#### 51nano-S-980-2.3-TH4-P-5-2-18-0-150

Fiber-coupled low coherence laser source with single-mode fiber cable



#### FEATURES

The Laser Diode Beam Source of type 51nano-S-980-2.3-TH4-P-5-2-18-0-150 has a <u>reduced power</u> <u>noise, a reduced coherence length and a low</u> <u>speckle contrast</u>.

- Reduced power noise: typ. < 0.25 % of P<sub>0</sub> (RMS, Bandwidth < 1 MHz)</li>
- Reduced coherence length: coherence length ≈ 300 µm
- Reduced speckle contrast
- Wavelength: 980 nm
- Laser output power: 2.3 mW
- Single-mode fiber cable
- FC APC connector (8°-polish)
- Modulation analog and TTL
- With interlock and key switch (conform to EN 60825-1)

Alternative: Laser Diode Beam Source <u>51nano-N</u> (OEM version w/o key switch and w/o interlock) or with <u>polarization-maintaining</u> fiber cable

### DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nano-S-980-2.3-TH4-P-5-2-18-0-150 has a reduced power noise (typ. < 0.25 % of P<sub>o</sub> (RMS, Bandwidth < 1 MHz)), reduced coherence length ( $\approx$  300 µm) and a lowered speckle contrast.

#### **Electrical features**

The output power is adjustable using a potentiometer or using the two modulation inputs for analog and TTL.



#### Fiber cable

The source is fiber-coupled to a single-mode fiber cable. As a result the beam profile is rotationally symmetric with Gaussian intensity distribution. The fiber cable is equipped with an FC APC type connector (8°-polish). The fiber cable has a strain-relief and a protective sleeving ( $\emptyset$  3 mm). Standard cable length is 150 cm.

Options:

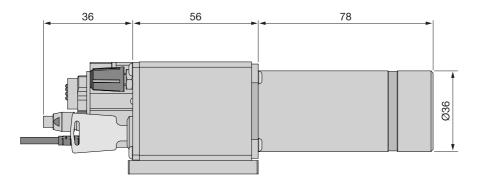
- Polarization-maintaining fiber cable
- Core-centered single-mode fiber cable
- Multiple fiber output cables (51nanoC, single-mode only)
- Other connector types including FC PC, DIN or AVIO, or E2000
- Other fiber cable lengths
- Incorporated vacuum feed-through

#### Laser safety

The laser safety is conform to IEC 825 / EN 60825-1.

- Interlock chain for the remote deactivation of the laser
- Laser power-up is only possible using the key switch
- LED status indicator for "Laser ON"
- For a quick start the laser is shipped with a interlock connector type <u>BC0106F-iLCK</u>

An OEM version is available as type 51 mano-N without key switch or interlock which is not conform to EN 60825-1.



#### **TECHNICAL DATA**

51nano-S-980-2.3-TH4-P-5-2-18-0-150

| Order Code        | 51nano-S-980-2.3-TH4-P-5-2-18-0-150    |
|-------------------|--|
| Will replace      | 51nanoFCM-S-980-2.3-TH4-P-5-2-18-0-150 |
| Series            | 51nano-S (single-mode)                 |
| Laser class       | 3R                                     |
| Center wavelength | 980 ± 10 nm                            |
| Bandwidth         | 0.7 - 4 nm                             |



