Where to buy ›
See the product page ›
http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

Data Sheet

Megaplex-2100/2104

Modular Integrated Access Multiplexers

Sub-DS0 multiplexer providing voice, data, Ethernet, and other unique services (teleprotection, omnibus)

TDMoIP Driven®

- Multiple n x 64 kbps, SHDSL, E1/T1 or fractional E1/T1 main links, with combined TDM capacity of up to 8 Mbps (124 timeslots)
- 10/100-Mbps IP access link for transparent circuit extension over IP, using RAD's TDMoIP technology
- Self-healing TDM E1/T1 rings and Resilient Fast Ethernet Ring (RFER) technology (under 50 msec switchover protection)
- Optional redundant configurations for critical applications
- Wide range of I/O modules supporting multiple channels:
  - up to 120 high speed data channels
  - up to 132 low speed data channels
  - up to 55 full BRI (2B+D) channels
  - up to 120 PCM voice channels

RAD data communications
The Access Company

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

Megaplex-2100/2104

Modular Integrated Access Multiplexers

MP-2100/2104 is a modular integrated access TDM multiplexer, which integrates multiple dedicated data, voice, ISDN and LAN channels over multiple main (network) links. MP-2100/2104 equipped with 8-port main link modules in conjunction with 12-port high-speed modules provides a traffic payload capacity of up to 248 DS0 timeslots. The modules of version 11 and lower support up to 124 DS0 timeslots (8 Mbps).

The flexible, modular MP-2100/2104 with a wide choice of I/O (user interface) modules was designed for applications ranging from small campus networks to multi-site *corporate networks or extensive carrier* access solutions. Due to MP-2100/2104's standards adherence, central office based cross-connect units (DACS) can separate voice and data, sending each to the appropriate carrier or service.

Megaplex enables carriers to successfully deploy bundled services, ISDN services and Internet access. The integration of a broad range of services makes Megaplex a cost-effective access device, with reduced deployment and maintenance costs.

Megaplex with TDMoIP technology provides a cost-effective, versatile and modular solution for transmitting legacy TDM traffic over IP networks. This is especially suitable for large corporations, utilities or power companies that are seeking a gradual migration to IP networks.

The equipment conforms to international standards, ensuring compatibility in multi-vendor environments worldwide.

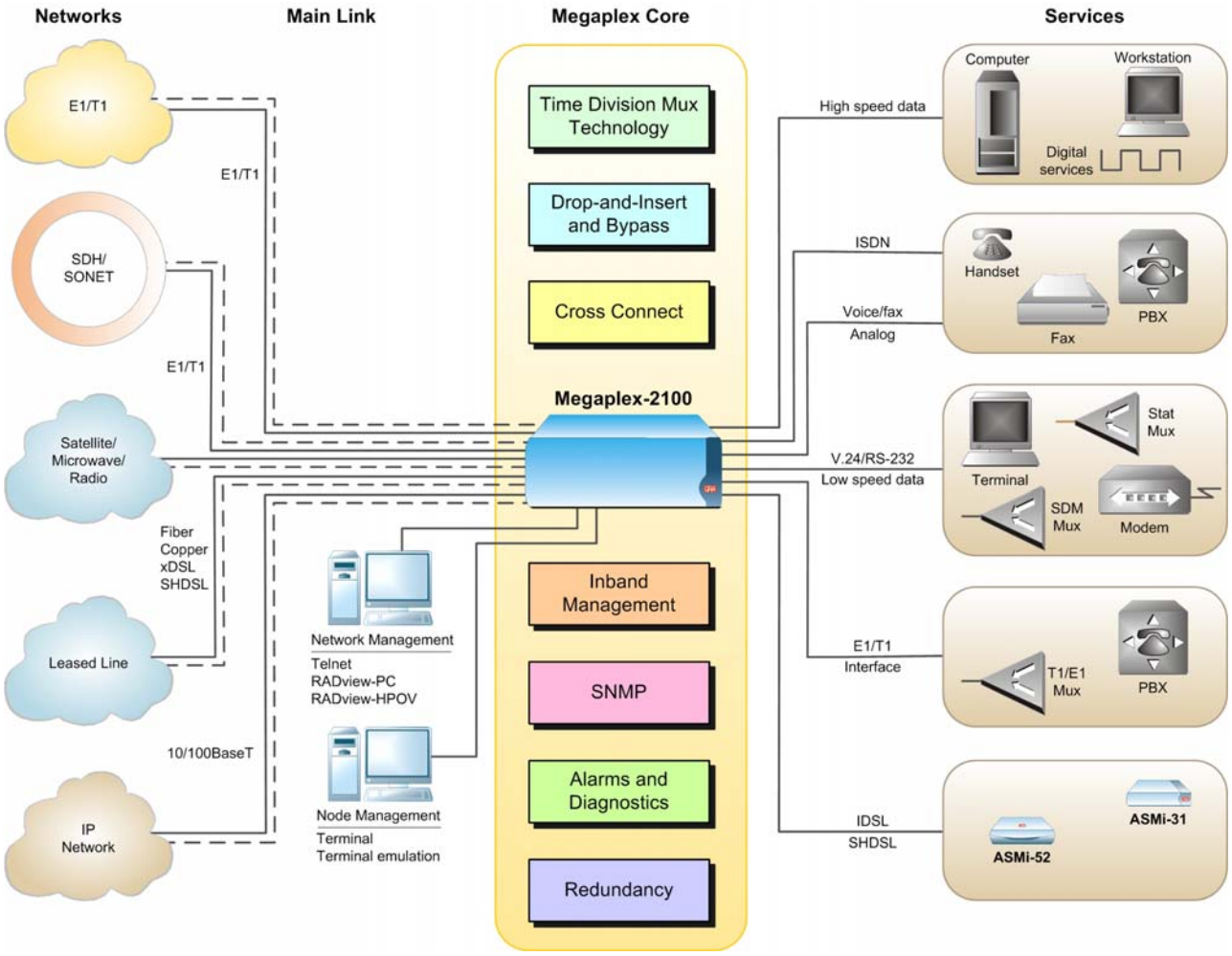

Figure 1. Megaplex-2100/2104 Multiple Services over Various Networks

DS0 CROSS-CONNECT

The built-in, non-blocking, DS0 cross-connect matrix enables routing any channel's timeslots to any link. This allows Megaplex to maximize its efficiency by splitting voice and data channels and redirecting the traffic, via separate links, to the appropriate service.

