

# PicoScale Environmental Module - Specification Sheet



## 1. INTRODUCTION

The Environmental Module (PS-EM) is an accessory product for the PICO SCALE. It monitors the environmental parameters such as temperature, relative humidity, and air pressure. With these data the PICO SCALE controller is able to correct the recorded displacement data for changes in the refractive index of air and thus virtual drifts of the target mirror. In the following the specifications of the three individual sensors that are built into the Environmental Module are given.

## 2. TEMPERATURE SENSOR

The temperature sensor is specified as shown in table 1.

**Table 1.** Specifications of temperature sensor.

Property	Value	Conditions
Accuracy	0.1 °C	-5..50 °C
	0.5 °C	-40..125 °C
Resolution	0.01 °C	
Long term drift	0.02 °C/year	

## 3. RELATIVE HUMIDITY SENSOR

The relative humidity (RH) sensor is specified as shown in table 2.

**Table 2.** Specifications of relative humidity (RH) sensor.

Property	Value	Conditions
Accuracy	1.8 %RH	0..80 %RH
Resolution	0.04 %RH	
Long term drift	0.25 %RH/year	

## 4. PRESSURE SENSOR

The pressure sensor is specified as shown in table 3.

**Table 3.** Specifications of pressure sensor.

Property	Value	Conditions
Accuracy	1.5 mbar	25 °C, 750 mbar
Resolution	0.02 mbar	
Long term drift	1 mbar/year	

## 5. OVERALL ACCURACY

The overall accuracy of the refractive index calculation is given by the uncertainties of the three sensors. It is given by

$$\frac{\Delta n}{n} = 4 \times 10^{-7}. \quad (1)$$

Please note, that the environmental data can only be measured at a single point along the optical path. Gradients of the environmental parameters can have significant influence on the accuracy of the displacement data.

## Sales partner / Contacts

### Headquarters

**SmarAct GmbH**

Schuetten-Lanz-Strasse 9  
26135 Oldenburg  
Germany

T: +49 441 – 800 87 90  
Email: [info-de@smaract.com](mailto:info-de@smaract.com)  
[www.smaract.com](http://www.smaract.com)

### France

**SmarAct GmbH**

Schuetten-Lanz-Strasse 9  
26135 Oldenburg  
Germany

T: +49 441 – 80 08 79 956  
Email: [info-fr@smaract.com](mailto:info-fr@smaract.com)  
[www.smaract.com](http://www.smaract.com)

### Israel

**Trico Israel Ltd.**

P.O.Box 6172  
46150 Herzeliya  
Israel

T: +972 9 – 950 60 74  
Email: [info-il@smaract.com](mailto:info-il@smaract.com)  
[www.trico.co.il](http://www.trico.co.il)

### 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](mailto:info-jp@smaract.com)  
[www.physix-tech.com](http://www.physix-tech.com)

### South Korea

**SEUM Tronics**

# 801, 1, Gasan digital 1-ro  
Geumcheon-gu  
Seoul, 08594,  
Korea

T: +82 2 868 – 10 02  
Email: [info-kr@smaract.com](mailto:info-kr@smaract.com)  
[www.seumtronics.com](http://www.seumtronics.com)

### USA

**SmarAct Inc.**

2140 Shattuck Ave., Suite 1103  
Berkeley, CA 94704  
United States of America

T: +1 415 – 766 9006  
Email: [info-us@smaract.com](mailto:info-us@smaract.com)  
[www.smaract.com](http://www.smaract.com)