

■ Features

- Stable generation of sub-nanosecond laser pulses
- High beam quality
- Design of robust static output feedback
- High pulse repetition rate (stepwise variable, single shot to 50 kHz)
- Air cooling

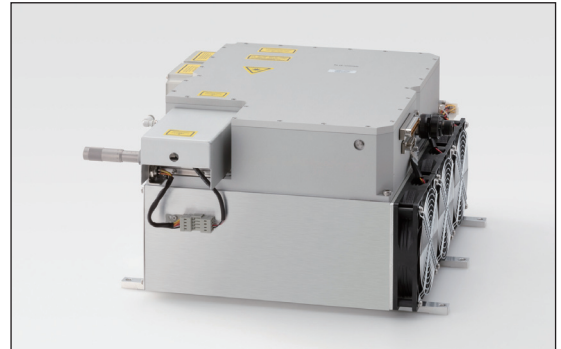
■ Applications

- Micromachining (dicing, drilling)
- Ablation processing (repair)

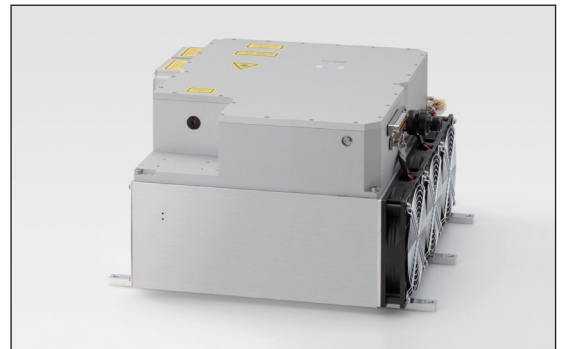
■ Outline

A passively Q-switched laser with short pulse and high beam quality, suitable for a wide variety of micro material processing applications. Equipped with repetition rate control and automatic output control of fundamental light to maintain long term stable machining performance. It is possible to acquire output characteristics, etc. by the internal monitor at all times, and it is also useful for self-diagnosis and identification of fault locations.

L15776-01 is also equipped with a manual shifter that recovers from changes in characteristics caused by long term use.



L15776-01



L15776-02, L15776-03

■ General ratings

Parameter	Value	Unit
Operating temperature *1	+20 to +25	°C
Storage temperature *1	+10 to +40	°C
Operating / Storage relative humidity *1	80 or less	%
Warmup time	30	min
Place of use	Indoor at an altitude of 2000 m or less	—

*1 No condensation (To prevent condensation, allow to reach room temperature for at least 4 hours.)

■ Specifications

Parameter	Specification									Unit
	L15776-01 *1			L15776-02			L15776-03			
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Wavelength	—	266 *2	—	—	532 *3	—	—	1064	—	nm
Pulse width *4*5	0.25	0.35	0.55	0.25	0.35	0.45	0.3	0.5	0.7	ns
Repetition rate *4	47	50	53	47	50	53	47	50	53	kHz
Average output power *3*4	1.0	1.1	—	3.0	3.3	—	5.0	5.5	—	W
Pulse energy *4*5	18	23	—	56	66	—	94	110	—	μJ
M ² *4*5*6	—	1.1	1.2	—	1.1	1.2	—	1.1	1.2	—
Polarization direction	Horizontal									—
Laser head dimensions (W × H × D)	410 × 215 × 403 (excluding protrusions)			365 × 215 × 360 (excluding protrusions)						mm
Laser head weight	Approx. 27			Approx. 26						kg
Laser class	4									—

*1 Dry air must be injected during L15776-01 operation. (Refer to "■ Required condition of supplied dry air".)

*2 532 nm and 1064 nm are emitted simultaneously.

*3 1064 nm is emitted simultaneously.

*4 Operating at 50 kHz. 1 min average. Pulse repetition rate is variable from single shot to 50 kHz/n. (n=1, 2,..., 50000)

*5 If the characteristics deviate from the specifications due to long term use, the characteristics can be recovered by adjusting the manual shifter or temperature control.(L15776-01 only)

*6 Calculated by gaussian fitting of beam profile measurements. The synergistic mean of horizontal and vertical.

