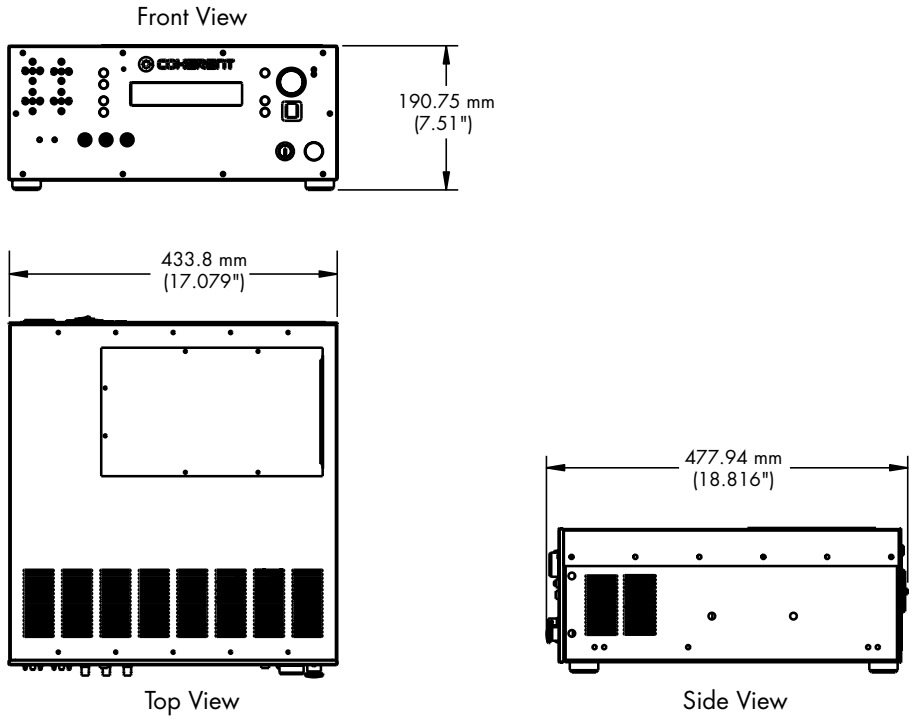
The Quattro FAP™-System is an easy-to-use full-feature microprocessor-controlled constant current semiconductor diode laser system. It is specifically designed for the industrial material processing industry to serve not only as a work-horse for soldering, brazing and plastic joining, but also as a thermal source for medical therapeutics.

The Quattro FAP-System can be equipped with up to four fiber-coupled semiconductor laser modules controlled by a single current driver.

Based on the desired application, the Quattro can be configured to a wide range of laser delivery options ranging from: four separate 800-micron diameter optical fibers to a single optical fiber bundle comprised of four 800-micron diameter fibers. Additionally, two separate aiming beams are available for precise optical alignment.

The Quattro is rack-mountable, and can be controlled either by the front-panel user interface, or by a computer-controlled RS-232 interface. Ruggedly built for industrial applications, the Quattro's four FAP-B modules are field replaceable, allowing power flexibility and easy wavelength selection.

DIMENSIONS



APPLICATIONS

- **Material Processing**
  - **Plastic Joining**
  - **Soldering**
  - **Brazing**
  - **Epoxy Curing**
- **Medical Therapeutics**
  - **Tissue Welding**
  - **Tissue Cutting**
  - **Non-Contact Surgery**

FEATURES

- **Full-Feature Microprocessor Control**
- **Up to Four FAP-B Field Replaceable Modules**
- **Air-Cooled**
- **Easy Diode Replacement**