The cross-connect matrix also enables routing timeslots from any link to any other link. This facilitates drop-insert, bypass, or broadcast multi-link applications.

A total of 124 timeslots can be allocated, either for transmission of I/O channels or for bypassing timeslots between links of different modules.

TDMOIP

Megaplex offers an optional IP main link module that transmits TDM traffic directly over IP networks. This TDMoIP access module converts user TDM traffic into IP packets transmitted on 10/100BaseT or 100BaseF Ethernet networks.

CHASSIS

There are two basic chassis:

- Megaplex-2100 (4U high) chassis accommodating up to 12 main link and I/O modules
- Megaplex-2104 (2U high) chassis accommodating up to 5 main link and I/O modules.

TIMING

Multiple system timing options are available:

- Internal crystal oscillator clock
- Clock received from any link (loopback)
- Clock from any high speed module channel
- External station (master) clock
- Adaptive timing received from any bundle (with ML-IP only).

Any clock source can be set as fallback in the event of primary clock source failure.

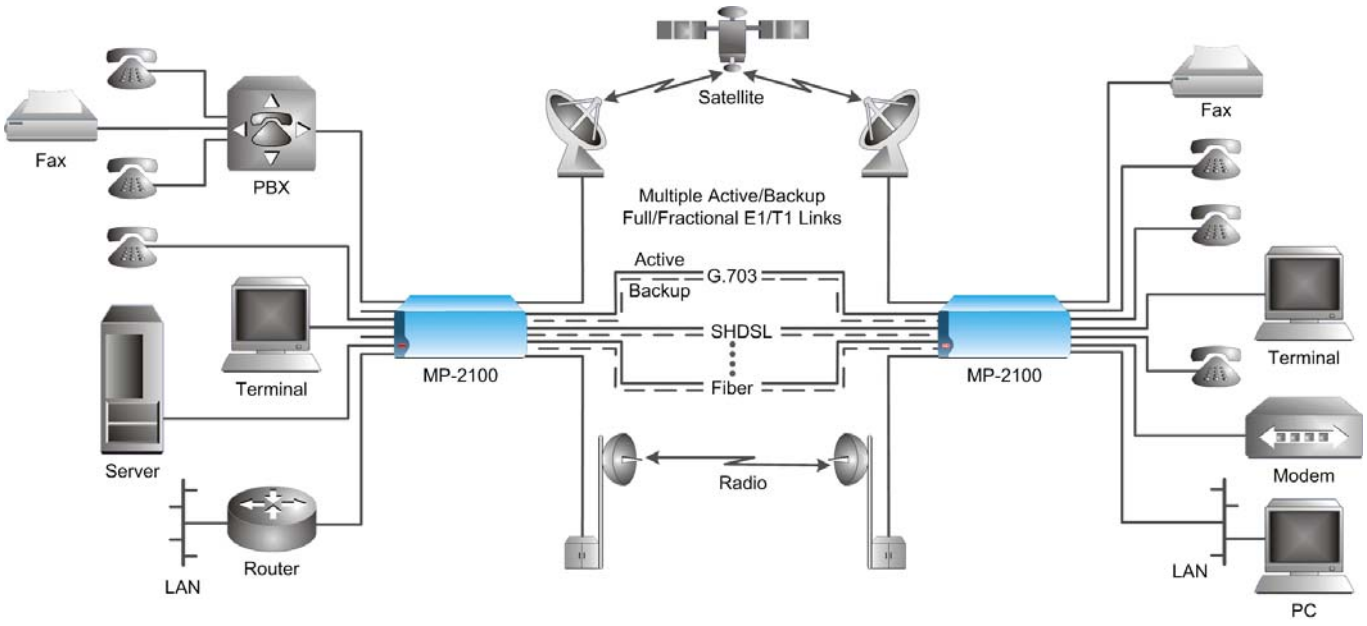

Figure 2. Point-to-Point Topology

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

SYSTEM REDUNDANCY

Megaplex's modular, distributed architecture enables redundancy at different levels of the network and provides a system with no single point of failure.

System hardware redundancy is attained by an optional redundant power supply and common logic module (MP-2100 chassis only).

1:1 protection switching on the main link modules protects against network or cable failure. Additional main link modules can be installed and interconnected via Y-cables to provide protection against main link hardware failures.

Bundle redundancy provides backup for IP transmissions (functions similarly to E1/T1 link "parallel TX" redundancy).

In case of link failure, Megaplex activates alternate routing. This is achieved by storing multiple configuration databases and flipping (switching) between them in case of any network event.

The Megaplex system also supports two RAD proprietary types of ring redundancy, provided by its main link modules:

- **E1/T1 Ring**: Similar to SDH, the E1/T1 ring features ring redundancy in a closed dual-ring topology: one path propagates data "clockwise" and the other "counterclockwise". Each Megaplex can receive data through two different paths, and selects only the signal received through one of the paths for processing. In case of failure, the failed segment is bypassed by using the second path, providing self-healing in less than five seconds.
- **RFER**: The TDMoIP link module employs RAD's Resilient Fast Ethernet Ring (RFER) technology for creating self-healing Ethernet ring networks. RFER reroutes traffic within 50 msec of a ring segment failure, providing fast redundancy performance similar to SDH networks. Survivability is further enhanced by RFER's scalable support for multiple rings. RFER can carry up to 40 E1 or 50 T1 links with no limit on the number of nodes.