Pulsed Solid State Laser L15776-01/-02/-03

■ Accessory specifications

Parameter		Specification	Unit
Laser power supply	Input power	100 to 240 (single phase) voltage allowable range $\pm 10\%$	V
	Power frequency	50 / 60	Hz
	Power consumption	350	VA
	Dimensions (W×H×D)	Approx. 440 × 177 × 430 (including rubber feet, excluding protrusions)	mm
	Weight	Approx. 15	kg
Optical switch driver	Dimensions (W×H×D)	Approx. 220 × 101 × 220 (including rubber feet, excluding protrusions)	mm
	Weight	Approx. 3.1	kg
Air filter (L15776-01 only)	Dimensions (W×H×D)	Approx. 180 × 228 × 73 (including rubber feet, excluding protrusions)	mm
	Weight	Approx. 2.1	kg

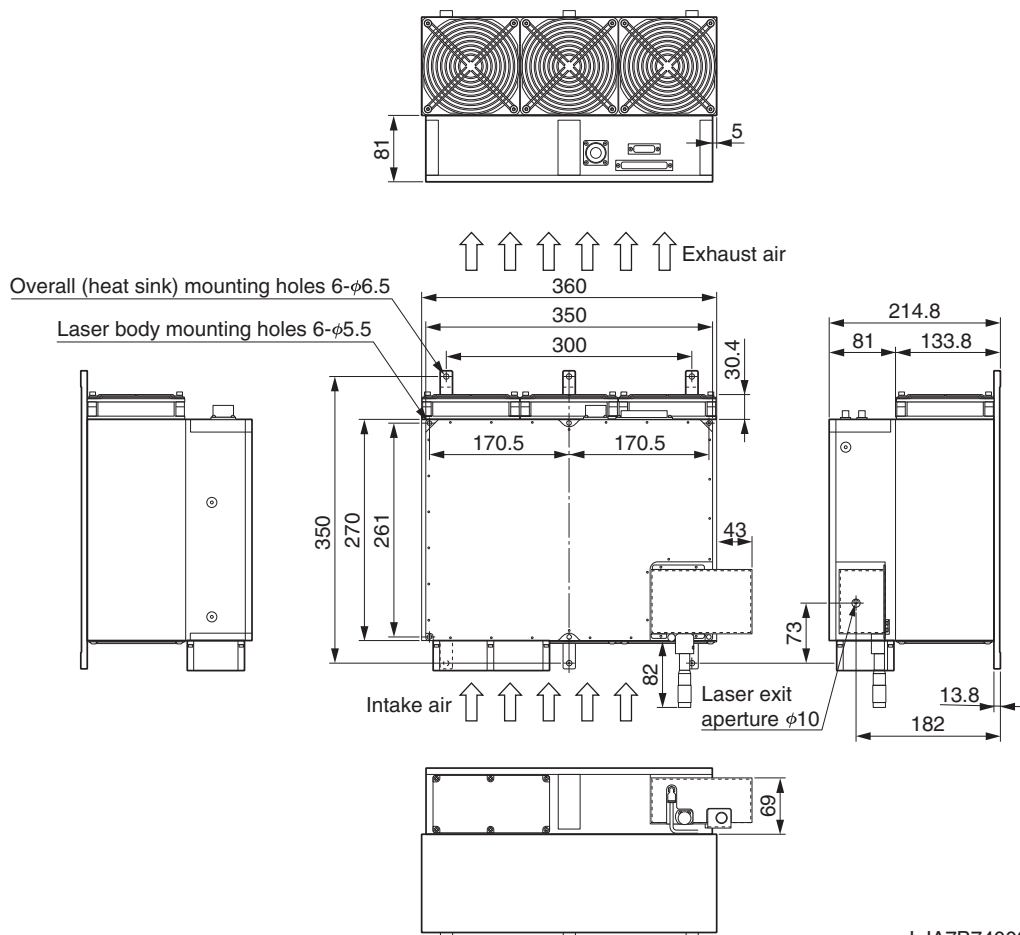
■ Required condition of supplied dry air (L15776-01 only)

Parameter	Specification	Unit
Supply flow rate	1.0 to 2.0	L/min
Injection pressure	0.1 or less	MPa
Temperature	21 to 25	°C
Relative humidity	10 or less	%
Filtration rate	0.01	μm
Oil mist concentration	0.1 (ANR)	mg/m^3
Tube O.D.	6	mm

Figure 1: Dimensions (unit: mm)

