



**Petr Provazník-čárové lasery**

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## Line Lasers

### Petr Provazník – Line Laser 24mW

Lasers developed in the first place for marking cutting areas and planes in simple machines, NC and CNC systems, as well as in complex working systems.

#### What else can they serve for ?

- used as an instrument to mark the spot of cutting for band, circular and reciprocal sawing machines,
- marking the cut of pneumatic shears and plate-cutting machines,
- marking the safe space at power presses,
- laying-out of a plane on construction works,
- plane marking at blow moulding of e.g. aircraft calottes on exhausters,
- plane and material marking for working by automatic machines,
- punctuating road billboards and other firm signs.

#### Equipment description

The laser diode modulus includes a laser diode with optics for collimation of optical pencil to a laser beam, in the version for line forming the line optics. It includes a serveloop (control circuit) for laser diode infeed, a stabilizer and a voltage rectifier. The modulus serves as a source of laser radiance in technical appliances with defined properties of the optical beam (see below).

#### Connection of the laser modulus 24mW:

These are lasers without adapter supplying, and it is necessary to provide the electricity supply in that machine, where the laser is installed. Connect the modulus to the voltage supply **12V AC/DC or 24V AC/DC**. If you can choose, use a lower infeed voltage. The modulus will be less warmed up. **Through a wrong infeed voltage over 24V the laser will be destroyed !** It does not matter how you connect the conductors. The modulus cannot be destroyed by polarity reversing, it functions in both connection possibilities. The laser itself is already rectified, it cannot be reset in any way, only by a deliberate and break-in damage (in this case, the guarantee has been finished, and this is also forbidden because of security reasons).

#### Laser modulus clamping

The laser can be clamped to our laser holders with a magnetic support or to a holder with a spherical joint. Then you have to set up the light exposure spot. You can also bolt the holder on into a tapped hole in the machine. We recommend a clamping provided with heat removal, or at least with air access. Do not install the modulus under a covering. Never let the laser shine in the eyes of people or animals, not even for a short time, or don't let it be reflected by mirror surfaces in the eyes when being used or switched on accidentally. The health risks are quoted below.

#### Instructions when used for the first time :

- **Check the correct source voltage before switching it on. Wrong setting can destroy the modulus.**
- Check the running temperature whether it is within the required limits (about 20°C – 40°C)
- Every modulus should be tested by warming-up during at least 24 hours. Thus the quality would be verified and the operating life of the product quaranteed.
- **The laser has thermal fuses which do not enable its working outside temperature limits –15°C to 45°C.** There will be no functioning outside these limits. The laser will stay switched-off until the temperature changes. Thus it is protected against extreme working conditions, and therefore its reliability is increased. If the laser may switch-off by itself when being used, check whether it is not warmed up by another source of heat. Check also the correct infeed voltage, possibly choose another clamping with a better heat removal.
- **The laser has got an automatic heating as well, which is activated when the laser is switched on by the temperature below 15°C.** After heating the tubus over this, the laser starts shining.
- **Read the security warnings.**



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### *Security warnings*

- **Caution ! The modulus contains a laser source Clas IIIa (3R – after standards IEC 60825). Avoid hitting the eyes by a direct or reflected beam. Never look directly into the switched-on laser optics ! Danger of permanent eye damage ! Never observe the beam through an optical systém. To observe the beam e.g. through binoculars is very dangerous and inadmissible. Protect your eyes by safety glasses when working with lasers with wave length 650nm. Secure the working place against the entering of unauthorized persons. We advise to prevent the access to children and to persons influenced by narcotic and psychotropic drugs. The place has to be labeled with warnings of laser radiance.**

Requirements for security while working with laser are set by the Regulations Nr.124 and 125 of the Czech Bureau for Work Safety (Coll. of Laws 1982, part 25, p.497) and the Ministry of Health Directive nr.61, vol.53/1982 (concerning hygienic rules for working with lasers). Both the Regulations and the Directive refer to the lasers, the wave length of which is placed between 200 nm and 13 000 nm. The Regulations have set the duties of laser designers, manufacturers and runners. Our lasers are in conformity with the Regulations. Conformity affirmations and assurances have been issued for all components as well, according to § 13 of the Act nr. 22/1997 Coll.

### **Guarantee**

A guarantee during 12 months following the delivery date is given to these laser moduli for company customers, for other customers according to rules given by the Civil Code. Because of this, please do not remove the modulus labels. The guarantee is given for all defects, except of those caused by manipulation mistakes, by not respecting the instructions for the installation and operation, or caused through another than usual operation of the mechanism. The guarantee expires through an interference into the modulus construction or content. This is forbidden because of safety. The guarantee and after-guarantee service is provided by our firm Petr Provazník – Line Lasers.

### **Technical Specifications**

- **Minimal working distance 1 m, maximal about 20 m (depends on outside lighting)**
- **Také-off angle about 90° - 100°**
- **Line thickness 2 mm/6 m (optimal line in 6 m distance)**
- **Optical inaccuracy of deflection max. 1 mm/3 m**
- **Divergency 0,6 mrad**
- **Laser with IIIa security class (3R – according to standard IEC 60825)**
- **Laser output 24mW at wave length 650 nm**
- **Shining durability  $\geq$ 5000 hours (about 2.5 years at 8 hours shifts)**
- **Current consumption - laser: 120mA. Heating: 125mA (never switched on together)**
- **Protection against polarity inversion through voltage stabilizer**
- **Infeed according to type 24V or 12V +/- 10% by DC or AC voltage**
- **Needs clamping with heat removal**
- **Coverage IP 65**
- **Circuitry separated in a galvanic way from framework by an electroinsulating protection up to 400V**
- **No releasable parts**
- **Temperature limits -15°C to 45°C**
- **The heating of laser makes installation up to -40°C possible**
- **Laser secured by a thermal fuse which makes operating outside temperature limits impossible**
- **Working temperature about 40° C by surrounding temperature 20° C**
- **Storage temperature -40°C to 80°C**
- **Dimension 32 mm x 150 mm, weight 190 g (without cable)**
- **Laser casing : duralumin (black eloxal coating)**