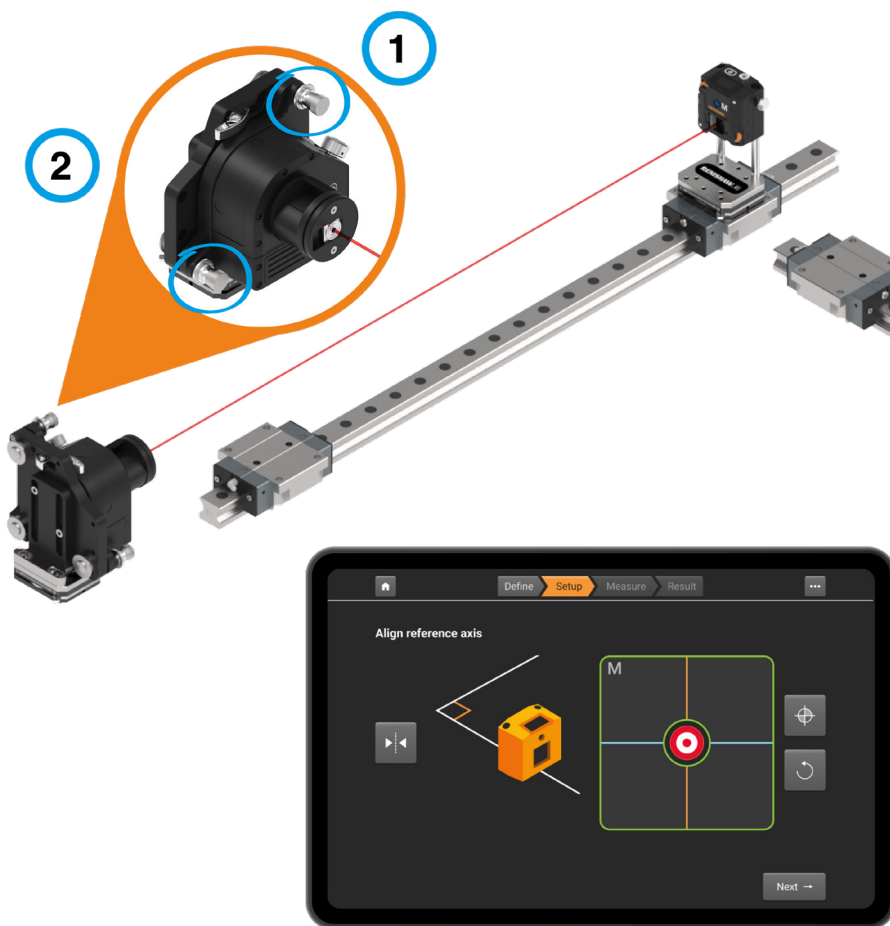


7. Slide the M unit on the carriage to the end of the rail. Adjust the pitch (1) and yaw (2) screws on the Launch unit until the beam is on the centre of the target.

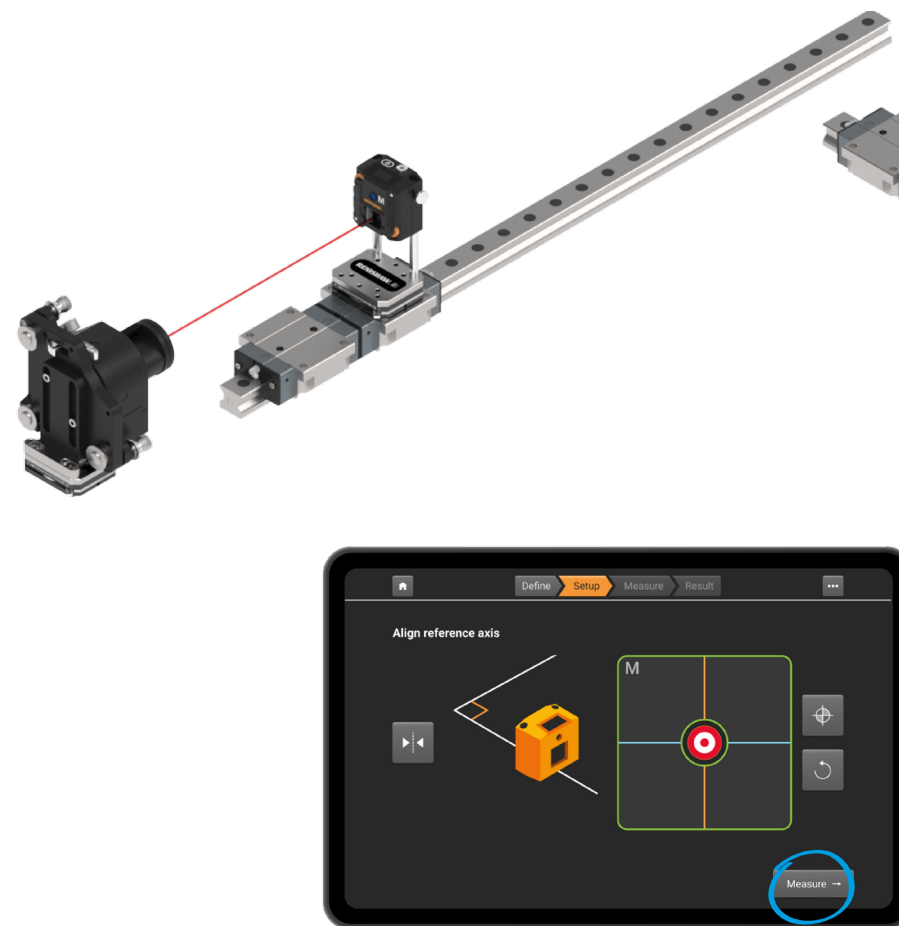
Repeat steps 6 to 7 until the beam stays on the centre of the target at the start and end of the rail.



