

SRc5P and SRc

Camera Slot Dual UHF Receiver

TECHNICAL DATA



- Fits camera “slots,” Lectrosonics Duopack adapter and Octopack multicoupler, and operates stand-alone with various adapters
- Tunes over a 76 MHz range* (3 blocks)
- Dual receiver design for two channels with phase switched diversity or single channel with ratio diversity operation
- Digital Hybrid Wireless® with compatibility modes for use with earlier transmitters

- Tracking front-end filters for high performance in tough RF environments
- LCD with RF spectrum scanning
- SmartSquelch™ DSP-controlled, noise based filtering and squelch
- DSP-based pilot tone for squelch control
- IR sync port for quick transmitter setup
- SmartTune™ operation for quick and confident frequency selection

The SRc5P and SRc design includes two separate receivers built into a single, ultra compact housing with adapters for video camera receiver slots and for stand-alone use. Digital Hybrid Wireless® technology provides superb, compandor-free audio quality and compatibility with other wireless systems. The RF performance is extremely stable over a very wide temperature range, making the receiver perfectly suited to the rough environmental conditions found in field production.

DSP compatibility modes allow the receiver to be used with a variety of Lectrosonics systems, other brands of wireless systems and with Lectrosonics IFB transmitters.

Digital Hybrid Wireless® is a revolutionary design that combines digital audio with an analog FM radio link to provide both outstanding audio quality and exemplary, noise-free RF performance.

Using a patented algorithm to encode 24-bit digital audio information in the transmitter into an analog format, the encoded signal is then transmitted over an analog FM wireless link.

At the receiver, the signal is then decoded to restore the original digital audio. This process eliminates compandor artifacts and produces an audio frequency response flat to 20 kHz.

(US Patent 7,225,135)

The front panel features a menu-driven LCD interface and four membrane switches which are used to view and alter settings. The main LCD window displays the pilot tone indicator, diversity activity, RF level, audio level and transmitter battery status for both receivers. To find clear operating frequencies, a built-in spectrum analyzer scans across the tuning range of the receiver and displays a histogram of RF activity across the band. Areas with little or no RF activity are easily recognizable.

The two internal receivers can be operated separately, each using switching, antenna combining diversity, or in tandem with ratio diversity reception. The audio outputs of the receivers can be mixed internally, or left separated for discrete recording tracks or external mixing.

A variety of output adapters and mounting options are available for camera slot operation. The receivers are powered from an external 7 to 18 volt DC source. The SRC5P model provides a 5-pin connector next to the control panel with audio output from both channels in addition to the camera slot outputs.

*Tuning range varies slightly in different bands

Three Block Tuning Range

The SRC & SRC5P receivers tune across a range of over 76 MHz. This tuning range covers three standard Lectrosonics frequency blocks.



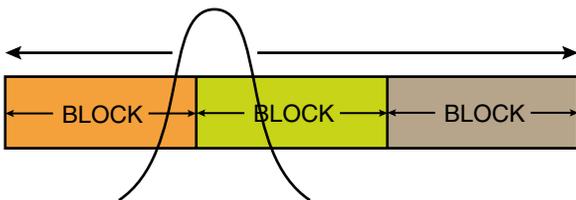
Tuning ranges are available covering standard blocks as follows:

Band	Blocks Covered	Freq. (MHz)
A1	470, 19, 20	470.100 - 537.575
B1	21, 22 23	537.600 - 614.375
B2	22, 23, 24	563.200 - 639.975
Block 606	23, 24	606.000 - 631.500
C1	24, 25, 26	614.400 - 691.175
C2	25, 26, 27	640.000 - 716.775

RF Front-End with Tracking Filter

A wide tuning range is helpful in finding clear frequencies for operation, however, it also allows a greater range of interfering frequencies to enter the receiver. The UHF frequency band, where almost all wireless microphone systems operate, is heavily populated by high power TV transmissions. The TV signals are immensely more powerful than a wireless microphone transmitter signal and will enter the receiver even when they are on significantly different frequencies than the wireless system. This powerful energy appears as noise to the receiver, and has the same effect as the noise that occurs with extreme operating range of the wireless system (noise bursts and dropouts). To alleviate this interference, front-end filters are needed in the receiver to suppress RF energy below and above the operating frequency.

Each receiver employs a variable frequency, tracking filter in the front-end section (the first circuit stage following the antenna). As the operating frequency is changed, the filters re-tune to stay centered over the selected carrier frequency.



