technicolor

FEEL THE WONDER

DGA2231
Dual-Band .11n and .11ac Wi-Fi
Smart Ultra-Broadband Gateway
with Voice

| TELCO BROADBAND | DATA | VOICE | VIDEO |

Technicolor's DGA2231 is a unique future proof triple-play service gateway that integrates both high speed VDSL2 and gigabit speed G.fast access. With high performance dual band wireless, featuring a seven antenna configuration, the DGA2231 can support seamless real-time HD video over wireless whilst simultaneously supporting other data applications. The DGA2231 also supports VoIP functions for residential and business users.

■ G.fast Technology

With the DGA2231, Technicolor introduces one of the world's first Smart Ultra Broadband Gateway integrating the new G.fast standard to bring gigabit access speeds on copper technology.

With this cutting edge solution, Technicolor opens up a whole array of new business opportunities and makes new immersive viewing experiences such as 4K Ultra HD video a reality, with the fidelity consumers are waiting for.

G.fast is surely the most promising technology for telecom operators looking to drastically increase bitrates at the lowest costs to answer the skyrocketing end-user demand for bandwidth. It also allows telecom operators to compete with alternative high-speed broadband access technologies such as Cable and Fiber. This technology is sure to accelerate the delivery of high-bandwidth services such as 4K/UHD video streaming or value-added connected home applications.

■ Wireless Doctor, a Technicolor Managed Service

The DGA2231 supports Wireless Doctor™, a Technicolor Managed Service that gives service providers advanced capabilities to monitor and to improve the Wi-Fi quality of experience for their subscribers.

Wireless Doctor™ encompasses many facets including Wi-Fi diagnostics, Wi-Fi network optimization, Wi-Fi mesh and Wi-Fi provisioning. It enables service providers to gain valuable insights into their installed base, to reduce OPEX proactively by leveraging Radio Resource Management (RRM) and reactively by empowering Customer Service, and to optimize CAPEX investments by identifying where new and additional Wi-Fi access points are needed.

Features at a Glance

- Integrated ADSL/ADSL2+/VDSL2 modem (up to VDSL2 profile 35b) and G.Fast modem
- 1 GE WAN port
- AutoWAN sensing™
- 4 GE LAN ports
- Dual-band concurrent Wi-Fi interfaces
    - IEEE 802.11n 2.4 GHz (3x3)
    - IEEE 802.11ac 5 GHz (4x4)
- 2 FXS ports for phone or fax
- 2 highspeed USB 2.0 ports
- Seamless media sharing (UPnP A/V™ and DLNA®)
- Future-proof full service platform
- Enabled to support Wireless Doctor™ (sold separately)
- Extensive remote management
- Non-service-affecting platform software upgrades (dual bank memory)
- IPv4 & IPv6 enabled
- Designed according to the latest ECO standards

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■ Leapfrogging Performance

Equipped with a next-gen dual core processor and hardware accelerator for CPU offload, the DGA2231 surpasses any current gateway's performance. Combining these features with Level 2 cache, this smart gateway is ideally suited to run multiple demanding applications, such as NAS-quality media sharing, high-speed LTE backup, smart life applications, deep packet inspection and powerful encryption algorithms simultaneously.

■ Flexible & Future-Proof Software Stack

The DGA2231 is enriched with Technicolor Homeware, a reliable and managed middleware that offers an open architecture with multiple application environments fit to open up the connected home and deliver an unlimited spectrum of value-added services and applications.

Featuring a platform agnostic architecture, Technicolor Homeware is a fully portable solution that ensures the fastest time to market. Moreover, its modularity and enhanced life cycle management make it easy to add or remove components to or from a software release, while enabling second & third party development.

Leveraging open source, Technicolor Homeware embraces different execution environments and supports current and emerging trends, transforming the gateway into a full-blown app platform.

■ Best-In-Class Ultra Broadband

The accelerating growth of WAN and LAN traffic is pushing telecom operators to look to ultra-high-speed network technologies to solve the bandwidth crunch. VDSL2 and G.fast combined with Gigabit Ethernet enables extremely high bandwidth and guarantees superior quality in voice, data and video.

A dedicated Gigabit Ethernet WAN port and AutoWAN sensing make the DGA2231 the ideal service gateway for deployment in Fiber To The Home (FTTH) scenarios.

