SURFboard® SB6121
Cable Modem

Strengthen your broadband leadership — Count on Motorola's SURFboard DOCSIS® / EuroDOCSIS 3.0 CPE to help you deliver innovative, ultra broadband data services to your premium customers.

High Value and Increased Data Rates

Motorola's easy-to-use SB6121 SURFboard DOCSIS 3.0 Cable Modem unlocks the potential of offering innovative high-bandwidth data and multimedia services to customers.

Utilizing the power of DOCSIS 3.0, the SB6121 enables channel bonding of up to four downstream channels and four upstream channels, which allows an operator to offer their customers advanced multimedia services with data rates of well over 100 Mbps in each direction. The SB6121's higher-speed services enable operators to:

• Protect their installed base of high-speed data customers
• Deliver high-bandwidth, multimedia services
• Deliver competitive, high-capacity commercial services to their business customers

Economic and Flexible

The Motorola SB6121 SURFboard DOCSIS 3.0 Cable Modem provides operators with an economic option for providing Ultra-Broadband services, with four times the current maximum user data throughput approximating 160 Mbps in DOCSIS mode and 195 Mbps in EuroDOCSIS mode*, without the need for hybrid fiber coax (HFC) plant upgrade. Maximizing an operator's current infrastructure investment, the SB6121 can be deployed without service interruption.

Backwards compatible to DOCSIS 1.0, 1.1 and 2.0, the SB6121 also supports both IPv4 and IPv6, Advanced Encryption Services, and all other DOCSIS 3.0 standards.

As part of Motorola DOCSIS 3.0 Ultra-Broadband family of products, the SB6121 includes an enhanced tuner that supports up to a 1 GHz downstream input, which allows operators to increase the frequency spectrum for deployment of new high-value services, such as bandwidth on-demand, commercial services, interactive gaming, and IPTV, to their customers.

The SB6121 features a 10/100/1000Base-T Ethernet (RJ-45) port, as well as intuitive, easy-to-read front-panel operational status LEDs. Operators can optionally activate dual colored LEDs for their customer to have visual verification of bonded channels and GigE link use.

With Motorola's cable modems, high-speed Internet access is always at your fingertips – always on and always connected. The SB6121 is the ideal competitive solution for the high-end residential user, the small home office owner, and the medium to large business enterprise.

ECOMOTO™

Motorola's Service Assured DOCSIS® 3.0 Solutions enable you to deliver increased bandwidth, enhance security, and cost-effectively deploy data services to your bandwidth-demanding consumers — all while maximizing current infrastructure investment and lowering capital spend.

General Specifications

Cable Interface	75 Ω F-connector
CPE Network Interface	10/100/1000Base-T Ethernet (RJ-45)
Data Protocol	TCP/IP
Dimensions	5.24 in H x 5.24 in W x 1.65 in D (133 mm x 133 mm x 42 mm)
Power	9W (nominal)
Input Power	
North America	105 to 125 VAC, 60 Hz
Outside North America	100 to 240 VAC, 50 to 60 Hz
Regulatory	RoHS compliant, ENERGY STAR V2 , COC V3, Compliant per the "Code of Conduct on Energy Consumption of Broadband Equipment", CMM, MEPS

Environmental

Operating Temperature	32 F to 104 °F (0 °C to 40 °C)
Storage Temperature	−22 °F to 158 °F (−30 °C to 70 °C)
Operating Humidity	5 to 95% R.H. (non-condensing)

