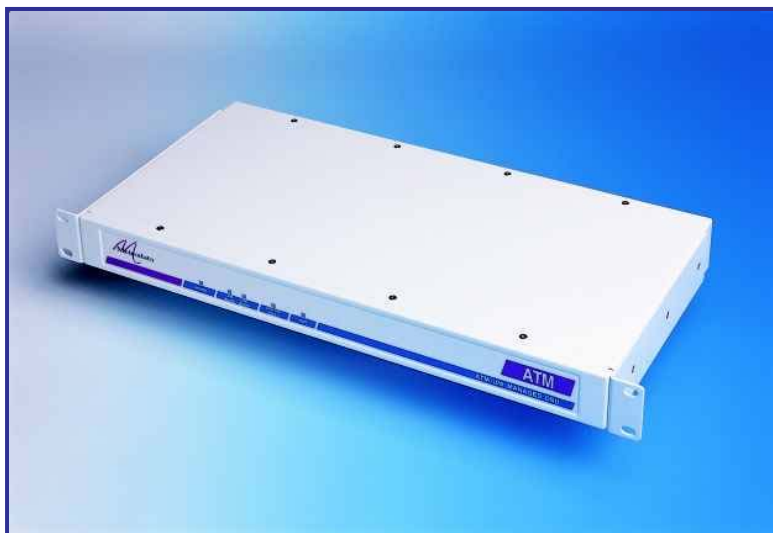


- High Performance ATM Networking
- Conversion between WAN & local ATM or CE equipment
- European & North American interface standards supported
- Remote configuration and testing of units across the network
- User friendly set-up menus - easy to install & configure
- Comprehensive performance monitoring & diagnostics
- Integral SNMP management
- All units 19 inch rack-mountable, 1U high
- Optional integral -48 volt DC supply



Introduction to ATM DSUs

Metrodata ATM DSUs consist of a 2-port ATM switch and cell matrix with buffer storage for a number of ATM cells. The cell matrix is accessed from two interfaces which connect to a network on one side and to a User equipment on the customer side. The DSU is configured for service via a menu system which can be displayed on a terminal or PC workstation either locally or via a LAN.

A range of interfaces for both fibre and copper media are available. Separate models support native ATM traffic streams or Circuit emulation traffic for carrying video or voice bundles.

Important features of all Metrodata DSUs are built in diagnostics for identifying device or network faults and Performance monitoring statistics which are stored for a 24 hour period.

About Metrodata

Founded in 1989 and based near London's Heathrow airport, Metrodata is a leading designer and manufacturer of datacommunications hardware for Fixed line, Satellite, Enterprise and Carrier networks. Specialising in interoperability and interconnectivity, Metrodata offers a range of Standard, Niche and System Integrated type products. These include Media converters, Interface converters, Fibre converters, Ethernet extenders and ATM switching and Circuit emulation products. Other specialist products manage high data rates and clock sensitive applications to ensure higher network performance. Metrodata provides COTS products to the commercial, government and defence sectors, as well as developing turnkey products to specific customer requirements. For more information and data on Metrodata products, visit our web site at www.metrodata.co.uk