8. Slide the M unit on the carriage to the start of the rail. Open the shutter and tap 'Datum'.

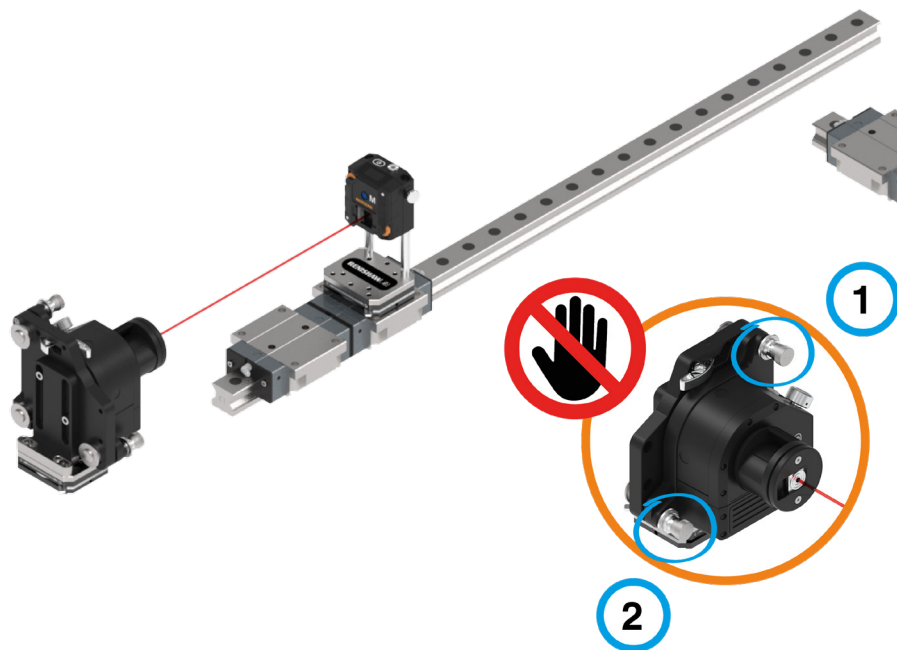


9. Slide the M unit on the carriage to the end of the rail. Adjust the pitch (1) and yaw (2) screws until the software target is green.

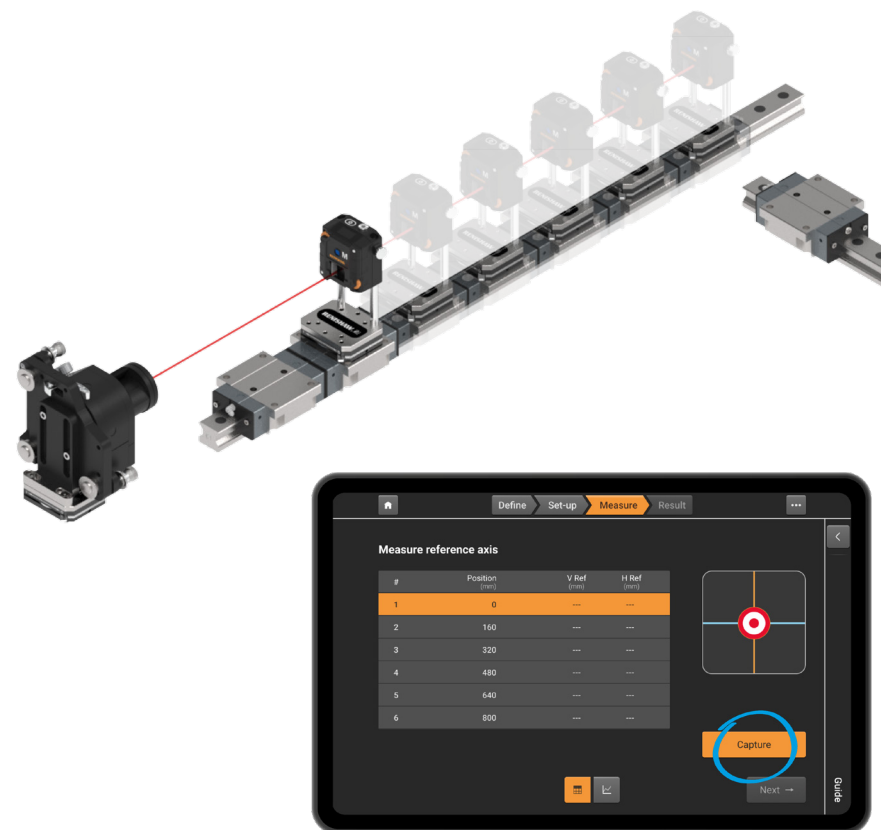


10. Slide the M unit on the carriage to the start of the rail.

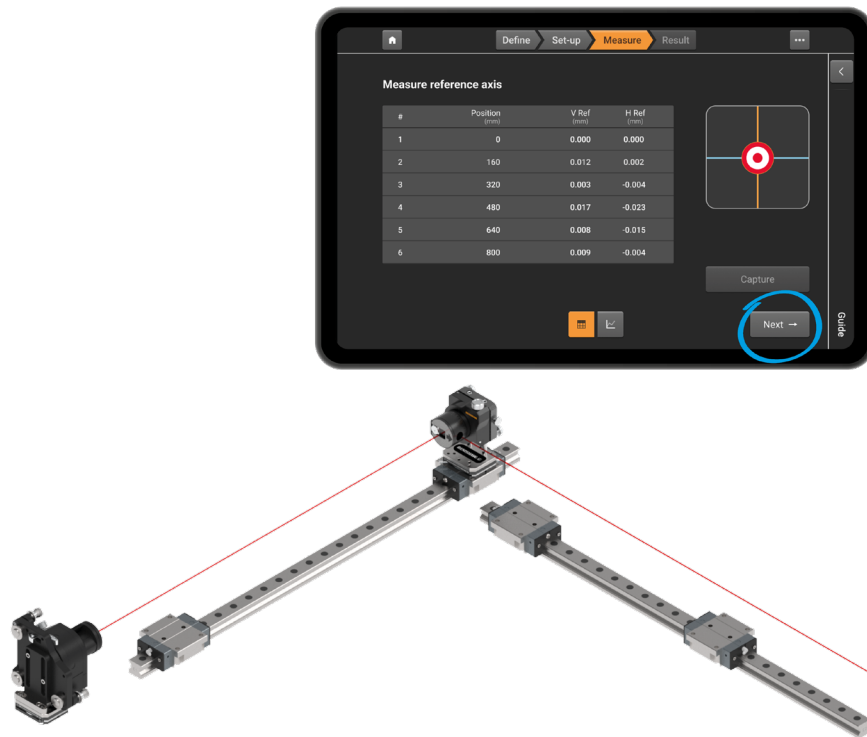
Repeat steps 8 to 10 until the software target stays green at the start and end of the rail. Then tap 'Measure'.



