



## DRG 500 series

## DRG 540 products

**The DRG System gives operators and service providers a reliable home gateway platform to support multiple broadband services with enhanced security and high quality standards.**

### **The DRG**

The DRG 540 (Digital Residential Gateway) is a Triple Play platform providing up to 100 Mbps WAN access, 4 LAN ports and 2 telephone lines. DRG 540 is designed for residential customers, small offices and medium size enterprises taking advantage of the multiple LAN ports and high through-put.

### **Multiple Broadband Services**

DRG supports Triple Play services such as fast Internet access, IP telephony and IPTV. CATV is optionally supported with a CATV receiver which converts optical TV signals received via the fibre network into traditional electrical RF signal.

### **Plug-n-Call IP Telephony**

The end-user only needs to plug in a standard analogue phone and/or G3 fax machine to use the telephone services. No investment in IP-phones is needed.

A full range of Class 5 services (e.g. Call Waiting, 3-Party Call, Call Forwarding, Caller Line Identification Presentation) are supported in the DRG, independently of the softswitch. DRG 540 complies with all IP telephony signalling protocols SIP, H.323, MGCP, and H.248.

### **High Quality Services**

DRG 540 enables carrier grade voice and video quality through priority mechanisms both on Ethernet and IP levels.

DRG 540 supports IGMP snooping, which routes a multicast video stream only to LAN ports that have joined the multicast group. This prevents unnecessary traffic on other ports.

### **Efficient Remote Management**

The DRG 540 is designed for remote management including remote configuration and software upgrade mechanism. This allows the operator to easily and efficiently manage and control a vast number of installed units.

In addition the DRG 540 provides quality measurement for LAN and voice ports. The produced statistics can be gathered allowing the operator to monitor and control the quality of the offered services.

### **Cost Efficient Click On Deployment**

The FTU provides the network builders a solution for terminating fiber access in a cost efficient and robust manner. Once the installation of the FTU and corresponding fiber connectors is done the end customers can install the active equipment themselves by simply click on the DRG unit. No special skills or patch cables are needed.

### **The Choice of FTTX Networks**

The DRG 540 can be used in fiber and copper networks and is very well suited to the particular requirements of FTTX networks.

# Product Specification for DRG 540

## Interfaces

Model	Port	Wavelength TX/RX (nm)	Max/Min output pwr (dBm)	Max/Min input pwr (dBm)	Speed (Mbps)	Specification
DRG 541	WAN	1310/(1270-1380)	-14/-22.5	-14/-31.8	10/100	Copper, UTP, Cat5, RJ-45
DRG 542m						Multi-mode, dual-fiber, MT-RJ
DRG 542s						Multi-mode, dual-fiber, SC
DRG 546s						Single-mode, single-fiber, SC
DRG 547c						Single-mode, dual-fiber, LC
DRG 547s	LAN	1310/(1260-1610)	0/-20	0/-28	100	Single-mode, dual-fiber, LC
DRG 54x*						4 x Copper, UTP, Cat5, RJ-45
DRG 54x*						2 x Analogue phones, RJ-11
DRG 54x*	Telephony				N/A	
DRG 54x*	LAN**				10/100	4 x Copper, UTP, Cat5, RJ-45

\* x can be either 1, 2, 6 or 7

\*\* LAN port 1-3 provides WAN-LAN throughput of up to 100Mbps whereas LAN port 4 has limited throughput and should not be used for bandwidth consuming applications.

## Telephone and Fax services

VoIP protocols	SIP, H.323, MGCP, H.248
Speech Codecs	G.711, G.729ab, (G.723.1 available on request)
Class 5 services	Call Waiting, 3-Party Call, Call Alteration, Differentiated Ringing Signals, Call Forwarding, Calling Line Identification Presentation (CLIP), permanent and temporary CLIR (Calling Line Identification Restriction)
Fax	T.38
3rd Party initiated pause and rerouting	External rerouting of media stream during speech, e.g. for pre-paid calling card and record announcement
DTMF	Inband and outband using H.245, H.225, RFC2833 or SIP INFO
Number of telephones	Up to 5 analogue telephones can be connected to each telephone port
Market adaptation	Possible to set telephony signals, tones, cadences, impedance, CLIP etc. according to local market requirements

## Management

SNMP management	SNMP v1, SNMP v2, MIB-II for statistics, Enterprise-specific DRG MIB for configuration
HTTP server	Two access levels for manual configuration, can be turned on/off remotely
TFTP/HTTP client	Software download
DHCP	Configuration support
HDD	Pre-integrated with 42Networks Element Management System, HDD, that allows optimal management of large populations of DRG units

## Quality of Service

DiffServ	Layer 3 (IP) QoS mechanism, 2 hardware queues for prioritization
Class of Service	IEEE 802.1p, Layer 2 (Ethernet) QoS mechanism, 2 hardware queues for prioritization
LAN-port priority	2 hardware queues for prioritization
Internal delay (VoIP)	5-30 ms delay for decoding/encoding/AEC/internal operations in the DRG
Bandwidth shaping	Rate limitation per LAN-port
General	Adaptive or flexible jitter buffer, echo cancellation (G.165, G.168), speech sampling
IGMP snooping	10-60 ms, silence suppression with comfort noise
	IGMP v1, IGMP v2

## Traffic Classification and Security

VLAN	Services and port separation
Authentication per registration	H225.0 RAS, SIP digest
Authentication per call	H235, SIP digest

## Reliability

MTBF	>150 000 hours
High Availability	Configurable high availability through secondary gatekeeper

## Physical

Dimensions	56 mm (D) x 170 mm (H) x 238 mm (W)
Weight	Approximately 430 g
Power requirements (incl. AC/DC adapter)	7,5-10,5 watts
Power supply	12Vdc, external plug-in wall adapter, UPS optional
LED indicators	WAN, LAN per port, POTS per port, POWER
Operating conditions	Temperature 0°C to +40°C, humidity 5-95% RH non-condensing

## Regulatory Compliance

CE-mark	
EC/EN/UL 60950, IEC/EN/UL 60825, ETSI EN 300386	
RoHS directive 2002/95/EC	
WEEE directive 2002/96/EC	

Subject to change without notice