

C-Band Redundant Block Upconverter Systems

BRCU1 Series

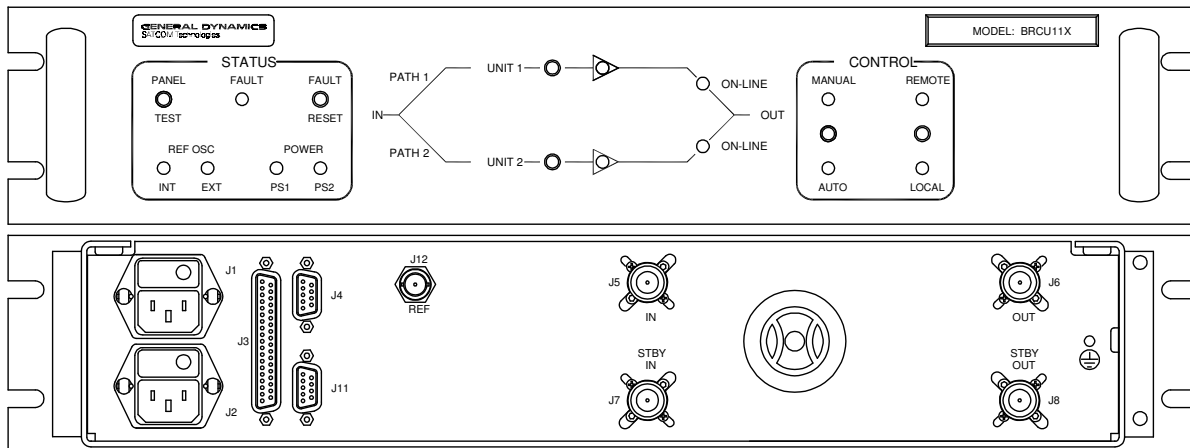
Introduction

BRCU1 Series C-Band Redundant Block Upconverter (BUC) systems contain either three converters in a 1:2 redundant configuration or two converters in a 1:1 redundant configuration. The systems include automatic switchover logic, redundant power supplies, and redundant ac line inputs. The systems are designed for installation at satellite earth stations in standard 19-inch EIA equipment racks. The systems are designed to house BU-Series C-Band Block Upconverters.

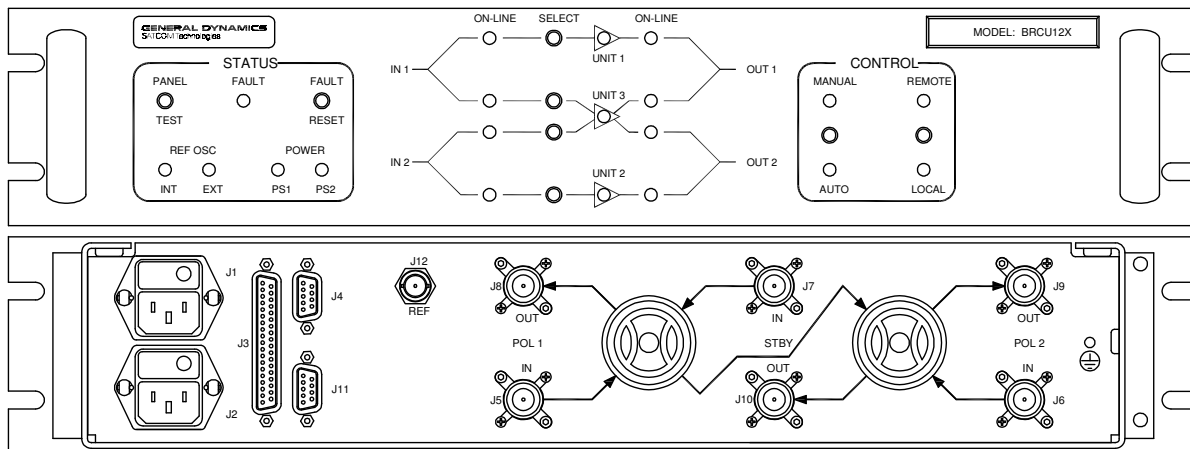
Features

- Standard 19" rack panel, 3.5" high
- Dual redundant power supplies
- Worldwide AC input capability
- Monitors converter bias currents and phase lock to external reference
- Manual or automatic operation
- Manual override switch control knobs on rear panel
- Serial I/O
- Offline I/O
- Frequency reference that is stable to ± 20 ppb in stand-alone operation
- 10.0 MHz external reference

