



## Argon-Ion Lasers

for industrial and scientific applications

Sacher Lasertechnik GmbH  
Rudolf-Breitscheid-Str. 1-5  
D-35037 Marburg

Phone +49 (0) 6421 305-0  
Fax +49 (0) 6421 305-299  
Email [contact@sacher-laser.com](mailto:contact@sacher-laser.com)  
Web <http://www.sacher-laser.com>

**Note:** Specification are subject to change without further notice.



## Table of Contents

### Part 1 - Rectangular Design

|               |   |
|---------------|---|
| 165 LG-series | 3 |
| 131 LG-series | 4 |
| 131 LG-series | 5 |

### Part 2 - Cylindrical Design

|               |   |
|---------------|---|
| 181 LG-series | 6 |
|---------------|---|

**Note:** Specifications are subject to change without further notice.



## Part 1: Rectangular Design

### 1. 165 LG Argon-Ion laser system



| Specifications <sup>1, 2, 3</sup>       | 165 LGV           | 165 LGS           | 165 LGG           | 165 LGA           |
|---|-------------------|-------------------|-------------------|-------------------|
| Wavelength [nm]                         | 458               | 488               | 514               | 458...514         |
| Output Power [mW]                       | 5                 | 15, 20, 30        | 10, 15, 20        | 25, 40, 65        |
| Power Stability (over 2 hrs.) [%]       | ±1                | ±1                | ±1                | ±1                |
| Spacial Mode                            | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> |
| M <sup>2</sup>                          | <1.2              | <1.2              | <1.2              | <1.2              |
| Beam Diameter (1/e <sup>2</sup> ) [mm]  | 0.63 ±5%          | 0.65 ±5%          | 0.67 ±5%          | 0.67 ±5%          |
| Beam Divergence [mrad]                  | < 1.0             | < 1.0             | < 1.0             | < 1.0             |
| Polarisation Ratio                      | > 250: 1          | > 250: 1          | > 250: 1          | > 250: 1          |
| Pointing Stability (over 2 hrs.) [μrad] | ±30 / ±3 °C       | ±30 / ±3 °C       | ±30 / ±3 °C       | ±30 / ±3 °C       |
| Noise (20Hz-2kHz; pk-pk) [%]            | 0.1               | 0.1               | 0.1               | 0.1               |
| Noise (20Hz-20kHz; pk-pk) [%]           | 1.0               | 1.0               | 1.0               | 1.0               |
| Noise (20Hz-2MHz; rms) [%]              | 1.0               | 1.0               | 1.0               | 1.0               |

| Operating Parameters                                       |                                    |
|--|------------------------------------|
| Input Voltage [VAC]  | 100 – 240 ±10%                     |
| Current [Amps]   | 16 (max.)                          |
| Frequency [Hz]   | 47 – 63                            |
| Phase  | Single                             |
| Air Intake (standard, large, remote cooling <sup>4</sup> ) | 106, 225, 65 CFM                   |
| Air Intake Clearance [cm]                                  | 2.5                                |
| Operating Temperature [°C]                                 | 4 – 40 (90% relative humidity)     |
| Storage Temperature [°C]                                   | -30 - +60 (100% relative humidity) |
| Warm-up time [min]   | 10                                 |

| Mechanical Parameters   |                         |
|---|-------------------------|
| Dimensions Laser Head (LxBxH) [mm]                                    | 322.33 x 133.6 x 160.02 |
| Dimensions Power Supply (LxBxH) [mm]                                  | 279.4 x 162.05 x 97.79  |
| Weight Laser Head (standard, large, remote cooling) <sup>5</sup> [kg] | 4.9, 5.7, 4.3           |
| Weight Power Supply [kg]  | 3.18                    |

1. Specifications subject to change without notice.

2. When used with 9400 series power supply.

3. Measurements taken in light control after 5 minute warm-up.

4. Nominal air flow is 65 CFM. Use McLean Engineering Model INB412 or equivalent fan rated for 185 CFM free air flow. Hose length not to exceed two meters.