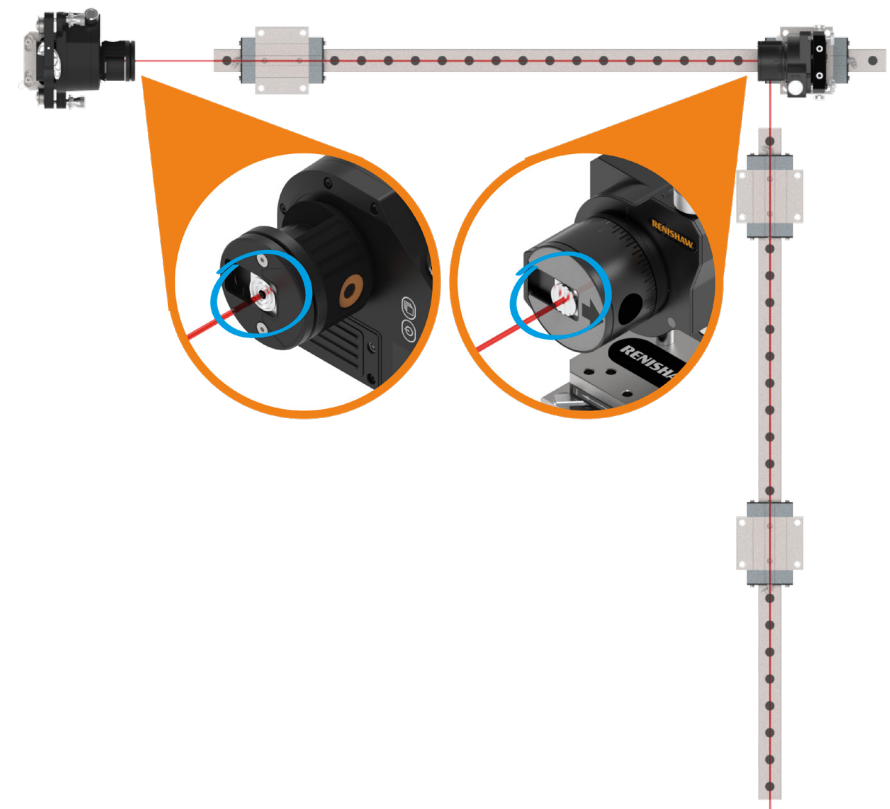
11. The Launch unit is now aligned. The Launch unit's pitch (1) and yaw (2) screws must not be adjusted for the remainder of the test process.



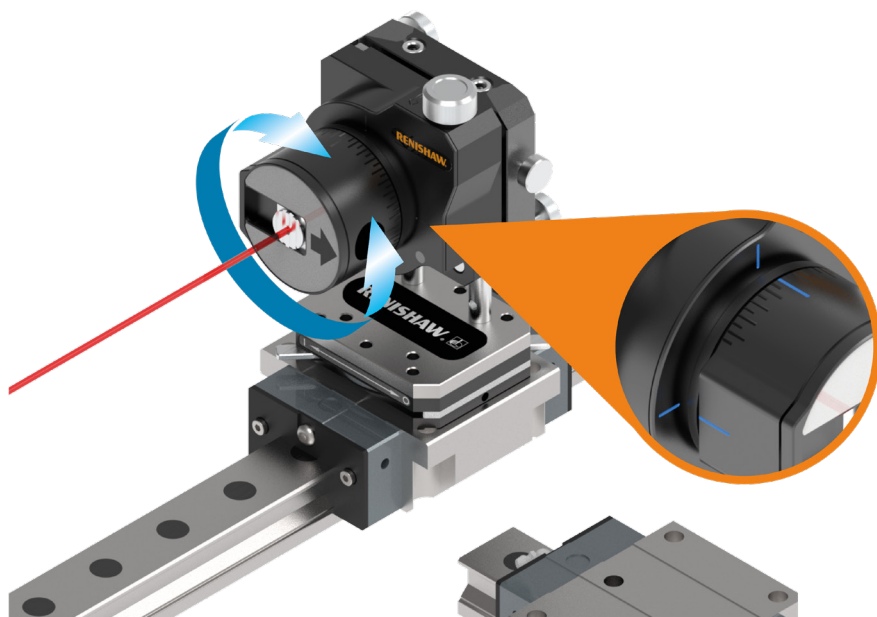
12. Tap 'Capture' to collect data at each target position.



