



Silvus SC4200 – Triad RF Systems BDA Integration Manual

PRELIMINARY

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Triad RF Systems Confidential

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Notice

Triad RF Systems reserves the right to make changes to its products or discontinue any of its products or offerings without notice.

Triad warrants the performance of its products to the specifications applicable at the time of sale in accordance with Triad's standard warranty.

Revision History

Version	Date	Changes	Author
1.0	6/15/18	Draft Document - Initial Release	CFD

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1. Overview

This document details the integration and setup of a **Silvus SC4200** data link radio with a compatible **Triad RF Systems Bi-Directional Amplifier**. This will include instructions for wiring connections as well as initial and ideal radio settings to maximize data link performance.

The Silvus SC4200 radio is used in a variety of military and commercial applications. Some of the applications in which these radios are used may present difficult RF or physical environment conditions.

Certain custom-designed products may have been supplied with a different set of operating manuals or interface control documents. In those cases, the recommendations of the documents supplied supersede the ones contained in this manual.

The instructions provided here will require a copy of the Triad RF Systems BDA specification sheet, which can be obtained from our website at www.triadr.com. For additional assistance please contact us at support@triadr.com



Notes that accompany the warning symbol denote instructions and guidelines that must be followed. Failure to follow these guidelines may result in damage to the amplifier that is not covered by Triad's product warranty.

2. Initial Radio Configuration

Below is an outline of recommended settings for the Silvus SC4200, to be set **prior** to connecting to the Triad RF Systems BDA.

2.1 Frequency

Set the radio operating frequency within the range of the Triad BDA frequency range. Consult specification sheet for frequency details.

2.2 Data Link Distance

Set the data link distance to desired or expected operating distance.

2.3 BDA Support Setting

In the SC4200 graphical interface there will be a tab near the top of the menu labelled “BDA Support.” Clicking this tab will present the option to enable Auto Noise Estimation and the option to select between Basic mode and No PA next to “PA Mode.” Auto Noise Estimation is not required unless the Rx gain of the BDA is unknown.

Please select the option “Basic Mode” and enter the Tx and Rx gain of your amplifier in the corresponding text fields that become available (test data is sent when purchasing your BDA from Triad). Then, enter the desired output power in the following text field, and click Apply. This will enable the Tx/Rx control line on the Silvus Radio.



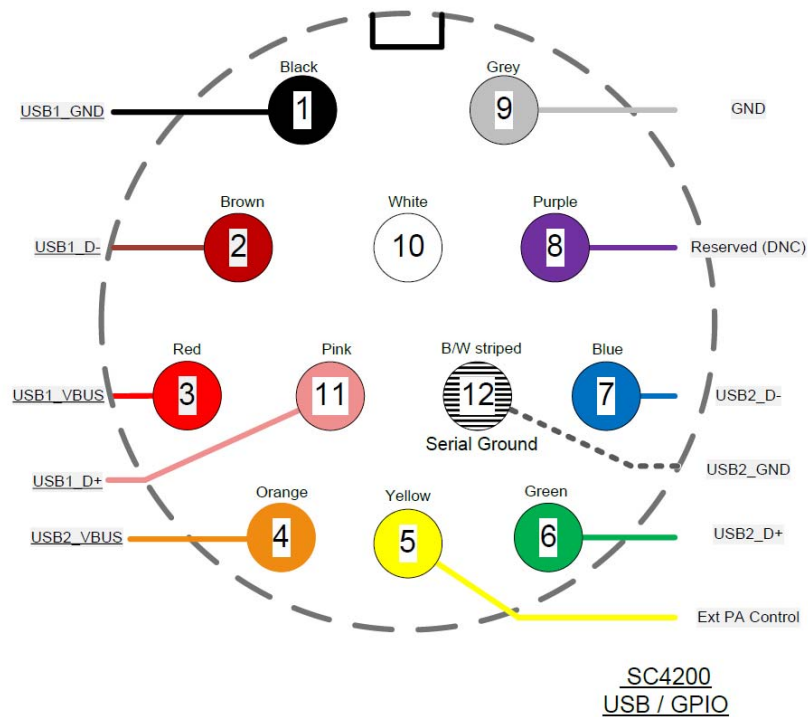
Before powering on the radio, ensure that the RF ports are properly terminated, or connected to their antennae. Operating the unit with the RF ports open can cause damage to the radio.

3. DC and RF Connections

A brief outline of electrical and RF connections of the devices under test are listed in the sub-sections below. Be sure to inspect both wire harnesses and connectors for damage or debris before connecting.

3.1 Wiring Harness – Silvus SC4200 to Triad BDA Connections

Below is a visual representation of the SC4200 wiring harness as well as a table of the required connections between the SC4200 and Triad BDA.



Silvus SC4200	Connect to	Triad BDA
Pin 5 – Ext PA Control	➡	Tx/Rx Control
Pin 9 – GND	➡	Signal Ground

3.2 RF Connections

Below is a visual representation of the SC4200 and Triad BDA RF Connections, as well as a table of the required connections between the SC4200, Triad BDA, and Antennae.



Silvus SC4200	Connect to	Triad BDA
A1	➡	RAD 1
A2	➡	RAD 2



Visual representation only. Please consult specification sheet for RF connections

Triad BDA	Connect to	Your Equipment
ANT 1	➡	Antenna 1
ANT 2	➡	Antenna 2

⚠ Triad RF products are unconditionally stable and can operate into an open circuit up to a certain power output level. Refer to the specification sheet for those limits. However, it is good practice to avoid operating the amplifier into an open circuit for an extended period of time.

4. Troubleshooting

The table below will outline common setup issues as well as suggested troubleshooting methods.

The instructions provided here will require a copy of the product's specification sheet, which can be obtained from our website at www.triadr.com

Symptom	Possible Cause	Solution
BDA will not turn on when voltage is applied	Connector Wiring	Ensure proper connections are made to wiring harness. Consult wiring diagram on product's spec sheet
	Supply Voltage Range Exceeded	Ensure power supply output is set to acceptable voltage range. Consult spec sheet for operating voltage range
	Power Supply Current Insufficient	Ensure power supply is capable of supplying at least 1.5x the expected current draw of the amplifier. This is due to the inrush current of the unit as it powers on
BDA powers down after some time, then turns back on shortly after	Over-Temperature Protection being triggered. Amplifier exceeding recommended operating temperature	Ensure sufficient heatsinking has been applied to unit. Add or increase airflow to heatsink
Intermittent or non-existent data link	Improper wiring harness connections	Refer to section 3.1 and verify that the proper connections have been made between the SC4200 and Triad BDA wiring harnesses
	Improper RF connections	Refer to section 3.2 and verify that the proper RF connections have been made between the SC4200 and Triad BDA
Data rate slower than desired.	Excess radio output power - EVM too high	Reduce radio output power in 0.5 dB steps until data rate improves.

For continuing issues, or to request any clarifications or additions to this document, please contact support@triadr.com