1:1 FRONT AND REAR PANELS:



1:2 FRONT AND REAR PANELS:



Operating Modes

- *Automatic Mode*

In Automatic mode, if a failure is detected in an on-line converter, the standby converter is switched on line. Typical switchover time is 100 milliseconds. For 1:2 systems, in the case that both on-line converters fail, priority is selectable to either Pol 1 or Pol 2. For either 1:1 or 1:2 systems, the unit will not automatically switch to a defective converter.

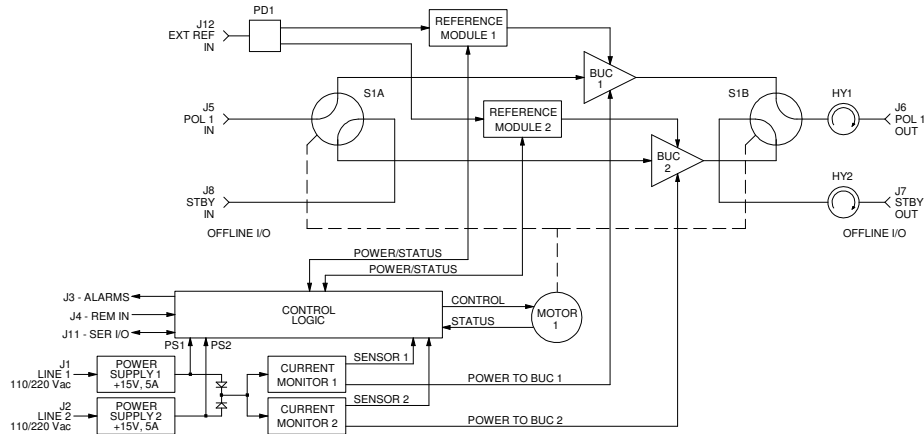
- *Manual Mode*

The converters can also be manually switched from the front panel or remotely. In Manual mode, automatic switching will not occur upon fault detection, although the monitor and alarm circuits still function.

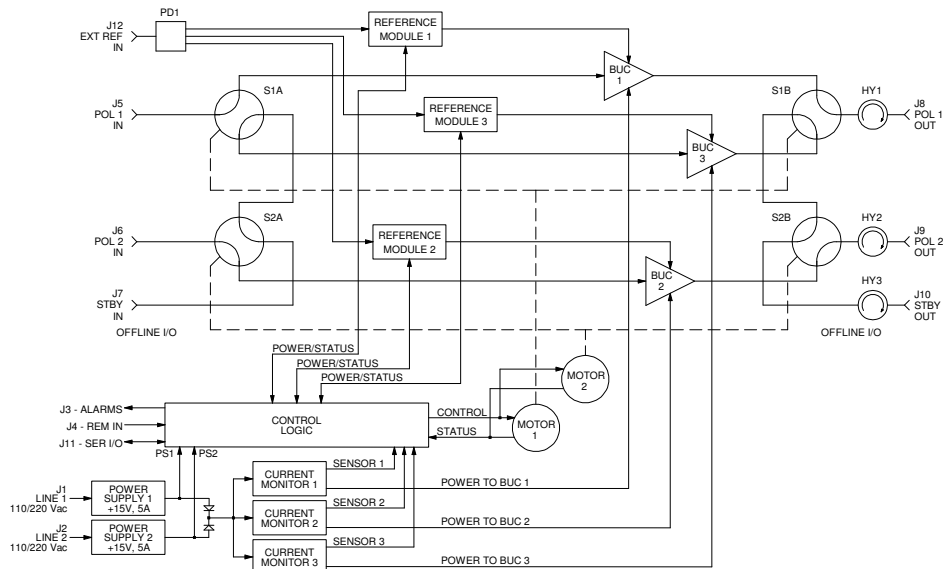
Local or Remote Control

The systems include provision for remote status monitoring and operation. Typical uses are for sending status information to a centralized monitor and control system or for remotely controlling the system from a nearby building. All Local front panel features can be remotely controlled and monitored, except for the Remote/Local switch. In Remote mode, the front panel controls are inoperative, but the indicators continue to reflect the current operating state of the system. Remote status outputs are Form 'C' dry relay contacts capable of switching up to 100 Vdc at 100 mA. Remote control inputs are opto-isolator coupled for noise and common mode ground loop rejection.

