

51nano-S-850-18-G17-P-5-2-28-0-150

Fiber-coupled low coherence laser source with polarization-maintaining fiber cable



FEATURES

The Laser Diode Beam Source of type 51nano-S-850-18-G17-P-5-2-28-0-150 has a <u>reduced power noise</u>, a reduced coherence length and a low <u>speckle contrast</u>.

- Reduced power noise: typ. < 0.1 % of P₀ (RMS, Bandwidth < 1 MHz)
- Reduced coherence length: coherence length ≈ 300 µm
- Reduced speckle contrast
- Wavelength: 850 nm
- Laser output power: 18 mW
- 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 <u>51nano-N</u> (OEM version w/o key switch and w/o interlock)

DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nano-S-850-18-G17-P-5-2-28-0-150 has a reduced power noise (typ. < 0.1 % of P_O (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 polarization-maintaining fiber cable (standard, polarization extinction ratio ≥ 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 (\emptyset 3 mm). Standard cable length is 150 cm.



Options:

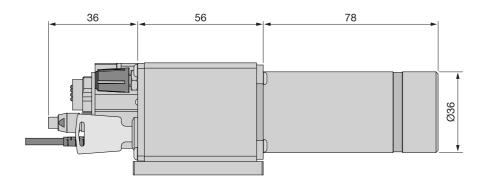
- Single-mode fiber
- Core-centered (single-mode only)
- Multiple fiber output cables (51nanoC, single-mode only)
- Other connector types including FC PC, DIN or AVIO, or E2000
- Other fiber cable lengths
- Incorporated vacuum feed-through

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 <u>51nano-N</u> without key switch or interlock which is not conform to EN 60825-1.



TECHNICAL DATA

51nano-S-850-18-G17-P-5-2-28-0-150

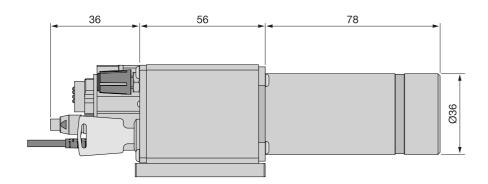
Order Code	51nano-S-850-18-G17-P-5-2-28-0-150	
Series	51nano-S (PM)	
Laser class	3B	
Center wavelength	850 ± 10 nm	
Bandwidth	0.7 - 4 nm	
Output power	typ. 18 mW	
Power adjustment	< 1 - 100 %	
Power noise	typ. $< 0.1 \%$ of P $_0$ (RMS, BW $< 1 \text{ MHz}$)	
Coherence length	≈ 300 µm	