Some of the latest performance-enhancing technologies have been added on top, to get the utmost out of existing infrastructures:

- G.fast: uses Time Division Multiplexing for wider frequency profiles on the twisted copper pair. This enables close to 1 Gigabit speeds over short distances.

- G.vector: effectively cancels the crosstalk noise inherently present in VDSL2 bands. With vectoring, every line in a binder can operate at peak performance, as if there were no other VDSL2 lines in that binder.

- G.inp ("Impulse Noise Protection"): makes sure that no errors occur on the DSL connection, even under extreme conditions, so that high-quality video transmission is guaranteed at all times. It is based on the principle of retransmission.

Furthermore, the latest wireless technologies ensure robust in-home wireless distribution which reduces wiring complexity and provides true mobility without sacrificing Quality of Service (QoS) and Quality of Experience (QoE) or transfer speeds.

■ Next-Gen Wi-Fi Technology for Next-Gen Speeds

Featuring the next-generation IEEE 802.11ac Wi-Fi standard for the 5 GHz band, this dual band Wi-Fi solution makes optimal use of the radio spectrum. With its optimized antenna configuration, the DGA2231 enables even higher throughput and better coverage over the much less crowded 5 GHz radio.

At the same time, it guarantees uninterrupted transmission of data services over IEEE 802.11n using the 2.4 GHz band.

■ Voice over IP

The DGA2231 offers VoIP functions for residential and business users. POTS phone connectors are provided to accommodate regular phones and faxes. Once the gateway is registered with a VoIP service, regular phone calls can be conducted over the Internet with all the benefits of IP telephony.

On top of a wide range of advanced voice services like caller ID, CLIR, call waiting, call forwarding, three-way conference and message waiting notification, the DGA2231 is completely interoperable with the main IMS cores in the market.

■ Media Sharing

The DGA2231 acts as a fully compliant DLNA 1.5 Digital Media Server (DMS) and enables distribution of all content from any device to any device in the home. You can stream music, data, pictures and video from your gateway to devices connected to your wired or wireless home network.

In addition, the DGA2231 supports hot plugging of USB hard disk drives, allowing you to simply plug and play devices without the need to switch the gateway off first.

■ Easy to Use

Like all Technicolor modems and gateways, the DGA2231 is an easy to use, easy to install device.

For convenience of the end user, the easy-to-access LEDs provide a clear indication of start-up sequence, operational status, and connectivity status.

Multiple integrated web pages also allow direct access to the status and settings, including privacy and security information.

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■ Highest Security

The DGA2231 Stateful Packet Inspection (SPI) firewall guarantees users the ultimate network security level. Through integration with Network Address & Port Translation (NAPT), the firewall leverages all the Application Level Gateways (ALGs) provided in the NAT context to minimize undesired service impacts.

Advanced smart parental controls, security audit services, access logging and monitoring are optionally available for home, hotspot and mobile data network users to create a fully personalized and time-based access control environment, based on individual user profiles and web usage behaviour.

The DGA2231 also supports powerful wireless security mechanisms, such as Wi-Fi Protected Access (WPA, WPA2) together with the secure and user friendly Wi-Fi Protected Setup (WPS) connection and configuration mechanism for connecting wireless clients.

In addition, the DGA2231 supports multiple wireless networks (mSSID) enabling to set up independent virtual wireless access points, including controlled wireless hotspots. These additional wireless networks allow other wireless users to enjoy high-performance access without any compromise on the integrity of the basic network, thus keeping the original network access limited and secure.

■ Easy to Manage

The DGA2231 is completely designed according to the TR-069's TR-098 IGD data model through which the device can be configured remotely by the operator without interrupting the end user's experience.

In addition, the TR-181i2 Device:2 data model is made available to further increase the remote management capabilities towards life cycle management, diagnostics and application management.

■ IPv6 Enabled

With the approaching IPv4 address pool depletion, our products need to be ready for IPv6. Technicolor is a frontrunner in the introduction of IPv6 on its devices, with the DGA2231 being enabled for multiple IPv6 field scenarios. Internet Protocol version 6 is the next generation of Internet technologies aiming to effectively support the ever-expanding Internet usage and functionality, and also to address security concerns that exist in an IPv4 environment.

Technicolor aims to introduce IPv6 as smoothly as possible in customer networks. By providing in-depth knowledge of the networking stack, we guide our customers in their transition from IPv4 to IPv6.

