DiBSYS Technologies DOCSIS 3.1 Cable Modem with Voice 4 GbE and Dual Wifi Instruction Manual

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Product Information

The CG445 is a state-of-the-art DOCSIS Cable Modem system designed by Dibsys Technologies. It includes a CMTS (Headend cable network) and CM (user end) to transparently transmit IP packets between the front end and the user end. The CG445 is compliant with DOCSIS 3.1 and is backward compatible with all existing DOCSIS 3.0/2.0/1.1/1.0 head-end equipment under Multiple Service Operator networks. It supports 2×2 channel bonding technology in OFDM mode and 32×8 channel bonding technology in SC-QAM mode. The CG445 provides a cost-effective solution for high-speed and bi-directional data services. It offers various models, ranging from low-end Four Giga Ethernet port models to high-end models with integrated optional WiFi features. These models can function as cable modems or even as Residential Gateways, providing excellent bandwidth to all Internet-capable devices.

Product Features

- DOCSIS 3.1 Compliant; Backward compatible with DOCSIS/EuroDOCSIS 3.0
- Switchable Diplexer for upstream and downstream
- 2x 192 MHz OFDM Downstream reception capability
- 4096 QAM support
- 32x SC-QAM Channel Downstream reception capability
- 1024 QAM support
- 2x 96 MHz OFDMA Upstream transmission capability
- 4096 QAM support
- 8x SC-QAM Channel upstream transmission capability
- 256 QAM support
- S-CDMA and A/TDMA support
- FBC (Full-Band Capture) Front End
- 1.2 GHz Bandwidth
- 4x Gigabit Ethernet Ports
- 1x USB3.0 Host, 1.5A limitation (Typ.) (Optional)
- Wireless networking on-board:
    - IEEE 802.11n 2.4GHz (3×3)
    - IEEE 802.11ac Wave2 5GHz (4×4)
- 2x FXS Ports for Phone (Optional)
- SNMP and TR-069 remote management
- Dual stack IPv4 and IPv6

Technical Specifications

Connectivity Interface

- RF Interface: F type female 75ohm connector port
- RJ45 Ethernet port: 4x RJ45 Ethernet port 10/100/1000 Mbps
- Wi-Fi: IEEE 802.11n 2.4GHz (3×3), IEEE 802.11ac Wave2 5GHz (4×4)
- RJ11: 2x FXS POTS Ports (Optional)
- USB: 1x USB 3.0 Host (Optional)

RF Downstream

- Frequency (edge-to-edge): 108-1218 MHz, 258-1218 MHz
- Input Impedance: 75 OHM
- Total Input Power: 6 dB

SC-QAM Channels

- No. of Channels: 32
- Level Range (one channel):
  - Max. North Am (64 QAM, 256 QAM): -15 to + 15 dBmV
  - Euro (64 QAM): -17 to + 13 dBmV
  - Euro (256 QAM): -13 to + 17dBmV
- Modulation Type: 64 QAM, 256 QAM
- Symbol Rate (nominal):
  - North Am (64 QAM): 5.056941 Msym/s
  - North Am (256 QAM): 5.360537 Msym/s
  - Euro (64 QAM, 256 QAM): 6.952 Msym/s
  - North Am (64 QAM/256QAM with =0.18/0.12): 6 MHz
  - EURO (64 QAM/256QAM with =0.15): 8 MHz

OFDM Channels

- Signal Type: OFDM
- Max OFDM Channel Bandwidth: 192 MHz
- Mini Contiguous-Modulated OFDM Bandwidth: 24 MHz
- No. of OFDM Channels: 2
- Frequency Boundary Assignment Granularity: 25 KHz
- Subcarrier Spacing / FFT Duration:
  - Modulation Type: QPSK, 16-QAM, 64-QAM, 128-QAM, 256-QAM,512-QAM, 1024-QAM, 2048-QAM, 4096-QAM
  - Support with subcarrier granularity
  - Support zero bit loaded subcarriers
- Level Range (24 MHz mini. Occupied BW): Equivalent Power Spectral Density to SC-QAM of -15 to + 15 dBmV per 6 MHz

Note:
For detailed instructions on product usage, please refer to the user manual provided with the product. DOCSIS system include CMTS (Headend cable network) and CM (user end). The main function of DOCSIS Cable Modem system is transparently transmitting IP packets between the front end and the user end.