Nominal fiber NA 0.12 Effective fiber NA _e ² $0.076 \pm 10 \% (1/e^2)$ Mode field diameter MFD $7.1 \mu m \pm 10 \% (1/e^2)$ PER $\geq 23 \text{dE}$ Fiber cable length $1.5 \pm 0.05 \text{m}$ (standard Fiber cable type $\emptyset 3 \text{mm}$ with Kevlar strain-relie Fiber connector type FC APC (standard Power stability max. 12 % power variation between 15°C and 35°C Electronics type Felectr. cable length $1.5 \pm 0.1 \text{m}$ (standard Connector type 3pin (male, Lumberg SV30 Supply voltage $5.0 \pm 0.2 \text{M}$ Modulation input connector 6pin (male, Lumberg SV60 Modulation inputs Analog TTI Max. input voltage $5 \text{V} \text{SV} \text{SV}$ Voltage for $P_{\text{min}} P_{\text{O}}$ $0 \text{V} / 2.5 \text{V}$ $1.5 \text{V} \text{SV}$ Input impedance $22 \text{kOhm} 22 \text{kOhm}$ 22kOhm Max. modulation frequency $100 \text{kHz} 100 \text{kHz}$ 100kHz Time delay ON/OFF* $2/0.3 \mu \text{s} 1.5/0.1 \mu \text{s}$ *Typical value. Depends on laser diode. Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up time approx.10 min Air humidity max. 90 % non-condensing Weight 530C	Fiber cable	polarization-maintaining		
Effective fiber NA $_e$ 2 $0.076 \pm 10 \% (1/e^2)$ Mode field diameter MFD $7.1 \mu m \pm 10 \% (1/e^2)$ PER $\geq 23 dt$ Fiber cable length $1.5 \pm 0.05 m$ (standard Fiber cable typeØ 3 mm with Kevlar strain-relieFiber connector typeFC APC (standard Power stabilityFC APC (standard Power stabilityPower stabilitymax. 12 % power variation between 15° C and 35° CElectronics typeFelectr. cable length $1.5 \pm 0.1 m$ (standard Connector typeSupply voltage $3 pin$ (male, Lumberg SV30Max. current consumption* $260 mA$ Modulation input connector $6 pin$ (male, Lumberg SV60 Modulation inputsAnalogTTIMax. input voltage $5 V$ $5 V$ Voltage for P_{min} / P_O $0 V / 2.5 V$ $< 0.8 V / 2.4 V$ Input impedance $22 kOhm$ $22 kOhm$ Max. modulation frequency $100 kHz$ $100 kHz$ Time delay ON/OFF* $2/0.3 \mu S$ $1.5/0.1 \mu S$ * Typical value. Depends on laser diode. $0.0/1.0 \mu S$ $1.0/1.0 \mu S$ Operating temperature $15 - 35^{\circ}C \pm 0.5^{\circ}C$ Warm-up timeapprox.10 minAir humiditymax. 90 % non-condensingWeight $530 G$	Fiber type	PMC-780		
Mode field diameter MFD 7.1 μm ± 10 % (1/e² PER ≥ 23 dE Fiber cable length 1.5 ± 0.05 m (standard Fiber cable type Ø 3 mm with Kevlar strain-relie Fiber connector type FC APC (standard Power stability max. 12 % power variation between 15°C and 35°C Electronics type F Electr. cable length 1.5 ± 0.1 m (standard Connector type 3 pin (male, Lumberg SV30 Supply voltage 5.0 ± 0.2 V Max. current consumption* 260 m/A Modulation input connector 6 pin (male, Lumberg SV60 Modulation inputs Analog TTI Max. input voltage 5 V 5 V Voltage for P _{min} / P _O 0 V / 2.5 V < 0.8 V / 2.4 V	Nominal fiber NA	Jominal fiber NA 0.12		
PER ≥ 23 dE Fiber cable length 1.5 ± 0.05 m (standard fiber cable type Ø 3 mm with Kevlar strain-relie Piber connector type FC APC (standard Power stability max. 12 % power variation between 15°C and 35°C filectronics type Felectr. cable length 1.5 ± 0.1 m (standard Connector type 3 pin (male, Lumberg SV30 Supply voltage 5.0 ± 0.2 N Max. current consumption* 260 m/A Modulation input connector 6 pin (male, Lumberg SV60 Modulation input connector 6 pin (male, Lumberg SV60 Modulation input s Analog TTI Max. input voltage 5 V 5 N SN S	Effective fiber NA _{e²}	0.076 ± 10 % (1/e ²)		
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Fiber cable type Fiber connector type FC APC (standard Power stability max. 12 % power variation between 15°C and 35°C Electronics type Flectr. cable length Fiber connector type Flectr. cable length Fiber cable length Fiber connector type power variation between 15°C and 35°C Electronics type Fiber connector type Fiber connector type power variation between 15°C and 35°C Electronics type Fiber connector type Fiber connector type power variation between 15°C and 35°C Electronics type Fiber connector type FC APC (standard Power variation between 15°C and 35°C Electronics type Fiber connector 15°C and 35°C Electronics type Fiber connector type FC APC (standard Power variation between 15°C and 35°C Electronics type Fiber connector 15°C and 35°C Electronics type Fiber connector type FC APC (standard Power variation between 15°C and 35°C Electronics type Fiber connector type FC APC (standard Power variation between 15°C and 35°C Electronics type Fiber connector type FC APC (standard Power variation between 15°C and 35°C Electronics type Fiber connector 15°C and 35°C Electronics type Fiber	PER		≥ 23 dB	
Fiber connector type Power stability max. 12 % power variation between 15°C and 35°C Electronics type Electr. cable length 1.5 ± 0.1 m (standard Connector type) 3 pin (male, Lumberg SV30) Supply voltage 5.0 ± 0.2 V Max. current consumption* Modulation input connector Modulation input connector Modulation inputs Analog TIL Max. input voltage 5 V 5 V Voltage for P _{min} / P _O 0 V / 2.5 V 1.0 ×	Fiber cable length	1.5 ± 0.05 m (standard)		
