Lock-In Preamplifier

SR554 — Transformer preamplifier with differential input

The SR554 is a low-noise, transformer-coupled preamplifier optimized for source impedances between 0.05 Ω and 1 kΩ. With an input noise of only 0.1 nV/√Hz, the SR554 can be used in a wide range of low-noise applications. It is the ideal preamplifier for low-temperature, synchronous detection applications where isolation between the experimental sample and the lock-in amplifier is critical.

The SR554 can operate in one of two modes. In the “bypassed” mode, the instrument is simply a passive transformer with a turns ratio of 100, providing an overall voltage gain of 100. In the “non-bypassed” mode, an additional amplifier (gain of 5) is added, increasing the overall gain to 500 and providing a low-impedance (<1 Ω) output. In the bypassed mode, the SR554 requires no external power. When using the output amplifier, ±20 VDC must be supplied. The preamplifier connector on SRS lock-ins can be used to power the SR554.

- Transformer-coupled input
- 0.1 nV/√Hz input noise
- 0.1 Hz to 40 kHz bandwidth
- Gain of 100 or 500
- Single-ended and differential inputs
- >40 dB isolation from DC to 500 MHz
- Powered by SRS lock-in amplifiers

SR554 ... $1200 (U.S. list)
Specifications

- **Mode**: Single-ended or differential
- **Noise**: 0.1 nV/√Hz
- **Source impedance**: 0.05 Ω to 1 kΩ (recommended)
- **CMRR**: >120 dB below 1 kHz
- **Common mode range**: Primary can float to ±100 VDC
- **Gain**: 100× (transformer only), 500× (transformer and buffer)
- **Max. freq. response**: 0.1 Hz to 40 kHz
- **Isolation**: >40 dB, DC to 500 MHz
- **Output**: Single-ended or differential
- **Maximum output**: 100 Vpp (transformer only), 20 Vpp (transformer and buffer)
- **Output impedance**: >5 kΩ (transformer only), <1 Ω (transformer and buffer)
- **Power**: Supplied by SR510, SR530, SR810, SR830, SR850 or SR124 via control cable. External ±20 VDC supplies can also power the SR554.
- **Dimensions**: 3.75" × 3" × 7.5" (WHD)
- **Weight**: 4 lbs.
- **Warranty**: One year parts and labor on defects in materials and workmanship

Ordering Information

SR554  Transformer preamplifier  $1200

SR554 Front Panel