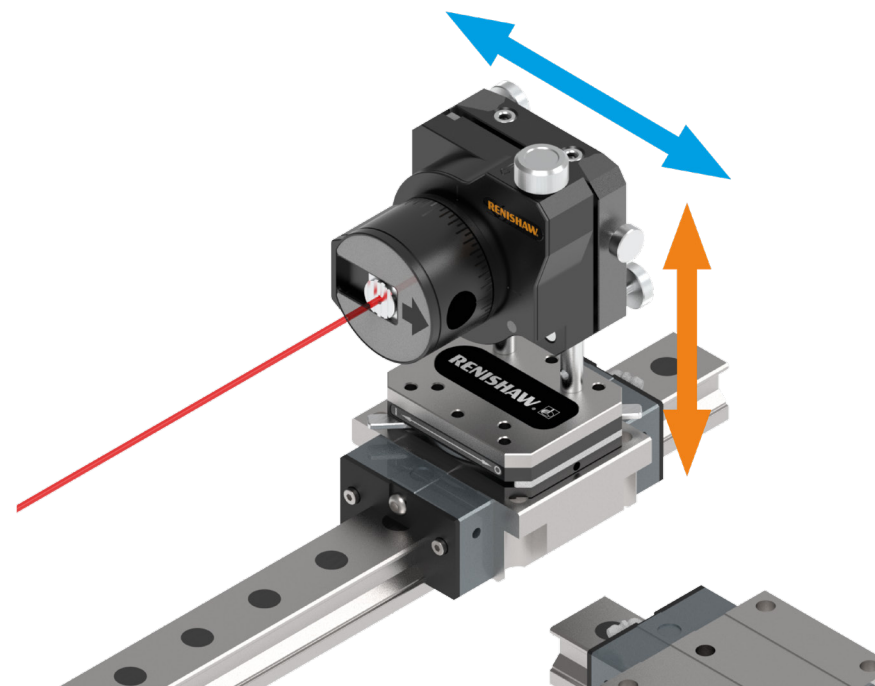
13. Tap 'Next'. Remove the M unit from the carriage and replace with the pentaprism optic. Ensure the carriage is positioned at the corner of both axes.



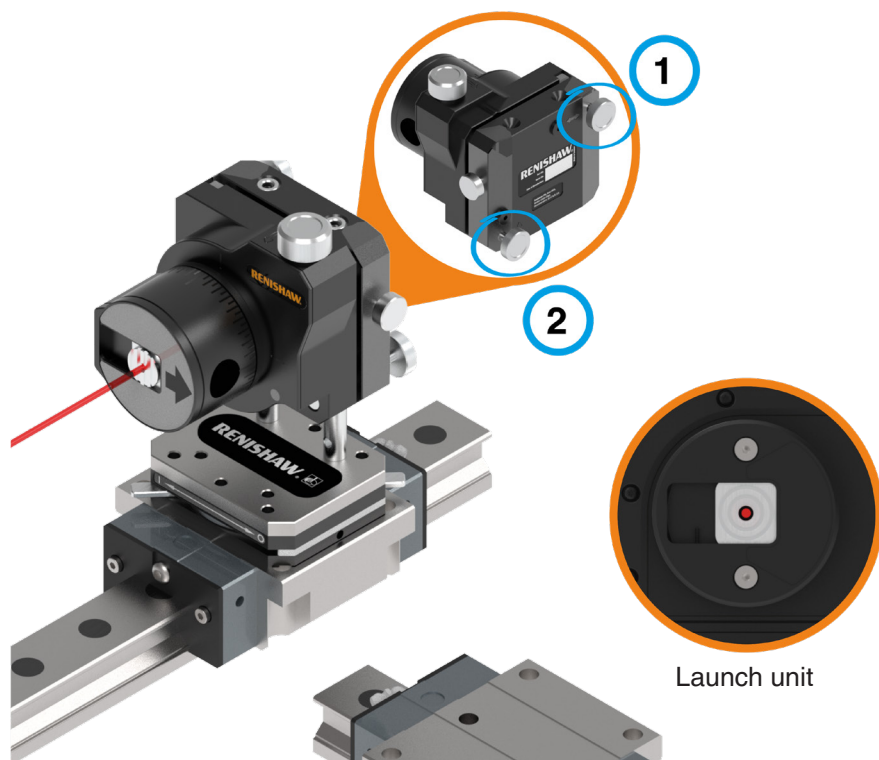
14. Ensure the pentaprism optic is parallel to the Launch unit on the reference rail. Close the pentaprism optic and Launch unit shutters.



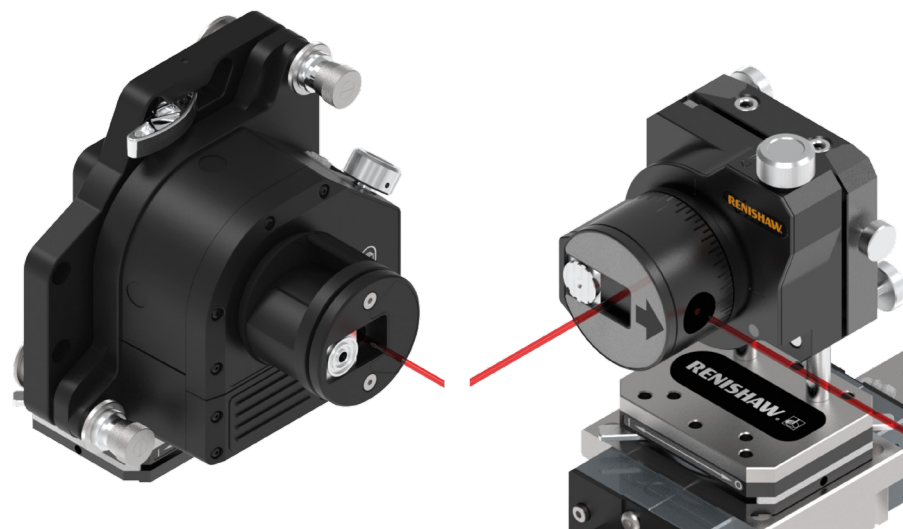
15. Rotate the pentaprism head so the arrow is pointing along the secondary rail. Ensure the 90 degree incremental marks are aligned.