In the front-end circuitry, a tuned tracking filter is followed by an amplifier and then another tuned tracking filter to provide the selectivity needed to suppress interference, yet provide a wide tuning range and retain the sensitivity needed for extended operating range.

IF (Intermediate Frequency) Filters

Following the front-end, the incoming RF signal in each receiver is mixed down to a lower frequency for additional filtering with two SAW (surface acoustic wave) filters. The use of two filters significantly increases the depth of filtering while preserving sharp skirts, constant group delay, and wide bandwidth.

Digital Pulse Counting Detector

Following the IF section, the receiver uses an elegantly simple, yet highly effective digital pulse counting detector to demodulate the FM signal to generate the audio, rather than a conventional quadrature detector. This unusual design eliminates thermal drift, improves AM rejection, and provides very low audio distortion.

DSP-Based Pilot Tone

The Digital Hybrid system design uses a DSP generated ultrasonic pilot tone to reliably mute the audio when no RF carrier is present. The pilot tone must be present in conjunction with a usable RF signal before the audio output will be enabled. 256 pilot tone frequencies are used across each 25.6 MHz block within the tuning range of the system. This alleviates erroneous squelch activity in multichannel systems where a pilot tone signal can appear in the wrong receiver via IM (intermodulation).

Automatic Power State Restoration

The firmware “remembers” whether it was turned on or off when power is disconnected and returns to that state when power is restored.

SmartSquelch™

A DSP-based algorithm named SmartSquelch™ optimizes the receiver performance in very weak signal conditions. The RF level and supersonic noise in the audio are continuously monitored to determine the appropriate noise reduction needed and the point at which squelch (complete muting of the audio) is necessary.

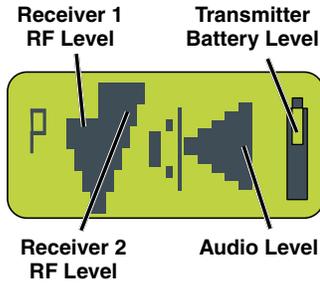
SmartTune™ Frequency Selection

SmartTune™ simplifies setup by scanning the tuning range of the receiver or a selected frequency block, and automatically setting a channel to the best available frequency. A prompt appears, reminding the user to use IR sync or manual settings to tune the transmitter to the selected frequency, then turn it on so the receiver sees it. Then, a prompt asks if the process should continue for the second channel. This process allows very quick and accurate tuning, whatever the RF environment.

Front Panel Controls and Functions



The control panel is a rugged, dust and water resistant design with membrane switches for the control interface. A backlit, graphics-type LCD is used to set up and monitor the receiver. Navigation through the menus is straightforward with text prompts for value and mode selections. In the ratio diversity mode, the Main Window displays audio levels, transmitter battery status, pilot tone status and RF level activity for both receivers, with a single audio channel display.



The 5P version of the SRc receiver is intended for use with cameras that do not have both audio channels enabled in the camera slot. In addition to the audio outputs on the rear panel, a second set of outputs are also provided through a 5-pin connector on an adapter next to the control panel. The TA5M connector next to the control panel provides two balanced outputs with the following pinouts:

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Shields	CH1 +	CH1 -	CH2 +	CH2 -

Rear Panel and Slot Adapter Kits

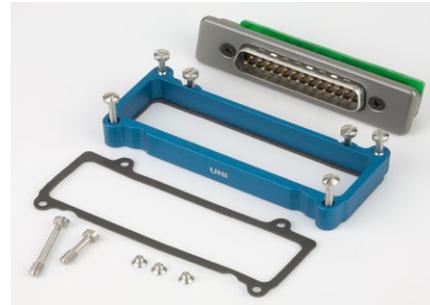
Several different rear panel adapters are available to configure the receiver for popular camera slots and for stand-alone use. The rear panels are held in place by two screws and are easily changed. Camera slot adapter kits include top panel bezels with hardware for a secure fit into the camera body.



SuperSlot adapter



SRSUPER adapter kit



SREXT adapter



SRSNY adapter



NOTE: SRSUPER adapter kit for Unislot® camera slots such as those provided on Ikegami® and Panasonic® cameras, as well as the SL-6 by Sound Devices®. Includes bezel, hardware and rear panel DB25 connector wired for power and audio connections.

Battery Adapter

The receiver can be powered with an optional battery "sled" adapter that accepts standard "L" and "M" style rechargeable batteries. The adapter includes an integrated SREXT plate for the rear panel audio outputs. Typical runtime with a 7.2 V, 2200 mA "L" style battery is approximately 11 hours.



