BLACK BOX®
NETWORK SERVICES

HighSpeed G.SHDSL+ Modem

Key Features

- ▶ G.shdsl, conform to ITU G.991.2

- ▶ Up to 9.7 Mbps on a 4-wire line

- ▶ TCPAM-32, up to 30% higher reach in comparison to HDSL

- ▶ Built-in TCP/IP bridge/router

- ▶ NAT/masquerade

- ▶ Firewall

- ▶ SNMP management

- ▶ Automatic traffic balancing between two DSL lines

- ▶ Individual throughput settings for each line (in case of quality differences between the lines)

- ▶ Automatic fall back to 2-wire transmission in case of line failure

MDS682AE modems take advantage of the latest G.shdsl technology unfolding unprecedented possibilities for the copper leased lines.
They achieve throughputs of nearly 10 Mbps on the distance of a few kilometers - faster and farther than any other modem technology.
Apart from typical G.shdsl modulations they support TCPAM-32 coding - much more efficient than the standard TCPAM-16, giving higher throughputs and higher reach.

TCP/IP Router
TCP/IP router is the most significant part of the MDS682AE modem. It allows to connect the modem directly to Ethernet (e.g. to a hub or a switch), and to divide a net into two subnetworks. As a result, traffic is separated and security of transmitted data is improved (e.g. computers operating under Windows are not able to see each other in network neighborhood).
IP packages are transmitted between router's interfaces. There is possibility to configure the interface aliases (eth0:0, eth0:1 and so on) with separate IP addresses and subnet masks. As a result, multiple subnetworks can coexist within a single LAN (e.g. with routable and non-routable IP addresses).
The router supports a variety of useful functions like NAT/masquerade, firewall, telnet management, SNMP management, DHCP/BOOTP server, VLAN support and many more.

Bridge
MDS682AE routers can work as an Ethernet bridge. In this mode both interconnected networks (on Ethernet side and on the remote end of the WAN) appear as a single LAN, as if both were plugged into the same Ethernet switch. Only packets destined to the remote stations and broadcast packets (ARP, etc.) are transmitted to the other side. As a result, stations on both sides of the WAN link may be in one IP subnet and they see each other in Windows network neighborhood.

NAT/masquerade
Thanks to masquerade entire subnetwork can access Internet using single routable IP address. All the computers constituting a subnetwork appear in Internet under the same address, but router is able to recognize, which one incoming data should be directed to, so no conflicts arise.

Firewall
MDS682AE routers contain a built-in firewall which allows control of the data beign received and transmitted, thus improving the security of the router itself and the users connected to it.
The traffic may be blocked depending on IP address, protocol, TCP or UDP port and TCP packet type (e.g. SYN packets initializing the TCP connection).

Telnet Management
Management through telnet is the simplest and most convenient way of changing modem and router settings. After logging in, multiple commands are available - some of them with Linux-like syntax (ifconfig, route, arp, ps, uptime), others typical for MDS682AE router (dhcp, snmp, hdsl, tftp etc.).

SNMP Management
Simple Network Management Protocol (SNMP) is a versatile protocol allowing networked hardware to be managed remotely. MDS682AE router supports standard MIB-II (RFC-1213) and hardware-specific parameters described in MDS682AE mib.
Standard MIB-II includes - among others - hardware data (location, administrator), time elapsed from last reboot, routing tables, ARP, interface configurations, transmitted data statistics.

DHCP/BOOTP Server
DHCP/BOOT server allows computers and other networked hardware to be configured automatically. It can be used to operate diskless workstations.
Server allocates to a client an IP address - dynamically using defined address pool or based on static connections between MAC and IP addresses.
Additionally, it transmits to a client another parameters required for correct operation, like subnetwork mask, gateway address, domain name, DNS, NTP and print servers addresses, routing tables and many others.
It can also transmit to a diskless workstation an address of a server allowing to download the operating system.

DHCP/BOOTP Relay Agent
DHCP/BOOT protocols operate within a single physical subnetwork (client doesn't know his own and DHCP server addresses, so it's enforced to broadcast a message in a hardware layer). If a network is large, configuring and administrating separate DHCP/BOOTP servers (one for each subnetwork) becomes burdensome and error-causing. DHCP/BOOTP Relay Agent allows to overcome these inconveniences. Within a subnetwork it is connected to (both at the Ethernet and at the WAN side), it looks for DHCP and BOOTP inquiries. Then it transfers the inquiries to a single or multiple central DHCP servers located at any place in the network. When a DHCP server transmits a response, the Relay Agent transfers it to the computer, which generated the inquiry.
As a result, even a very large network based on dynamic allocation of IP addresses and other parameters can be easily managed using a single server. Built-in server within MDS682AE routers can be used for this purpose, or any other server compatible with RFC-2131.

Firmware upgrade using TFTP
MDS682AE routers allow to exchange the built-in software for a newer one. Such an exchange can be done remotely, using TFTP protocol. New versions of firmware will be published in our site, accompanied with instructions for installing them.

VLAN (Virtual LAN) support
The IEEE 802.1q standard describes a way to create distinct LANs within the same Ethernet network. Each packet being transmitted contains a VLAN ID. VLAN-enabled switches can manage the traffic by sending given VLAN to selected ports, they may also remove the VLAN ID and turn VLAN packets into regular ones. Thus stations belonging to different VLANs are separated although all of them use the same wires. Moreover any reconfiguration is only matter of software - no changes in the cabling are necessary.

Specifications

IProcessor — Motorola PowerPC 50MHz
Memory — 4MB SDRAM, 1MB Flash
Network Protocols — TCP, IP, UDP, ICMP, TFTP, SNMP, DHCP, BOOTP
WAN Protocols — Cisco® HDLC, PPP, Frame Relay
Frame Relay signaling — ANSI T1.617 Annex A, ITU Q.933 Annex D, Cisco ® LMI
WAN Encapsulation — ATM AAL5
Dimensions — 200 mm (width) x 130 mm (length) x 45 mm (height)
Power Supply — 15V, 360 mA, 5W external 230V/50Hz power supply included other power supplies on request

G.shdsl interface

Connector — RJ-11
Standards — ITU G.991.2 (G.shdsl) ITU G.994.1 (G.hs)
Modulations — TCPAM-32, TCPAM-16, TCPAM-8, TCPAM-4, PAM-16, PAM-8, PAM-4, PAM-2
Throughput — 128 - 9728 kbps
Ethernet interface — 10/100Base-T, RJ-45 connector
Serial console — RS-232, DB9/M connector

Modem Reach (0.5mm) **—**
1024kbps = 5300m
2048kbps = 4800m
3072kbps = 4100m
4864kbps = 3800m
6272kbps = 3500m
7168kbps = 3200m
8448kbps = 2900m
9728kbps = 2600m

▼
Ordering information

ITEM	CODE
G.SHDSL Modem, Bridge/Router, over 2/4 wire up to 10 Mbps MDS682AE	

▼
Black Box Network Services - The world's largest network services company

We are, with 25 years of experience, the world leader in network infrastructure services.

On the Phone — no charge, answer calls in less than 20 seconds, find the right product with our technical experts.

On-site — superior design and engineering, Certified installations, end-to-end service.

On-line — receive technical knowledge on-line, including technology overviews, Black Box Explains and the Knowledge Box.

Most comprehensive TECHNICAL SUPPORT — our best Product! Free hotline TECH SUPPORT!

The world's best customer service — Custom design services and products, the best warranties, money-saving discount programs.

BLACK BOX exclusives — Certification Plus. Guaranteed-for-life products and services.