

RBD420-2

2+1 Redundant, High Grade, C-Band, Inverting, Block DownConverter System









The **RBD420-2** 2+1 redundant C-Band block DownConverter system comprises three **IBD420** block DownConverters, plus an **RCU200** control unit along with matched SHF, L-Band and a complete control interface cable set. It includes all that is required to implement a dual-feed 2+1 redundant C-Band BDC system, maintaining maximum availability whilst allowing routine maintenance and repair work to be carried out on the standby converter without the normally associated down-time.

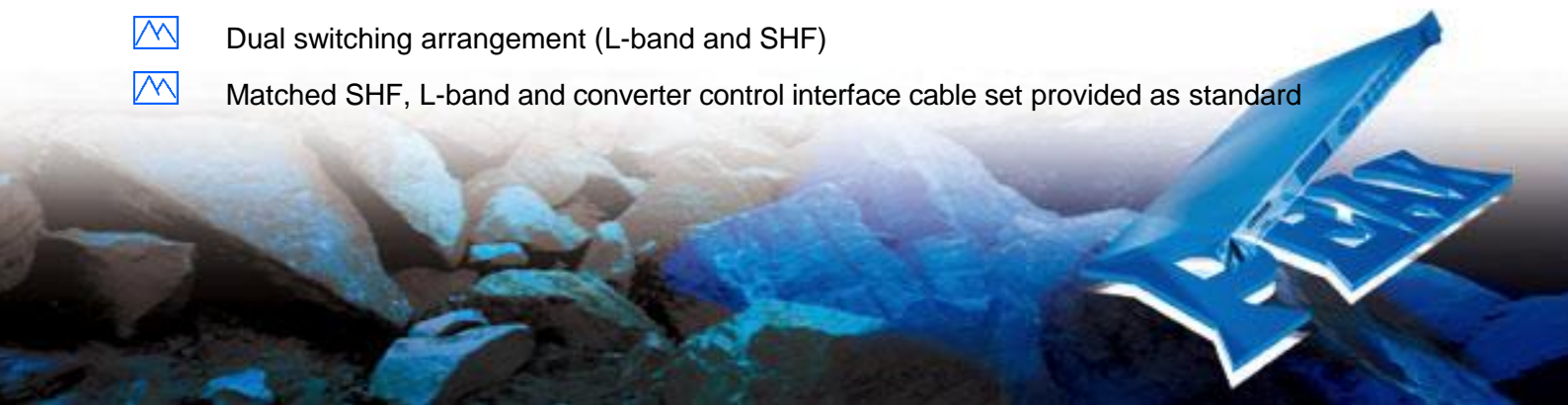
The **RBD420-2** system maintains two converters on-line whilst the other is held in hot standby, allowing the user to select the on-line converters. The redundancy unit can be controlled from the front panel (local mode) or by the RS232/RS485 link to a host computer (remote mode). In remote mode, the on-line converters can be selected and monitored whilst keeping switch-over automatic in case of failure.

In AUTO mode, the **RCU200** control unit monitors the converter alarm signals via the interface connecting cables and if a fault condition develops within an on-line converter, the **RCU200** automatically switches traffic to the standby unit.

All units are mains powered and are constructed of high grade components to give the ultimate stability, ripple and phase noise performance. The converters utilise externally phase locked dielectric resonator oscillators (XPDROs) and are far superior in stability and phase noise to voltage controlled oscillators (VCOs), as commonly used in other BDC designs.

Peak Features

-  High stability, low ripple and excellent phase noise
-  10MHz external reference option fitted as standard with automatic internal reference back-up
-  Dual mains input & redundant power supplies on control unit fitted as standard
-  Keys removable for security in any position
-  Dual switching arrangement (L-band and SHF)
-  Matched SHF, L-band and converter control interface cable set provided as standard



RBD420-2 Typical Specification

SHF Inputs

Frequency	3.40-4.20GHz
Connector	50Ω, SMA (f)
Return loss	>18dB

L-Band Outputs

Frequency	1750-950MHz (Inverted spectrum)
Connectors	50Ω, SMA (f)
Option 3;	75Ω, BNC (f)
Return loss	>15dB
1dB GCP	+7dBm

System Transfer Characteristics

Conversion gain	26dB ±0.5dB at band centre
Option 4c;	36dB ±0.5dB at band centre
Gain stability	±0.5dB from 0 to 40°C
Gain flatness	±1dB full band
	±0.5dB across 40MHz in band.
2+1 changeover	1dB max variation (unit to unit)

RF Performance

LO phase noise	-55dBc/Hz at 10Hz
(typical with good	-75dBc/Hz at 100Hz
phase noise	-92dBc/Hz at 1kHz
ext. 10MHz ref)	-100dBc/Hz at 10kHz
	-105dBc/Hz at 100kHz
	-125dBc/Hz at 1MHz
Harmonics	Better than -50dBc
Spurious	<-80dBm (in band non-carrier related)
	<-65dBc at -40dBm input (in band carrier related)
3rd order intercept	>+17dBm
LO leakage	-80dBm (always out of band)

Manual Attenuation (Option 10)

Attenuation range	30dB nominal
Control	Continuously variable from front panel

Notes; options 10c & 10d offer manually adjustable attenuators fitted to the switch unit 'common' input or output paths. Can degrade gain flatness performance.