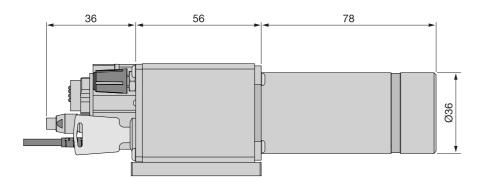
## **DATA SHEET**

| Power adjustment<1 - 100 %Power noisetyp. <0.25 % of P <sub>0</sub> (RMS, BW <1 MHz)Coherence length= 300 µmFiber cablesingle-modeFiber cableSMC-980Nominal fiber NA0.12Effective fiber NAe <sup>2</sup> 0.093 ± 10 % (1/e <sup>2</sup> )Mode field diameter MFD6.7 µm ± 10 % (1/e <sup>2</sup> )Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.1 m (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length1.5 ± 0.1 m (standard)Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage5.0 ± 0.2 VMax. current consumption*260 mAModulation inputsAnalogModulation inputsAnalogMax. input voltage5.V5.V5.VVoltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 VVoltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 VCoperating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 × 58 × 166 mmProtection ClassIP30   | Output power                                  |                                     | typ. 2.3 mW                            |  |
|--|---|-------------------------------------|--|--|
| Coherence length= 300 µmFiber cablesingle-modeFiber cableSMC-980Nominal fiber NA0.12Effective fiber NAe²0.093 ± 10 % (1/e²)Mode field diameter MFD6.7 µm ± 10 % (1/e²)Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.05 m (standard)Fiber cable length1.5 ± 0.1 m (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length1.5 ± 0.1 m (standard)Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage5.0 ± 0.2 VMax. current consumption*260 mAModulation inputsAnalogModulation inputsAnalogMax. input voltage5 V5 V5 VVoltage for P <sub>min</sub> / Po0 V / 2.5 V< 2.4 V1.00 kHzTime delay ON/OFF*2/0.3 µs1.5/0.1 µs1.0/1.0 µsRise / fall time*1.0/1.0 µs* Typical value. Depends on laser diode.0Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 × 58 × 166 mm  | Power adjustment                              |                                     | < 1 - 100 %                            |  |
| Fiber cable       single-mode         Fiber type       SMC-980         Nominal fiber NA       0.12         Effective fiber NA <sub>e</sub> 2       0.093 ± 10 % (1/e <sup>2</sup> )         Mode field diameter MFD       6.7 µm ± 10 % (1/e <sup>2</sup> )         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber connector type       FC APC (standard)         Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation inputs       Analog       TTL         Max. input voltage       5.V       5.V         Voltage for P <sub>min</sub> / Po       0 V / 2.5 V       <0.8 V / > 2.4 V         Input impedance       22 kOhm       22 kOhm         Max. modulation frequency       100 kHz       100 kHz         Time delay ON/OFF*       2/0.3 µs       1.5/0.1 µs         Rise / fall time*       1.0/1.0 µs       1.0/1.0 µs         <  | Power noise                                   | typ. < 0.25 % of P <sub>o</sub> (RM | S, BW < 1 MHz)                         |  |
| Fiber typeSMC-980Nominal fiber NA0.12Effective fiber NAe² $0.093 \pm 10 \% (1/e²)$ Mode field diameter MFD $6.7 \ \mu m \pm 10 \% (1/e²)$ Fiber cable length $1.5 \pm 0.05 \ m (standard)$ Fiber cable length $1.5 \pm 0.05 \ m (standard)$ Fiber cable typeØ 3 mm with Kevlar strain-reliefFiber cable typeFC APC (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length $1.5 \pm 0.1 \ m (standard)$ Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage $5.0 \pm 0.2 \ V$ Max. current consumption*260 \maxModulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogTTLMax. input voltage $5 \ V$ $5 \ V$ Voltage for $P_{min} / P_O$ $0 \ V / 2.5 \ V$ Voltage for $P_{min} / P_O$ $0 \ V / 2.5 \ V$ Max. modulation frequency $100 \ KHz$ Time delay ON/OFF* $2/0.3 \ \mu S$ $1.5/0.1 \ \mu S$ $1.5/0.1 \ \mu S$ Rise / fall time* $1.0/1.0 \ \mu S$ * Typical value. Depends on laser diode.Operating temperatureOperating temperature $15 - 35^{\circ}C \pm 0.5^{\circ}C$ Warm-up timeapprox.10 \mininAir humiditymax. 90 % non-condensingWeight $530 \ g$ Dimensions $50 \ x 58 \times 166 \ mm$   | Coherence length                              |                                     | ≈ 300 µm                               |  |
| Nomial fiber NA       0.12         Effective fiber NA <sub>e</sub> 2       0.093 ± 10 % (1/e <sup>2</sup> )         Mode field diameter MFD       6.7 µm ± 10 % (1/e <sup>2</sup> )         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber connector type       FC APC (standard)         Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation inputs       Analog       TTL         Max. input voltage       5 V       5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V       <0.8 V / > 2.4 V         Input impedance       22 kOhm       22 kOhm         Max. modulation frequency       100 kHz       100 kHz         Time delay ON/OFF*       2/0.3 µs       1.5/0.1 µs         Rise / fall time*       1.0/1.0 µs       1.0/1.0 µs         * Typical value. Depends on laser diode.       Operating temperature       15 - 35°C ± 0.5°C         Warm-up time       approx.10 min       Air humidity <td< th=""><th>Fiber cable</th><th></th><th>single-mode</th></td<>               | Fiber cable                                   |                                     | single-mode                            |  |
| Effective fiber NAe² $0.093 \pm 10 \ \% (1/e^2)$ Mode field diameter MFD $6.7 \ \mu m \pm 10 \ \% (1/e^2)$ Fiber cable length $1.5 \pm 0.05 \ m (standard)$ Fiber cable typeØ 3 mm with Kevlar strain-reliefFiber connector typeFC APC (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length $1.5 \pm 0.1 \ m (standard)$ Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage $5.0 \pm 0.2 \ V$ Modulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogMax. input voltage $5 \ V$ Voltage for P <sub>min</sub> / P <sub>O</sub> $0 \ V / 2.5 \ V$ Voltage for P <sub>min</sub> / P <sub>O</sub> $0 \ V / 2.5 \ V$ Voltage I all time* $1.0/1.0 \ \mu s$ * Typical value. Depends on laser diode. $0 \ V max. 90 \ N \ non-condensingWeight530 \ gDimensions50 \times 58 \times 166 \ mm$  | Fiber type                                    |                                     | SMC-980                                |  |
