

## 51nanoFI-S-445-15-G02-P-12-4-18-0-150

Fiber-coupled low coherence laser source with integrated Faraday isolator and single-mode fiber cable



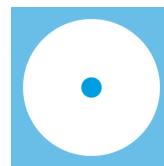
### FEATURES

The Laser Diode Beam Source of type 51nanoFI-S-445-15-G02-P-12-4-18-0-150 has a reduced power noise, a reduced coherence length and a low speckle contrast.

- Reduced power noise: typ.  $< 0.06\%$  of  $P_o$  (RMS, Bandwidth  $< 1$  MHz)
- Reduced coherence length: coherence length  $\approx 300\ \mu\text{m}$
- Reduced speckle contrast
- Wavelength: 445 nm
- Laser output power: 15 mW
- Integrated Faraday isolator  $> 30$  dB
- Single-mode fiber cable
- FC APC connector (8°-polish) with end cap
- Modulation analog and TTL
- With interlock and key switch (conform to EN 60825-1)

Alternative: Laser Diode Beam Source 51nanoFi-N (OEM version w/o key switch and w/o interlock)

- 
- With integrated Faraday isolator



## DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nanoFI-S-445-15-G02-P-12-4-18-0-150 has a [reduced power noise \(typ. < 0.06 % of  \$P\_o\$  \(RMS, Bandwidth < 1 MHz\)\)](#), [reduced coherence length \( \$\approx 300 \mu\text{m}\$ \)](#) 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.

#### Faraday isolator

The source has an integrated Faraday isolator in order to protect the laser from back reflections.

#### 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) and an [end cap](#) to prevent fiber damage. The fiber cable has a strain-relief and a protective sleeving ( $\varnothing 3 \text{ mm}$ ). Standard cable length is 150 cm.

Options:

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

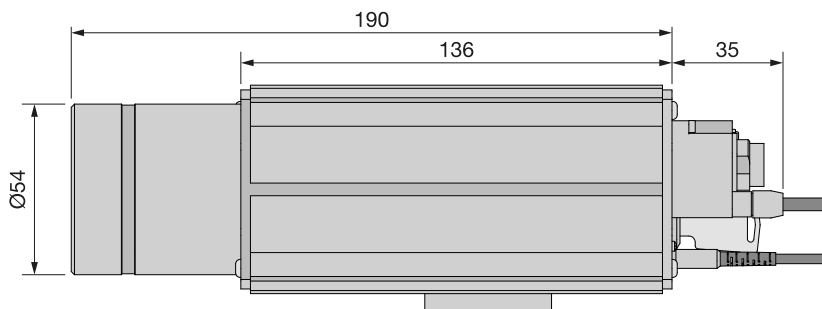
#### Laser safety

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 [BC0106F-iLCK](#)

An OEM version is available as type [51nanoFi-N](#) without key switch or interlock which is not conform to EN 60825-1.

A version without Faraday isolator is available [here](#).

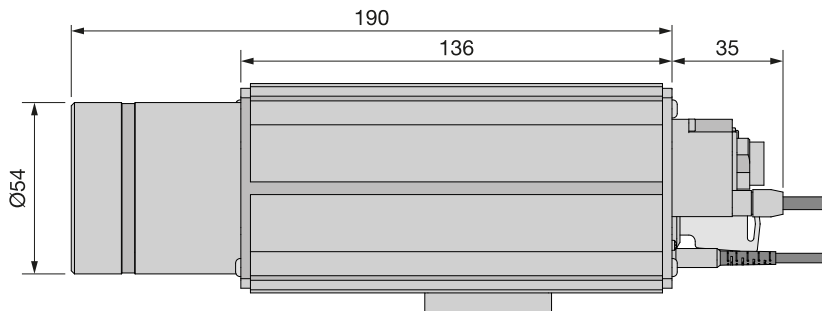


## TECHNICAL DATA

51nanoFI-S-445-15-G02-P-12-4-18-0-150

|   |   |                   |
|---|---|-------------------|
| Order Code                                    | 51nanoFI-S-445-15-G02-P-12-4-18-0-150             |                   |
| Series  | 51nanoFI-S (single-mode)                          |                   |
| Laser class                                   | 3B  |                   |
| Center Wavelength                             | 445 ± 5 nm  |                   |
| Bandwidth                                     | 0.7 - 4 nm  |                   |
| Output power                                  | typ. 15 mW  |                   |
| Power adjustment                              | < 1 - 100 %                                       |                   |
| Power noise                                   | typ. < 0.06 % of P <sub>0</sub> (RMS, BW < 1 MHz) |                   |
| Coherence length                              | ≈ 300 µm  |                   |
| Isolation                                     | > 30 dB   |                   |
| Fiber cable                                   | single-mode                                       |                   |
| Fiber type                                    | SMC-E-460Si                                       |                   |
| Nominal fiber NA                              | 0.12  |                   |
| Effective fiber NA <sub>e</sub> <sup>2</sup>  | 0.081 ± 10 % (1/e <sup>2</sup> )                  |                   |
| Mode field diameter MFD                       | 3.4 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 with end cap (standard)                    |                   |
| Power stability                               | max. 12 % power variation between 15°C and 35°C   |                   |
| Electronics type                              | HP  |                   |
| Electr. cable length                          | 1.5 ± 0.1 m (standard)                            |                   |
| Connector type                                | 4 pin (male, Lumberg SV40)                        |                   |
| Supply voltage                                | 12.0 ± 0.5 V                                      |                   |
| Max. current consumption*                     | 260 mA  |                   |
| Modulation input connector                    | 6 pin (male, Lumberg SV60)                        |                   |
| Modulation inputs                             | Analog  | TTL               |
| Max. input voltage                            | 6.5 V   | 6.5 V             |
| Voltage for P <sub>min</sub> / P <sub>0</sub> | 0 V / 2.5 V                                       | < 0.8 V / > 2.4 V |
| Input impedance                               | 9 kOhm  | 9 kOhm            |
| Max. modulation frequency                     | 1 Hz  | 300 kHz           |
| Time delay ON/OFF*                            | < 2.0/0.5 ms                                      | < 0.5/0.2 µs      |

|   |                          |
|---|--------------------------|
| Rise / fall time*   | 0.5/0.5 s   0.8/0.3 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 |
| Casing Type   | S1                       |
| Weight  | g                        |
| Dimensions (w/o base)   | 66 x 66 x 225 mm         |
| Protection Class  | IP30                     |
| 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](#)
- [51nano: Electronics Type HP](#)  
[Electronic features for electronics type HP](#)

## DOWNLOADS



[090410090100.pdf \(Dimensional drawing\).](#)



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

## ACCESSORIES

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

## RELATED PRODUCTS

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

This is a printout of the page <https://sukhamburg.com/products/details/51nanoFI-S-445-15-G02-P-12-4-18-0-150> from 5/2/2024

## CONTACT

For more information please contact:

Schäfter + Kirchhoff GmbH

Kieler Str. 212

22525 Hamburg

Germany

Tel: +49 40 85 39 97-0

Fax: +49 40 85 39 97-79

[info@sukhamburg.de](mailto:info@sukhamburg.de)

[www.sukhamburg.com](http://www.sukhamburg.com)

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