COHERENT
SEMICONDUCTOR DIVISION

Quattro FAP – System

SPECIFICATIONS

Optical

	FAP-λ-120Q-2000-System	FAP-λ-90Q-2000-System	FAP-λ-60Q-2000-System	FAP-λ-30Q-800-System
CW Output power	80 Watts	60 Watts	40 Watts	25 Watts
Peak Output power[1]	120 Watts	90 Watts	60 Watts	30 Watts
Number of FAP/Bs	4	3	2	1
Center Wavelength[5]	790 to 820 nm, 940 nm, 980 nm	790 to 820 nm, 940 nm, 980 nm	790 to 820 nm, 940 nm, 980 nm	790 to 820 nm, 940 nm, 980 nm
Spectral Width	<6 nm	<6 nm	<6 nm	<6 nm
Beam Divergence[2]	<0.20 N.A.	<0.20 N.A.	<0.20 N.A.	<0.20 N.A.
Beam Diameter (One Fiber)	2000 µm	2000 µm	2000 µm	800 µm
Beam Diameter (No. of Outputs)	4 x 800 µm	3 x 800 µm	2 x 800 µm	1 x 800 µm
Noise[3]	1% rms	1% rms	1% rms	1% rms
Optical Fiber Delivery Type	5-meter long, armored jacketed	5-meter long, armored jacketed	5-meter long, armored jacketed	5-meter long, armored jacketed
Optical Fiber Delivery Termination	SMA 905	SMA 905	SMA 905	SMA 905

Diode Laser Control

Operating Temperature[4]	10°C to 35°C	10°C to 35°C	10°C to 35°C	10°C to 35°C
Operating Modes	cw	cw	cw	cw
	Single Shot	Single Shot	Single Shot	Single Shot
	Repetitively Pulsed	Repetitively Pulsed	Repetitively Pulsed	Repetitively Pulsed
	External Analog Input	External Analog Input	External Analog Input	External Analog Input
Operating Current	<60 A	<60 A	<60 A	<60 A
Pulse Rise/Fall Time	<50 µS	<50 µS	<50 µS	<50 µS
Minimum/Maximum				
Pulse Width	100 µS/3600 Second	100 µS/3600 Second	100 µS/3600 Second	100 µS/3600 Second
Pulse Frequency	0.3 mHz to 10 kHz	0.3 mHz to 10 kHz	0.3 mHz to 10 kHz	0.3 mHz to 10 kHz
External Analog Input				
Input	0 to 6V	0 to 6V	0 to 6V	0 to 6V
Transfer Function	10 A/V	10 A/V	10 A/V	10 A/V
Bandwidth	10 kHz	10 kHz	10 kHz	10 kHz
Maximum Slew Rate	0.2 A/µS	0.2 A/µS	0.2 A/µS	0.2 A/µS

System Specifications

Input Devices	Front Panel User Interface	Front Panel User Interface	Front Panel User Interface	Front Panel User Interface
	RS-232	RS-232	RS-232	RS-232
	Analog Voltage	Analog Voltage	Analog Voltage	Analog Voltage
	External Digital Modulation	External Digital Modulation	External Digital Modulation	External Digital Modulation
	Foot Pedal (optional)	Foot Pedal (optional)	Foot Pedal (optional)	Foot Pedal (optional)
Operating Temperature[4]	15°C to 35°C	15°C to 35°C	15°C to 35°C	15°C to 35°C
Cooling Requirements[6]	Internal Fan	Internal Fan	Internal Fan	Internal Fan
Operating Humidity	5 to 95%, non-condensing	5 to 95%, non-condensing	5 to 95%, non-condensing	5 to 95%, non-condensing
Storage Temperature	-20°C to 65°C	-20°C to 65°C	-20°C to 65°C	-20°C to 65°C

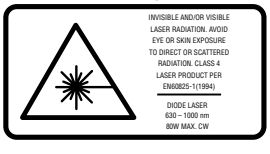
Electrical Specifications

Operating Voltage	96-264 VAC	96-264 VAC	96-264 VAC	96-264 VAC
	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Consumption	<600W (400W typical)	<600W (350W typical)	<500W (250W typical)	<400W (200W typical)

