#### 51nano-N-635-1-H10-P-5-2-18-0-150

Fiber-coupled low coherence laser source with single-mode fiber cable (OEM version)



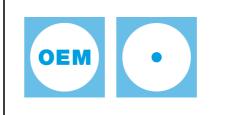
#### FEATURES

The Laser Diode Beam Source of type 51nano-N-635-1-H10-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. < 0.4 % of P<sub>0</sub> (RMS, Bandwidth < 1 MHz)</li>
- Reduced coherence length: coherence length ≈ 300 µm
- Reduced speckle contrast
- Wavelength: 635 nm
- Laser output power: 0.9 mW
- Single-mode fiber cable
- FC APC connector (8°-polish)
- Modulation analog and TTL
- OEM version w/o interlock and w/o key switch

Alternative: Laser Diode Beam Source <u>51nano-S</u> (with key switch and interlock) or with <u>single-mode</u> fiber cable

OEM Version



#### DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nano-N-635-1-H10-P-5-2-18-0-150 has a reduced power noise (typ. < 0.4 % 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 asingle-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
- 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

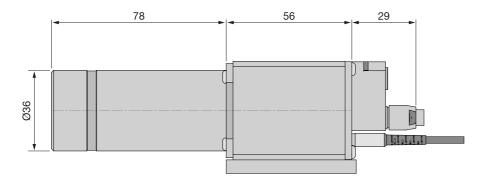
#### Laser safety

This OEM version has no key switch or interlock and is not conform to EN 60825-1.

It can be operated conform to EN 60825-1 by using a switchbox.

As an alternative, a version with key switch and with interlock (conform to EN 60825-1) is available

as type <u>51nano-S</u>.



## **TECHNICAL DATA**

51nano-N-635-1-H10-P-5-2-18-0-150

Order Code	51nano-N-635-1-H10-P-5-2-18-0-150
Will replace	51nanoFCM-N-635-1-H10-P-5-2-18-0-150
Series	51nano-N (single-mode)
Laser class	2
Center wavelength	635 ± 10 nm