The model CG445 product is designed with state-of-the-art DOCSIS/EuroDOCSIS 3.1, as well as backward compatible to all existing DOCSIS 3.0/2.0/1.1/1.0 head-end equipment under Multiple Service Operator networks. In OFDM mode, itsupport 2*2 channel bonding technology, and in SC-QAM mode, it support 32*8 channel bonding technology. DIBSYS cable modem provides a cost-effective solution which delivers high-speed and bi-directional data services.

The model CG445 product cover from low-end Four Giga Ethernet port model to high-end with integrated optional Wi-Fi feature, DIBSYS offer a one-stop solution to satisfy customers all kinds of demands. It not only play as cable modem feature, some models with built in Wi-Fi Router function are even capable to work as Residential Gateway in your home or small office and offer excellent bandwidth to all your Internet-capable devices.

Features

- DOCSIS 3.1 Compliant; Backward compatible with DOCSIS/EuroDOCSIS 3.0
- Switchable Diplexer for upstream and downstream
- 2x 192 MHz OFDM Downstream reception capability
- 4096 QAM support
- 32x SC-QAM (Single-Carries QAM) Channel Downstream reception capability
- 1024 QAM support
- 2x 96 MHz OFDMA Upstream transmission capability
- 4096 QAM support
- 8x SC-QAM Channel upstream transmission capability
- 256 QAM support
- S-CDMA and A/TDMA support
- FBC (Full-Band Capture) Front End
- 1.2 GHz Bandwidth
- 4x Gigabit Ethernet Ports
- 1x USB3.0 Host, 1.5A limitation (Typ.) (Optional)
- Wireless networking on-board:
  - IEEE 802.11n 2.4GHz (3×3)
  - IEEE 802.11ac Wave2 5GHz (4×4)
- 2x FXS Ports for Phone (Optional)
- SNMP and TR-069 remote management
- Dual stack IPv4 and IPv6

TECHNICAL SPECIFICATIONS

Connectivity Interface

- RF Interface F type female 75ohm connector port
- RJ45 4x RJ45 Ethernet port 10/100/1000 Mbps
- Wi-Fi IEEE 802.11n 2.4GHz 3×3
- IEEE 802.11ac Wave2 5GHz 4×4
- RJ11 2x FXS POTS Ports
- USB 1x USB 3.0 Host (Optional)

RF Downstream

- Frequency (edge-to-edge) 108-1218 MHz 258-1218 MHz
- Input Impedance 75 OHM
- Total Input Power <40 dBmV

- Input Return Loss > 6 dB

SC-QAM Channels

- No. of Channels 32 Max.
- Level Range (one channel) North Am (64 QAM, 256 QAM):-15 to + 15 dBmV
  Euro (64 QAM): -17 to + 13 dBmV
  Euro (256 QAM): -13 to + 17dBmV
- Modulation Type 64 QAM, 256 QAM
- Symbol Rate (nominal) North Am (64 QAM): 5.056941 Msym/s
- North Am (256 QAM): 5.360537 Msym/s
- Euro (64 QAM, 256 QAM): 6.952 Msym/s
- Bandwidth North Am (64 QAM/256QAM with α=0.18/0.12): 6 MHz EURO (64 QAM/256QAM with α=0.15): 8 MHz

OFDM Channels

- Signal Type OFDM
- Max OFDM Channel Bandwidth 192 MHz
- Mini Contiguous-Modulated
- OFDM Bandwidth 24 MHz
- No. of OFDM Channels 2
- Frequency Boundary Assignment Granularity 25 KHz 8K FFT 50 KHz 4K FFT
- Subcarrier Spacing / FFT Duration 25 KHz / 40 us 50 KHz / 20 us
- Modulation Type QPSK, 16-QAM, 64-QAM,128-QAM,256-QAM, 512-QAM,1024-QAM, 2048-QAM, 4096-QAM
- Variable Bit Loading Support with subcarrier granularity
  Support zero bit loaded subcarriers
- Level Range (24 MHz mini.
  Occupied BW) Equivalent Power Spectral Density to SC-QAM of -15 to + 15 dBmV per 6 MHz -9 dBmV/24 MHz to 21 dBmV/24 MHz

Upstream

- Frequency Range (edge to edge) 5-85 MHz, 5-204 MHz
- Output Impedance 75 OHM
- Maximum Transmit Level (Total average power) +65 dBmV
- Output Return Loss >6 dB