| Mode field diameter MFD       6.7 μm ± 10 % (1/e <sup>2</sup> )         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber cable type       FC APC (standard)         Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation input connector       6 pin (male, Lumberg SV60)         Modulation inputs       Analog       TTL         Max. input voltage       5 V       5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V       < 0.8 V />         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V       < 0.8 V />         Time delay ON/OFF*       2/0.3 μs       1.5/0.1 μs         Rise / fall time*       1.0/1.0 μs       1.0/1.0 μs         * Typical value. Depends on laser diode.       Operating temperature       15 - 35°C ± 0.5°C         Warm-up time       approx. 10 min <th>Nominal fiber NA</th> <th></th> <th>0.12</th>           | Nominal fiber NA                              |                                     | 0.12                                   |  |
| Fiber cable length1.5 $\pm$ 0.05 m (standard)Fiber cable typeØ 3 mm with Kevlar strain-reliefFiber cable typeØ 3 mm with Kevlar strain-reliefFiber connector typeFC APC (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length1.5 $\pm$ 0.1 m (standard)Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage $5.0 \pm 0.2$ VMax. current consumption*260 mAModulation inputsAnalogTTLMax. input voltage5 V5 VVoltage for Pmin / Po0 V / 2.5 V< 0.8 V / >Linput impedance22 kOhm22 kOhmMax. modulation frequency100 kHz100 kHzTime delay ON/OFF*2/0.3 µs1.5/0.1 µsRise / fall time*1.0/1.0 µs1.0/1.0 µs* Typical value. Depends on laser diode.Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox.10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm  | Effective fiber NA <sub>e<sup>2</sup></sub>   | 0.09                                | 93 ± 10 % (1/e <sup>2</sup> )          |  |
| Fiber cable type       Ø 3 mm with Kevlar strain-relief         Fiber connector type       FC APC (standard)         Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation input connector       6 pin (male, Lumberg SV60)         Modulation inputs       Analog         Max. input voltage       5 V         5 V       5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         4 V       1nput impedance         22 kOhm       22 kOhm         Max. modulation frequency       100 kHz         Time delay ON/OFF*       2/0.3 µs         1.5/0.1 µs       1.5/0.1 µs         Rise / fall time*       1.0/1.0 µs         * Typical value. Depends on laser diode.       0         Operating temperature       15 - 35°C ± 0.5°C         Warm-up time       approx.10 min         Air humidity       max. 90 % non-condensing         Weight       530 g  | Mode field diameter MFD                       | 6.7 µ                               | m ± 10 % (1/e <sup>2</sup> )           |  |
| Fiber connector type       FC APC (standard)         Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation input connector       6 pin (male, Lumberg SV60)         Modulation inputs       Analog         Max. input voltage       5 V         5 V       5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 100 kHz         Time delay ON/OFF*       2/0.3 µs       1.5/0.1 µs         Rise / fall time*       1.0/1.0 µs       1.0/1.0 µs         * Typical val       | Fiber cable length                            | ·                                   |  |  |
| Power stability       max. 12 % power variation between 15°C and 35°C         Electronics type       H         Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation input connector       6 pin (male, Lumberg SV60)         Modulation inputs       Analog         Max. input voltage       5 V         Sv       5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>O</sub> 0 V / 2.5 V         Input impedance       22 kOhm         Max. modulation frequency       100 kHz         Time delay ON/OFF*       2/0.3 µs       1.5/0.1 µs         Rise / fall time*       1.0/1.0 µs       1.0/1.0 µs         * Typical value. Depends on laser diode.       Operating temperature       15 - 35°C ± 0.5°C         Warm-up time       approx. 10 min       approx. 10 min         Air humidity       max. 90 % non-condensing         Weight       530 g         Dimensions       50 x 58 x 166 mm  | Fiber cable type                              | Ø 3 mm with Ke                      | evlar strain-relief                    |  |
| Electronics typeHElectr. cable length $1.5 \pm 0.1 \text{ m}$ (standard)Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage $5.0 \pm 0.2 \text{ V}$ Max. current consumption*260 mAModulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogMax. input voltage $5 \text{ V}$ $5 \text{ V}$ $5 \text{ V}$ Voltage for $P_{min} / P_0$ $0 \text{ V} / 2.5 \text{ V}$ < 0.8 V / ><br>2.4 VInput impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ 1.0/1.0 $\mu \text{s}$ $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode.Operating temperature0 perating temperature $15 - 35^{\circ} \text{C} \pm 0.5^{\circ} \text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$   | Fiber connector type                          | FC                                  | APC (standard)                         |  |
| Electr. cable length       1.5 ± 0.1 m (standard)         Connector type       Connector, 3-pol. (male, Lumberg SV30)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         Modulation input connector       6 pin (male, Lumberg SV60)         Modulation inputs       Analog         Max. input voltage       5 V         Sv       5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Voltage for P <sub>min</sub> / P <sub>0</sub> 0 V / 2.5 V         Supply       22 kOhm         Max. modulation frequency       100 kHz         Input impedance       22 kOhm         Max. modulation frequency       100 kHz         Time delay ON/OFF*       2/0.3 µs         Time delay ON/OFF*       1.0/1.0 µs         * Typical value. Depends on laser diode.       0         Operating temperature       15 - 35°C ± 0.5°C         Warm-up time       approx. 10 min         Air humidity       max. 90 % non-condensing         Weight       530 g <th>Power stability</th> <th>max. 12 % power variation between</th> <th>15°C and 35°C</th> | Power stability                               | max. 12 % power variation between   | 15°C and 35°C                          |  |
| Connector typeConnector, 3-pol. (male, Lumberg SV30)Supply voltage $5.0 \pm 0.2 \vee$ Max. current consumption*260 mAModulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogMax. input voltage $5 \vee$ $5 \vee$ $5 \vee$ Voltage for Pmin / Po $0 \vee / 2.5 \vee$ $24 \vee$ Input impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$   | Electronics type                              |                                     | Н                                      |  |
