

VCSEL solutions

High Power Infrared Sources for Laser Edge Welding

Fast processing

Thanks to high power density

Scalable

Application specific kW
range output

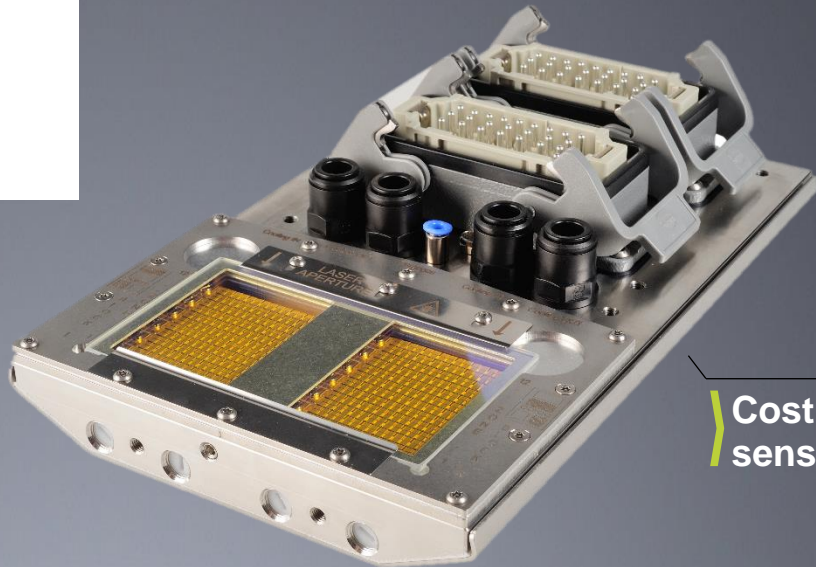
Cost sensitive

Precise control

Tailored solution by individually
addressable emission zones

Easy to integrate

Compact and robust design



Scalable and flexible solutions for seamless edge welding

Designed for the specific requirements of seamless edging with excellent product quality. Application as industrial production of furniture panels benefit from this technology.

The compact and reliable VCSEL laser source delivers directed and controlled infrared power and enables high productivity. For processing, no optics are needed.

How it works?

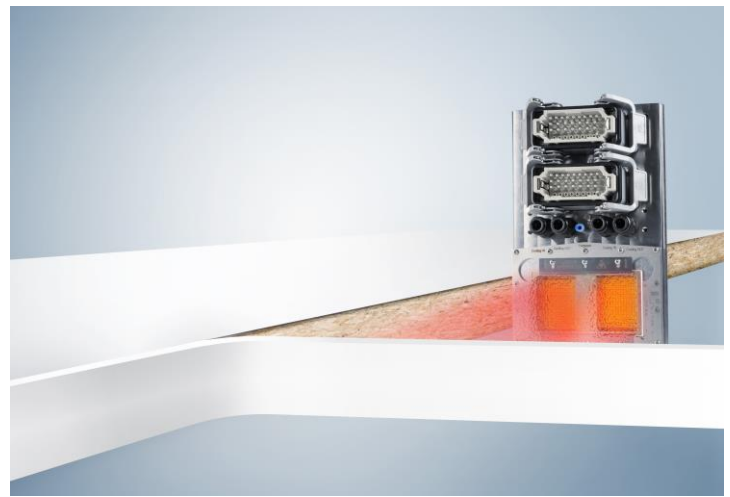
The robust and compact laser modules deliver directed large-area beams of infrared power and are easily integrated into industrial heating applications and production processes. An electronic driver system enables precise power control and fast switching. As a unique feature, individual emission zones of the source can be controlled independently. Thereby dynamic programming of the spatial heating pattern is possible, enabling an unprecedented level of process flexibility and control.

PPM420-24-980-48

Based on the standard PPM412 industrial range of laser modules, a more flat version of the 4.8 kW module was developed, where the electrical power connector and purge gas connection was moved to the front of the module.

Performance data and specifications, besides geometry and electrical interface, are the same as for the standard PPM412-24-980-48 laser module.

Because of the special size, the laser module can be mounted in very restricted geometries.



Application example: laser edge welding of furniture panels

PPM420 High Power Laser System - Typical Data


Laser Module		PPM420-24-980-48
Optical power	kW (cw)	0.2- 4.8
Emission area	mm ²	2x (40 x 52)
Distinct emission zones		24
Power density ¹⁾	W/cm ²	typ. 115
Wavelength	nm	980 ± 20
Protective front glass ²⁾		borosilicate, anti-reflex coated
Electrical interface		industry standard power connectors
Module size ³⁾	mm	W 166 x H 71 x L 254
Driver Unit		
Number of driver racks		2 x PPD011
Laser control		typ. 10ms time constant, individual control and fault monitoring of laser zones
Machine communication		EtherCAT®
Mains voltage		3 phases 400V (±10%), 47-63 Hz
Mains supply unit (option)		mains connection unit with safety circuit

¹⁾ at emission aperture ²⁾ outer glasses user-replaceable ³⁾ without connector

For more information visit
www.trumpf.com/s/VCSEL-solutions



Safety information:

 The products contain laser arrays that can emit invisible high power laser radiation of class 4, which can cause serious injury. The machine manufacturer is responsible to fulfill the relevant laser-related and other safety regulations.

TRUMPF Photonic Components GmbH

Lise-Meitner-Straße 13 · 89081 Ulm · Germany

E-mail: photonic.components@trumpf.com · Homepage: www.trumpf.com/s/VCSEL-solutions

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