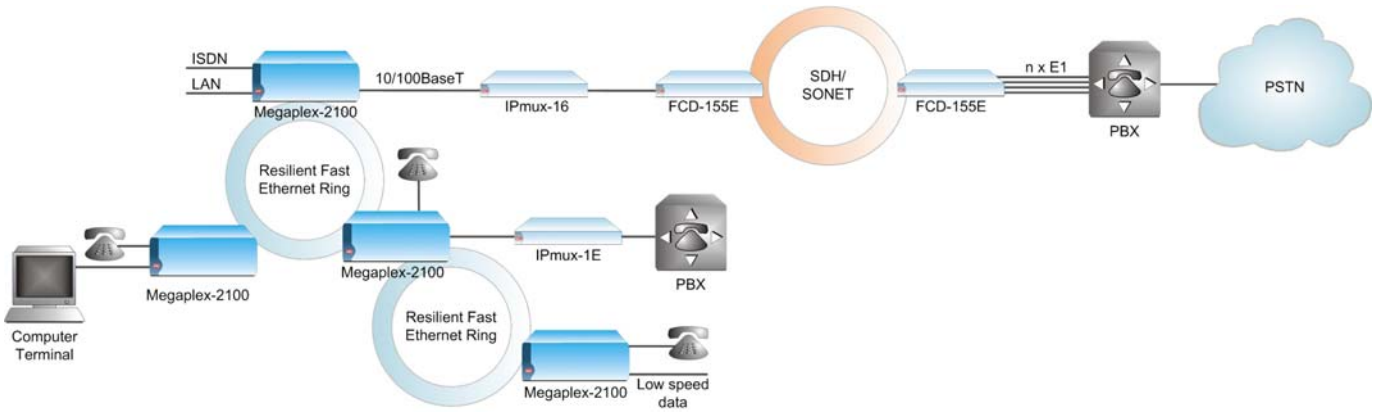

Figure 3. Resilient Fast Ethernet Ring (RFER) Provides 50-msec Self-Healing IP Networks

Megaplex ML-IP with RAD's RFER technology, enables corporations, campuses, utilities, and transportation companies to create highly reliable IP networks with 50-msec link protection switching, using dark fiber or copper wire in a ring topology.

Multiple fractional or full E1/T1 links provide load sharing between the links, as well as automatic backup, with prioritization of voice and data services. Link redundancy is supported, providing 1:1 protective switching between any two links (within 50 msec between dual links of same ML module).

R2 SIGNALING

Main link modules support R2 signaling with transparent MFC/DECADIC, so that Megaplex can be placed between an older R2-PBX and a digital (E1-CAS) PBX. The MFC/DECADIC signaling is not terminated by Megaplex, but passed on to the PBX. In addition to the ITU-T standard R2 protocol, several predefined national PTT protocols, as well as user-defined variations, are also supported. Since the R2 signaling support is provided by the main link modules, all voice modules support R2.

COMMON LOGIC MODULES

The Common Logic (CL) module controls the Megaplex operation and is the interface for its configuration and management. It stores the application software and up to 10 configuration databases (depending on complexity) for multiple independent configurations. The CL also stores all system event information. Flash EPROM for software download is provided.

Two dedicated ports are provided on the CL module for management purposes. One port has a 9-pin DCE interface for direct connection of a management terminal or PC. The other is ordered with one of the following interface options:

- Ethernet 10BaseT (UTP)
- Ethernet 10Base2 (BNC)
- V.24/RS-232 DTE.

An input voltage detector, intended for sensing external events (coming from temperature alarm sensors etc), generates internal alarms, which are sent to the NMS station and reported to the user.

Two outbound relays can be triggered by any user-selected major or minor alarm, for routing of Megaplex alarms to outside indicators, such as buzzers and bells.

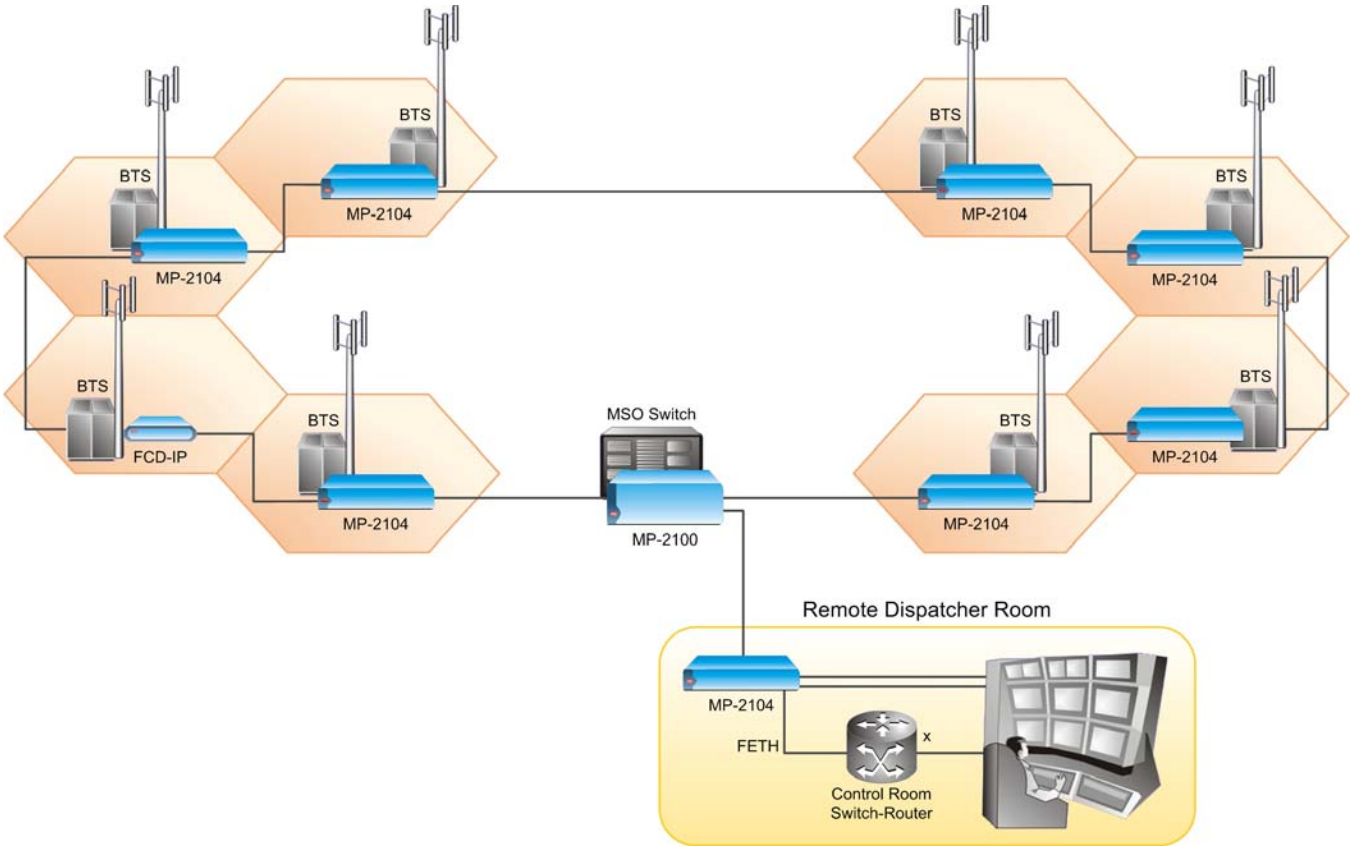

Figure 4. Megaplex-2100 in a Tetra Ring

RAD's DXC (Digital Cross-connect) DACS complements Megaplex's own cross-connect capabilities, to provide a comprehensive network solution. DXC flexibly routes timeslots between different Megaplex and other E1/T1 sites. The equipment in all the sites is easily controlled and monitored by an integrated network management system.