| Supply voltage $5.0 \pm 0.2 \vee$ Max. current consumption*260 mAModulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogMax. input voltage $5 \vee$ $5 \vee$ $5 \vee$ Voltage for P <sub>min</sub> / P <sub>O</sub> $0 \vee / 2.5 \vee$ < 0.8 $\vee / > 2.4 \vee$ Input impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ 1.0/1.0 $\mu \text{s}$ $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$   | Electr. cable length                          | 1.5 ± (                             | ).1 m (standard)                       |  |
| Max. current consumption*260 mAModulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ Voltage for $P_{min} / P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / > 2.4 \vee$ Input impedance22 kOhm22 kOhmMax. modulation frequency100 kHz100 kHzTime delay ON/OFF*2/0.3 µs1.5/0.1 µsRise / fall time*1.0/1.0 µs1.0/1.0 µs* Typical value. Depends on laser diode.Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm   | Connector type                                | Connector, 3-pol. (male,            | Connector, 3-pol. (male, Lumberg SV30) |  |
| Modulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ Voltage for P <sub>min</sub> / P <sub>O</sub> $0 \vee / 2.5 \vee$ $< 0.8 \vee / >$ 2.4 $\vee$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $1.0/1.0 \mu \text{s}$ $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$   | Supply voltage                                |                                     | 5.0 ± 0.2 V                            |  |
| Modulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ Max. input voltage for $P_{min} / P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / > 2.4 \vee$ Voltage for $P_{min} / P_0$ $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $1.0/1.0 \mu \text{s}$ $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode. $0 \text{ perating temperature}$ $15 - 35^\circ \text{C} \pm 0.5^\circ \text{C}$ Warm-up timeapprox. 10 min $10 \text{ max}. 90 \%$ non-condensing $50 \times 58 \times 166 \text{ mm}$ Dimensions $50 \times 58 \times 166 \text{ mm}$ $50 \times 58 \times 166 \text{ mm}$   | Max. current consumption*                     |                                     | 260 mA                                 |  |
| Max. input voltage $5 \vee$ $5 \vee$ Voltage for $P_{min} / P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / > 2.4 \vee$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu\text{s}$ $1.5/0.1 \mu\text{s}$ Rise / fall time* $1.0/1.0 \mu\text{s}$ $1.0/1.0 \mu\text{s}$ * Typical value. Depends on laser diode. $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$  | Modulation input connector                    | 6 pin (male, Lumberg SV60)          |  |  |
| Voltage for $P_{min} / P_0$ $0 \lor / 2.5 \lor$ $< 0.8 \lor / > 2.4 \lor$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $1.0/1.0 \mu \text{s}$ $1.0/1.0 \mu \text{s}$ * Typical value. Depends on laser diode. $53^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$  | Modulation inputs                             | Analog                              | TTL                                    |  |
| 2.4 V       Input impedance     22 kOhm       Max. modulation frequency     100 kHz       100 kHz     100 kHz       Time delay ON/OFF*     2/0.3 μs       Rise / fall time*     1.0/1.0 μs       * Typical value. Depends on laser diode.       Operating temperature     15 - 35°C ± 0.5°C       Warm-up time     approx. 10 min       Air humidity     max. 90 % non-condensing       Weight     530 g       Dimensions     50 x 58 x 166 mm   | Max. input voltage                            | 5 V                                 | 5 V                                    |  |
| Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.3 \mu\text{s}$ $1.5/0.1 \mu\text{s}$ Rise / fall time* $1.0/1.0 \mu\text{s}$ $1.0/1.0 \mu\text{s}$ * Typical value. Depends on laser diode. $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$   | Voltage for P <sub>min</sub> / P <sub>O</sub> | 0 V / 2.5 V                         |  |  |
| Time delay ON/OFF*         2/0.3 μs         1.5/0.1 μs           Rise / fall time*         1.0/1.0 μs         1.0/1.0 μs           * Typical value. Depends on laser diode.         15 - 35°C ± 0.5°C           Operating temperature         15 - 35°C ± 0.5°C           Warm-up time         approx. 10 min           Air humidity         max. 90 % non-condensing           Weight         530 g           Dimensions         50 x 58 x 166 mm   | Input impedance                               | 22 kOhm                             | 22 kOhm                                |  |
| Rise / fall time*1.0/1.0 μs* Typical value. Depends on laser diode.Operating temperature15 - 35°C ± 0.5°CWarm-up timeAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm   | Max. modulation frequency                     | 100 kHz                             | 100 kHz                                |  |
| * Typical value. Depends on laser diode.<br>Operating temperature 15 - 35°C ± 0.5°C<br>Warm-up time approx. 10 min<br>Air humidity max. 90 % non-condensing<br>Weight 530 g<br>Dimensions 50 x 58 x 166 mm   | Time delay ON/OFF*                            | 2/0.3 µs                            | 1.5/0.1 μs                             |  |
| Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm  | Rise / fall time*                             | 1.0/1.0 µs                          | 1.0/1.0 μs                             |  |
| Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm  | * Typical value. Depends on las               | er diode.                           |  |  |
| Air humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm  | Operating temperature                         | 1                                   | 5 - 35°C ± 0.5°C                       |  |
| Weight         530 g           Dimensions         50 x 58 x 166 mm   | Warm-up time                                  | approx. 10 min                      |  |  |
| Dimensions         50 x 58 x 166 mm  | Air humidity                                  | max. 90 %                           | non-condensing                         |  |
|  | Weight  |                                     | 530 g                                  |  |
| Protection Class IP30  | Dimensions                                    | 50 x 58 x 166 mm                    |  |  |
|  | Protection Class IP30                         |                                     |  |  |



