interferoMETER IMS5400-DS1/VAC

- Absolute measurement with nanometer resolution, suitable for the measurement of e.g. step profiles
- Measuring rate up to 6 kHz for high speed measurements
- Miniature sensor with 4 mm diameter
- Vacuum compatible sensor
- Ethernet / EtherCAT / RS422
- Robust controller with passive cooling
- Easy configuration via web interface

### Model IMS5400-DS1/VAC

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>1 mm</td>
</tr>
<tr>
<td>Start of measuring range</td>
<td>1 mm</td>
</tr>
<tr>
<td>Resolution</td>
<td>&lt; 1 nm</td>
</tr>
<tr>
<td>Measuring rate</td>
<td>continuously adjustable from 100 Hz to 6 kHz</td>
</tr>
<tr>
<td>Linearity</td>
<td>&lt; ±50 nm</td>
</tr>
<tr>
<td>Temperature stability</td>
<td>sensor: Linearity: typ. 0.1 nm / K (without offset displacement) controlled temperature compensated, stability &lt; 10 ppm between +15 ... +35 °C</td>
</tr>
<tr>
<td>Light source</td>
<td>NIR-SLED, wavelength 840 nm; pilot laser: laser LED, wavelength 635 nm</td>
</tr>
<tr>
<td>Laser class</td>
<td>Class 1 according to DIN EN 60825-1: 2015-07; pilot laser: Class 1, power (&lt; 0.2 mW)</td>
</tr>
<tr>
<td>Light spot diameter</td>
<td>10 µm</td>
</tr>
<tr>
<td>Measuring angle</td>
<td>±2°</td>
</tr>
<tr>
<td>Target material</td>
<td>Glass, reflecting or diffuse surfaces</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 VDC ±15 %</td>
</tr>
<tr>
<td>Power consumption</td>
<td>approx. 10 W (24 V)</td>
</tr>
<tr>
<td>Signal input</td>
<td>Sync in, trigger in, 2x encoders (A+, A-, B+, B-, index)</td>
</tr>
<tr>
<td>Digital interface</td>
<td>Ethernet / EtherCAT / RS422 / PROFINET / EtherNet/IP</td>
</tr>
<tr>
<td>Analog output</td>
<td>4 ... 20 mA / 0 ... 10 V (16 bit D/A converter)</td>
</tr>
<tr>
<td>Switching output</td>
<td>Error1-Out, Error2-Out</td>
</tr>
<tr>
<td>Digital output</td>
<td>sync out</td>
</tr>
</tbody>
</table>

### Connector

- **Optical**: Sensor with integrated vacuum optical fiber; length 2 m and FC/APC connector. Extendable via pluggable optical fiber via E2000 socket (controller) and FC socket (vacuum feed through), standard length 3 m, 5 m and 10 m; other cable lengths on request; bending radius: static 30 mm, dynamic 40 mm
- **Electrical**: 3-pin supply terminal strip; encoder connection (15-pin, HD-sub socket, max. cable length 3 m, 30 m with external encoder supply), RS422 connection socket (9-pin, Sub-D, max. cable length 30 m); 3-pin output terminal strip (max. cable length 30 m); 11-pin I/O terminal strip (max. cable length 30 m); RJ45 socket for Ethernet (out) / EtherCAT (in/out) (max. cable length 100 m)

### Mounting

- **Sensor**: Clamping, mounting adapter (see accessories)
- **Controller**: free-standing, DIN rail mounting

### Temperature range

- **Operation**: -20 ... +70 °C
- **Storage**: -20 ... +70 °C

### Shock (DIN EN 60068-2-27)

- 15 g / 6 ms in XY axis, 1000 shocks each

### Vibration (DIN EN 60068-2-6)

- 2 g / 20 ... 500 Hz in XY axis, 10 cycles each

### Protection class (DIN EN 60529)

- **Sensor**: IP40
- **Controller**: IP40

### Vacuum

- UHV (cable and sensor)

### Material

- **Sensor**: Stainless steel
- **Controller**: Aluminum housing, passive cooling

### Control and indicator elements

- Multifunction button: two adjustable functions and reset to factory settings after 10 s;
  - web interface for setup: selectable presets, freely selectable averaging, data reduction, setup management;
  - 6 x color LEDs for intensity, range, SLED, pilot laser, status and power; pilot laser: can be switched on for sensor alignment

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1) Measuring rate 0.5 kHz, moving average over 64 values, measured differentially between the front and back of a thin glass plate in the mid of the measuring range (2 sigma)
2) Maximum deviation from reference system over entire measuring range, measured on front surface of ND filter
3) In the mid of the measuring range
4) Maximum sensor tilt angle that produces a usable signal on polished glass (n = 1.5) in the mid of the measuring range. The accuracy decreases when approaching the limit values.
5) Non-transparent materials require optically dense surface at a wavelength of 840 nm
6) Optional connection via interface module (see accessories)
Dimensions:

Sensor

Controller

Sensor mounting adapter

Dimensions in mm,
not to scale.