

The NuPower Xtender™ SCISR-20 Tri-Band Bidirectional Amplifier is a 20-watt amplifier† intended to simplify subsystem architecture with a compact form-factor offering in-band and cross-band bidirectional communication for improved link margin. Featuring auto-sense T/R capabilities with a 2-μs switching speed, the SCISR-20 automatically detects whether it is in transmit or receive mode in each channel, independent of the operational modes of the other channels.

This amplifier is designed to support secure CDL ISR (SCISR) software-defined radio communications as an easy-to-integrate addition to any ground or airborne terminal. While the SCISR-20 is designed to support these SCISR radios specifically, it can be used in any application requiring amplification in L-, S-, and C-band and can be customized for specific use-cases and unique requirements.

Small, compact, and rugged, the SCISR-20 is designed and built to last in the harshest of environments. Furthermore, NuWaves Engineering's commitment to maintaining our AS9100D quality management system guarantees full materials traceability and quality accountability. Please contact us today for more information on how NuWaves' SCISR-20 can take your system to the next level.



P/N: NW-BA-SCISR-20-M02

### Key Features

- >10 W RF output power (typical)
- >10 dB of transmit gain (typical)
- >10 dB of receive gain (typical)
- Bidirectional operation
- Auto-sense or manual T/R control¹
- Optimized size, weight, and power (SWaP)
- Three-channel, multi-band operation
- Non-proprietary interfaces
- Single or multiple power supply²
- Over-voltage protection
- 3.3 V or 5 V logic control³
- Half-duplex and full-duplex operation⁴

### Applications

- Unmanned aircraft systems (UAS), Groups 3-5
- Small to medium-sized manned aircraft
- Airborne datalinks allowing ISR and command and control C2 data transmission
- Remote video terminals (RTV)
- Unmanned ground vehicles (UGV)
- Any application requiring T/R bidirectional amplification in L-, S-, and C-band

### Designed to Support

- Collins Aerospace RT-2071 (C) Secure CDL ISR (SCISR) Radio\*
- Cubic Nano Multiband Transceiver (nMT)/SCISR
- Kratos SCISR/TBS Radio
- L3 BANDIT™ 2/SCISR Transceiver



\*Verified compatibility with radio OEM

†Band-dependent



## Specifications

Export Classification: EAR99

SWaP
<ul style="list-style-type: none"> <li>Size: 7.25" x 4.50" x 1.375"</li> <li>Weight: 34 oz</li> <li>Power: 2.0 A (typical, per single-channel TX @ 28 V)</li> </ul>
Operation
<ul style="list-style-type: none"> <li>Full-duplex (cross-band)</li> <li>Half-duplex (in-band)</li> </ul>
Frequency
<ul style="list-style-type: none"> <li>L-band: 1350 MHz – 1390 MHz</li> <li>L-band: 1755 MHz – 1850 MHz</li> <li>S-band: 2025 MHz – 2500 MHz</li> <li>C-band: 4400 MHz – 4990 MHz</li> </ul>
Connectors
<ul style="list-style-type: none"> <li>6x SMA female for RF ports (2x per L-, S-, and C-band)</li> <li>1x 25 socket Micro-D for power/data</li> </ul>

<sup>1</sup>Default configuration is auto-sense. Factory-configurable.

<sup>2</sup>Input voltage 11-32 V (L-band, S-band), 27-32 V (C-band).

<sup>3</sup>Default configuration is 5 V. Factory-configurable.

<sup>4</sup>Half-duplex in-band operation, full-duplex cross-band operation.

## Customization

The SCISR-20 can be customized as-needed for customer-specific applications<sup>5</sup>. Customizations we can provide include but are not limited to:

- Repackaging to fit unique form factors
- Embedded OEM amplifier boards for ultimate SWaP-saving integration
- Custom filtering (e.g., integrated triplexer)
- Increased output power
- Modified input drive levels
- Modified bands of operation

## In-Band and Cross-Band Operation

Each channel operates independent of one another. Here are a few examples of how the SCISR-20 could be operated:

- Receiving on S-band while transmitting on S-band (half-duplex)
- Receiving on S-band while transmitting on C-band (full-duplex)
- Receiving on S-band while transmitting on L- and C-band (full-duplex)
- Receiving on L-, S-, and C-band simultaneously
- Transmitting on L-, S-, and C-band simultaneously<sup>6</sup>

Technology: Gallium Nitride (GaN)

Performance Characteristics
<p>@ 28 V, 25 deg. C, 50-Ohm</p> <p><b>Transmit Performance Characteristics (typical, w/ +30 dBm input)</b></p> <ul style="list-style-type: none"> <li>• L-band output power (Psat): 20 W</li> <li>• S-band output power (Psat): 20 W</li> <li>• C-band output power (Psat): 10 W</li> </ul> <p><b>Receive Performance Characteristics (typical)</b></p> <ul style="list-style-type: none"> <li>• L-band gain: 17 dB</li> <li>• S-band gain: 15 dB</li> <li>• C-band gain: 10 dB</li> <li>• L-band NF: 3.5 dB</li> <li>• S-band NF: 3.5 dB</li> <li>• C-band NF: 3.0 dB</li> </ul>
Environmental
<ul style="list-style-type: none"> <li>• Operating temperature (ambient): -40 to +60 deg. C</li> <li>• Operating temperature (baseplate): -40 to +85 deg. C</li> <li>• Storage temperature: -55 to +85 deg. C</li> <li>• Altitude: 30,000 ft</li> </ul>

<sup>5</sup>All customizations require additional funding through non-recurring engineering (NRE) which can be amortized. Determined on a case-by-case basis.

<sup>6</sup>Requires specialized thermal management considerations.



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