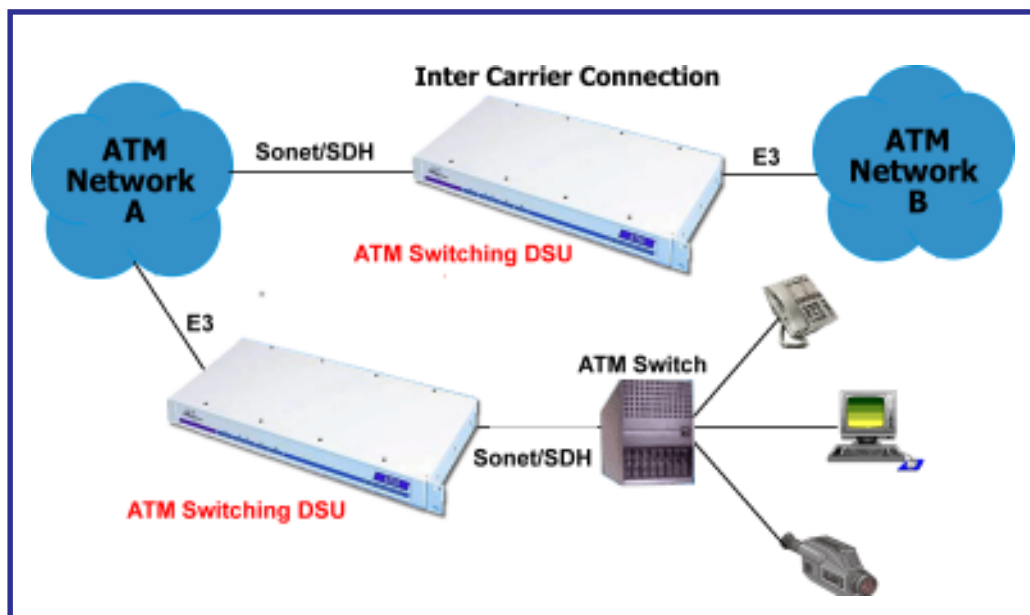
ATM Switching

Application

Most ATM switches and network devices are designed primarily for the American market and are equipped with SONET or DS3 interfaces. In Europe, with its E1, E2, E3, E4 and SDH services, ATM equipment therefore must be connected to unfamiliar and unsupported interfaces.

The Metrodata Switching DSU solves this problem by enabling both speed and interface conversion at an economic price. The ATM switching DSU is a 2-port ATM switch that can be configured to a wide choice of interface standards to provide the link between the Customer premises and the Carrier's WAN.

The Switching DSU can also be used to interconnect ATM services between two Carrier WANs with different speed and interface characteristics.



Product Features

The DSU has two sets of ATM interfaces. Cell traffic received at either of these interfaces is analysed for errors and idle cells are deleted. Good traffic is then forwarded to the switch matrix in the DSU. If bandwidth is available traffic passes through the switch matrix to the other interface. If bandwidth is not immediately available, traffic is held in buffer storage within the DSU. This storage permits the DSU to operate the interfaces efficiently at different speeds. If the buffer store becomes full, then cells are discarded until space becomes available. If there is no traffic queued, the DSU transmits idle cells in lieu of traffic.

The DSU stores performance data for the preceding 24 hours of operation, thus providing a substantial database for assessing the performance of the networks, lines and connected equipment. Front panel lights give indication of major and minor alarms. The DSU provides a test mode to carry out local Loopback tests which segment the link and assist in locating faults. Line performance statistics gathered by the DSU can then be used to pinpoint data loss.

A LAN port on the DSU is provided to permit remote management of the DSU and SNMP can be used to manage the unit as a part of a wider network.