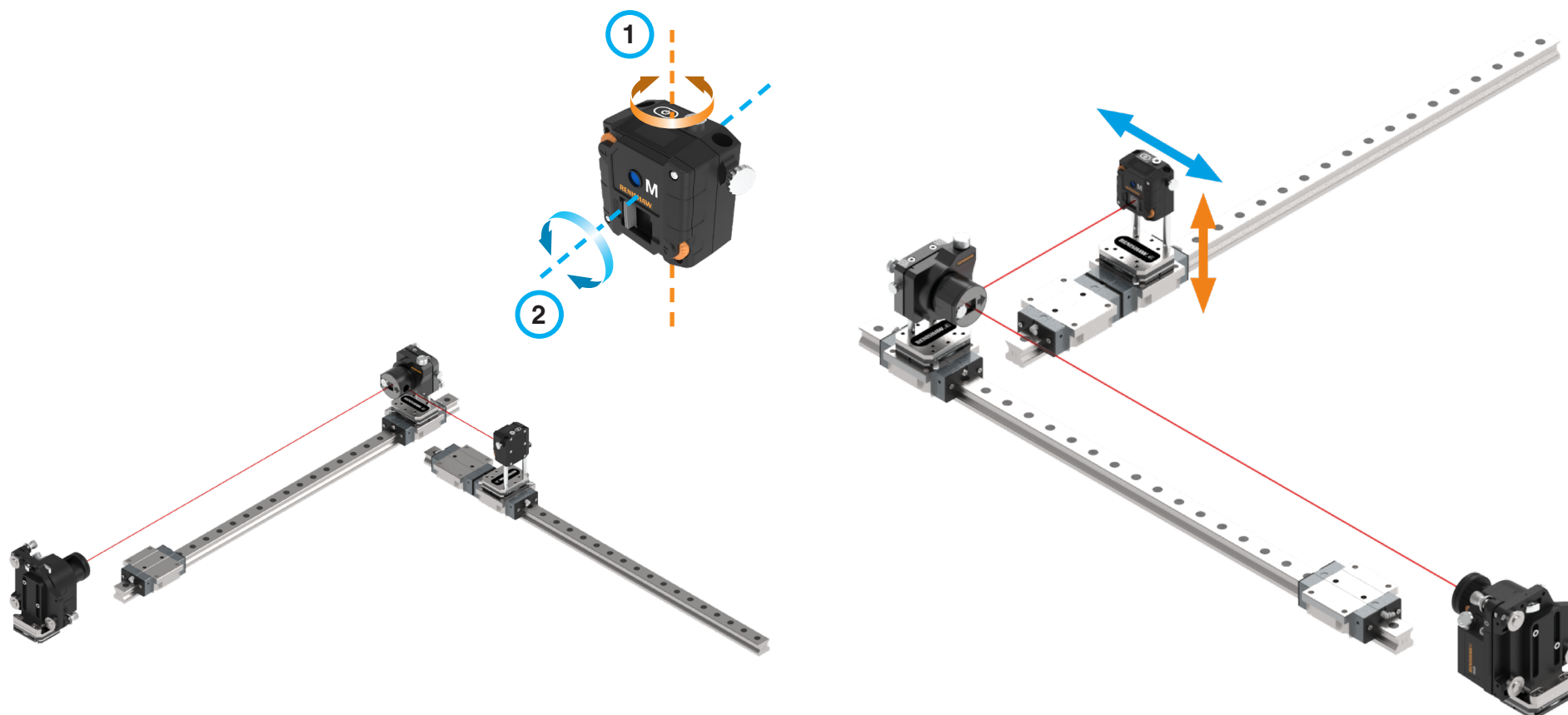
16. Translate the pentaprism optic until the beam is on the centre of the target.



17. Adjust the pitch (1) and yaw (2) screws on the pentaprism optic until the reflected beam is on the centre of the Launch unit target.



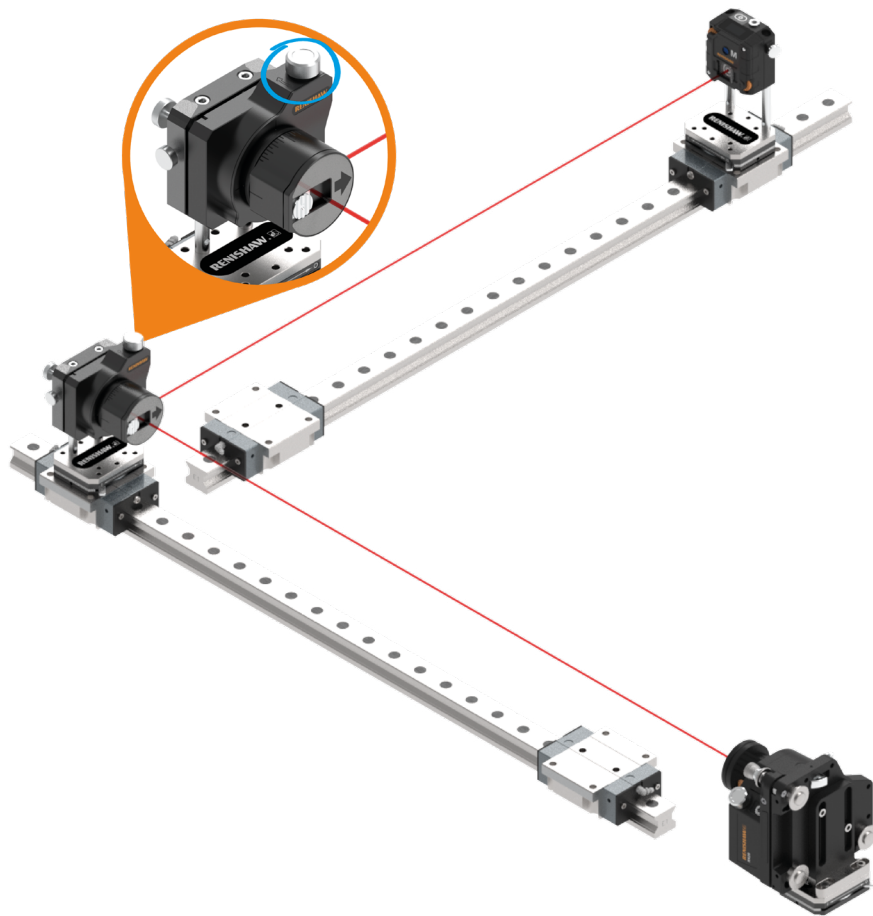
18. Open the pentaprism optic and Launch unit shutters.