Mechanical Specifications

Weight	27 kg (60 lb)	27 kg (60 lb)	27 kg (60 lb)	27 kg (60 lb)

[1]Assume 50% duty cycle, maximum pulse width is 1 second
[2]The numerical aperture of the output beam is defined as the sine of the half-angle of the divergence cone that encircles 90% of the energy.
[3]Measured from 10 Hz to 1 GHz in cw operation, at power well above threshold.
[4]At ambient temperatures above 35°C the system will automatically shut off.
[5]Other wavelengths are available upon request. Consult your Coherent representative for other available options.
[6]10 cm clearance required.



Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological health on all systems ordered for shipment after August 2, 1976.

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

WARRANTY

Coherent offers a limited warranty for its diode laser systems. Please refer to the latest version of the Coherent, Inc., Semiconductor Division Price List, for full details of this warranty coverage.

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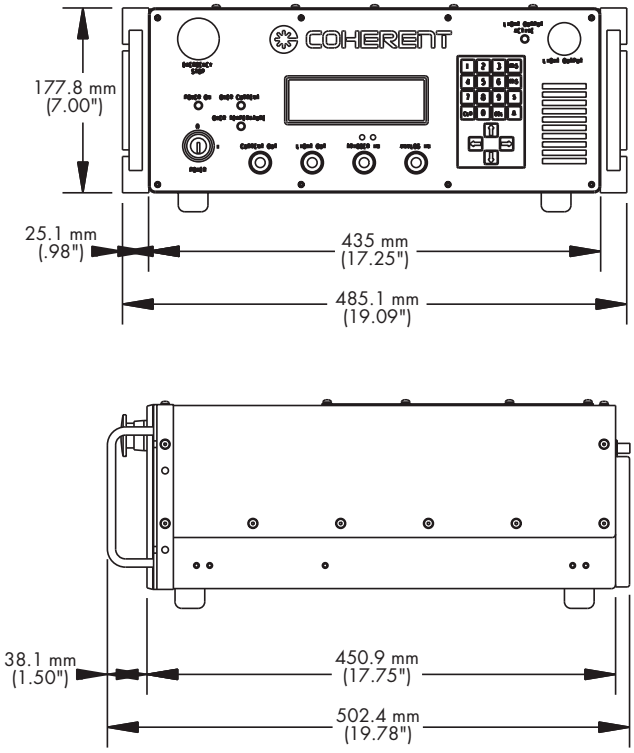
COHERENT® SEMICONDUCTOR DIVISION

The FAP™-System is a complete, turn-key diode system suitable for material processing, medical therapeutics and pumping solid-state laser media. Delivering up to 30W of diode light into an armored 800 µm core fiber, the FAP-System makes it easy to develop new applications.

With control over the operating temperature of the laser diode, as well as current and pulse width, the FAP-System offers flexibility and an easy to use interface. The system is rack-mountable and can be controlled either by the front panel user interface, or by a computer-controlled RS-232 interface. Ruggedly built for industrial applications, the system has a user-replaceable FAP-I diode module. This module can also be replaced with different wavelengths allowing complete flexibility for the user. The FAP-System is designed to seamlessly integrate future Fiber Array Packaged bars that are under development at Coherent.

The FAP-System has a series of optical accessories to make the system easy to use right out of the box. The imaging and collimating modules offer different spot sizes and focal distances for various material processing or pumping applications. A proprietary aiming module can be integrated with any of the imaging modules, to show the path and focus of the laser beam.

DIMENSIONS



APPLICATIONS

- **Material Processing**
- **Heating**
- **Marking**
- **Medical Therapeutics**
- **Laser Pumping**

FEATURES

- **Turn-Key System**
- **Laser Diode Temperature Control**
- **Air-Cooled**
- **Easy Diode Replacement**

COHERENT
SEMICONDUCTOR GROUP

FAP – System

SPECIFICATIONS

Optical

Output power, from 12 – 30W, in the wavelength range of 780 nm to 840 nm are available. Laser output wavelength and power specifications are based on the FAP-B devices. Please consult the appropriate FAP-B datasheet for details.