datasheet ATM Switching



ATM Network Termination

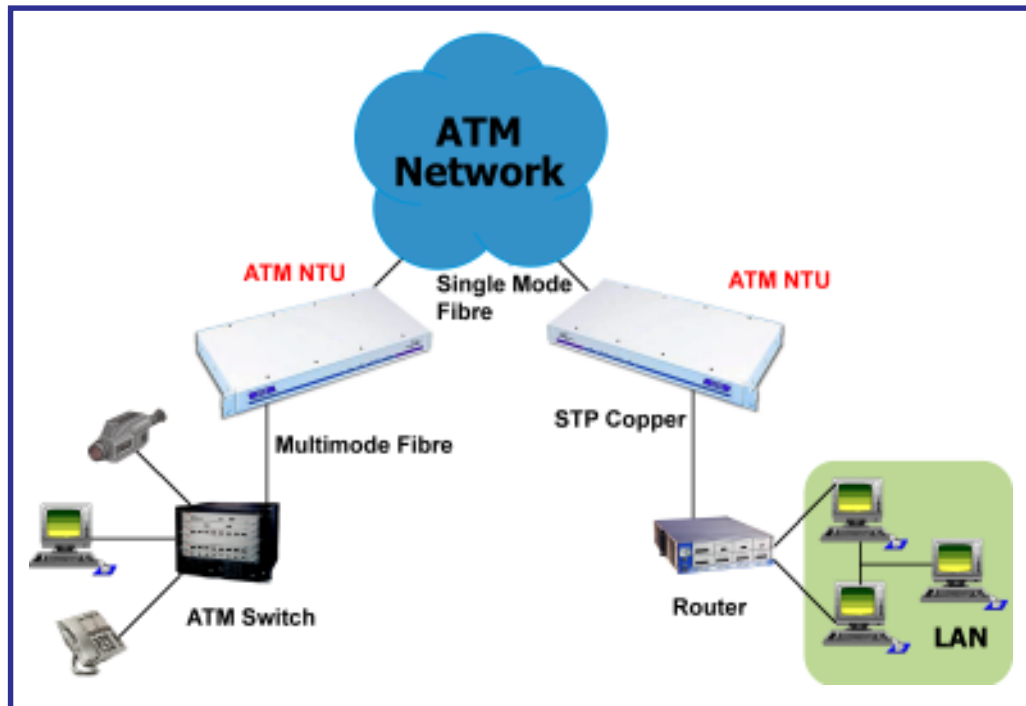


Application

The Metrodata ATM Network Termination DSU (NTU) helps to optimise the cost of network cabling between the new public optical networks being installed by Carriers and existing legacy wiring on Customer premises. This legacy wiring often consists of multi-mode fibre and /or twisted pair copper on an ATM local area network. The Metrodata NTU converts the Carrier's single-mode optical fibre interface to the legacy wiring interface. This can save substantial costs by eliminating the need to rewire the Customer premises.

Another scenario may involve the need to extend the range of a multi-mode optical ATM local area network to a wider area, perhaps up to 50 kilometres. The Metrodata NTU provides conversion from the local multi-mode fibre to a single mode fibre which is used for the wide area connection.

The Metrodata NTU also provides management and line monitoring functions as well as diagnostic loop tests. These features provide an effective quality control facility for both



datasheet ATM Network Termination

The interface options provided for the ATM NTU are given in the table

Customer Interfaces	Multi-mode SC connector	RJ45 Electrical connector
Network Interfaces		
Short haul Single-mode SC connector	yes	yes
Long haul Single-mode SC connector	yes	yes
BNC Electrical coax connector pair	yes	yes



ATM Circuit Emulation

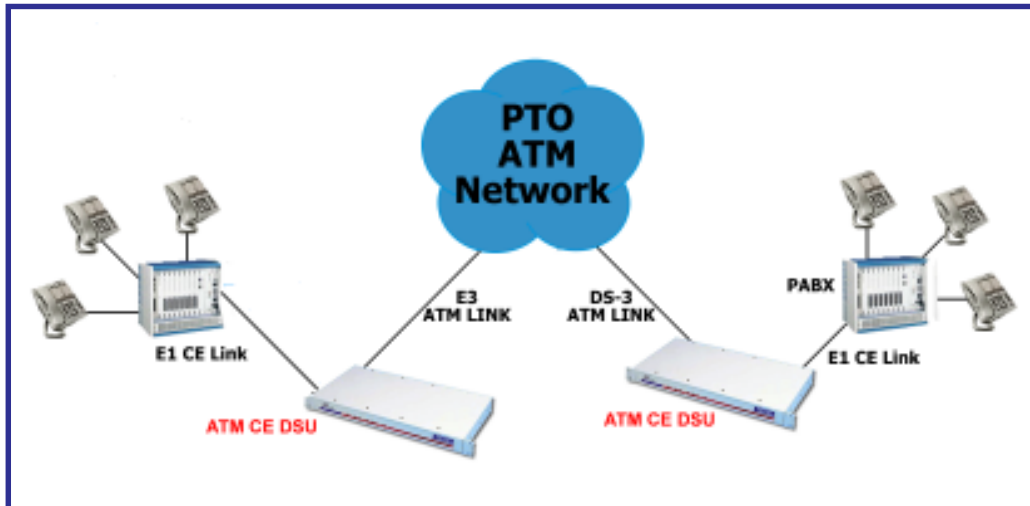
Application

The drive towards converged network infrastructure means that there is often a requirement to transport legacy traffic over a converged ATM network. Two options exist: either to replace or upgrade the legacy equipment to support native ATM interfaces; or to use an ATM CE DSU to provide a conversion between non-ATM and ATM traffic. The Metrodata CE DSU offers a wide range of legacy interfaces including E1, E2, E3 and DS3 and supports all common interfaces for connection to the ATM network equipment.

For legacy traffic to traverse an ATM network the DSU must Segment the traffic into a stream of ATM cells, and the virtual connection must be made and managed. At the far end the DSU must Re-assemble the traffic into its original bit-pattern. The segmentation and re-assembly processes are as defined in ITU I 363.1 AAL.1. The Metrodata Circuit Emulation DSU solves this problem by enabling non-ATM traffic to traverse an ATM network at an economic cost. The ATM CE DSU is a 2-port device that can be configured to a wide choice of interface standards to provide the link between the Customer premises and the Carrier's WAN.