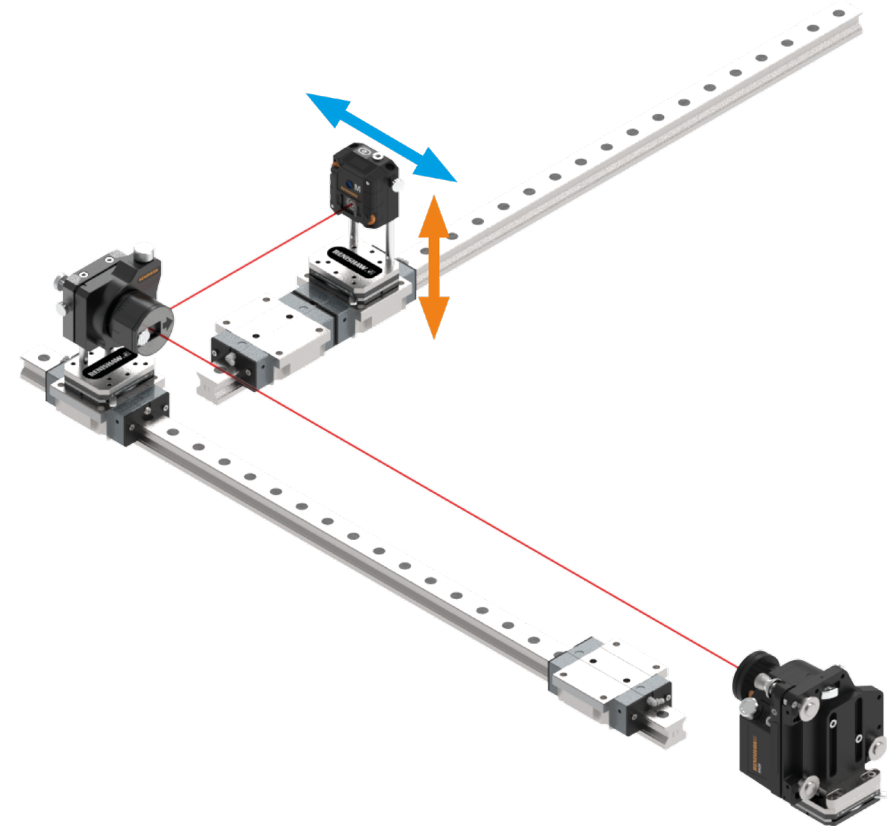
19. Place the M unit onto the secondary rail carriage. Slide the carriage to the start of the rail.

20. Close the M unit shutter. Translate the M unit until the beam is on the centre of the target.

NOTE: In vertical squareness, the inclination (2) of the M unit in relation to gravity must be set manually.

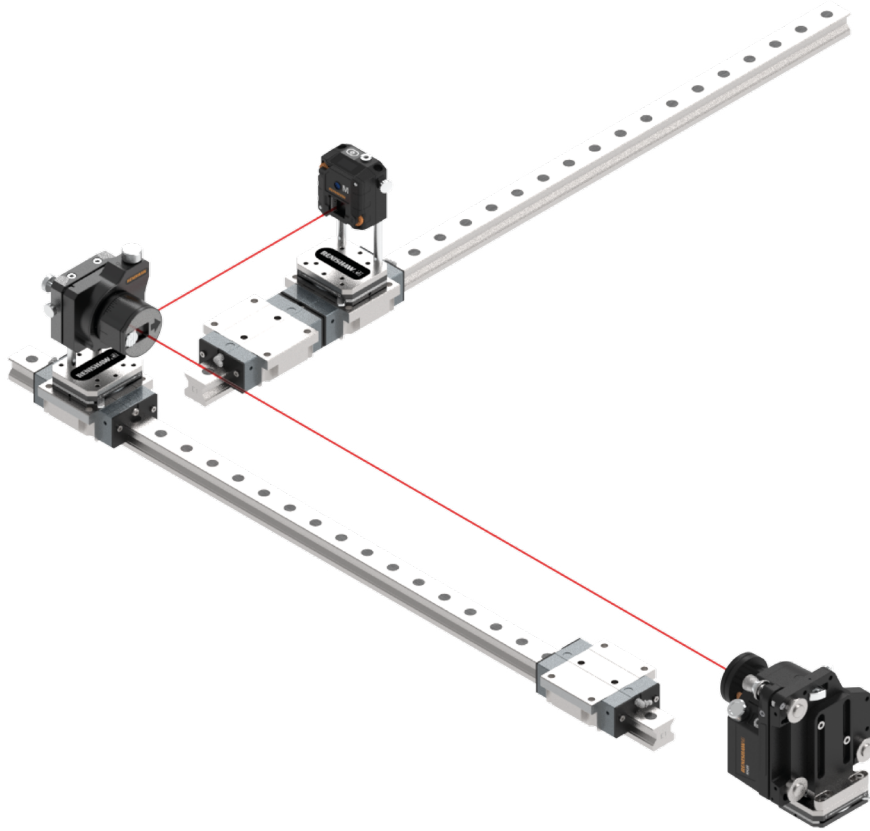


21. Slide the M unit on the carriage to the end of the rail. Adjust the pentaprism optic's rotational pitch screw until the beam is vertically aligned to the centre of the M unit target.