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

MAIN LINK MODULES

E1/T1 Main Links

Megaplex TDM E1/T1 main link (ML) modules allow direct connection to a wide range of services, eliminating the need for external equipment. Multiple active links can operate in each chassis. Additional modules can also be installed for link redundancy.

The various ML modules can be configured for a broad range of applications: from single link non-redundant operation, to multiple full or fractional E1/T1 link applications requiring drop & insert and broadcast.

E1/T1 link modules with built-in fiber optic modems (range of up to 100 km/62 miles) or E1 link modules with xDSL modems (range of up to 10.6 km/6.6 miles) are available. These special links reduce the cost of local loop solutions by lowering equipment deployment and maintenance costs.

The dual-trunk main link modules increase efficiency and provide 1:1 protective switching between the two links within 50 msec.

The high-density 8-port E1, T1 and SHDSL modules increase the Megaplex TDM capacity of up to 16 Mbps.

TDMoIP Main Link

The unique ML-IP main link module converts the TDM bit stream delivered over the internal Megaplex back plane into IP packets, for transmission over IP networks. ML-IP features three Ethernet ports, with 10/100BaseT or 100BaseF interfaces. The module conforms to IEEE 802.3 and 802.3u and provides reliable, high quality of service (QoS), including VLAN tagging and priority labeling (ToS).

ML-IP places TDM timeslots into IP bundles with VLAN tagging required by point-to-multipoint applications. Duplicate bundles can be transmitted simultaneously on different paths for redundancy.

I/O MODULES

Up to 11 I/O modules of any kind can be placed in a MP-2100 chassis (up to 4 I/O modules in an MP-2104). If more I/O modules are required, Megaplex units can be cascaded.

Tables 1 through 7 list the I/O modules available for MP-2100/2104(see enclosed data sheets for detailed specifications).

High-Speed Data Modules

High speed data interface modules provide leased line data services, operating at multiples of 56 or 64 kbps, up to 2.048 Mbps, connecting routers, bridges, front-end processors, etc.

E1 I/O modules with built-in xDSL modems enable cost-effective long-range deployment of high speed services over 2- or 4-wire copper lines. Range is up to 4.0 km.

ISDN BRI ("U" or "S") modules extend ISDN services over non-ISDN facilities, supporting data, voice and Ethernet applications. The "U" interface modules employ IDSL technology for "last mile" applications.

An IEEE C37.94-compliant n x 64 fiber data module is provided for transporting teleprotection data.

Low Speed Data Modules

Sub-rate multiplexer modules for low speed (2.4 to 19.2 kbps) synchronous and asynchronous data channels employ standard X.50, X.58 or SDM (DS0-B) multiplexing techniques.

Low-speed modules with sync/async V.24/RS-232 channels, with independent channel rates of up to 64 kbps are available. End-to-end control signals are supported.

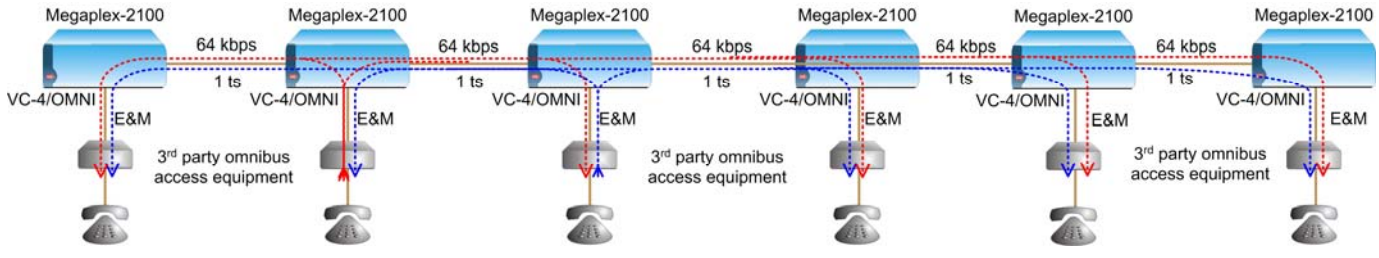

Figure 5. Typical Point-to-Multipoint (Omnibus) Connection

Voice/Fax and Voice Compression Modules

Voice/fax modules transmit voice at toll quality using standard PCM (ITU-T G.711), as well as ADPCM (G.726), MPMLQ (G.723.1), or P-CELP 4.8 kbps compression. Standard analog interfaces are available for direct connection to POTS, public payphones, LB (local battery) field phones, PBX extensions or 2/4-wire E&M trunks. Alternatively, voice compression modules with E1 and T1 digital PBX interfaces are available. Loop, wink and ground-start signaling are also supported.

Digital voice compression modules connect PBX trunks with greater bandwidth utilization (compression ratio of up to 10:1). The modules employ a choice of high quality voice compression methods, including G.723.1 at 6.4 kbps per channel, or G.729A at 8 kbps. The modules perform Group III fax and modem relay, at user-selectable standard rates of up to 14.4 kbps, featuring transparent timeslot transfer, voice activity detection, silence suppression, and comfort noise generation. Module versions are offered with single/dual T1 (up to 24/48 channels), or single/dual E1 (up to 30/60 channels) interfaces.

