AMTRON

Laser Focused on Electronics.

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AMTRON

Laser Focused on Electronics.

POWER SUPPLIES
SENSING
PROCESS CONTROL
SYSTEMS

"AMTRON.
Our partner for 15 years.
Because in our business,
reliable top-quality control
systems are essential."

Head of Quality Assurance, Automotive Industry

www.amtron.net

[german engineered]

AMTRON GMBH.

HIGH-PERFORMANCE SOLUTIONS FOR LASER CONTROL.

ABOUT US.

Founded in 2000 as a successful spin-out of Germany´s renowned Fraunhofer Institute for Laser Technology, AMTRON develops and manufactures electronics for precision diode laser control. We supply our high-quality laser diode controllers and laser diode systems to a broad variety of customers across five continents.

Clients include laser manufacturers, system integrators and R&D specialists using AMTRON systems for the monitoring and control of diode lasers in a wide range of applications, including machining, medical technology and scientific research.

At AMTRON, excellent engineering is in our DNA. Collaborative development is our strength. Our experts support all development stages in close cooperation with our clients—from an analysis of requirements and conceptual design to the final product. Our customers rely on our know-how and experience to create customized solutions that cater to their specific needs.

We combine our comprehensive, high-quality portfolio with extensive technical expertise and fast and reliable customer support. We truly understand the needs of our clients and provide first-rate electronics for demanding diode laser applications. By always putting the customer first, we have succesfully managed to build strong and long-lasting business relationships. Earning the enduring trust of our partners is what drives us.

LASER-FOCUSED ON TOP-QUALITY PRODUCTION.

Our R&D and manufacturing facilities are located in close proximity to RWTH Aachen – the largest technical university in Germany and premier training ground for engineering talent. All our products are designed and manufactured by our highly-qualified experts using selected components that maintain excellent durability in 24/7-applications.

As part of quality assurance, each individual product is subjected to an extensive test program. Before delivery, every device successfully passes a rigorous examination of its entire functionality in continuous operation. The result is documented in a test protocol and confirmed by a certificate for each device, underscoring our uncompromised focus on top-quality production.

CM100 POWER SUPPLY MODULES.

Power supplies for system integration.

The housing of these ultra-compact devices is smaller than a paper-back book and they produce power ranging up to 18 kW. In the various housings, laser diode bars are powered by up to 350A CW or 800A in pulse mode. For single emitter laser diodes they supply appropriately high-resolution currents at up to 80V. Tailor made and OEM versions can easily be set up.

- *Ultra-compact housing*
- *Flexible configuration for multiple voltage or current ranges*
- *Efficiency of up to 97%*
- *Fit for the digital age of Industry 4.0*
- *Air, water or conductive cooling*
- *Performance Level „e" (PL e) according to safety standard EN ISO 13849*

Type	Max voltage [V]	Max current [A]	CW	Pulse	TEC	Cooling
CM031P 22X140	22	140		x		Conductive
CM132 80W15	80	15	x	x		Water
CM132P 30W200	30	200		x		Water
CM134 80W90	80	90	x	x		Water
CM142 40L100	40	100	x	x		Air
CM143 80L15	80	15	x	x	x	Air
CM143 40L70	40	70	x	x	x	Air
CM154 20W250	20	250	x	x		Water
CM164 50W350	50	350	x	x		Water
CM186P 50W800	50	800		x		Water

FE400/FE100 POWER FRONTENDS.

Safe and reliable AC/DC power supplies.

The FE400/FE100 series delivers DC output power within a range up to 10 kW. An integrated auxiliary supply and redundant enable lines make them well-suited to feed DC/DC supplies like the AMTRON CM100 power supply modules series.

- *19-inch table top (FE400) or compact housing variants (FE100)*
- *integrated auxiliary supply 24V*
- *max. number of parallel outputs: 6*
- *air or water cooling (depending on output power)*

Type	Voltage [V]	Max. current [A]	Housing	Cooling
FE131 48L10	48	10	Compact	Air
FE471 48L15	48	15	19"/2HU	Air
FE471 48L62	48	62	19"/2HU	Air
FE471 96L31	96	31	19"/2HU	Air
FE470 48W105	48	105	19"/2HU	Water
FE470 96W105	96	105	19"/4HU	Water

CS400 LASER DIODE CONTROLLERS.

Power supplies with process control.

