

## 51nanoFI-S-980-2-TH4-P-5-2-28-0-150

Fiber-coupled low coherence laser source with integrated Faraday isolator and polarization-maintaining fiber cable



### FEATURES

The Laser Diode Beam Source of type 51nanoFI-S-980-2-TH4-P-5-2-28-0-150 has a reduced power noise, a reduced coherence length and a low speckle contrast.

- Reduced power noise: typ.  $< 0.25\%$  of  $P_0$  (RMS, Bandwidth  $< 1$  MHz)
- Reduced coherence length: coherence length  $\approx 300\ \mu\text{m}$
- Reduced speckle contrast
- Wavelength: 980 nm
- Laser output power: 2 mW
- Integrated Faraday isolator  $> 30$  dB
- Polarization-maintaining 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 [51nanoFi-N](#) (OEM version w/o key switch and w/o interlock)

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- With integrated Faraday isolator



## DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nanoFI-S-980-2-TH4-P-5-2-28-0-150 has a reduced power noise (typ.  $< 0.25\%$  of  $P_0$  (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 polarization-maintaining fiber cable (standard, polarization extinction ratio  $\geq 23$  dB). 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 ( $\varnothing 3$  mm). Standard cable length is 150 cm.

Options:

- Single-mode 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-980-2-TH4-P-5-2-28-0-150

Order Code	51nanoFI-S-980-2-TH4-P-5-2-28-0-150	
Series	51nanoFI-S (PM)	
Laser class	3R	
Center Wavelength	$980 \pm 10 \text{ nm}$	
Bandwidth	0.7 - 4 nm	
Output power	typ. 2 mW	
Power adjustment	< 1 - 100 %	
Power noise	typ. < 0.25 % of $P_0$ (RMS, BW < 1 MHz)	
Coherence length	$\approx 300 \mu\text{m}$	
Isolation	> 30 dB	
Fiber cable	polarization-maintaining	
Fiber type	PMC-980	
Nominal fiber NA	0.12	
Effective fiber $NA_e^2$	$0.081 \pm 10 \% (1/e^2)$	
Mode field diameter MFD	$7.7 \mu\text{m} \pm 10 \% (1/e^2)$	
PER	$\geq 23 \text{ dB}$	
Fiber cable length	$1.5 \pm 0.05 \text{ m}$ (standard)	
Fiber cable type	$\varnothing 3 \text{ mm}$ 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	$1.5 \pm 0.1 \text{ m}$ (standard)	
Connector type	3 pin (male, Lumberg SV30)	
Supply voltage	$5.0 \pm 0.2 \text{ V}$	
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 $P_{\min} / P_0$	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 $\mu$ s	1.5/0.1 $\mu$ s
Rise / fall time*	1.0/1.0 $\mu$ s	1.0/1.0 $\mu$ s
* Typical value. Depends on laser diode.		
Operating temperature	15 - 35°C $\pm$ 0.5°C	
Warm-up time	approx. 10 min	
Air humidity	max. 90 % non-condensing	
Casing Type	S2	
Weight	g	
Dimensions (w/o base)	66 x 66 x 265 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 H](#)  
[Electronic features for electronics type H](#)

## DOWNLOADS



[090410090200.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 SINGLE-MODE/PM</b>	Fiber Collimators for collimating light exiting a single-mode or polarization-maintaining fiber cable

## RELATED PRODUCTS

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

This is a printout of the page <https://sukhamburg.com/products/details/51nanoFI-S-980-2-TH4-P-5-2-28-0-150> from 5/2/2024

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