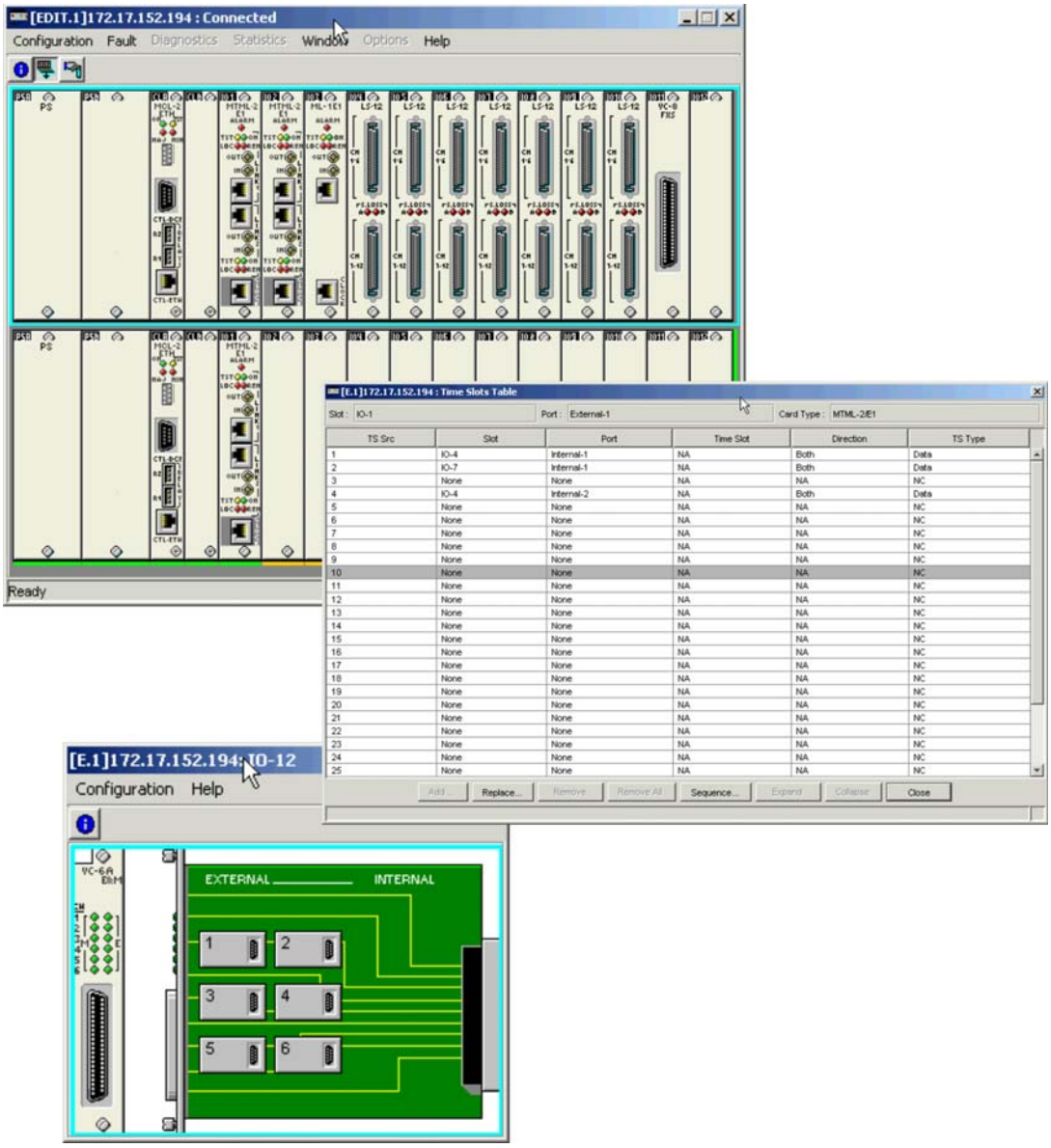

Figure 6. GUI-based RADview Element Management System for Megaplex-2100/2104

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

A special "omnibus" module provides four toll-quality voice channels for applications (see *Figure 4*) where a master site needs to communicate with multiple remote stations simultaneously (such as to broadcast an important message).

LAN Modules

Ethernet router/bridge modules enable LAN to LAN extension over E1/T1 services, offering various L2 capabilities.

MANAGEMENT

Megaplex can be fully configured locally, using an ASCII terminal. It can also be managed remotely via Telnet, SNMP element management applications, or an end-to-end path management application.

Megaplex communicates with the management station by means of its SNMP agent (via a SLIP/PPP or TCP/IP connection). Network management applications provide centralized control of all network nodes, including interface configuration, connection setup, alarms and monitoring.

The user-friendly GUI-based RADview network management applications facilitate management of both individual units and entire networks.

The RADview-SC/TDM application enables end-to-end path management of MAP devices, providing physical and logical graphic views of all network links and service paths of the system.

The management connection can be established by the following methods:

- Out-of-band, using the Ethernet management port. This simple and efficient method takes advantage of IP bandwidth on demand, while saving link bandwidth for user traffic
- Inband over a dedicated timeslot, supporting standard PPP, FR encapsulation, and RIP2 protocols
- Over a modem link or over a FRAD, via the control port of the remote unit.

DIAGNOSTICS

Megaplex incorporates test features for rapid fault detection and easy maintenance. Upon power-up, all system and modules perform self-test. Any problems are reported to the management system. Loopbacks, BERTs and tone injections can be run on individual channels or main links, towards both the network and user side.

The signaling monitoring capability useful for voice application diagnostics enables Megaplex to display a "snapshot" of the current ABCD signaling bit states of any selected timeslot that carries voice traffic.

All alarms, including state and frequency of occurrence, are stored in the CL alarm status buffer. The last 256 alarms are kept in a separate alarm history buffer.

Alarm status can be automatically read online by the management system from any node. User-set alarm masking, filtering and inversion, as well as 5-level prioritization are also performed.

NEBS-COMPLIANT EQUIPMENT

Megaplex-2100 is also offered in a special NEBS-compliant version which meets the Type-3 and Type-4 requirements, and permits reliable operation in harsher environmental conditions.

Contact your authorized RAD partner for more information on NEBS-compliant equipment.

Figure 7. NEBS-Compliant Megaplex-2100 Chassis

Figure 8. Megaplex-2014 Rear View

Figure 9. Megaplex-2100 Rear View

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

I/O Modules

The following tables present all the main link, I/O and system modules, supported by the Megaplex-2104 (2U-high) and Megaplex-2100 (4U-high) systems with the Version 12.xx CL.2 common logic module. For full module details and ordering information, see individual module data sheets. The following types of modules are available:

- Main Link Modules
- Low Speed Data I/O Modules
- High Speed Data I/O Modules
- Internetworking I/O Modules
- Voice/Fax I/O Modules
- System Modules
- Ringers.