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Technical Specifications

Hardware

- Interfaces WAN   1 RJ-11 xDSL/G.fast line port
  1 autosensing 10/100/1000 Base-T Ethernet WAN port
- Interfaces LAN   4-port autosensing 10/100/1000 Base-T Ethernet LAN switch
  IEEE 802.11n 2.4 GHz radio
  IEEE 802.11ac 5 GHz radio
  2 FXS POTS ports
  2 USB 2.0 master ports
- Buttons & LEDs   Wi-Fi on/off button
  WPS button
  Reset button (recessed)
  Power button
  5 status LEDs
- Power input   DC jack
- Power supply   12 VDC external PSU
- AC Voltage   100 - 240 VAC, 50 - 60 Hz (switched mode power supply)

xDSL & G.fast modem

- Supports multi mode standards
- ADSL compliancy   ITU-T G.992.1 Annex A (G.dmt)
  ITU-T G.992.2 Annex A (G.lite)
  ITU-T G.994.1 (G.hs)
  Rates up to 8 Mbps downstream and 1 Mbps upstream
- ADSL2 compliancy   ITU-T G.992.3 Annex A, L (G.dmt.bis)
  ITU-T G.992.4 Annex A, L (G.lite.bis)
  ITU-T G.998.4 (G.inp)
  Rates up to 12 Mbps downstream and 1 Mbps upstream
- ADSL2+ compliancy   ITU-T G.992.5 Annex A, M
  ITU-T G.998.4 (G.inp)
  Rates up to 24 Mbps downstream and 3 Mbps upstream
- VDSL2 compliancy   ITU G.993.2
  SOS
  SRA
  INM
  Up to VDSL2 profile 35b
  ITU-T G.993.5 (G.vector)
  ITU-T G.998.4 (G.inp)
- G.fast compliancy   ITU-T G.9700, ITU-T G.9701 (G.fast)
- Supports Dying Gasp

Wi-Fi

- Full dual band concurrent Wi-Fi access points, Wi-Fi certified®
  2.4 GHz (3x3) IEEE 802.11n AP
  5 GHz (4x4) IEEE 802.11ac AP
  with IEEE 802.11ac compliant transmit beamforming
- Wi-Fi Protected Setup (WPS™)
- Wi-Fi security levels   WPA2™-Enterprise / WPA™-Enterprise
  WPA2™-Personal / WPA™-Personal
  WPA2™ + WPA™ mixed mode (AES and TKIP)
- Wi-Fi Multimedia (WMM®) and WMM-Power Save
- Up to 4 BSSIDs (virtual AP) support per radio interface
- Wireless hotspot capabilities
- Band Steering
- 3x3 MIMO 2.4 GHz Wi-Fi features
  2.4 GHz frequency bands
  2400 - 2483.5 MHz
  2.4 GHz Wi-Fi power up to 20 dBm (100 mW EIRP)
  SGi (Short Guard Interval)
  STBC (Space-Time Block Code)
  20, 40 MHz bandwidths
- 4x4 MU-MIMO 5 GHz Wi-Fi features
  5 GHz frequency bands
  5150 - 5250 MHz
  5250 - 5350 MHz with Dynamic Frequency Control (DFC)
  5 GHz Wi-Fi power up to 30 dBm (1000 mW EIRP)
  SGi (Short Guard Interval)
  STBC (Space-Time Block Code)
  LDPC (FEC)
  Multi-User MIMO
  TPC (Transmit Power Control)
  OCAC (Off Channel Availability Check)
  20, 40, 80, 160 MHz bandwidths
- RX/TX switched diversity
- Dynamic rate switching for optimal wireless performance
- Manual/auto radio channel selection

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Voice and telephony

- Voice technologies — Voice over IP (VoIP)
- Voice signalling — SIP
- Voice codecs — G.711, G.726, G.729
  - iLBC (internet Low Bitrate Codec)
  - Wideband — G.722.2 AMR-WB (optional)
  - T.38
- Echo cancellation — G.168 compliant
- Comfort Noise Generator (CNG)
- Voice Activity Detection (VAD)
- Flexible telephone number per FXS handset, including common numbers
- Supplementary and advanced services
  - Caller ID
  - Call waiting (on call basis)
  - Call forwarding (no answer/busy/unconditional)
  - Call transferring
  - Call hold, call return
  - Calling Line Identification Presentation (CLIP)
  - Calling Line Identification Restriction (CLIR)
  - Calling Name Identification Presentation (CNIP)
  - Calling Name Identification Restriction (CNIR)
  - Fax transparency / V.92 transparency
  - 3-way conference
  - Message Waiting Indicator (MWI)
  - Call completion to busy subscriber
  - Abbreviated number
  - Anonymous Call Rejection (ACR)
  - Distinctive ringing
  - DNS SRV
- SIP server — Back-to-Back User Agent
- Interoperable with main market softswitches

