
Stabilized HeNe Laser



SL 03-Series

Design and Operation

Our SL 03-Series stabilized HeNe lasers employ a patented dual longitudinal mode stabilization technique providing high frequency and amplitude stabilities, low optical feedback, and extremely rapid warm-up. They consist of a compact cylindrical head incorporating the laser tube, plus a separate table-top housing incorporating a high-voltage supply and control electronics equipped with a front-panel switch for selecting frequency-stabilized or amplitude-stabilized mode of operation. An internal thread at their beam exit provides a rigid mounting for mechanical shutters or various types of optical components. Fiber couplers mating to singlemode or multimode fibers are available as an option.

| Technical Data | | SL 03/1 |
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| Nominal wavelength | nm | 632.9910 ± 0.0002 |
| Output power | mW | ≥ 0.8 |
| Amplitude noise (30 Hz - 10 MHz) | % | < 0.2 |
| Amplitude stability over 24 h/1 min (frequency stabilization mode) | % | < 5 / < 0.5 |
| Amplitude stability over 24 h/1 min (amplitude stabilization mode) | % | < 0.5 / < 0.2 |
| Beam diameter (TEM ₀₀) | mm | 0.55 |
| Beam divergence (TEM ₀₀) | mrاد | 1.5 |
| Polarization | | Linearly polarized longitudinal mode |
| Time required to warm-up to stabilized condition | min | ≈ 10 |
| Frequency drift: | | |
| Max. thermal frequency drift | MHz/K | ± 2 |
| Max. total frequency drift | MHz | ± 5 |
| Frequency stability over 1 min / 1h / 24h after 30-min warm-up | | ± 1 × 10 ⁻⁹ / ± 2 × 10 ⁻⁹ / ± 1 × 10 ⁻⁸ |
| Max. tolerated optical feedback | | < 10 ⁻⁵ |
| Maximum tolerated magnetic fields at laser head: | | |
| Magnetodynamic field | T | < 10 ⁻⁶ |
| Magnetostatic field | T | < 10 ⁻⁴ |
| Operating temperature range | °C | + 15...+ 30 |
| Storage temperature range | °C | - 20...+ 50 |
| Typical life time | h | ≥ 15,000 |
| Power consumption in stabilized condition | W | < 20 |
| Line voltage | VAC | 100 - 240 |
| Dimensions of laser head [Dia. x L] / electronic unit [W x H x D] | mm | ∅ 34.9 x 280 / 172 x 60 x 230 |
| Internal thread at beam exit | | 1.279"-32 |
| Length of cable interconnecting laser head and electronic unit | m | 0.8 |
| Weights of laser head / electronic unit | g | 450 / 1,200 |
| Laser Safety Class according DIN EN 60825-1 | | 2M |

Major Features and Benefits

- High frequency and amplitude stabilities
- Choice of two modes of operation, frequency stabilized or amplitude stabilized
- Rapid warm-up (typically 10 min)
- Compactly designed
- Laser heads come equipped with an internal thread at their beam exit for installing, e.g., fiberoptic couplers, as standard.
- All units bear the CE-symbol certifying compliance with EG-Guidelines 73/23/EWG and 89/336/EWG and harmonized EN-Standards EN 61010-1, EN 60825-1, EN 55011, and EN 50082-1.



Options

- Datasheet with absolute frequency (maximum error 1 MHz) measured in comparison with an iodine-stabilized HeNe laser
- Marking indicating the beam's plane of polarization
- Extended or shifted operating temperature range
- Faraday isolator
- Couplers for multimode or singlemode optical fibers
- Fiberoptic connector, e.g., a DIN-connector, installed on the fiber exit end

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| <p>SIOS Meßtechnik GmbH Am Vogelherd 46 D-98693 Ilmenau Tel: +49-(0)3677-64470 e-mail: info@sios.de Fax: +49-(0)3677-64478 URL: http://www.sios.de</p> | <p>Warning: LASER RADIATION DO NOT STARE INTO BEAM OR VIEW BEAM USING OPTICAL INSTRUMENTS. LASER CLASS 2M</p> |
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