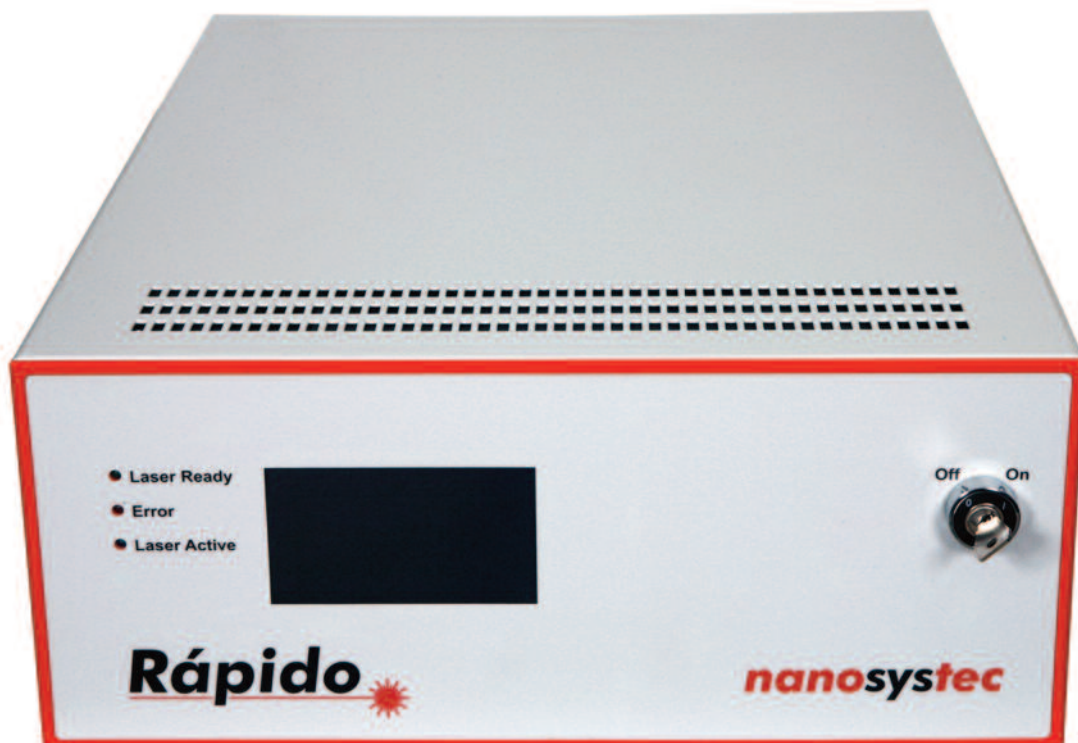

Rápido

Advanced Laser Soldering Source



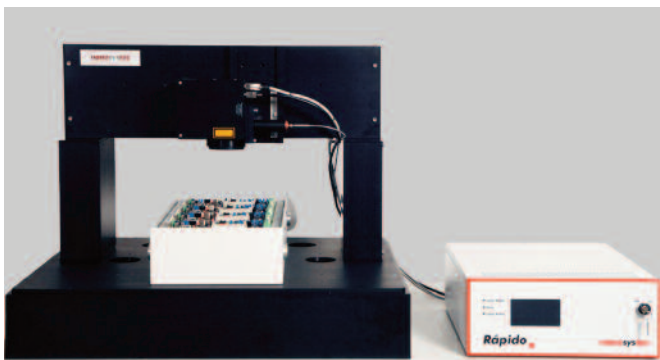
nanosystec

Reliable Laser Soldering Source

The industrial grade laser system Rápido is the ideal choice for laser soldering applications. It can be easily integrated into high volume production lines.

Depending on the model, Rápido delivers nominal ratings between 30W and 400W continuous output power. With this large power variety, the respective model can be chosen to perform the specific job.

The high wall-plug efficiency of Rápido minimizes the requirements for the power supply. The expected life time exceeds 30,000 operating hours – a prerequisite for reliable operation with low cost of ownership.