CS400 series devices supply constant current at up to 300A and pulsed current at up to 2000A with a pulse width as of 10 µs. With innovative functions such as broken fiber detection and power regulation, these devices monitor and protect the complete processing procedure of CW and pulse lasers.

- *Current, power & temperature regulation for diode lasers*
- *Current rise time 5 µs – 100 µs*
- *19" or compact housing*
- *Ultra low-noise output power*
- *Water or air cooling*
- *TEC control with polarity reversal*
- *For bars and single emitter lasers*

Type	Pulse/ CW	Power unit	PLC and other interfaces	Control panel	TEC	Power values
CS401/CS441 [1]	x/x	1	–	–	–	110 V / 14 A
CS402/CS442 [1]	x/x	1	x	–	–	28 V / 140 A
CS404P	x/–	1	x	–	–	80 V / 500 A
CB411P	x/–	1	–	x	–	15 V / 2000 A
CU402S	x/x	–	x	–	–	Control Unit
CS411/CS451 [1]	x/x	1	–	x	–	10 V / 120 A
CS412P/CS452P [1]	x/–	1	x	x	–	110 V / 300 A
CU412/CU412S [3]	x/x	–	x	x	–	Control Unit
CS405	x/x	2	–	–	–	2 x 80 V / 14 A
PU405	x/x	2	–	–	–	2 x 80 V / 100 A
CS403	x/x	1	x	–	x	13 V / 80 A
CS413	x/x	1	x	x	x	80 V / 14 A

[1] Model in compact housing [2] Supply via FE471 front end [3] Output for controlling external laser power supplies or fiber lasers

LS400 LASER DIODE SYSTEMS.

Plug'n'play solution for laser processing.

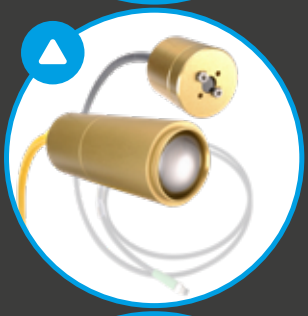
The LS series devices integrate the laser diodes from renowned manufacturers in user-friendly systems for the direct machining of materials or as intelligent pumps for solid-state lasers. TEC air cooling (TEC – Thermo Electric Cooling) enables the laser temperature to be regulated precisely and is maintenance free.

- *Direct machining of plastics and metals*
- *Intelligent pumps for solid-state lasers (e.g. for inscription)*
- *Water cooling, TEC control with polarity reversal*
- *Wavelengths from 450nm to 1940nm*
- *Power up to 300 W, pulse duration 10 µs to cw*

Type	Power [W]	CW	Pulse	PLC and other interfaces	Control panel	Housing	Cooling
LS403	40	x	x	x		19"/3HU	Air
LS443	60	x	x	x		Compact	Air
LS444	80	x	x			Compact	Air
LS453	90	x	x	x	x	Compact	Air
LS413	120	x	x	x	x	19"/3HU	Air
LS412	300	x	x	x	x	19"/4HU	Water

SE200 / SE400 HIGH SPEED PYROMETERS.

Fast laser process control with digital precision.



The AMTRON Pyrometer series SE200 and SE400 offer highest measurement speed and noise immunity even at low process temperatures. Their PY100 and PY200 series sensors contain the complete analog-to-digital signal conversion and an integrated flash memory for parameters. Compact control units (series CU100-CU500) are available with many different interface options. Highlights are the simultaneous processing of up to 15 sensors and the interfacing to galvanometer scanheads for exact positon readout.

- *Suitable for plastic welding, soldering, hardening, selective laser melting*
- *Closed loop control or logging of process temperature or radiation*
- *Detection rate up to 100kHz (depending on detection wavelength)*
- *Direct digital link to CS400 series (SE200)*
- *Spatially resolved data acquisition in combination with either multiple pyrometers or galvanometer scanhead*
- *Robust signal transmission without the need of fiber cables (up to 20m)*
- *For stationary and hand-guided laser heads*

CS120 LASER DIODE CONTROLLER.

Easy entry into high-performance laser control.

The CS120 series combines a wide range of output power levels with simple and safe control in a compact 19-inch package. Based on AMTRON's proven CM100 switching regulator technology, it combines high efficiency with low acquisition costs.