Table 1. Main Link Modules

ML-8E1	8-port copper E1 interface modules. Feature full cross-connect, bypass and diagnostics. Equipped with integral user-enabled LTU and station clock interface.
ML-1E1 ML-2E1	Single/dual copper E1 interface modules. Feature full cross-connect, bypass, R2 CAS, diagnostics and statistics. Equipped with integral user-enabled LTU and station clock interface. Enhanced diagnostics with BERTs (dual-port modules only), loopbacks, and tone injection per timeslot. Can display signaling bit state of any timeslot carrying voice. Support self-healing ring redundancy topology.
MLF-1E1 MLF-2E1	Single/dual E1 interface modules with built-in fiber optic modems. Available with various fiber optic interface/connector combinations. Station clock interface provided (on single link module only). Support same features as described for ML-1E1/ML-2E1 above, including ring topology.
MSL-8	SHDSL technology 8-E1 2-wire interface module extending the range of Megaplex to 10.6 km/3.5 miles over existing copper lines. Supports same features as described for M8E1 above.
ML-8T1	8-port copper T1 interface modules. Feature full cross-connect, bypass (including multiframe synchronization) and diagnostics. Equipped with integral user-enabled CSU and station clock interface.
ML-1T1 ML-2T1	Single/dual copper T1 interface modules. Feature full cross-connect, bypass (including multiframe synchronization), diagnostics and statistics. Equipped with integral user-enabled CSU and station clock interface. Enhanced diagnostics with BERTs (dual-port modules only), loopbacks, and tone injection per timeslot. Can display the signaling bit state of any timeslot carrying voice. Support self-healing ring redundancy topology.
MLF-1T1 MLF-2T1	Single/dual T1 interface modules with built-in fiber optic modems. Available with various fiber optic interface/connector combinations. Station clock interface provided (on single link module only). Support same features as described for ML-1T1/ML-2T1 above, including ring topology.
ML-IP TDMoIP Driven®	Provides standard 10/100 Mbps Ethernet connectivity for Megaplex, complying with all relevant IEEE Ethernet LAN standards. Uses RAD's TDMoIP® technology to convert the Megaplex TDM bit stream into IP packets for transmission over IP networks. Features two Ethernet uplinks with choice of 10/100BaseT (UTP) or 100BaseF (fiber) interface and additional 10/100BaseT Ethernet user port. Employs Resilient Fast Ethernet Ring (RFER) technology to build Fast Ethernet networks with 50-msec self-healing link protection.
ML-20N/1 ML-20N/2	One or two n x 64 kbps synchronous main links for direct connection to high-speed data service networks running at rates between 128 and 2048 kbps. Can provide link backup for E1 main links over high-speed digital data lines.

Table 2. Low Speed Data I/O Modules

LS-6N LS-12	6 or 12 sync/async V.24/RS-232 data channels, with independent data rates from 2.4 to 64 kbps. Feature end-to-end control signal and BERT. LS-12 can bundle channels into two groups, each of which can be directed to a different main link, while LS-6N can bundle channels into one group only.
HS-RN*	Four low-speed sync/async data channels with data rates from 0.6 to 64 kbps (sync) or 38.4 kbps (async), including HDLC-based end-to-end control signaling.
HS-DP/3 HS-DP/6	3 or 6 OCU-DP (Office Channel Unit - Data Port) channels, operating at data rates of 2.4, 4.8, 9.6 and 56 kbps per channel. The OCU-DP interface directly connects to products with a built-in CSU/DSU. It is also used with standalone CSU/DSU products in DDS networks. The modules are compatible with AT&T PUB 62310 (Standard DDS), BELLCORE TA-TSY-000077, and TR-TSY-000458 standards.

Table 3. High Speed Data I/O Modules

HS-2	Two high speed synchronous data channels with V.35 or V.11/RS-422 (for V.36/RS-449, RS-530, X.21) interface, at data rates of n x 56 or n x 64 kbps, up to 1984 kbps.
HS-QN	Four high speed synchronous data channels with V.35 or V.11/RS-422 (for V.36/RS-449, RS-530, X.21) interface, at data rates of n x 56 or n x 64 kbps, up to 1984 kbps.
HS-703	Four 64-kbps G.703 codirectional data channels.
HS-S	Four ISDN "S"-interface (2B+D) channels, operating as an ISDN channel extension, and providing ISDN leased line services over "S" interface, including power feeding.
HS-U*	Four ISDN "U"-interface (2B+D) channels; for "last mile" solutions at ranges of up to 5.5 km/3.4 miles, and for ISDN channel extension including power feeding for remote NT-1. Automatic configuration download and full-duplex management, including remotely initiated BERTs and loopbacks, for ASMi-31 modems.
HS-U-6* HS-U-12*	Similar to the HS-U module above, but with 6 or 12 ISDN "U"-interface (2B+D) channels. D channel signaling information can be compressed to reduce bandwidth.
HSF-1* HSF-2*	One- or two-port 850 nm multimode fiber interface, with a capacity of up to 10 × 64-kbps per port, for teleprotection equipment, complying with IEEE C37.94 requirements
HS-6N* HS-12N*	Similar to HS-Q/N, but with 6 or 12 high speed synchronous data channels, operating at data rates of n x 56 or n x 64 kbps, up to 1984 kbps. Feature enhanced clock mode and BERT. Any channel can be directed to any main link module.