Downstream

Modulation	64 or 256 QAM
Capture Bandwidth	100 MHz (edge to edge)
Maximum Theoretical Data Rate**	
DOCSIS	171.537 Mbps (4 channels) / 42.884 (single channel) @ 256 QAM at 5.36 Msym/s
EuroDOCSIS	222.464 Mbps (4 channels) / 55.616 (single channel) @ 256 QAM at 6.952 Msym/s
Bandwidth	
DOCSIS	≤ 24 MHz
EuroDOCSIS	≤ 32 MHz
Symbol Rate	
DOCSIS	64 QAM 5.057 Msym/s; 256 QAM 5.361 Msym/s
EuroDOCSIS	64 QAM 6.952 Msym/s; 256 QAM 6.952 Msym/s
Operating Level Range	−15 to 15 dBmV
Bonded Channel RF Level Tolerance	10dBmV
Input Impedance	75 Ω (nominal)
Frequency Range	DOCSIS and EuroDOCSIS 108 to 1002 MHz (edge to edge), Optional 91 to 1002 MHz (edge to edge)
Frequency Plan	
EuroDOCSIS	Annex A
DOCSIS	Annex B
J-DOCSIS	Annex B, modified for Japan Frequencies
Security	DOCSIS 3.0 Security (BPI+, EAE, SSD)
Network Management	SNMP v2 & v3
Provisioning	Supports IP addressing using IPv4 and/or IPv6 (dual stack)

Upstream

* Actual speeds will vary, and are often less than the maximum possible. Data transmission speed is approximate and depends on the configuration and capacity of your network, as well as the amount of traffic on the network.

** Actual data throughput will be less due to physical layer overhead (error correction coding, burst preamble, and guard interval).

Certain features may not be activated by your service provider, and/or their network settings may limit the feature's functionality. Additionally, certain features may require a subscription. Contact your service provider for details.

All features, functionality, and other product specifications are subject to change without notice or obligation. DOCSIS 3.0 modem capabilities are dependant on the services available through the CMTS. Please verify with your CMTS vendor their specific DOCSIS 3.0 implementation roadmap.

Modulation	QPSK and 8, 16, 32, 64, 128 QAM
Maximum Channel Rate**	
DOCSIS	131.072 Mbps (4 channels) / 32.768 Mbps (single channel): @ 128 QAM at 6.4 MHz
EuroDOCSIS	131.072 Mbps (4 channels) / 32.768 Mbps (single channel): @ 128 QAM at 6.4 MHz
Channel Width	200 kHz, 400 kHz, 800 kHz, 1.6 MHz, 3.2 MHz, 6.4 MHz
Symbol Rates	160, 320, 640, 1280, 2560, 5120 ksym/s
Operating Level Range	Level range per channel (Multiple Transmit Channel mode disabled, or only Multiple Transmit Channel mode enabled with one channel in the TCS)
DOCSIS/EuroDOCSIS	
TDMA	
	Pmin to +57 dBmV (32 QAM, 64 QAM)
	Pmin to +58 dBmV (8 QAM, 16 QAM)
	Pmin to +61 dBmV (QPSK)
S-CDMA	
	Pmin to +56 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
	Level range per channel (two channels in the TCS)
TDMA	
	Pmin to +54 dBmV (32 QAM, 64 QAM)
	Pmin to +55 dBmV (8 QAM, 16 QAM)
	Pmin to +58 dBmV (QPSK)
S-CDMA	
	Pmin to +53 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
	Level range per channel (three or four channels in the TCS)
TDMA	
	Pmin to +51 dBmV (32 QAM, 64 QAM)
	Pmin to +52 dBmV (8 QAM, 16 QAM)
	Pmin to +55 dBmV (QPSK)
S-CDMA	
	Pmin to +53 dBmV (all modulations), where:
	Pmin = +17 dBmV, 1280 kHz modulation rate
	Pmin = +20 dBmV, 2560 kHz modulation rate
	Pmin = +23 dBmV, 5120 kHz modulation rate
Output Impedance	75 Ω (nominal)
Frequency Range	DOCSIS 5-42 MHz (edge to edge), EuroDOCSIS and optional DOCSIS 5 to 65 MHz (edge to edge)
Compatibility	PC: 90496, Pentium, or later; Windows Vista™, 2000, XP or 7 or Linux® with Ethernet connection (older versions of Windows, although not specifically supported, will work with this cable modem)
	Macintosh: Power PC or later; OS 9 or higher, Ethernet connection
	UNIX: Ethernet connection
	Home Networking: Ethernet router or wireless access point

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