Power stability max. 12 % power variation between 15°C and 35°C Electronics type Flectr. cable length Connector type 3 pin (male, Lumberg SV30) Supply voltage 5.0 ± 0.2 Max. current consumption* Modulation input connector 6 pin (male, Lumberg SV60) Modulation inputs Analog Max. input voltage 5 V Voltage for Pmin / Po 0 V / 2.5 V Voltage for Pmin / Po 0 V / 2.5 V Input impedance 22 kOhm Max. modulation frequency 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	Fiber cable type	Ø 3 mm with Kevlar strain-relief		
Electronics type 1.5 ± 0.1 m (standard Connector type) 3 pin (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 _{min} / P _O 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 * Typical value. Depends on laser diode. 10/1.0 μs 1.0/1.0 μs * Typical value. Depends on laser diode. 4ir humidity max. 90 % non-condensing Weight 530 g	Fiber connector type	FC APC (standard)		
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Connector type 3 pin (male, Lumberg SV30 Supply voltage 5.0 ± 0.2 N Max. current consumption* 260 m/z Modulation input connector 6 pin (male, Lumberg SV60 Modulation inputs Analog TTL Max. input voltage 5 V 5 N Voltage for Pmin / Po 0 V / 2.5 V < 0.8 V / 2.4 N 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 * 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	Electronics type	Н		
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Max. current consumption* 260 m/m Modulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogTTLMax. input voltage 5 V 5 V Voltage for P_{min} / P_{O} $0 \text{ V}/2.5 \text{ V}$ $< 0.8 \text{ V}/2.5 \text{ V}$ Linput impedance 22 kOhm 22 kOhm Max. modulation frequency 100 kHz 100 kHz Time delay ON/OFF* $2/0.3 \text{ µs}$ $1.5/0.1 \text{ µs}$ Rise / fall time* $1.0/1.0 \text{ µs}$ $1.0/1.0 \text{ µs}$ * 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 G	Connector type	3 pin (male, Lumberg SV30)		
Modulation input connector6 pin (male, Lumberg SV60)Modulation inputsAnalogTTLMax. input voltage 5 V 5 V Voltage for P_{min} / P_{O} $0 \text{ V} / 2.5 \text{ V}$ $< 0.8 \text{ V} / 2.4 \text{ V}$ Input impedance 22 kOhm 22 kOhm Max. modulation frequency 100 kHz 100 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 G	Supply voltage	5.0 ± 0.2 V		
Modulation inputsAnalogTTIMax. input voltage 5 V 5 V Voltage for P_{min} / P_{O} $0 \text{ V} / 2.5 \text{ V}$ $< 0.8 \text{ V} / 2.4 \text{ V}$ Input impedance 22 kOhm 22 kOhm 22 kOhm Max. modulation frequency 100 kHz 100 kHz Time delay ON/OFF* $2/0.3 \text{ µs}$ $1.5/0.1 \text{ µs}$ Rise / fall time* $1.0/1.0 \text{ µs}$ $1.0/1.0 \text{ µs}$ * 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 G	Max. current consumption*	260 mA		
Max. input voltage 5V 5N Voltage for P_{min} / P_{O} $0 \text{V} / 2.5 \text{V}$ $< 0.8 \text{V} / 2.5 \text{V}$ Input impedance 22kOhm 22kOhm Max. modulation frequency 100kHz 100kHz 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-condensingWeight530 $ \text{C}$	Modulation input connector	6 pin (male, Lumberg SV60)		
Voltage for P_{min} / P_{O}	Modulation inputs	Analog	TTL	
2.4 \	Max. input voltage	5 V	5 V	
Max. 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 mirAir humiditymax. 90 % non-condensingWeight530 g	Voltage for P _{min} / P _O	0 V / 2.5 V	< 0.8 V / > 2.4 V	
Time delay ON/OFF* 2/0.3 μ s 1.5/0.1 μ s Rise / fall time* 1.0/1.0 μ s 1.0/1.0 μ 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 Weight 530 \pm	Input impedance	22 kOhm	22 kOhm	
Rise / fall time* 1.0/1.0 μ s 1.0/1.0 μ 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 Weight 530 \pm	Max. modulation frequency	100 kHz	100 kHz	
* Typical value. Depends on laser diode. Operating temperature 15 - 35°C ± 0.5°C Warm-up time Air humidity max. 90 % non-condensing Weight 530 g	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 g	Rise / fall time*	1.0/1.0 μs	1.0/1.0 μs	
Warm-up time approx.10 min Air humidity max. 90 % non-condensing Weight 530 g	* Typical value. Depends on lase	er diode.		
Air humidity max. 90 % non-condensing Weight 530 g	Operating temperature	15 - 35°C ± 0.5°C		
Weight 530 g	Warm-up time	approx.10 min		
	Air humidity	max. 90 % non-condensing		
	Weight 530 (
Dimensions 50 x 58 x 166 mm	Dimensions	50 x 58 x 166 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



000829001100.pdf (Dimensional drawing)



Conformity 51nano 2023 E web.PDF (CE certificate)

ACCESSORIES

PS051003E Power Supply 5 V

BC0106F-ILCK Interlock connector

FIBER COLLIMATORS Fiber Collimators for collimating light exiting a single-

SINGLE-MODE/PM mode or polarization-maintaining fiber cable

RELATED PRODUCTS

51NANO-S (SINGLE- Fiber-coupled low coherence laser source with

MODE) single-mode fiber cable



51NANO-N (POLARIZATION-MAINTAINING, OEM) Fiber-coupled low coherence laser source with polarization-maintaining fiber cable (OEM version)

51NANOFI-S WITH FARADAY ISOLATOR (PM) Fiber-coupled low coherence laser source with

polarization-maintaining fiber cable

This is a printout of the page $\underline{\text{https://sukhamburg.com/products/details/51nano-S-850-18-G17-P-5-2-28-0-150}}$ from 5/6/2024

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