Beam Divergence[1]	<0.20 N.A.
Beam Diameter	800 µm
Power Stability[2]	± 5%
Noise[3]	1% rms
Fiber Optic Cable	5m, armored cable
Fiber Optic Cable Termination	SMA 905

Laser Diode Control

Operating Temperature[4]	0°C to 35°C
Temperature Stability	±0.5°C
Operating Modes	cw
	Single Shot
	Repetitively Pulsed
	External Analog Input
Operating Current	<60 A
Pulse Rise/Fall Time	<60 µS
Minimum/Maximum Pulse Width	100 µS/3600 Second
Pulse Frequency	0.3 mHz to 10 kHz
External Analog Input	
Input	0 to 6V
Transfer Function	10 A/V
Bandwidth	10 kHz
Maximum Slew Rate	1 A/µS

System Specifications

Input Devices	Front Panel Keyboard
	RS-232
	Analog Voltage
	External Trigger
	Foot Pedal (optional device)
Operating Temperature	0°C to 40°C
Cooling Requirements	Internal Fan (10 cm clearance required)
Operating Humidity	5 to 95%, non-condensing
Storage Temperature	-20°C to 65°C

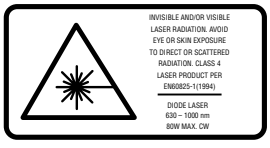
Electrical Specifications

Operating Voltage	100/115/220 VAC ±10%
	50/60 Hz
Power Consumption	<1200W (500W typical)

Mechanical Specifications

Weight	27 kg (60 lb)

[1]The numerical aperture of the output beam is defined as the sine of the half-angle of the divergence cone that encircles 90% of the energy.
[2]Measured over 8 hours over the specified operating temperature range.
[3]Measured from 10 Hz to 1 GHz in cw operation, at power well above threshold.
[4]0°C is lowest minimum value, actual minimum laser diode temperature may be higher depending on operating conditions.



CE

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WARRANTY

Coherent offers a limited warranty for its laser diode devices. Please refer to the latest version of the Coherent, Inc., Semiconductor Group Price List, for full details of this warranty coverage.

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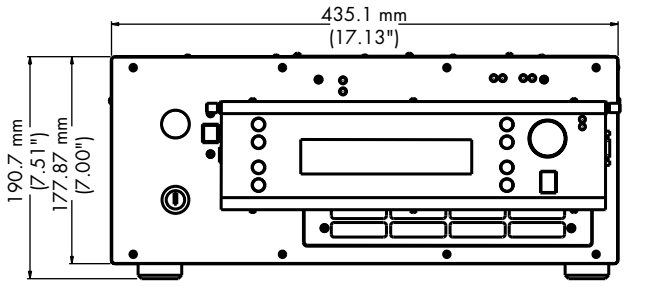
COHERENT® SEMICONDUCTOR GROUP

MC-DB039-2000-2.5M0800-R3

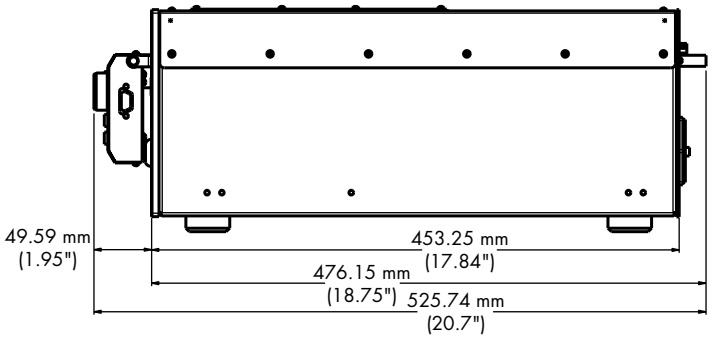
The Duo FAP™-System is a user-friendly full-feature microprocessor-controlled diode laser system. It is primarily designed for the enhanced-MRI industry to serve not only as the work-horse for Rubidium Vapor Pumping, but also as a reliable high spectral-density laser source for novel Potassium pumping applications. The Duo FAP-System is also a complete stand-alone pump source for state-of-the-art high power solid-state laser pumping. The Duo offers independent diode laser current and temperature control of both fiber-coupled diode laser modules. It is capable of delivering up to 60W of wavelength-matched laser light from either two 800-micron diameter optical fibers or one 1.7 mm diameter fiber bundle.