SHF & L-Band Monitor (Option 2) on converters

Connector	
Option 2a;	L-Band monitor, 50Ω, SMA (f) on rear panel
Option 2b;	L-Band monitor, 50Ω, SMA (f) on front panel
Option 2c;	SHF monitor, 50Ω, SMA (f) on rear panel
Option 2d;	SHF monitor, 50Ω, SMA (f) on front panel

Note; for other connector types please consult the factory

Level	-20dBc ±3dB
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Internal Reference Stability

Allan deviation	5×10^{-11} over 1s
Ageing	$<5 \times 10^{-9}$ per day, $<5 \times 10^{-7}$ per year
Temp stability	$<5 \times 10^{-8}$ over 0 to 50°C

High stability (Option 8)

Allan deviation	3×10^{-12} over 1s
Ageing	$<2 \times 10^{-10}$ per day, $<2 \times 10^{-8}$ per year
Temp stability	$<3 \times 10^{-9}$ over 0 to 50°C

External Reference Input

Frequency	10MHz (5MHz factory settable)
Connector	50Ω, BNC (f)
Level	0dBm ±3dB
Required phase noise	to be better than 50dBc/Hz of output phase noise
Locking delay	<2 minutes to stabilise from cold

Switch Element Parameters

Switching speed	<15ms
Type	Co-axial, latching
Response speed	<150ms (from fault to switch completion)

Mechanical

Width	19" standard rack mountable
System height	4U (1U (1.75") x 4)
Depth	~400mm (15.7"), plus connectors
Construction	Aluminium chassis
Weight	17kgs (~37lbs) approx

Environmental

Operating temp	0°C to +50°C
EMC	EN 55022 part B & EN 50082-1
Safety	EN 60950

Power Supply

Voltage	90-264VAC
	Dual redundant PSU on switch unit
Frequency	47-63Hz
System power	150Watts max

Control System

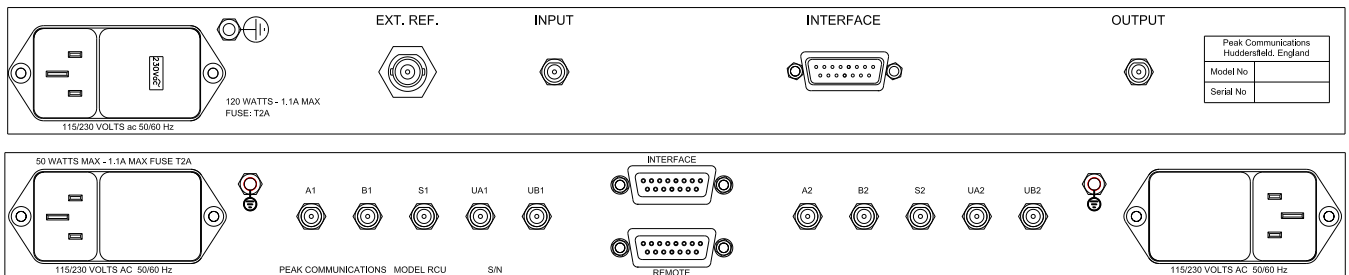
Rem/Loc switch	2 position key switch, for remote/ local mode
Auto/A/B switch	3 position key switch, selects standby converter to chain A or B manually, or automatically
Remote control	RS232/RS485 port
Option 9;	Ethernet; embedded web server & SNMP network management support
Converter alarm	PSU fail, LO lock fail & Amp fail

Options

- 2a) -20dBc L-band monitor on rear panel (SMA)
- 2b) -20dBc L-band monitor on front panel (SMA)
- 2c) -20dBc SHF monitor on rear panel (SMA)
- 2d) -20dBc SHF monitor on front panel (SMA)
- 3) 75Ω interface at L band
- 4c) 10dB increase in gain
- 8) High stability internal reference option
- 9) Ethernet interface, replaces RS232/485 port
- 10c) System input manual variable attenuator, 0-30dB
- 10d) System output manual variable attenuator, 0-30dB

Note; the addition of options can modify the typical specification, for details please consult the factory

Rear panel Views (single Converter shown)



Peak Communications reserves the right to alter the specifications of this equipment without prior notice. RBD420-2-291215.

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