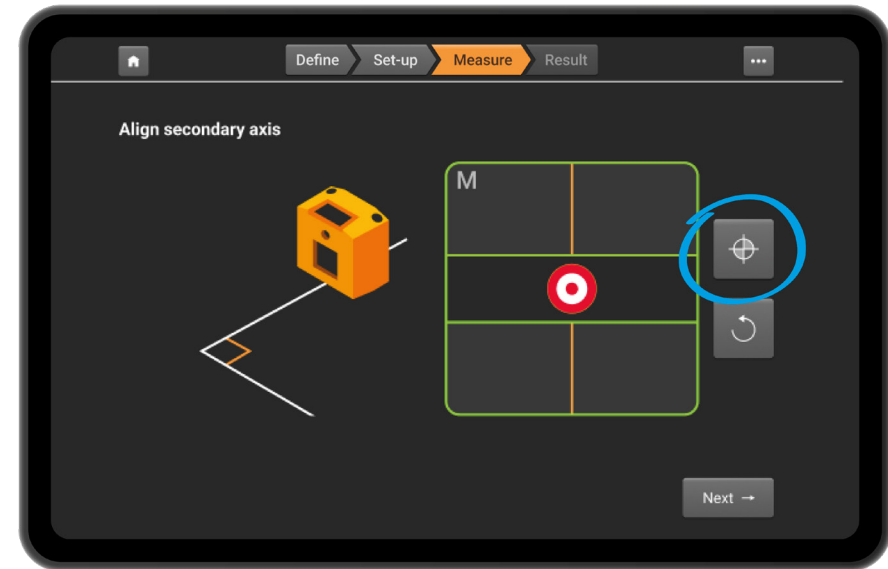


22. Slide the M unit on the carriage to the start of the rail. Translate the M unit until the beam is on the centre of the target.

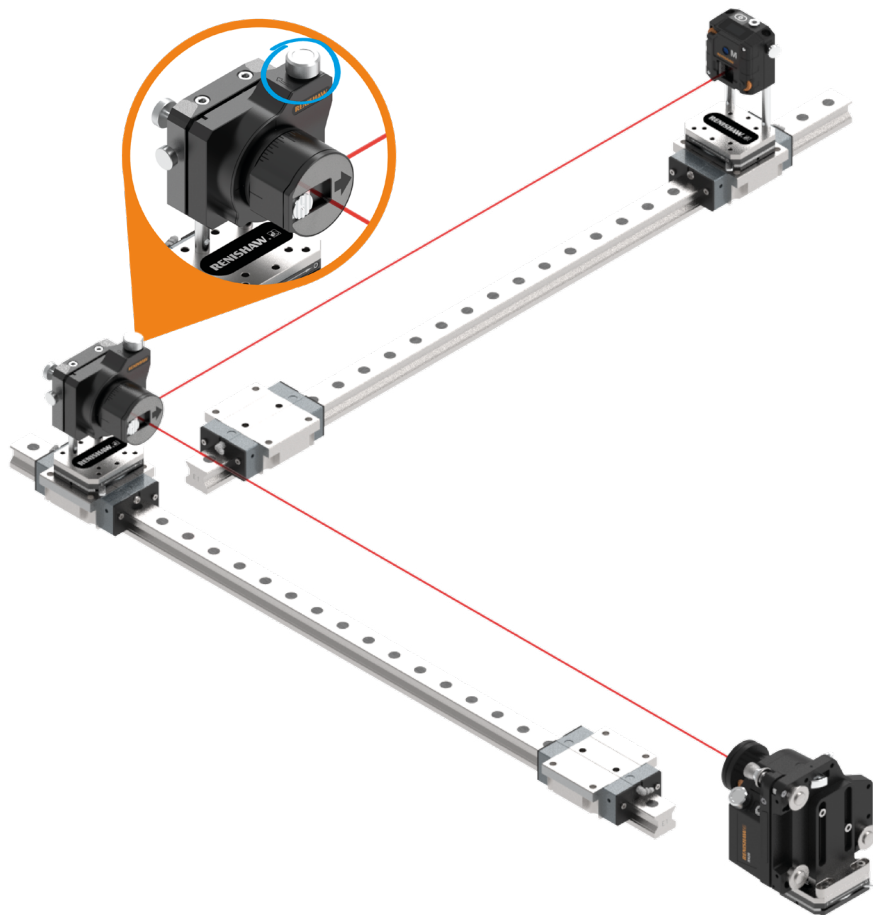
Repeat steps 21 to 22 until the beam stays on the centre of the target at the start and end of the rail.



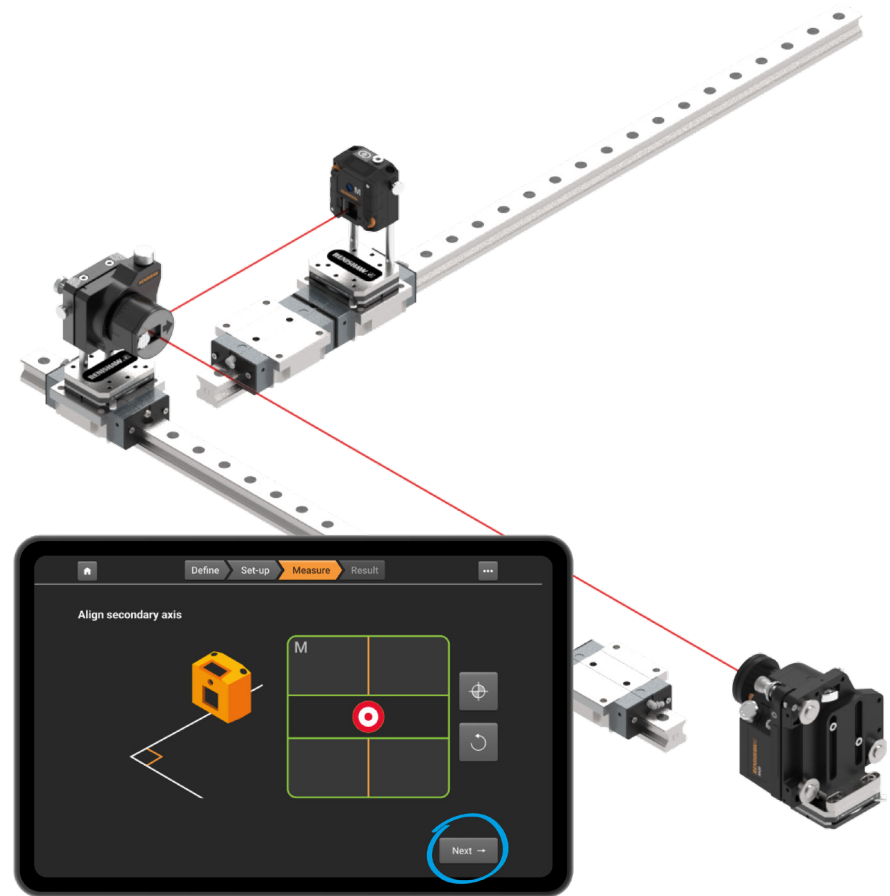
23. Slide the M unit on the carriage to the start of the rail. Open the M unit shutter.