Management

- Customizable user-friendly GUI via HTTP and HTTPS
- Command Line Access SHell (CLASH)
  - SSH v2
- Web services API for remote access (portal, management, diagnostics, applications, ...)
- Web-browsing intercept (install/diagnostics/captive portal)
- AutoWAN sensing™ (automatic selection and configuration of WAN interfaces)
- TR-069 CPE WAN Management Protocol (CWMP)
  - TR-098 Internet Gateway Device (IGD) management
  - TR-104 voice service provisioning and configuration
  - TR-111 home network device management
  - TR-140 storage service provisioning
  - TR-143 network throughput performance tests and statistical monitoring
  - TR-157a3 Life Cycle Management (LCM)
  - TR-181i2 Device:2 data model
- Zero-touch autoprovisioning

Services

- Life Cycle Management (LCM) for developing advanced services support
- Open architecture for 3rd party application and UI development
- 3G/LTE/4G mobile fall-back WAN connection (through USB adapter)
- Enabled to support Technicolor Managed Services
  - Wireless Doctor™ (sold separately)
- VPN client/server scenarios — L2TP/IPSec
  - PPTP
  - OpenVPN
- Wireless hotspot (optional, on request)
  - Based on HotSpot 2.0 technologies
  - Passpoint™
  - GRE tunneling
  - EAP
  - Fon
- Parental control — URL- and (optional) content-based website filtering
  - Time-based access control (Time of Day)
- Printer sharing — IPP
  - LPD
  - Server Message Block (SMB) Samba printer sharing
- Content sharing — Server Message Block (SMB) Samba file server
  - UPnP A/V™ media server and control point
  - DLNA® DMS
  - Metadata support
- HDD file systems — FAT32, NTFS
  - EXT2, EXT3, EXT4
  - HFS+

Networking

- Symmetrical NAT with application helpers (ALGs)
- Game and application sharing NAT port maps
- DHCP conditional serving & relay
- DNS server & relay
- IGMPv3 proxy (Fastleave)
- IGMP snooping (full routed)
- DHCP spoofing
- IEEE 802.1q VLAN bridging, multiple bridge instances
- MLD Proxy for IPv6
- Port Control Protocol (PCP)
- Multicast to unicast translation on Wi-Fi interfaces

IPv6 networking

- IPv4 / IPv6 dual IP stack
- Supported models — PPP(oE)(oA)
  - IPoE(oA)
- Transitioning — 6rd/6to4/6in4
  - DS-Lite
- Stateful connection tracking / stateful inspection firewall
- DHCPv6 — Stateful/stateless DHCPv6 client
  - Stateless DHCPv6 server
  - Relay
  - Prefix Delegation
- ICMPv6
- 464xlat
- MAP-T

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Technical Specifications

Quality of Service

- **ATM QoS** — UBR, VBR-nrt, VBR-rt, CBR shaping, queuing and scheduling
  CLP tagging
- **IP QoS** — Flexible classification (ALG aided)
  IP rate limiting (two-rate remarking/dropping)
  DSCP (re-)marking
  Dynamic link fragmentation
- **Ethernet QoS** — Priority or C-VLAN/S-VLAN tagging
  Ethernet switch port queuing and scheduling
- **Wireless QoS** — WMM (BE, BK, VI, VO access categories) queuing and scheduling

Security

- Stateful Packet Inspection Firewall (SPIF)
- Customizable firewall security levels
- Intrusion detection and prevention
- DeMilitarized Zone (DMZ)
- GRE Tunnel encryption
- Multilevel access policy
- Secure boot
- Security and service segregation per SSID

ECO design

- ECO mode for more intelligent power saving
- Wi-Fi on/off button
- WMM-Power Save

Package contents

- DGA2231
- Power supply unit
- Quick Setup Guide
- Safety Instructions & Regulatory Information
- DSL/G.fast cable
- Ethernet cable
- Filter(s) or splitter(s) (optional)

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