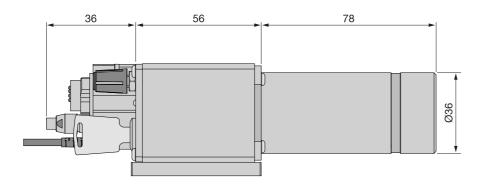
### **DATA SHEET**

Output power         typ. 0.9 mW           Power adjustment         < 1 - 100 %           Power noise         typ. < 0.4 % of P <sub>o</sub> (RMS, BW < 1 MHz)           Coherence length         ≈ 300 µm           Fiber cable         single-mode           Fiber cable         single-mode           Fiber type         SMC-630           Nominal fiber NA         0.12           Effective fiber NAe <sup>2</sup> 0.072 ± 10 % (1/e <sup>2</sup> )           Mode field diameter MFD         5.6 µm ± 10 % (1/e <sup>2</sup> )           Mode field diameter MFD         5.6 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         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>O</sub> 0 V/2.5 V         <0.8 V/>           Voltage for P <sub>min</sub> / P <sub>O</sub> </th <th>Band width</th> <th></th> <th>0.7 - 4 nm</th>	Band width		0.7 - 4 nm	
Power noisetyp. < 0.4 % of $P_0$ (RMS, BW < 1 MHz)	Output power		typ. 0.9 mW	
Coherence length       ~ 300 µm         Fiber cable       single-mode         Fiber type       SMC-630         Nominal fiber NA       0.12         Effective fiber NAe²       0.072 ± 10 % (1/e²)         Mode field diameter MFD       5.6 µm ± 10 % (1/e²)         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 cable length       1.5 ± 0.11 m (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       5 pin (male, Lumberg SV50)         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>O</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*       2/0.2 µs       1.5/0.1 µs         Rise / fall time*       0.6/0	Power adjustment		< 1 - 100 %	
Fiber cable       single-mode         Fiber type       SMC-630         Nominal fiber NA       0.12         Effective fiber NAe²       0.072 ± 10 % (1/e²)         Mode field diameter MFD       5.6 µm ± 10 % (1/e²)         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable length       1.5 ± 0.05 m (standard)         Fiber cable length       1.5 ± 0.05 m (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       5 pin (male, Lumberg SV50)         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>O</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*       2/0.2 µs       1.5/0.1 µs         Rise / fall time*       0.6/0.6 µs       0.5/0.5 µs         * Typical value. Depends on laser diode.       Operating temperature       15 - 35°C ± 0.	Power noise	typ. < 0.4 % of P <sub>o</sub> (RM	S, BW < 1 MHz)	
Fiber typeSMC-630Nominal fiber NA0.12Effective fiber NAe² $0.072 \pm 10 \% (1/e²)$ Mode field diameter MFD $5.6 \ \mu m \pm 10 \% (1/e²)$ 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 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 type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \ V$ Max. current consumption*260 \mmode MModulation inputsAnalogTTLMax. input voltage $5 \ V$ $5 \ V$ Voltage for $P_{min} / P_O$ $0 \ V/2.5 \ V$ $2.0 \ W/2.5 \ V$ Input impedance $22 \ kOhm$ $2.2 \ kOhm$ Max. modulation frequency $100 \ kHz$ $100 \ kHz$ Time delay ON/OFF* $2/0.2 \ \mu$ $1.5/0.1 \ \mu$ sRise / fall time* $0.6/0.6 \ \mu$ $0.5/0.5 \ \mu$ s* Typical value. Depends on laser diode.Operating temperature $15 - 35°C \pm 0.5°C$ Warm-up timeapprox. 10 \minAir humiditymax. 90 % non-condensingWeight $50 \times 58 \times 166 \ mm$	Coherence length		≈ 300 µm	
Nomial fiber NA       0.12         Effective fiber NA <sub>e</sub> <sup>2</sup> 0.072 ± 10 % (1/e <sup>2</sup> )         Mode field diameter MFD       5.6 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       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       5 pin (male, Lumberg SV50)         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*       2/0.2 µs       1.5/0.1 µs         Rise / fall time*       0.6/0.6 µs       0.5/0.5 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 %	Fiber cable		single-mode	
Effective fiber $NA_e^2$ 0.072 ± 10 % (1/e²)Mode field diameter MFD5.6 µm ± 10 % (1/e²)Fiber cable length1.5 ± 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 length1.5 ± 0.1 m (standard)Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2$ VMax. current consumption*260 mAModulation inputsAnalogTTLMax. input voltage5 V5 VVoltage for $P_{min}$ / $P_0$ 0 V / 2.5 V< 0.8 V / > 2.4 VInput impedance22 kOhm22 kOhmMax. modulation frequency100 kHz100 kHzTime delay ON/OFF*2/0.2 µs1.5/0.1 µsRise / fall time*0.6/0.6 µs0.5/0.5 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	Fiber type		SMC-630	
Mode field diameter MFD $5.6 \ \mu m \pm 10 \ \% (1/e^2)$ 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 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 type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \ V$ Max. current consumption*260 mAModulation inputsAnalogMax. input voltage $5 \ V$ $5 \ V$ $5 \ V$ Voltage for $P_{min} / P_O$ $0 \ V / 2.5 \ V$ Number of the elevel $22 \ kOhm$ Max. modulation frequency $100 \ kHz$ Time delay ON/OFF* $2/0.2 \ \mu s$ $1.5/0.1 \ \mu s$ $8.5/0.5 \ \mu s$ * Typical value. Depends on laser diode. $0.5/0.5 \ \mu s$ Operating temperature $15 - 35^\circ C \pm 0.5^\circ C$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \ g$ Dimensions $50 \times 58 \times 166 \ mm$	Nominal fiber NA		0.12	
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       5 pin (male, Lumberg SV50)         Supply voltage       5.0 ± 0.2 V         Max. current consumption*       260 mA         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         Input impedance       22 kOhm         Max. modulation frequency       100 kHz         100 kHz       100 kHz         Time delay ON/OFF*       2/0.2 µs       1.5/0.1 µs         Rise / fall time*       0.6/0.6 µs       0.5/0.5 µs         * Typical value. Depends on laser diode.       0       0 % non-condensing         Weight       530 g       50 x 58 x 166 mm	Effective fiber NA <sub>e<sup>2</sup></sub>	0.07	72 ± 10 % (1/e <sup>2</sup> )	
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 $1.5 \pm 0.1 \text{ m}$ (standard)Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \text{ V}$ Max. current consumption*260 mAModulation inputsAnalogTTLMax. input voltage $5 \text{ V}$ $5 \text{ V}$ Voltage for $P_{min} / P_O$ $0 \text{ V} / 2.5 \text{ V}$ $< 0.8 \text{ V} / > 2.4 \text{ V}$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}^*$ * 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 $50 \times 58 \times 166 \text{ mm}$	Mode field diameter MFD	5.6 μ	m ± 10 % (1/e <sup>2</sup> )	