5. Large fan required for 30, 20, & 65mW @ 488, 514, & 458-514nm options.

**Note:** Specification are subject to change without further notice.



## 2. 131 LG Argon-Ion laser system



| Specifications <sup>1, 2, 3</sup>       | 131 LGS           | 131 LGA           | 131 LGM    |
|---|-------------------|-------------------|------------|
| Wavelength [nm]                         | 488               | 458...514         | 458...514  |
| Output Power [mW]                       | 40                | 100               | 200        |
| Power Stability (over 2 hrs.) [%]       | ±1                | ±1                | ±1         |
| Spacial Mode                            | TEM <sub>00</sub> | TEM <sub>00</sub> | Multi-Mode |
| M <sup>2</sup>                          | <1.2              | <1.2              |            |
| Beam Diameter (1/e <sup>2</sup> ) [mm]  | 0.70 ±5%          | 0.75 ±5%          | 0.80 ±5%   |
| Beam Divergence [mrad]                  | < 1.0             | < 1.0             | < 2.4      |
| Polarisation Ratio                      | > 250: 1          | > 250: 1          | Random     |
| Pointing Stability (over 2 hrs.) [μrad] | ±30 / ±3°C        | ±30 / ±3°C        | ±30 / ±3°C |
| Noise (20Hz-2kHz; pk-pk) [%]            | 0.1               | 0.1               | 0.1        |
| Noise (20Hz-20kHz; pk-pk) [%]           | 1.0               | 1.0               | 1.0        |
| Noise (20Hz-2MHz; rms) [%]              | 1.0               | 1.0               | 1.0        |

| Operating Parameters       |                                    |
|----------------------------|------------------------------------|
| Input Voltage [VAC]        | 200 – 240 ±10%                     |
| Current [Amps]             | 16 (max.)                          |
| Frequency [Hz]             | 47 – 63                            |
| Phase                      | Single                             |
| Air Intake                 | 216 CFM                            |
| Air Intake Clearance [cm]  | 2.5                                |
| Operating Temperature [°C] | 4 – 40 (90% relative humidity)     |
| Storage Temperature [°C]   | -30 - +60 (100% relative humidity) |
| Warm-up time [min]         | 10                                 |

| Mechanical Parameters                |                          |
|--------------------------------------|--------------------------|
| Dimensions Laser Head (LxWxH) [mm]   | 395.22 x 119.38 x 158.24 |
| Dimensions Power Supply (LxWxH) [mm] | 287.02 x 162.05 x 141.73 |
| Weight Laser Head [kg]               | 5.8                      |
| Weight Power Supply [kg]             | 3.18                     |

1. Specifications subject to change without notice.

2. When used with 8400 series power supply.

3. Measurements taken in light control after 5 minute warm-up.

**Note:** Specification are subject to change without further notice.



### 3. 131 LG Argon-Ion laser system



| Specifications <sup>1, 2, 3</sup>       | 131 LGV           | 131 LGSP          | 131 LGG           | 131 LGMP   |
|---|-------------------|-------------------|-------------------|------------|
| Wavelength [nm]                         | 458               | 488               | 514               | 458...514  |
| Output Power [mW]                       | 20                | 100               | 225               | 500        |
| Power Stability (over 2 hrs.) [%]       | ±1                | ±1                | ±1                | ±1         |
| Spacial Mode                            | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> | Multi-Mode |
| M <sup>2</sup>                          | <1.2              | <1.2              | <1.2              |            |
| Beam Diameter (1/e <sup>2</sup> ) [mm]  | 0.83 ±5%          | 0.83 ±5%          | 0.85 ±5%          | 0.83 ±5%   |
| Beam Divergence [mrad]                  | < 1.0             | < 1.0             | < 1.0             | < 2.0      |
| Polarisation Ratio                      | > 250: 1          | > 250: 1          | > 250: 1          | Random     |
| Pointing Stability (over 2 hrs.) [μrad] | ±30 / ±3°C        | ±30 / ±3°C        | ±30 / ±3°C        | ±30 / ±3°C |
| Noise (20Hz-2kHz; pk-pk) [%]            | 0.1               | 0.1               | 0.1               | 0.1        |
| Noise (20Hz-20kHz; pk-pk) [%]           | 2.0               | 2.0               | 2.0               | 2.0        |
| Noise (20Hz-2MHz; rms) <sup>4</sup> [%] | 1.0               | 1.0               | 1.0               | 1.0        |