SC-QAM Channels

- Signal Type TDMA, S-CDMA
- No. of Channels 8 MAX.
- Modulation Type QPSK, 8 QAM, 16 QAM, 32 QAM,64 QAM, and 128 QAM
- Modulation Rate (nominal) TDMA: 1280, 2560, and 5120 KHz S-CDMA: 1280, 2560, and 5120 KHz Pre-

DOCSIS3 operation: TDMA: 160, 320, and 640 KHz

- Bandwidth TDMA: 1600, 3200, and 6400 KHz S-CDMA: 1600, 3200, and 6400 KHz
  Pre-DOCSIS3 operation: TDMA: 200, 400, and 800 KHz
- Mini Transmit Level Pmin = +17 dBmV at ≤1280 KHz modulation rate Pmin = +20 dBmV at 2560 KHz modulation rate Pmin = +23 dBmV at 5120 KHz modulation rate

OFDMA Channels

- Signal Type OFDMA
- Max OFDMA Channel Bandwidth 96 MHz
- Mini OFDMA Occupied Bandwidth 6.4 MHz (for 25 KHz subcarrier spacing) 10 MHz (for 50 KHz subcarriers spacing)
- No. of Independently Configurable OFDMA Channels 2
- Subcarrier Channel Spacing 25, 50 KHz
- FFT Size 50 KHz: 2048 (2K FFT); 1900 Max. active subcarriers 25 KHz: 4096 (4K FFT); 3800 Max. active subcarriers
- Sampling Rate 102.4 (96 MHz Block Size)
- FFT Time Duration 40 us (25 KHz subcarriers) 20 us (50 KHz subcarriers)
- Modulation Type BPSK, QPSK, 8-QAM, 16-QAM,32-QAM, 64-QAM,128-QAM,256-QAM, 512-QAM, 1024-QAM,2048-QAM, 4096-QAM

Wi-Fi

- Full dual band concurrent WiFi 2.4GHz (3×3) IEEE 802.11n AP 5GHz (4×4) IEEE 802.11ac Wave2 AP
- 2.4GHz WiFi Power Up to +20dBm
- 5GHz WiFi Power Up to +36dBm
- WPS WiFi Protected Setup (WPS)
- WiFi Security Levers WPA2 Enterprise / WPA Enterprise WPA2 Personal / WPA Personal
- IEEE 802.1x port-based authentication with RADIUS client
- SSID Up to 8 SSIDs per radio interface
- 3×3 MIMO 2.4GHz WiFi features SGI STBC 20/40MHz coexistence
- 4×4 MU-MIMO 5GHz
  WiFi features SGI STBC LDPC (FEC) 20/40/80/160MHz mode Multi-User MIMO
- Channel Selection Manual / auto radio channel selection

Voice and Telephony

- Voice Compliant PacketCable 2.0; EuroPacketCable 1.5
- Multi-line Phone Support 2 Phone lines 3-Party Conference Calls Support Two Complex Voice Codecs simultaneously
- DTMF Tone Relay RFC 2833
- Packet Tone DTMF Generation Call Progress Generation Custom Tone Generation
- REN 3 REN per device
- Pulse Dialing DTMF/Pulse Tones Pulse/DTMF Tones Conversion

Mechanical

- LED PWR/TEL/WiFi/WPS/Internet
- Button WiFi on/off button WPS button Reset button (recessed) Power on/off button
- Dimensions TBD
- Weight TBD

Environment

- Operation temperature 0 to 40°C
- Storage temperature -20 70°C
- Operating Humidity 10~90% non-condensing
- Power Consumption <36W (Max.)
- Power input 12V/3A

Accessories

- 1x User Guide
- 1x 1.5M Ethernet Cable
- 4x Label (SN, MAC Address)
- 1x Power Adapter
- Input: 100-240VAC, 50/60Hz; Output: 12VDC/3A

Documents / Resources

	DiBSYS Technologies DOCSIS 3.1 Cable Modem with Voice 4 GbE and Dual Wifi [pdf] Instruction Manual CG445, DOCSIS 3.1, DOCSIS 3.1 Cable Modem with Voice 4 GbE and Dual Wifi, 3.1 Cable Modem with Voice 4 GbE and Dual Wifi, Modem with Voice 4 GbE and Dual Wifi, Voice 4 GbE and Dual Wifi, 4 GbE and Dual Wifi, Dual Wifi

References

- China Encoder Decoder, Hotel IPTV, IPTV Solution Suppliers, Manufacturers, Factory, Company - Hangzhou HAOXUN Technologies Co.,Ltd