Fiber connector typeFC APC (standard)Power stabilitymax. 12 % power variation between 15°C and 35°CElectronics typeHElectr. cable length1.5 ± 0.1 m (standard)Connector type5 pin (male, Lumberg SV50)Supply voltage5.0 ± 0.2 VMax. current consumption*260 mAModulation inputsAnalogModulation inputsAnalogTILMax. input voltage5 V5 VVoltage for Pmin / Po0 V / 2.5 V< 0.8 V / >2.4 VInput impedance22 kOhm22 kOhm22 kOhmMax. modulation frequency100 kHzTime delay ON/OFF*2/0.2 µs1.5/0.1 µsRise / fall time*0.6/0.6 µs0.5/0.5 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	Fiber cable length	1.5 ± 0.	05 m (standard)	
Power stabilitymax. 12 % power variation between $15^{\circ}C$ and $35^{\circ}C$ Electronics typeHElectr. cable length $1.5 \pm 0.1 \text{ m}$ (standard)Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \text{ V}$ Max. current consumption*260 mAModulation inputsAnalogModulation 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 / > $2.4 \text{ V}$ Input impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ 1.5/0.1 $\mu \text{s}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ} \text{C} \pm 0.5^{\circ} \text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$	Fiber cable type	Ø 3 mm with Ke	evlar strain-relief	
Electronics typeHElectr. cable length $1.5 \pm 0.1 \text{ m}$ (standard)Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \text{ V}$ Max. current consumption*260 mAModulation 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 / > 2.4 VInput impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{ s}$ 1.5/0.1 $\mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{ s}$ 0.5/0.5 $\mu \text{ s}$ * 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 gDimensions $50 \times 58 \times 166 \text{ mm}$	Fiber connector type	FC	APC (standard)	
Electr. cable length $1.5 \pm 0.1 \text{ m} \text{ (standard)}$ Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \text{ V}$ Max. current consumption*260 mAModulation inputsAnalogTTLMax. input voltage $5 \text{ V}$ $5 \text{ V}$ Voltage for Pmin / Po $0 \text{ V} / 2.5 \text{ V}$ $< 0.8 \text{ V} / > 2.4 \text{ V}$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * 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 $50 \times 58 \times 166 \text{ mm}$	Power stability	max. 12 % power variation between	15°C and 35°C	
Connector type5 pin (male, Lumberg SV50)Supply voltage $5.0 \pm 0.2 \vee$ Max. current consumption*260 mAModulation 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* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * 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* $260 \text{ mA}$ Modulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ $5 \vee$ $5 \vee$ $5 \vee$ Voltage for $P_{min}$ / $P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / >$ Number of the system $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * Typical value. Depends on laser diode. $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ 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 ± 0	).1 m (standard)	
Max. current consumption*260 mAModulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ Voltage for $P_{min}$ / $P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / >$ Voltage for P_min / $P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / >$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * 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 $50 \times 58 \times 166 \text{ mm}$	Connector type	5 pin (male,	Lumberg SV50)	
Modulation inputsAnalogTTLMax. input voltage $5 \vee$ $5 \vee$ Max. input voltage for $P_{min} / P_0$ $0 \vee / 2.5 \vee$ $< 0.8 \vee / > 2.4 \vee$ Input impedance $22 \text{ kOhm}$ $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * Typical value. Depends on laser diode. $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up time $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up time $30 \%$ non-condensingWeight $530 \text{g}$ Dimensions $50 \times 58 \times 166 \text{mm}$	Supply voltage		5.0 ± 0.2 V	
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* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * 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 $50 \times 58 \times 166 \text{ mm}$	Max. current consumption*		260 mA	
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* $2/0.2 \mu \text{s}$ $1.5/0.1 \mu \text{s}$ Rise / fall time* $0.6/0.6 \mu \text{s}$ $0.5/0.5 \mu \text{s}$ * 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 inputs	Analog	TTL	
$2.4 V$ Input impedance $22 \text{ kOhm}$ Max. modulation frequency $100 \text{ kHz}$ $100 \text{ kHz}$ $100 \text{ kHz}$ Time delay ON/OFF* $2/0.2 \text{ µs}$ $1.5/0.1 \text{ µs}$ Rise / fall time* $0.6/0.6 \text{ µs}$ $0.5/0.5 \text{ µs}$ * Typical value. Depends on laser diode. $0 \text{ perating temperature}$ $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up time $a \text{ pprox. 10 min}$ Air humidity $max. 90 \% \text{ non-condensing}$ Weight $530 \text{ g}$ Dimensions $50 \times 58 \times 166 \text{ mm}$	Max. input voltage	5 V	5 V	
Max. modulation frequency100 kHz100 kHzTime delay ON/OFF*2/0.2 μs1.5/0.1 μsRise / fall time*0.6/0.6 μs0.5/0.5 μs* Typical value. Depends on laser diode.0.6/0.6 μs0.5/0.5 μsOperating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm	Voltage for P <sub>min</sub> / P <sub>O</sub>	0 V / 2.5 V		
Time delay ON/OFF*         2/0.2 μs         1.5/0.1 μs           Rise / fall time*         0.6/0.6 μs         0.5/0.5 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	Input impedance	22 kOhm	22 kOhm	
Rise / fall time*0.6/0.6 μs0.5/0.5 μs* Typical value. Depends on laser diode.0Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm	Max. modulation frequency	100 kHz	100 kHz	
* 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	Time delay ON/OFF*	2/0.2 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*	0.6/0.6 µs	0.5/0.5 μs	
Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm	* Typical value. Depends on las	ser diode.		
Air humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm	Operating temperature	15	15 - 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	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



000824000400.pdf (Dimensional drawing)



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

## ACCESSORIES

PS051003E	Power Supply 5 V
SBN050501	For laser diode beam sources of electronics type S/C/P/H and 5 V power supply
FIBER COLLIMATORS SINGLE-MODE/PM	Fiber Collimators for collimating light exiting a single- mode or polarization-maintaining fiber cable

#### **RELATED PRODUCTS**

#### **DATA SHEET**

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

This is a printout of the page <u>https://sukhamburg.com/products/details/51nano-N-635-1-H10-P-5-2-18-0-150</u> from 5/6/2024

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