

Control electronics IMS-5/250J, IMS-5/250Z, IMS-3/100B

The control electronics IMS-5/250 is a double-sided printed circuit board (SMD) for the operating of CW laser diodes with a maximum current consumption of 250mA.

Voltage supply: 5VDC regulated. The circuit has a control input regulating the output power.

Pin configuration
Printed circuit board

TP1	+5V	TP4	Cathode of laser diode (KLD)
TP2	Mass	TP5	Anode of monitor diode (AMD)
TP3	Casing Laser diode	TP6	Control input

Calculation of Rset

The output power is set by means of the resistance R001.

The value is calculated as follows:

IMS-5/250J: $R001 = 1,22 / I_m$

IMS-5/250Z and IMS-3/100B: $R001 = 3,66 / I_m$

R001 is calculated in kOhm if the monitor diode current I_m is given in milliamperes.

For the resistance R001, the minimum value is 2.7 kOhm, the maximum value is 50 kOhm.

In case of continuous wave operation without power regulation, the equipment of R004 and R005 is not compulsory.

To adjust the laser output power exactly, the optical power should be measured straight ahead of the laser diode.

Control input TP6

If the control input is used, R004 and R005 have to be equipped, and R001 has to be calculated with a different formula.

If the control input is used, the maximum power, which is set with R001, mustn't be higher than 75% of the laser diode performance (paralleling of R004 and R001).

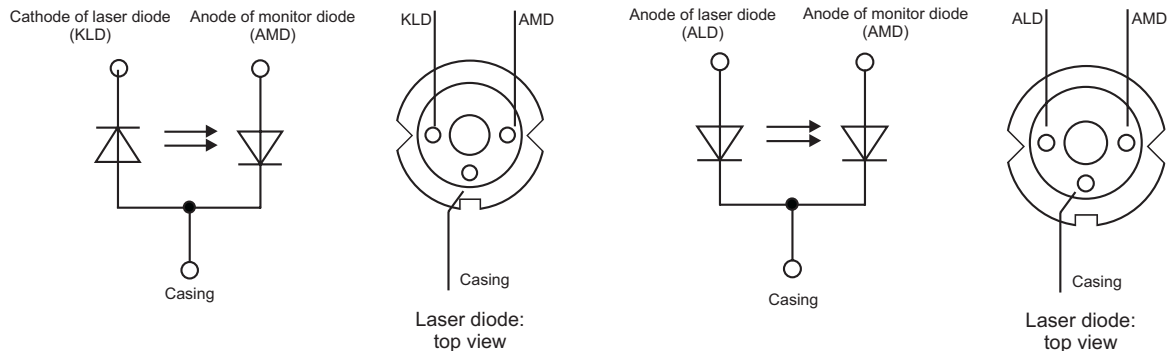
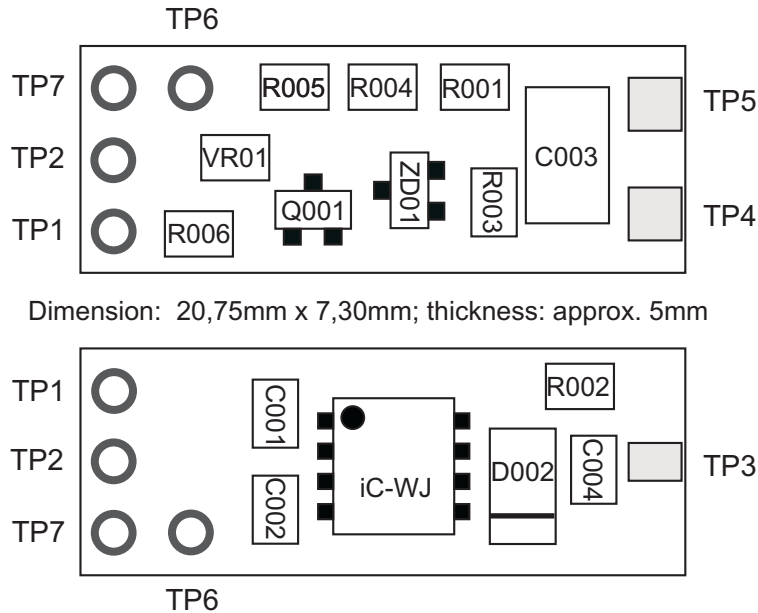
To steer laser diode power from 0mW up to its maximum value, a voltage of 5-0 V is applied. 0V corresponds to the maximum output power, 5V corresponds to the minimum output power.

Caution: To prevent the destruction of the laser diode, make sure that $R004 = \text{approx. } 3 \times R001 - R005!$ (A value of 5 kOhm can be chosen for R005).

Input Tp7: without function

Practical hint: The solder pads of the circuit board are designed for SMD resistances of the type 0805.

Component mounting diagram



Caution:

During operation of laser diodes, provide for sufficient cooling.
 Overheating of a laser diode will lead to its destruction
 Maximum cable length between laser diode and PCB: 10cm.
 If cables are used, a capacitor (10nF) has to be fitted in between CLP and ALD directly at the laser diode.

Notes on safety:

For operation with laser diodes, observe safety regulations according to EN60825.
 During operation with laser diodes, do not look into the beam.
 Furthermore, observe the safety regulations for laser radiation (VBG93) of the German employees' insurance for precision mechanics and electrical engineering (Berufsgenossenschaft der Feinmechanik und Elektrotechnik).