The optical power of the Rápido is guided via a robust optical fiber. No additional optical elements for guiding the beam are necessary. The open beam path exists only between the fiber output and the work piece. This facilitates the system integration according to laser class 1 as only this area needs to be protected.

Advantages of Laser Soldering

Selective laser soldering replaces other selective soldering methods in applications requiring extremely low heat impact and specific shapes. The laser beam can be focused and formed to almost any shape and size with a homogeneous heat distribution. As the energy is applied localized, it heats only the solder

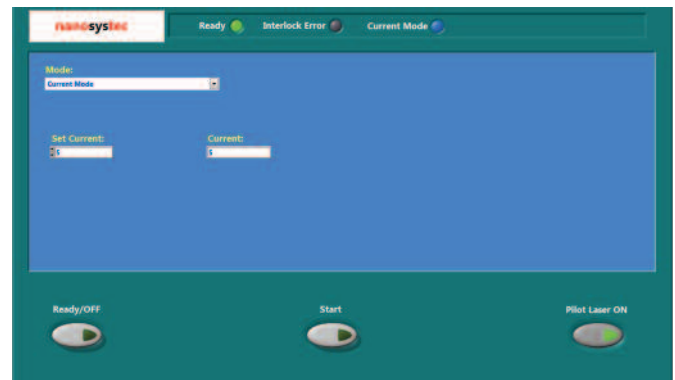
joint under process. Neighboring components will not be affected. As the duration of the laser radiation and the intensity are freely selectable, the amount of energy per solder joint can be well controlled.

Advanced System Configuration

Rápido eliminates all disadvantages of conventional laser sources for selective laser soldering. With its wavelength in the near infrared, Rápido can use standard optical fibers to bring the laser power to the solder point. This allows maximum freedom for the system design.

The control electronics with a dual microprocessor works as a real time system. The output power of the Rápido can be varied between zero and maximum output power in less than a millisecond. For high volume applications, each fraction of a second adds up.

Therefore, waiting times should be zero. When the correct position is reached, the energy should be released immediately. An external trigger signal can release the pre-stored profile.



The Rápido can be controlled via RS 232 commands from higher level programs. An additional user interface allows setting parameters and storing intensity profiles which can be triggered by a TTL or 24V input.

Profile Shaping for Superior Results

Internal or external modulation defines the duration and shape of the laser pulse. The flexibility in timing and power allows finding the optimal parameter set for high quality laser soldering.

Difficult tasks may require pre-heating of the area, a constant power for the core soldering procedure and a specific cool down ramp. Three different profiles can be permanently stored on the microprocessor. These consist of a curve with a maximum of 20 nodes.

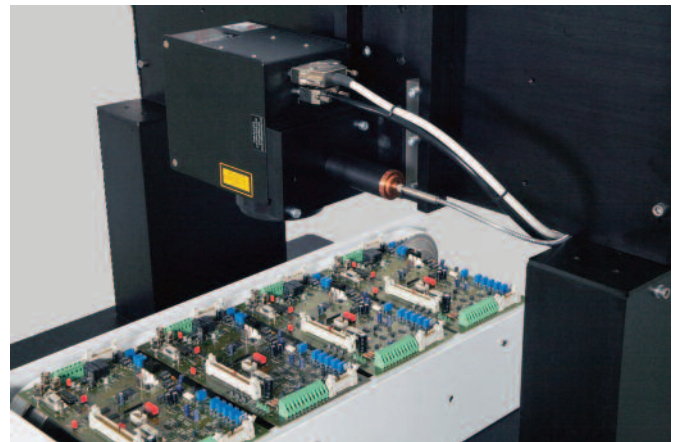
Communication Interfaces

The various settings and functions can be activated manually via the user interface of the software or by sending directly RS-232 command to the serial interface. In addition, 16 electrically isolated in or outputs can be used to send or accept signals from other hardware (for example an “in position” command from a conveyor belt). In order to provide generic control, an analog input can control the output power of the Rápido.