Table 4. Voice/Fax I/O Modules

VC-6	Six analog voice channels using 64-kbps PCM encoding. Features EIA RS-464 loop-start signaling. E&M, FXS, FXO interface options available.
VC-6A	Six analog voice channels using 64-kbps PCM or 32-kbps ADPCM compression. Suitable for various loop-start applications, PSTN applications, and public payphone applications. Features loop-start as well as ground-start signaling, reverse polarity for wink-start, and pulse-metering. E&M, FXS, FXO interface options available.
VC-6/LB	Six analog voice channels for connecting between 2-wire local battery-powered (LB) military-type field telephones at different locations, point-to-point. A four-channel version is available for LB telephone connection via PBX extension lines.
VC-4* VC-8* VC-16*	4, 8 or 16 analog voice channels using 64-kbps PCM encoding, with E&M, FXS or FXO interface options. Suitable for various loop-start applications, PSTN applications, and public payphone applications (requiring wink-start signaling and pulse-metering). With VC-16, a single Megaplex-2100 unit can transmit up to 120 PCM voice channels (or up to 60 channels with Megaplex-2104).
VC-4A* VC-8A*	4- or 8- analog voice channels using PCM (64-kbps) encoding or ADPCM (24 or 32-kbps) encoding, with E&M, FXS or FXO interface options. Suitable for various loop-start applications, PSTN applications, and public payphone applications (requiring wink-start signaling and pulse-metering).
VC-16A*	16 analog voice channels using 64-kbps PCM or 32-kbps ADPCM compression. Transmits voice without any channel signaling, thus it is primarily intended for basic point-to-point applications which do not require signaling, or use only inband signaling (such as DTMF). Enables a single Megaplex-2100 unit to transmit up to 160 ADPCM voice channels (or up to 64 channels with Megaplex-2104).
VC-4/OMNI*	A special "omnibus" E&M interface module providing four toll-quality voice channels for applications where a master site needs to communicate with multiple remote stations simultaneously (such as to broadcast an important message).
VFS-24/T1* VFS-48/T1* VFS-30/E1* VFS-60/E1*	In addition to all features of the VF modules above, the VFS modules also act as voice and FAX relay compression servers, performing compression of analog voice channels within the same module.

Table 5. Internetworking I/O Modules

HS-ETH	1/2/4-channel Ethernet bridge/router module transmitting at data rates of n x 56/64 kbps (up to 1.984 Mbps payload) per channel. Suitable for LAN to LAN extension applications. Provides up to four high-performance, remote, self-learning 10BaseT Ethernet bridge or IP router channels. Each channel terminates in a separate RJ-45 connector. Supports VLANs. 10/100BaseT Fast Ethernet bridge module also available.
HS-ETH/SW*	4-channel 10/100BaseT Ethernet I/O module with a built in Layer-2 Ethernet switch, featuring VLAN support and double-tagging. Employs static routing, IP subnet switching over PPP, STP and RSTP protocols. WAN side transfers data at rates of 64 to 1536 kbps for T1 links, and 64 to 1920 kbps for E1 links. Total WAN capacity is up to 4096 kbps.

* These I/O modules can utilize the 4 buses of MP-2100/2104(up to 124 timeslots) using any main link; other I/O modules can utilize up to 62 timeslots. HS-6N and HS-12N in conjunction with the ML-8E1/T1 modules can utilize the full TDM capacity of MP-2100/2104(up to 248 timeslots).

Table 6. System Modules

CL.2 (Ver.12.xx)	CL.2 common logic module for MP-2100/MP-2104. Available with choice of Ethernet BNC, Ethernet UTP or V.24 port for management. Can be ordered separately to provide redundancy for the CL module supplied with chassis, or for upgrading older systems. ***Note:*** Contact your local distributor for more information about system upgrades.
ACM	Alarm and diagnostics module with four outbound relays for reporting internal alarms to outside indicators such as bells, buzzers, etc. Eight inbound sensors enable external alarms or conditions to be reported to the Megaplex system.
PS	Power supply module for MP-2100 chassis. Supply 115 VAC, 230 VAC, -24 VDC or -48 VDC input. Can be ordered separately to provide redundancy for PS module supplied with chassis.

Table 7. Ringers

Ringer-2100R	DC power supply module providing DC feed and ring voltages required by certain voice/fax modules or phantom feeding for ISDN modules installed in MP-2100 chassis. (MP-2104 chassis can be ordered with a built-in ringer.) Supports up to 32 active voice channels.
Ringer-2000	DC power supply standalone unit providing DC feed and ring voltages required by certain voice/fax modules or phantom feeding for ISDN modules used by Megaplex. Can be mounted in a 19″ rack. Supports up to 60 active voice channels.
Ringer-2200N	Enhanced DC power supply standalone unit providing DC feed and ring voltages required by certain voice/fax modules or phantom feeding for ISDN modules used by Megaplex. Can be mounted in a 19″ rack. Supports up to 120 active voice channels.

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

Megaplex-2100/2104

Modular Integrated Access Multiplexers

Specifications

Compliance

E1: ITU-T Rec. G.704 and G.706, G.736
T1: AT&T TR-62411, ANSI T1.403-1989
ITU-T Rec. G.703, G.704, and G.733
SHDSL: ITU-T Rec. G.991.2
Ethernet : IEEE 802.3, 802.1p, 802.1Q, 802.3U

CL.2 MODULE

Serial Ports

Interface:
CONTROL DCE: RS-232 sync DCE port
CONTROL DTE: RS-232 async DTE port (ordering option)
Data Rate: 0.3, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, and 57.6 kbps
Data Word Format
1 start bit
7 or 8 data bits
Parity: none/odd/even
1 or 2 stop bits
Connectors:
CONTROL DCE: 9-pin D-type female
CONTROL DTE: 25-pin D-type male

Ethernet Port

Type: 10BaseT or 10Base2
Connectors
10BaseT: 8-pin RJ-45
10Base2: 2 BNC

Indicators

ON: Lights steadily on the master (active) module; flashes when this module is in standby
ALARM MAJ: Flashes when a major or critical alarm has been detected
ALARM MIN: Lights steadily when any alarm has been detected
TST: Lights when a test (or test loopback) is being performed in the local Megaplex system

MAIN LINK AND I/O MODULES

See respective data sheets

DIAGNOSTICS

Tests

Local main link loopback
Local main link loop towards remote unit
Local and remote BERT on channels, ports, bundles, individual timeslots and individual bits in a timeslot
Local and remote loopbacks on channels, ports, and timeslots
Forward and remote tone injection in individual timeslots (voice channels only)
IP connectivity check (ping)

Alarms

Time and date stamped
Last 256 alarms stored in RAM on CL module, readable by management system or terminal
Current alarms status

Statistics

AT&T statistics when using ESF framing for T1 trunks, or CRC-4 multiframing for E1 trunks
Performance statistics for bundles and LAN ports