# **DATA SHEET**

Dimensions (for a complete dimensional drawing please refer to the downloads section)



## **TECHNOTES**

- Fiber-coupled low noise beam source
   Comparison of a low noise laser source to a conventional laser source
- <u>51nano: Electronics Type H</u>
   <u>Electronic features for electronics type H</u>

### DOWNLOADS



000829001100.pdf (Dimensional drawing)



Conformity\_51nano\_2023\_E\_web.PDF (CE certificate)

# ACCESSORIES

| PS051003E                           | Power Supply 5 V  |
|-------------------------------------|---|
| BC0106F-ILCK                        | Interlock connector   |
| FIBER COLLIMATORS<br>SINGLE-MODE/PM | Fiber Collimators for collimating light exiting a single-<br>mode or polarization-maintaining fiber cable |

### **RELATED PRODUCTS**



### **DATA SHEET**

| 51NANO-S<br>(POLARIZATION-<br>MAINTAINING)  | Fiber-coupled low coherence laser source with polarization-maintaining fiber cable  |
|---|---|
| 51NANO-N (SINGLE-<br>MODE, OEM)             | Fiber-coupled low coherence laser source with single-mode fiber cable (OEM version) |
| 51NANOFI-S WITH<br>FARADAY ISOLATOR<br>(PM) | Fiber-coupled low coherence laser source with polarization-maintaining fiber cable  |

This is a printout of the page <u>https://sukhamburg.com/products/details/51nano-S-980-2\_3-TH4-P-5-2-18-0-150</u> from 5/3/2024

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