| Operating Parameters                               |                                    |
|--|------------------------------------|
| Input Voltage [VAC]                                | 200 – 240 ±10%                     |
| Current [Amps]                                     | 16 (max.)                          |
| Frequency [Hz]                                     | 47 – 63                            |
| Phase  | Single                             |
| Air Intake (standard, remote cooling) <sup>5</sup> | 450, 250 CFM                       |
| Air Intake Clearance [cm]                          | 3.8                                |
| Operating Temperature [°C]                         | 4 – 40 (90% relative humidity)     |
| Storage Temperature [°C]                           | -30 - +60 (100% relative humidity) |
| Warm-up time [min]                                 | 10                                 |

| Mechanical Parameters                                    |                          |
|--|--------------------------|
| Dimensions Laser Head (LxWxH) [mm]                       | 454.76 x 154.2 x 196.42  |
| Dimensions Power Supply (LxWxH) [mm]                     | 287.02 x 162.05 x 141.73 |
| Weight Laser Head (standard, large, remote cooling) [kg] | 8.9 / 6.6                |
| Weight Power Supply [kg]                                 | 3.18                     |

1. Specifications subject to change without notice.

2. When used with 8400 series power supply.

3. Measurements taken in light control after 5 minute warm-up.

4. 1% for single line wavelengths. 2% for multiline wavelengths.

5. Nominal air flow is 250 CFM. Use Kooltronic Model KBB49 or equivalent fan rated for 425 CFM free air flow. Hose length not to exceed three meters.

**Note:** Specification are subject to change without further notice.



## Part 2: Cylindrical Design

### 1. 181 LG Argon-Ion laser system



| Specifications                          | 181 LGV           | 181 LGS           | 181 LGG           | 181 LGA           |
|---|-------------------|-------------------|-------------------|-------------------|
| Wavelength [nm]                         | 458               | 488               | 514               | 458...514         |
| Output Power [mW]                       | 5                 | 4, 10, 20, 30     | 10, 15            | 25, 40, 65        |
| Power Stability (over 2 hrs.) [%]       | ±1                | ±1                | ±1                | ±1                |
| Spacial Mode                            | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> |
| M <sup>2</sup>                          | <1.2              | <1.2              | <1.2              | <1.2              |
| Beam Diameter (1/e <sup>2</sup> ) [mm]  | 0.62 ±5%          | 0.65 ±5%          | 0.67 ±5%          | 0.67 ±5%          |
| Beam Divergence [mrad]                  | < 1.0             | < 1.0             | < 1.0             | < 1.0             |
| Polarisation Ratio                      | > 250 : 1         | > 250 : 1         | > 250 : 1         | > 250 : 1         |
| Pointing Stability (over 2 hrs.) [μrad] | ±30 / ±3°C        | ±30 / ±3°C        | ±30 / ±3°C        | ±30 / ±3°C        |
| Noise (20Hz-2kHz; pk-pk) [%]            | 0.1               | 0.1               | 0.1               | 0.1               |
| Noise (20Hz-20kHz; pk-pk) [%]           | 1.0               | 1.0               | 1.0               | 1.0               |
| Noise (20Hz-2MHz; rms) [%]              | 1.0               | 1.0               | 1.0               | 1.0               |

| Operating Parameters       |                                    |
|----------------------------|------------------------------------|
| Input Voltage [VAC]        | 100 – 240 ±10%                     |
| Current [Amps]             | 16 (max.)                          |
| Frequency [Hz]             | 47 – 63                            |
| Phase                      | Single                             |
| Air Intake                 | 65 CFM                             |
| Air Intake Clearance [cm]  | 2.5                                |
| Operating Temperature [°C] | 4 – 40 (90% relative humidity)     |
| Storage Temperature [°C]   | -30 – +60 (100% relative humidity) |
| Warm-up time [min]         | 10                                 |

| Mechanical Parameters                |                        |
|--------------------------------------|------------------------|
| Dimensions Laser Head (LxWxH) [mm]   | 358.9 x 101.6 x 122.17 |
| Dimensions Power Supply (LxWxH) [mm] | 279.4 x 162.05 x 97.79 |
| Weight Laser Head [kg]               | 2.8                    |
| Weight Power Supply [kg]             | 3.18                   |

1. Specifications subject to change without notice.
2. When used with 9400 series power supply.
3. Measurements taken in light control after 5 minute warm-up.
4. Nominal air flow is 65 CFM. Use McLean Engineering Model INB412 or equivalent fan rated for 185 CFM free air flow. Hose length not to exceed two meters.

**Note:** Specification are subject to change without further notice.