One example for active feedback control is the integration of a pyrometer which is used to maintain a specific temperature very accurately.

The Rápido user interface is programmed in LabVIEW. All commands and parameters are displayed as clear text messages. The power display is shown as a line function, visualizing the temporal devolution.

Interlock inputs ensure a smooth operation and comply with all relevant safety standards for system integration. The voltage level of all interlock signals is either 5V or 24V (user selectable).



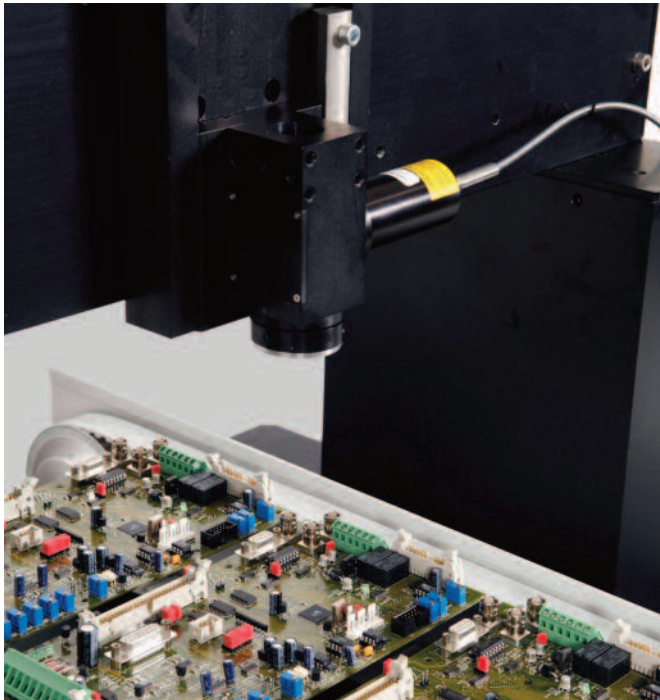
Maximum versatility is achieved with a XY scanner. This scanner deviates the beam to any point within a large operating area. The switching from one point to the next is extremely fast.

Beam Shaping Variety

Single spot operation: The beam will be focused to the desired diameter with a single lens. The spot diameter can be chosen between a fraction of a millimeter and several mm. In this configuration, the lens or the work piece have to be moved in order to reach the next solder joint.

XY Scanner: The use of a XY scanner increases flexibility and processing speed. Switching from one position to the next is a matter of milliseconds. It is the ideal choice if several solder joints on a work piece have to be processed. Essentially no time is lost due to switching.

Multiple Beam Optics: The multiple beam optics developed by nanosystec create a pattern of solder points in one shot and therefore dramatically reduce process time. In addition, a suitable geometry can be chosen to avoid shifting or tilting of the device to be soldered. Typical applications include the soldering of fine pitch connectors.



The multiple beam optic is adapted specifically to the solder point geometry. It creates a pattern of various solder spots at the same time. This increases the productivity and also the reliability as tombstone effects are avoided.

Machine Vision

Cameras can be integrated in the optical beam path of the single spot or the XY scanner. Machine vision algorithms allow correcting the solder position. In addition, the soldering spot can be observed for visual inspection or feedback to the electronics. With multiple beam optics, cameras with a separate beam path can be integrated.

General Specification

Output power:	30 W, 50 W, 100 W, 150 W, 250 W, 400W
Wavelength:	808 nm standard, optional 880 nm, 940nm and 980 nm
Pilotbeam:	650 nm, 1 mW
Pulse duration:	5 ms to cw, full power
Trigger signals:	TTL and/or 24 V
Power profile:	20 Programming points
Electrical supply:	120/ 230 V, 50/ 60 Hz
Cooling:	tap water or recirculating chiller, up to 100 W power forced air as an option
Size:	19 " width, 4 HU, 600 mm depth
Weight:	230 N



The LED lamps on the front panel of the Rápido show the status of the operation and indicate errors. The additional display is used for clear text information.

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