PHYSICAL

MP-2100 (4U-high)

2 power supply module slots
2 CL module slots
12 slots for I/O and ML modules

Megaplex Chassis Comparison

Feature	MP-2104 (Ver. 12.9) 	MP-2100 (Ver. 12.9) 	MP-4100 (Ver. 2.2) 
Functionality	Modular multiservice access multiplexer	Modular multiservice access multiplexer	Modular digital access cross-connect, Ethernet Aggregator and STM-1/OC-3 ADM
Dimensions [cm]	9*44*33	18*44*33	18*44*33
Modularity	Yes	Yes	Yes
I/O slots	5	12	10
Redundancy	Yes	Yes	Yes
Services	LS, HS, Voice, ETH, TDMoIP	LS, HS, Voice, ETH, TDMoIP	LS, HS, Voice, E1/T1, xDSL, STM-1/OC-3, GbE, Fast Ethernet, fiber multiplexing, pseudowire
Capacity	4 x E1/5 x T1	4 x E1/5 x T1	STM-1/OC-3 + 1GbE
Management Interface	RAD proprietary CLI	RAD proprietary CLI	Menu-driven

Height: 18 cm (7 in) (4U)
Width: 44 cm (17 in)
Depth: 33 cm (13 in)
Weight: less than 17 kg (37 lb)

MP-2104 (2U-high)
Built-in power supply (optional built-in voice ringer or ISDN power feeder is available)
1 CL module slot
5 slots for I/O and ML modules
Height: 9 cm (3.5 in) (2U)
Width: 44 cm (17 in)
Depth: 33 cm (13 in)
Weight: less than 6 kg (13 lb)
(All weights are for fully loaded units)

POWER SUPPLIES

Power Supply Input
110/115 VAC (85 to 150 VAC), 50/60Hz
220/230 VAC (150 to 264 VAC), 50/60Hz
-48 VDC (-36 to -57 VDC)
-24 VDC (-18 to -40 VDC)
24 VDC with floating ground (18 to 40 VDC)

MP-2100 (without Ringer)
Maximum Output Power:
- AC: 250W
- DC: 250W

Maximum Input Power:
- AC: 250W
- DC: 350W

***Note**: Maximum power consumption for a system with redundant power supplies is 250W.*

MP-2104
Maximum Output Power
- AC: 120W
- DC: 120W
- AC w/Ringer: 300W
- DC w/Ringer: 290W

Maximum Input Power:
- AC: 160W
- DC: 160W
- AC w/Ringer: 300W
- DC w/Ringer: 350W

GENERAL

Front Panel Indicators
ON LINE: Lights steadily when the corresponding PS module is on and the CL module is active
TEST: Indicates that a test initiated by the local CL module is being performed
ALARM: Lights steadily when an event or minor fault has been detected in the local MP-2100 system; flashes when a major and/or critical alarm has been detected

Configuration
- By ASCII Terminal or PC, connected to terminal interface or via Telnet
- Using RADview SNMP management system

Environment
Operating temperature: -10°C to 55°C (14°F to 131°F)
Storage temperature: -20°C to +70°C (-4°F to +158°F)
Humidity: up to 95%, non-condensing
***Note:** Actual operating temperature range is determined by the specific modules installed in the chassis, and might require special ordering options. If you need -20°C to 55°C (-4°F to 131°F) operating temperature support, contact Technical Services Dept.*

http://www.CBNETWORKS.fr - E-Mail: sales@cbnetworks.fr - Tel: 33 (0)1 77 55 03 00

Data Sheet

Megaplex-2100/2104

Modular Integrated Access Multiplexers

Ordering

BASIC UNITS

Basic unit includes a chassis, single common logic module, single power supply and power supply cables. Main link and I/O modules are ordered separately (see separate module data sheets for details and ordering information).

STANDARD CONFIGURATIONS

MP-2100/115/2UTP

MP-2100/115/R/2UTP

MP-2100/230/2UTP

MP-2100/230/R/2UTP

MP-2100/48/2UTP

MP-2100/48/R/2UTP

MP-2100M-CL.2/UTP

SPECIAL CONFIGURATIONS

MP-2100/~/&/2#
4U-high chassis with 12 module slots and CL.2 common logic module

MP-2104/~/+/2#
2U-high chassis with 5 module slots and CL.2 common logic module

SYSTEM MODULES

System modules can be ordered separately for redundancy or special requirements.

MP-2100M-PS/~
Power Supply Module for MP-2100

MP-2100M-CL.2/#
Common Logic Module

Legend

~ Power supply input voltage:
- **115** 115 VAC
- **230** 230 VAC
- **24** -24 VDC
- **24/FLG** 24 VDC with floating ground
- **48** -48 VDC

& Redundancy (Default=1 x PS, 1 x CL)
- **R** Full (2 x PS, 2 x CL)

\+ Built-in ringer (Default=without ringer)
- **RI** Built-in ringer

\# CL second management port (in addition to standard 9-pin DCE port)
- **UTP** Ethernet 10BaseT (UTP)
- **BNC** Ethernet 10Base2 (BNC)
- **V24** V.24/RS-232 DTE

SUPPLIED ACCESSORIES

AC power cord (when AC power supply is ordered)

DC adapter plug (when DC power supply is ordered)

RM-MP-MX-23/19
Hardware kit for mounting one MP-2100 unit into both 19-inch and ETSI 23-inch racks

RM-MP-2104-MN
Hardware kit for mounting one MP-2104 unit into a 19-inch rack

OPTIONAL ACCESSORIES

CBL-SP-9/SH
Standard DB-9 to DB-9 control port cable

764-100-02/12.9 Specifications are subject to change without prior notice. © 1988–2012 RAD Data Communications Ltd. The RAD name, logo, logotype, and the terms EtherAccess, TDMoIP and TDMoIP Driven, and the product names Optimux and IPmux, are registered trademarks of RAD Data Communications Ltd. All other trademarks are the property of their respective holders.

International Headquarters
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

CB NETWORKS
http://www.cbnetworks.fr

12 avenue des prés
78059 St Quentin en Yvelines
Tel: 33 (0)1 77 55 03 00
Fax: 33 (0)1 30 44 11 95
E-mail: sales@cbnetworks.fr

www.rad.com

Order this publication by Catalog No. 801318

RAD data communications
The Access Company