

L-Band Block Upconverter

Key features SBU-Type

- High integrated MMIC technology
- Low phase noise
- Adjustable attenuator (range: 0..20 dB, 0.1 dB step size)
- Output power +10 dBm (1 dB compression point)
- Low spurious emissions
- Internal OCXO with long term stability 10^{-7} / year
- External reference input 5 or 10 MHz
- Local control through push buttons on front panel and display menu
- Remote control through RS232, RS422/485 (2-wire or 4-wire) interfaces, TCP/IP over
- Ethernet, Web browser interface, SNMP (MIBs are provided).
- Packet command syntax supports RS485 bus systems and allows addressed operation.
- Stored alarms with time stamps
- Summary alarm output (DPDT)
- Low power consumption typ. less than 15 W
- CE compliant
- 3 years warranty



SBU-Type

Key features SBUL-Type

- High integrated MMIC technology
- Low phase noise
- Adjustable attenuator (range: 0..19 dB, 1 dB step size) through attenuator selector on front panel
- Output power +10 dBm (1 dB compression point)
- Low spurious emissions
- Internal OCXO with long term stability 10^{-7} / year
- External reference input 5 or 10 MHz
- L-Band monitor output on front panel
- Summary alarm output (DPDT)
- RS232 diagnostic interface
- Low power consumption typ. less than 13 W
- CE compliant
- 3 years warranty



SBUL-Type

L-Band Block Upconverter (Indoor Version)

Single Band L-Band to C, X, Ku-Band

Specifications

Part No.	SBU/SBUL-C	SBU/SBUL-X	SBU/SBUL-Ku1 – SBU/SBUL-Ku3
RF-Output Frequency	C-Band 5.850...6.450 GHz	X-Band 7.9...8.4 GHz	Ku-Band Ku1: 13.75...14.50 GHz Ku3: 12.75...13.50 GHz (on request)
Conversion Scheme	Block up conversion, no frequency inversion		
IF-Input Characteristics	Frequency: 950 MHz...1550 MHz (C-Band) 950 MHz...1450 MHz (X-Band) 950 MHz...1700 MHz (Ku-Band) Impedance: 50Ω Return Loss: >15 dB Connector: SMA (female)		
IF-Monitor (SBUL only)	Signal level in reference to input: -20 dB Impedance: 50Ω Connector: SMA (female)		
RF-Output Characteristics	Impedance: 50Ω Return Loss: >15 dB 1 dB Compression Point: >10 dBm Output Muting: >75 dB (by command or sense input or by alarm condition) Connectors: SMA (female)		
Transfer Characteristics	Max Conversion Gain: 35 dB Attenuation range: 0...20 dB, 0.1 dB steps (SBU) 0...19 dB, 1 dB steps (SBUL) Gain Variation over Temp.: ± 1 dB max Gain Flatness over Freq.: ± 1.5 dB max. over band Gain Flatness over 40 MHz: ± 0.5 dB Image Rejection: >80 dB Noise Figure: <15 dB		
Group Delay	Variation: < 4 ns peak-peak / 80 MHz max.		
Spurious Outputs	Signal related: < -65 dBc Signal independent: < -85 dBm		
Intermodulation (3rd Order)	10 Hz - 51 dBc/Hz max. 100 Hz - 63 dBc/Hz max. 1 kHz - 73 dBc/Hz max. 10 kHz - 83 dBc/Hz max. 100 kHz - 93 dBc/Hz max. 1 MHz - 102 dBc/Hz max.		
Intermodulation (3rd Order)	-53 dBc max (two CW signal input, (Δf_{in} : 5 MHz, P_{in} 2 x -33 dBm, P_{out} : 2 x -8d Bm)		
Internal frequency Stability	0.1° / dB (P_{out} = 0 dBm)		
Internal frequency Stability	10 Hz - 50 dBc/Hz 100 Hz - 70 dBc/Hz 1 kHz - 80 dBc/Hz 10 kHz - 83 dBc/Hz 100 kHz - 95 dBc/Hz ¹ 1 MHz - 111 dBc/Hz ¹ 1) 0°C to 50°C, outside this temperature range degraded by max 5 dB.		
Reference Input	Frequency: 5 or 10 MHz sine wave (± 2 ppm) Level: 5 dBm ± 5 dBm Modes: auto Connector: BNC		
Monitoring and Control Interface (SBU only)	Protocol: SNMP Connection: UDP over Ethernet (10 or 100 Mbit/s, auto sensing), connector RJ-45		
	Protocol: HTTP (web browser interface) Connection: TCP/IP over Ethernet (10 or 100 Mbit/s, auto sensing), connector RJ-45		
	Protocol: Multipoint Connection: RS232 or RS422/RS485 (configurable), connector DSUB09 female or TCP/IP over Ethernet (10 or 100 Mbit/s, auto sensing), connector RJ-45		

L-Band Block Upconverter (Indoor Version)

Single Band L-Band to C, X, Ku-Band

Specifications (cont.)

Part No.	SBU/SBUL-C	SBU/SBUL-X	SBU/SBUL-Ku1 – SBU/SBUL-Ku3
Diagnostic Interface (SBUL only)	RS232, connector DSUB09 female		
Alarm Interface	Alarm: two potential free contacts (DPDT), Connector DSUB09 female		
Temperature Range	0°C to 50°C operating - 30°C to 80°C storage		
Relative Humidity	< 95 % non condensing		
User Interface SBU	LCD-Display 2 x 40 characters, 4 cursor keys, 4 function keys VFD-Display 2 x 40 characters, 4 cursor keys, 4 function keys (option: VFD)		
User Interface SBUL	Attenuator selector on front panel		
Power Input	85...264 V AC, 40...70 Hz, approx. 15 W		
Mains Fuse	2 x 3.15 A time-lag fuse		
Dimension and Weight	483 x 44 x 310 mm ³ , 1 RU (19") approx.6 kg		

Other Information

SBU-[RF Band]-[Options] or SBUL-[RF Band]-[Options]
Possible Options are: VFD (VFD display, for SBU only)

Example:

SBU-Ku1 (Ku-Band 1)

Fixed L-Band Block Upconverter (Indoor Version)

Block Downconverter C-Band Input, L-Band Output, Fixed Gain

Specifications

Downconverter Type	BD-C
RF-Input Frequency	3.50...3.70 GHz
Conversion Scheme	Single down-conversion, frequency inversion
LO Frequency	5.154 GHz
RF-Input Characteristics	Impedance: 50Ω Return Loss: >20 dB (VSWR = 1.22) Maximum Aggregate Input Level: - 17 dBm LO Leakage: - 80 dBm max. RF-Connector: SMA female
IF-Output Characteristics	Frequency: 1454...1654 MHz Impedance: 50Ω Return Loss: >15 dB (VSWR = 1.43) 1 dB Compression Point: >19 dBm IF-Connectors: SMA female
Transfer Characteristics	Conversion Gain: 35 +/-2 dB (within the operating temperature range) Level Stability: ± 0.25 dB/day (constant temperature) Amplitude Ripple: ± 0.2 dB / 20 MHz Image Rejection: >80 dB Noise Figure: <11 dB