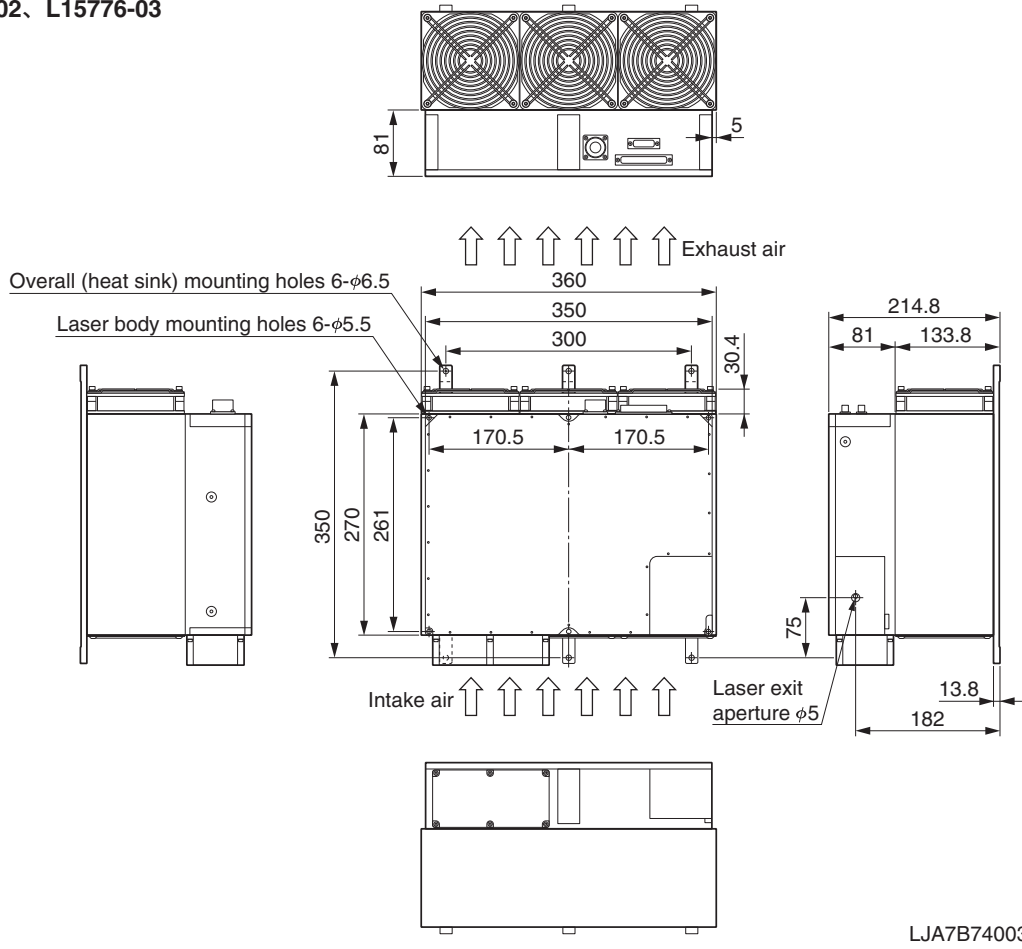
● Solid state laser head

· L15776-01



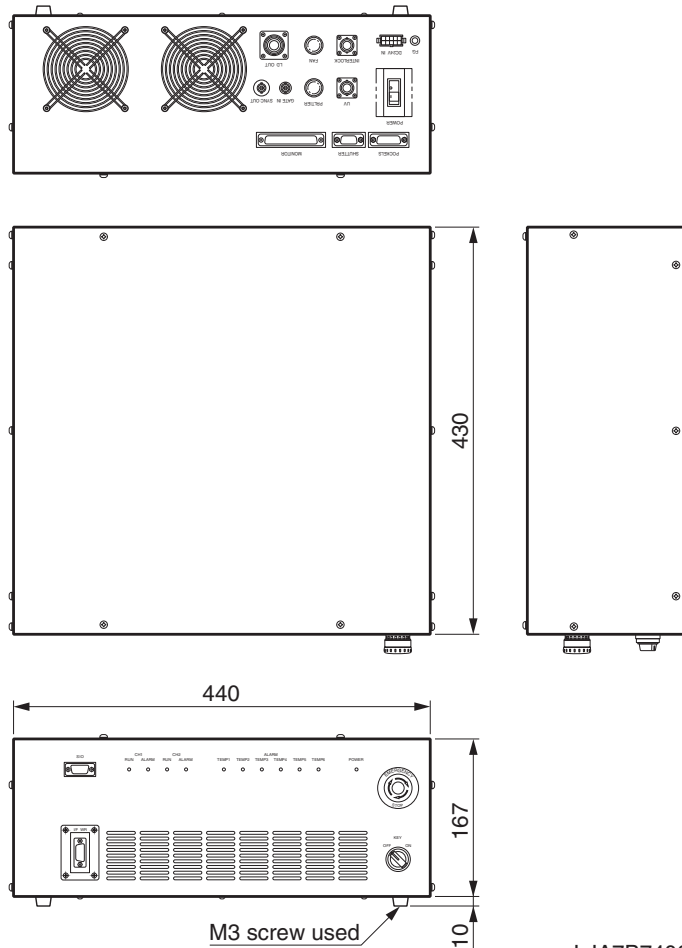
Pulsed Solid State Laser L15776-01/-02/-03

