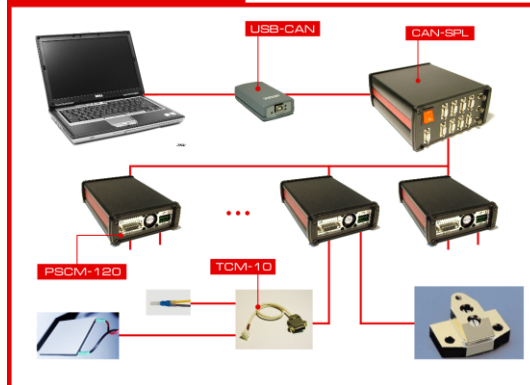
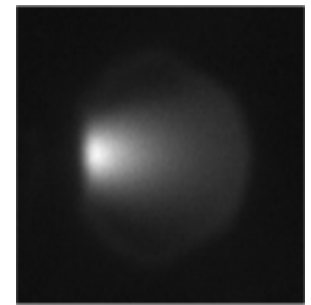
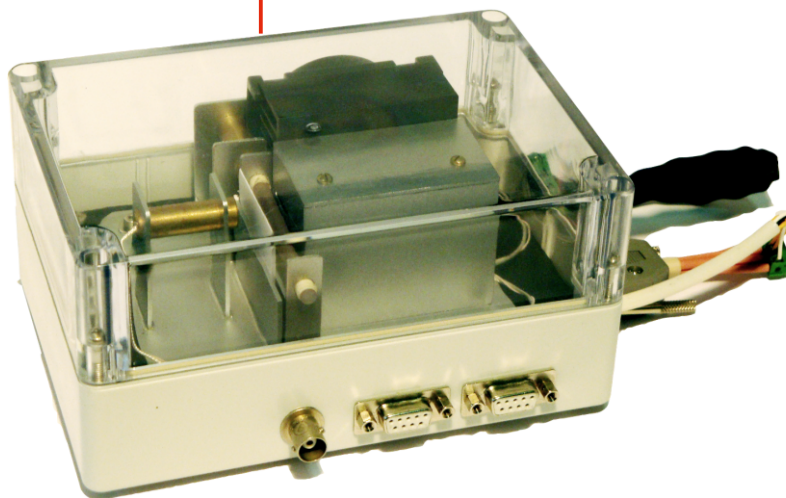
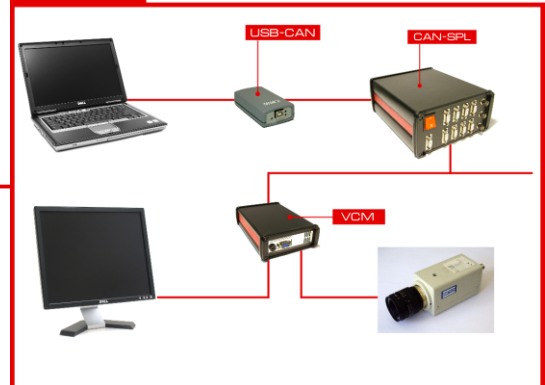


Complex for implementation of diode pumping in solid state lasers

MCPS-120



LFRS



Application

Complex intended to provide researches and detailed studying of laser emission generation processes in diode pumped pulsed solid state lasers.

Configuration

Complex includes:

- pumping and thermostating multichannel system for laser diode bars MCPS-120,
- light field registration system LFRS,
- electrooptical module.

Optional:

- HVM - high voltage pulses generator module, providing control pulses for laser's Q-switch

All smart modules of complex are connected by noise-immune CAN network. Control PC connected to CAN network by means of CAN-USB module.

Essential features

- MCPS-120 system provides synchronous generation of highly stable pump current pulses with amplitude of 10...120A for each served laser bar and automatic maintenance of temperature for each bar with accuracy of $\pm 0,10^{\circ}\text{C}$. Systems provides simultaneous operation fo up to 32 diode laser bars. Full in-line state control, damage protection and centralized operating mode control for all laser bars are provided. With MCPS-120 it is possible to construct custom design solid state lasers with output power up to 10W.
- LFRS system provides registration of quick-changing light field emitted by laser diode bars, luminiscence distribution in active element, light intensity distribution in cross-section of laser beam. System provides synchronization of light registration process to pumping pulse generation process with accuracy better than $\pm 0,1\mu\text{s}$. Registered light emission fields are visualized on external display with VGA input and may be sent to control PC via USB-CAN module for postprocessing.
- Electrooptical module contains active element (YAG) of solid state laser, diode laser bar, 2 wideband photodetectors with time response $\sim 10^{-8}\text{s}$ (first PD for registration of pumping emission intensity, propagated through active element, second PD for registration of spontaneous laser emission). Electrooptical module allows to investigate inverse population distribution in cross-section of active element, to estimate laser diode's thermal dynamics during pumping pulse duration, to demonstrate distinctive features of diode pumping in solid state lasers.
- High voltage Q-switch control pulses generator module provides investigation of defferent operating modes of resonator. Fast response (6...7 ns) allows to investigate processes of emission generation in lasers with "short" resonators with length about 80...100 mm and less.

Approbation

In cooperation with DAAD, complex with electrooptical module was approbated and highly appreciated at Berlin Technical University at 2008.

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