

# PicoScale Angular Measurement Head - PS-ACC-HA-3A-C01



The assembly is composed of three PS-SH-C01 sensor heads in an L-shaped configuration. The distance between neighboring sensor heads is 12.7 mm (0.5"). Given the picometer resolution of the **PICOSCALE** interferometer, the theoretical angular resolution of the measurement is in the low nanoradians. The outer dimension of the assembly is 25.4 mm, which means that it fits into every commercially available 1 inch kinematic mount. The three optical fibers are 1.5 m long and collected into a common tube for routing to the **PICOSCALE** controller. The beam specifications are the same as for the C01 sensor heads which the assembly is composed of. For details, please refer to the specs sheet PS-SS00001.

## 1. OPTICAL PROPERTIES

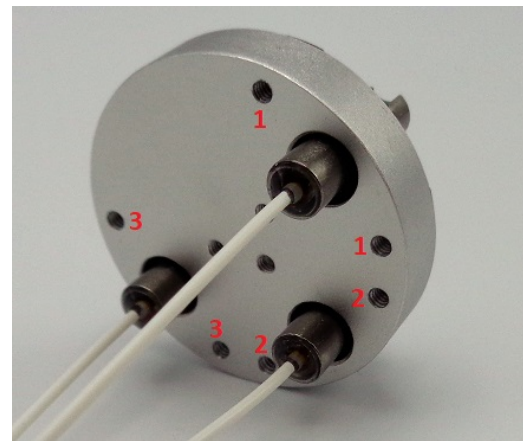
The angular working range can be expanded by relaxing the beam interrupt tolerance in the **PICOSCALE** software. A recommended value which combines a larger angular working ranges with good reliability of the resulting measurement is 75%. This allows for an angular working range of 100 m° measured at a working distance of 100 mm. However, the angular working range does not depend strongly on the working distance, which means that the value of 100 m° holds true for the whole recommended working distance range from 13 to 300 mm.

## 2. FINE ALIGNMENT

In order to obtain the maximum angular working range and measurement accuracy, it is important to align the sensor heads to the target in a way that all three channels show similar signal qualities. If this is not possible, the individual sensor heads have to be

**Table 1.** Summary of specifications.

Property	Value
Angular range (pitch/yaw)	$\pm 100$ m° (pitch <u>or</u> yaw)
	$\pm 70$ m° (pitch <u>and</u> yaw)
Resolution	$\approx 60$ n°
Sensor head separation	12.7 mm $\pm$ 0.2 mm
Outer diameter	25.4 mm (1")



**Figure 1.** Backside of the PS-ACC-HA-3A-C01 with setscrews to align the individual sensor heads.

fine-adjusted. Therefore, maximize the signal quality of one sensor head with the help of a kinematic mount holding the whole assembly or the target mirror. Then, use a 0.7 mm Allen key to adjust the small setscrews indicated in figure 1 to achieve maximum signal quality for the other sensor heads as well. The mechanics are quite delicate, so be careful not to push the setscrews in too far or pull them out. Since the heads are pre-aligned at SmarAct, only minor adjustments should be necessary to ensure parallelism between the sensor heads. Do not use the small setscrews for global alignment of the PS-ACC-HA-3A-C01 to a target.

## 3. ORDER CODE

The order code for the assembly is PS-ACC-HA-3A-C01. For questions or pricing information, please contact the SmarAct sales team.

## Sales partner / Contacts

### Germany

**SmarAct GmbH**

Schuetten-Lanz-Strasse 9  
26135 Oldenburg  
Germany

T: +49 441 - 800 879 0  
Email: info-de@smaract.com  
www.smaract.com

### France

**SmarAct GmbH**

Schuetten-Lanz-Strasse 9  
26135 Oldenburg  
Germany

T: +49 441 - 800 879 956  
Email: info-fr@smaract.com  
www.smaract.com

### USA

**SmarAct Inc.**

2140 Shattuck Ave. Suite 302  
Berkeley, CA 94704  
United States of America

T: +1 415 - 766 9006  
Email: info-us@smaract.com  
www.smaract.com

### China

**Dynasense Photonics**

6 Taiping Street  
Xi Cheng District,  
Beijing, China

T: +86 10 - 835 038 53  
Email: info@dyna-sense.com  
www.dyna-sense.com

**Natsu Precision Tech**

Room 515, Floor 5, Building 7,  
No.18 East Qinghe Anning  
Zhuang Road,  
Haidian District  
Beijing, China

T: +86 18 - 616 715 058  
Email: chenye@nano-stage.com  
www.nano-stage.com

**Shanghai Kingway Optech Co.Ltd**

Room 1212, T1 Building  
Zhonggong Global Creative Center  
Lane 166, Yuhong Road  
Minhang District  
Shanghai, China

Tel: +86 21 - 548 469 66  
Email: sales@kingway-optech.com  
www.kingway-optech.com

### Japan

**Physix Technology Inc.**

Ichikawa-Business-Plaza  
4-2-5 Minami-yawata,  
Ichikawa-shi  
272-0023 Chiba  
Japan

T/F: +81 47 - 370 86 00  
Email: info-jp@smaract.com  
www.physix-tech.com

### South Korea

**SEUM Tronics**

# 1109, 1, Gasan digital 1-ro  
Geumcheon-gu  
Seoul, 08594,  
Korea

T: +82 2 - 868 10 02  
Email: info-kr@smaract.com  
www.seumtronics.com

### Israel

**Trico Israel Ltd.**

P.O.Box 6172  
46150 Herzeliya  
Israel

T: +972 9 - 950 60 74  
Email: info-il@smaract.com  
www.trico.co.il