The Duo is rack-mountable, and can be controlled either by the removable front panel user interface or remotely controlled via RS-232 interface. Ruggedly built, the Duo platform has two independantly controlled FAP-I modules, which are user-replaceable, allowing wavelength flexibility and selection.

DIMENSIONS



FRONT VIEW



SIDE VIEW

APPLICATIONS

- **High Power Solid-State Laser Pumping**
- **Rubidium Vapor Optical Pumping for Enhanced-MRI**
- **Potassium Vapor Optical Pumping for NMR Spectroscopy**
- **Medical and Scientific Research**

FEATURES

- **Full-Feature Microprocessor Control**
- **Two Field Replaceable FAP-I Modules**
- **Independent Diode Laser Current Control**
- **Independent Diode Laser Temperature Control**
- **Modular Diode Laser Packaging**

COHERENT
SEMICONDUCTOR DIVISION

Duo FAP – System

SPECIFICATIONS

Optical

CW Output power	60 Watts (44 Watts @ 940 nm and 980 nm)
Center Wavelength[5]	785 to 820 nm, (940 nm, and 980 nm)
Spectral Width	<3 nm
Beam Divergence[2]	<0.20 N.A.
Beam Diameter	2x800 µm or 1x1700 µm fiber bundle
Noise[3]	1% rms
Power Stability[1]	±5%
Optical Fiber Delivery Type	5-meter long, armored jacketed
Optical Fiber Delivery Termination	SMA 905

Diode Laser Control

Operating Temperature[4]	10°C to 35°C
Operating Modes	cw
	Single Shot
	Repetitively Pulsed
	External Analog Input
Operating Current	<60 A
Pulse Rise/Fall Time	<60 µS
Minimum/Maximum Pulse Width	100 µS/3600 Second
Pulse Frequency	0.3 mHz to 10 kHz
External Analog Input	
Input	0 to 6V
Transfer Function	10 A/V
Bandwidth	1 kHz
Maximum Slew Rate	0.1 A/µS

System Specifications

Input Devices	Front Panel Keypad
	RS-232
	Analog Voltage
	External Trigger
	Foot Pedal (optional)
Operating Temperature[4]	0°C to 40°C
Cooling Requirements[6]	Internal Fan
Operating Humidity	5 to 95%, non-condensing
Storage Temperature	-20°C to 65°C

Electrical Specifications

Operating Voltage	100/115/220 VAC ±10%
	50/60 Hz
Power Consumption	<1200W (500W typical)

Mechanical Specifications

Weight	27 kg (66 lb)

[1]Measured over 8 hours over the specified operating temperature range.
[2]The numerical aperture of the output beam is defined as the sine of the half-angle of the divergence cone that encircles 90% of the energy.
[3]Measured from 10 Hz to 1 GHz in cw operation, at power well above threshold.
[4]At ambient temperatures above 30°C the system will automatically shut off.
[5]Other wavelengths are available upon request. Consult your Coherent representative for other available options.
[6]10 cm clearance required.

WARRANTY

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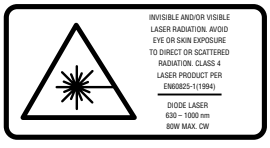

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