· L15776-02、L15776-03



LJA7B740030

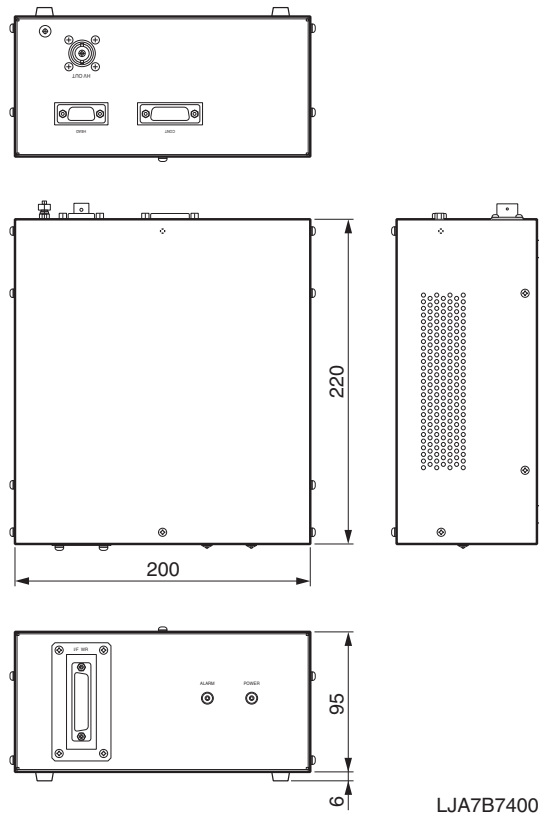
●Laser power supply



LJA7B740031

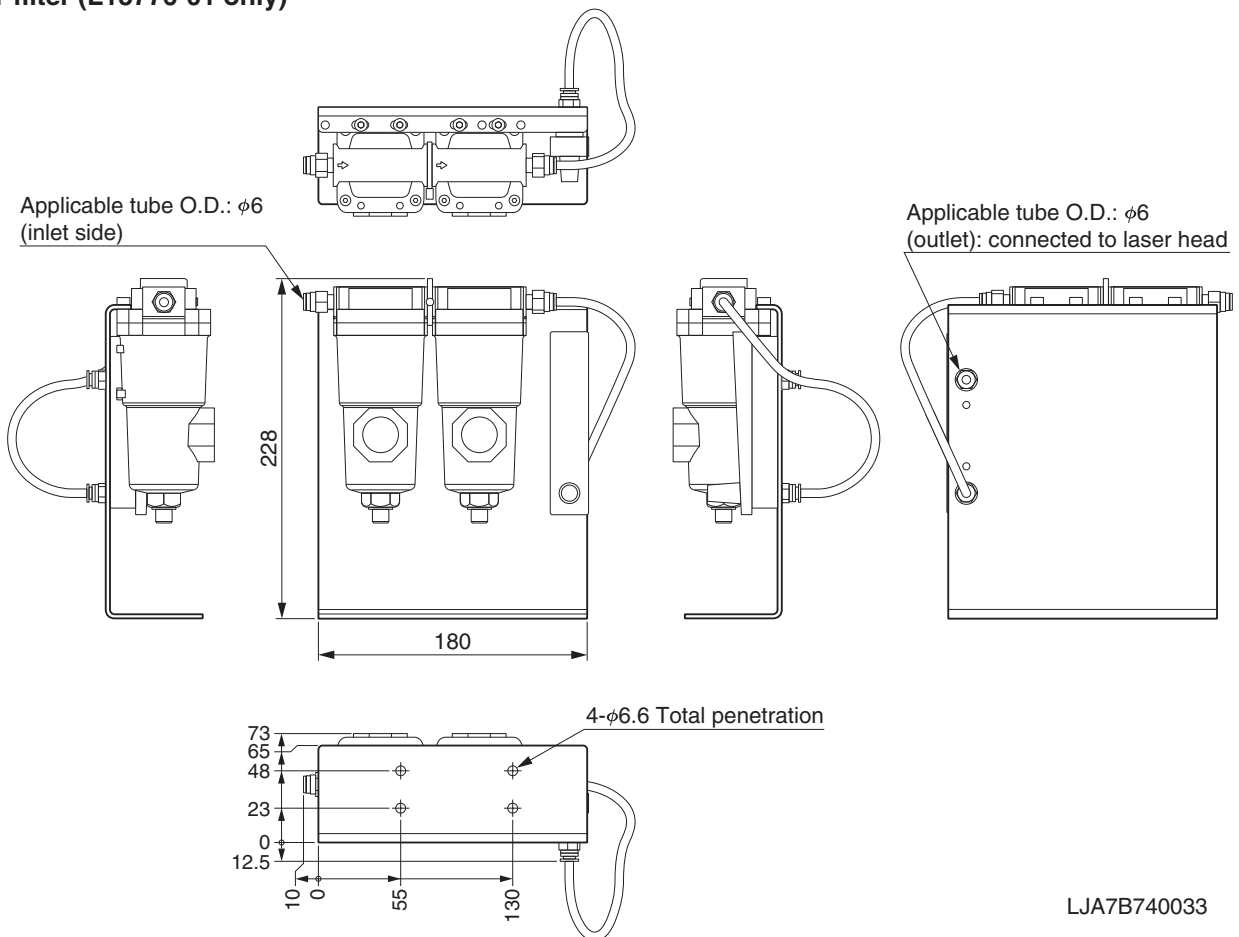
Pulsed Solid State Laser L15776-01/-02/-03

●Optical switch driver



LJA7B740032

●Air filter (L15776-01 only)



LJA7B740033

Pulsed Solid State Laser L15776-01/-02/-03

Danger (Class 4 Laser)

Invisible laser radiation (266 nm): Avoid eye or skin exposure to direct or scattered radiation

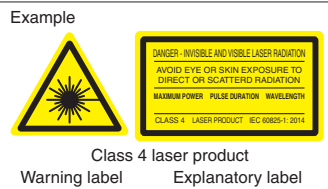
Danger (Class 4 Laser)

Laser radiation (532 nm): Avoid eye or skin exposure to direct or scattered radiation

Danger (Class 4 Laser)

Invisible laser radiation (1064 nm): Avoid eye or skin exposure to direct or scattered radiation

● The main laser beam emitted from this product contains invisible laser that cannot be seen by the naked eye. This product is as a "Class 4 Laser" according to the laser product classification defined by IEC 60825-1. To use this product safely, follow IEC 60825-1 regulations, etc.



* This product is an OEM product for system integration only. This product as stand-alone units do not fully comply with safety regulations IEC 60825-1:2014. Direct and indirect eye contact with the output beam from the laser will cause serious damage and possible blindness. It is good procedure to operate the laser in a room with controlled and restricted access. To comply with the safety regulations according to IEC 60825:2014 the integrator must.

* This product is covered by the following joint patents invented in collaboration with Prof. Takunori Taira, Institute for Molecular Sciences: JP4530348, US7664148, CN100492786.

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

Laser Promotion Division, Business Promotion G.

1-8-3, Shinmiyakoda, Kita-ku, Hamamatsu City, Shizuoka, 431-2103, Japan, Telephone: (81)53-484-1301, Fax: (81)53-484-1302, E-mail: sales-laser@lpd.hpk.co.jp

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH.: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R. China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section 2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.com.tw