1:1 System Block Diagram



1:2 System Block Diagram



Parameter	Notes	Min.	Nom./Typ.†	Max.	Units
Configuration	BRCU11 _ systems BRCU12 _ systems		1:1, One standby BUC for one main BUC 1:2, One standby BUC for two main BUCs		
Input Frequency Range	BRCU1 _ A systems BRCU1 _ B systems	950 950		1525 1825	MHz MHz
Output Frequency Range	BRCU1 _ A systems BRCU1 _ B systems	5.850 5.850		6.425 6.725	GHz GHz
System Gain		17			dB
Gain Flatness	Full band		±1.0	±1.5	dB
Gain Match	Between BUCs			±1.0	dB
Noise Figure	At +23 °C		16	20	dB
Power Output	At 1 dB compression ($P_{1\text{ dB}}$)	+8	+10		dBm
Third Order Intercept	Output, OIP ₃	+18	+20		dBm
Phase Noise	@ 100 Hz offset @ 1 kHz offset @10 kHz offset @100 kHz offset @ 1 MHz offset			-60 -70 -80 -90 -100	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz
Group Delay	Linear Parabolic Ripple		0.03 0.003		ns/MHz ns/MHz ² ns p-p
VSWR	Input (50 ohms) Output (50 ohms)		1.50 1.20	2.00 1.25	:1 :1
Connectors	RF input and output External reference Remote input Alarm output Serial I/O (RS-232/-422/-485)		Type N Female (50 ohms) Type BNC Female (50 ohms) 9-pin D Male 37-pin D Male 9-pin D Female		
Operating Modes			Manual or Automatic		
Alarm Method	BUC phase lock/bias current		Alarm is generated if phase lock is lost or current draw is outside tolerance window		
Alarm Output	Form 'C' contacts		100 Vdc / 100 mA		
Remote Inputs	Control inputs		Contact closure to ground; withstand 5 V, sink 5 mA		
External Reference (10.0 MHz)	Level Impedance Phase Noise @ 10 Hz offset @ 100 Hz offset @ 1 kHz offset @ 10 kHz offset	0	50	+15	dBm ohms dBc/Hz dBc/Hz dBc/Hz dBc/Hz
Power Requirements	Voltage (autoranging) Frequency Power	47	90–135 or 175–264 30	63	Vac Hz W
Size			19 x 3.47 x 24 483 x 88.1 x 610		inches mm
Temperature Range	Operating	0		+50	°C

* Specifications shown are for BU-Series BUCs. See product data sheet 16971 for spurious levels.

† When there is only one value on a line, the Nom./Typ. column is a nominal value; otherwise it is a typical value. Typical values are intended to illustrate typical performance, but are not guaranteed.

**Part Number/Ordering Information,
C-Band Redundant Block Upconverter Systems**

BRCU1

System Type:	1:1	1
	1:2	2
Frequency Band (In / Out / LO)	950–1525 MHz / 5.850–6.425 GHz / 4.90 GHz	A
	950–1825 MHz / 5.850–6.725 GHz / 4.90 GHz	B

Examples:

Order Number

- | | |
|--|----------------|
| • 1:1 system with 950–1525 MHz input, 5.850–6.425 GHz output | BRCU11A |
| • 1:2 system with 950–1825 MHz input, 5.850–6.725 GHz output | BRCU12B |

Other Products

- Solid-State Power Amplifiers and SSPA Systems
- Solid-State Power BUCs and SSPB Systems
- Low Noise Amplifiers and LNA Systems
- Low Noise Block Converters and LNB Systems
- Block Up and Block Down Converters
- Synthesized Converters
- Line Drive Amplifiers
- Power Supply Monitors
- Redundant Control Panels for SSPAs, SSPBs, and LNAs

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