24. Tap 'Datum' in the software.

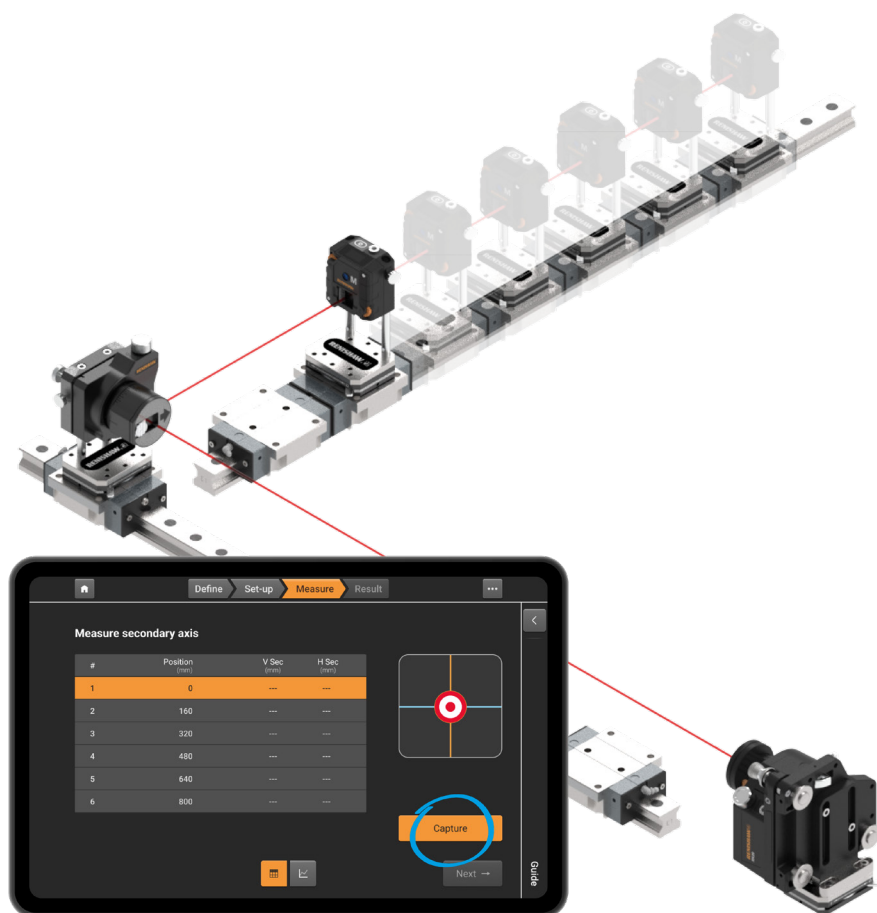


25. Slide the M unit on the carriage to the end of the rail. Adjust the pentaprism optic's rotational pitch screw until the software target turns green.

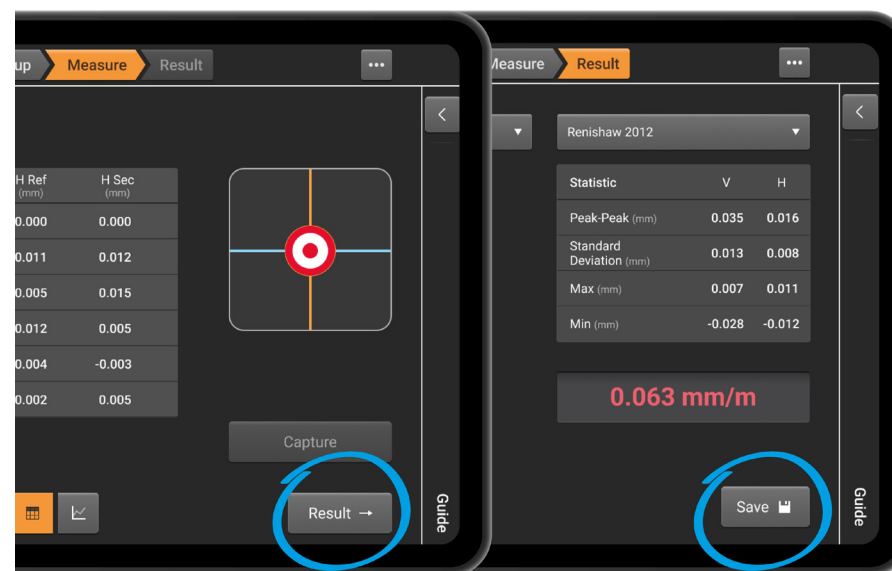


26. Slide the M unit on the carriage to the start of the rail.

Repeat steps 24 to 26 until the software target stays green at the start and end of the rail. Then tap 'Next'.



27. Tap 'Capture' to collect data at each target position.



28. Tap 'Result' then 'Save' the data.

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