Specifications and Features

Operating Frequencies:
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 Band A1: 470.100 - 537.575 MHz
 Band B1: 537.600 - 614.375 MHz
 Band B2: 563.200 - 639.975 MHz
 Block 606: 606.000 - 631.500 MHz
 Band C1: 614.400 - 691.175 MHz
 Band C2: 640.000 - 713.900 MHz/716.775 MHz selectable

Frequency selection steps: Selectable; 100 kHz or 25 kHz

Receiver Type: Dual conversion, superheterodyne
 IF Frequencies: Ch. 1: 248.450 MHz and 350.000 kHz
 Ch. 2: 243.950 MHz and 250.000 kHz

Frequency Stability: ±0.001 %
 Front end bandwidth: 20 MHz @ -3 dB

Sensitivity
 20 dB SINAD: 1.0 uV (-107 dBm), A weighted
 60 dB Quieting: 2.2 uV (-100 dBm), A weighted

Squelch quieting: Greater than 100 dB typical
 AM rejection: Greater than 60 dB, 4 uV to 1 Volt

Modulation acceptance: 85 kHz
 Image and spurious rejection: 85 dB
 Third order intercept: 0 dBm

Diversity method: SmartDiversity™ phased antenna combining or Ratio Diversity using both receivers for a single audio channel
 Digital Pulse Counting Detector operating at 250 and 350 kHz

FM Detector: Digital Pulse Counting Detector operating at 250 and 350 kHz

RF spectrum analyzer: Coarse and fine scanning modes for RF spectrum site survey

Antenna inputs: 50 Ohm; SMA female connectors

Audio output connectors:
 • Interchangeable D connector adapters for camera slot interfaces
 • Dual TA3 male (mini XLR) balanced output adapter
 • Balanced output adapter with fixed cables

Front panel audio output (5P model): Control panel TA5M with two balanced outputs

Audio output level: Adjustable -50 to +5 dBu in 1 dB steps; unbalanced output is 6 dB lower

Audio channel crosstalk: -80 dB or better

Front Panel Controls and Indicators:
 • Sealed panel with membrane switches
 • LCD monitors pilot tone; antenna phase; receiver battery level; transmitter battery status; audio level, RF level

Audio test tone: 1 kHz, -50 dBu to +5 dBu output (bal); 1% THD

Transmitter battery type Selection: 9V alkaline, 9V lithium, AA alkaline, AA lithium, NIMH
 Audio output phase normal or inverted

Phase invert: Audio output phase normal or inverted

Compatibility modes:
 NA HYBR: North American Digital Hybrid Wireless®
 MODE 3: Other manufacturer*
 200 SER: 200 Series transmitters
 100 SER: 100 Series transmitters
 MODE E: Other manufacturer*
 EU HYBR: European Digital Hybrid Wireless®
 300 SER: 300 Series transmitters (European)
 MODE 7: Other manufacturer*
 MODE 6: Other manufacturer*
 IFB SER: IFB transmitters in IFB mode

*Contact the factory for details on other manufacturers

SmartNR (noise reduction): OFF, NORMAL, FULL modes (available in Digital Hybrid mode only)

Audio Performance (overall system):
 Frequency Response: 32 Hz to 20 kHz (+/- 1dB)
 THD: 0.15% (system) typical in Digital Hybrid mode

System Dynamic Range:

(Note: The dual envelope "soft" limiter provides exceptionally good handling of transients using variable attack and release time constants. Once activated, the limiter compresses 30+ dB of transmitter input range into 4.5 dB of receiver output range, thus reducing the measured figure for dynamic range with no limiting by 4.5 dB.)

Smart-NR	No Limiting	W/ Limiting
OFF	103.5	108.0
NOR-MAL	107.0	111.5
FULL	108.5	113.0

Rear Panel Controls and features:

- Audio output connectors;
- External DC input;

Powering and current consumption: Min. 7 V to max. 18 Volts DC; 2.6 W

- 145 mA at 18 VDC
- 290 mA at 7 VDC

Runtime with SRBATTSLD adapter: 7.2 V, 2200 mAh "L" style battery will typically provide over 7 hours of operation

Transmitter battery level tracking: LCD display with battery icon or timer readout

Operating temperature: -20°C to +50°C

Weight: 225 grams (7.9 ozs.) with SREXT adapter

Overall dimensions: 2.92" wide x 1.22" high x 4.93" deep (with SREXT adapter)

Specifications subject to change without notice

FCC Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning

the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this equipment not expressly approved by Lectrosonics, Inc. could void the user's authority to operate it.