- *Particularly cost-efficient and powerful current driver in 19"-format*
- *Performance classes up to 10kW / 400A*
- *Outstanding efficiency of typ. 90 %*
- *Performance level "e" (PL e) according to safety standard EN ISO 13849*
- *Fully updatable for future features*
- *Convenient access via web interface in modern design with customizable layout*

Type	Max voltage [V]	Max current [A]	CW	Pulse	Cooling
CS120 35L20	35	20	x	x	Air
CS120 80L12	80	12	x	x	Air
CS120 15L80	15	80		x	Air
CS120 20L120	20	120	x	x	Air
CS120P 50L750	50	750	x	x	Air
CS120 35W120	35	120	x	x	Water
CS120 70W130	70	130	x	x	Water
CS120 23W400	23	400		x	Water
CB120 15W2000 *	15	2000	x	x	Water

* Supply via FE471 front end

PM200 POWER SENSORS.

Power regulation directly at the point of processing.

The power sensor PM200 takes measurements directly at the processing point. It measures power, the momentary temperature and, by providing feedback to the laser diode controller, it enables precise control of the current for constant processing performance.

- *Regular monitoring of laser power in combination with the CS400 series*
- *Automatic adjustment of laser current for regulation of processing performance*
- *Storage of all parameters directly in the power sensor; no PC required*
- *Direct measurement at the point of processing*
- *Small size for easy machine integration*

Sensor type	Power cw	Power Pulse	Aperture	Dimensions (WxDxH)	Wavelength
PM219 19L10	10 W*	50 W	19 mm	50/50/60	0.2 - 11µm
PM219 19L40	40 W*	100 W	19 mm	50/50/60	0.2 - 11µm
PM219 19L80	80 W*	150 W	19 mm	50/50/60	0.2 - 11µm
PM219 25L180	180 W*	400 W	25 mm	80/80/100	0.2 - 11µm

* CW power is quoted for a maximum irradiation of 2 minutes. In combination with a series CS 400 laser diode controller, irradiation is automatically interrupted after a maximum of 15 seconds.

CU190 PROCESS CONTROLLER.

Regulation and control of laser processing.

The process controller CU190 stands out with its fast power modulation, which makes it ideal for regulating and controlling the processes between the system and the laser. The device offers a range of connections via different fieldbus systems. The process controller uses various input parameters such as feedrate, external sensors or trigger/gate to calculate and control the analog and digital laser power. The control unit modulates the amplitude, pulse width, or frequencies with fast cycle times of 1µs. In contrast to conventional system controllers, the CU190 process controller offers fully customizable laser control, which easily integrates into existing processes.

- *Integrated controller for the regulation of process signals*
- *Storable processing recipes*
- *Customizable laser control*
- *Connection to Profibus, ProfiNET or CAN-Bus*
- *Optional remote maintenance via a web interface*

SYSTEM-INTEGRATION.

Ready-to-go control systems for demanding tasks.

- *Integration into rack cabinets or dedicated mechanical infrastructure*
- *Mains power distribution, laser diode controllers, monitoring units, temperature management, safety management, control software*
- *Example: Power supply to 54 synchronously pulsed diode stacks with up to 600 A pulsed current with 10 Hz and an overall power of 100 joules*
- *Example: Up to 176 controller units with diode-stack monitoring. Control of all AMTRON devices via a common user interface*

BURN-IN / LONG-TERM CHARACTERISTICS.

Multi-parameter monitoring for maximum security.

- *Measurement and recording of laser power, electrical diode characteristics (current, voltage), temperature, water flow and cooling, etc.*
- *Process control*
- *For bar or single emitter based laser diodes*
- *Operation in CW and pulse mode; all measurements pulse-synchronous*
- *Logging and storage of measured values and operating parameters*
- *Automatic control without PC*
- *Number of test stations individually scalable*

SOFTWARE FOR LASER PROCESSING SYSTEMS.

Smart solutions designed for specific needs.

Along with the standard products, AMTRON also supplies customized systems for demanding tasks in laser processing. These all-round solutions include the adaptation of the software to the system at hand. AMTRON software manages, for example, burn-in systems or equipment for the long-term laser diode testing whereby a number of diode bars or single emitters can be controlled.

- *Implementation in NI Labview or Microsoft MFC*
- *Control of complete processing systems including additional components such as coolers, trigger generators, safety equipment, etc.*
- *Control of all AMTRON devices via a common user interface*

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