Bandwidth Adaptation

The DSU consists of a common services unit carrying the Customer-side CE interface plus an ATM UNI port to permit connection to an ATM network. Built in buffer storage caters for transient traffic bursts without loss of data.



Installation

The DSU is shipped with plug and play standard default settings. The menu system is accessed via a local or remote terminal and permits the unit to be set up in a logical and coherent way.



datasheet ATM Circuit Emulation





datasheet ATM Interface Data

Single-mode Short haul Line I/F (SM SC SH)		E1 interface	
Port	G.957	Physical	BNC 75 ohm, G.703, HDB3
Interface	Dual SC single mode 8/125 um	Rate	2.048 Mbps +/- 50ppm per G.703
Wavelength	1310 uM	Framing	G.704
Tx power	-8 dBm to -15 dBm	High level Framing	ETS300-213 or G.804
Max Rx input power	-8 dBm	Jitter	Per G.823
Rx sensitivity	-8 to -31 dBm	Clocks	Internal, Loop, Through
Optical loss budget	-15 - (-31) = 16 dB	E2 Interface	
Single-mode Long Haul Line I/F (SM SC LH)		Physical	BNC 75 ohm, G.703, HDB3
Port	G.957	Rate	8.448 Mbps +/- 30ppm per G.703
Interface	Dual SC single mode 8/125 um	Framing	G.804, G.832
Wavelength	1310 uM	PLCP	None
Tx power	0 dBm to -5 dBm	Jitter	Per G.823
Max Rx input power	-8 * dBm (may need attenuator)	Clocks	Internal, Loop, Through
Rx sensitivity	-8 to -34 dBm	E3 Interface	
Optical loss budget	-5 - (-34) = 29 dB	Physical	BNC 75 ohm, G.703, HDB3
Multi-mode Fibre Interface		Rate	34.368Mbps +/- 20ppm per G.703
Port	G.957	Framing	G.804, G.832
Interface	Dual SC multi-mode 62.5/125 um	PLCP	None
Wavelength	1310 uM	Jitter	Per G.823
Tx power	-14 to -19 dBm	Clocks	Internal, Loop, Through
Max Rx input power	-14 dBm	E4 Interface	
Rx sensitivity	-14 to -30 dBm	Physical	BNC 75 ohm, G.703, CMI
Optical loss budget	-19 - (-30) = 11dB	Rate	139.264Mbps +/- 15ppm per G.703
SDH/Sonet BNC Electrical Interface		Framing	G.804, G.832
Physical	BNC 75 ohm balanced	PLCP	None
Cable	75 ohm co-ax	Jitter	Per G.823
Encoding	CMI	Clocks	Internal, Loop, Through
Cable lengths	RG59 = 70 m, UR202 = 80 m	DS3 Interface	
SDH/Sonet RJ45 Electrical Interface		Physical	BNC 75 ohm, G.703, B3ZS
Physical	RJ45 120 ohm unbalanced	Rate	44.736Mbps +/- 20ppm per G.703
Cable	75 ohm STP	Framing	T1. 107/107a
Encoding	NRZ	PLCP	Tr-TSV 000 773
Cable lengths	RG59 = 70 m, UR202 = 80 m	Jitter	Per G.823
SDH/Sonet ATM Interface higher layers		Clocks	Internal, Loop, Through
Rate	155.52 Mbps per G.957		
Framing	Sonet/STS-3c SDH/STM-1 per G.709		
PLCP	I.432		
Clocks	Internal, Loop, Through		

Metrodata reserves the right to change specifications without notice.
Please check when ordering equipment.



ATM DSU Range

CE Interface Data General DSU Specs



CE Line Interface Specs

E1 interface		E3 Interface	
Physical	BNC 75 ohm, G.703, HDB3	Physical	BNC 75 ohm, G.703, HDB3
Rate	2.048 Mbps +/- 50ppm per G.703	Rate	34.368 Mbps +/- 20ppm per G.703
Framing	Unframed	Framing	Unframed
Jitter	Per G.823	Jitter	Per G.823
Clocks	Through	Clocks	Through
E2 Interface		DS3 Interface	
Physical	BNC 75 ohm, G.703, HDB3	Physical	BNC 75 ohm, G.703, B3ZS
Rate	8.448 Mbps +/- 30ppm per G.703	Rate	44.736 Mbps +/- 20ppm per G.703
Framing	Unframed	Framing	Unframed
Jitter	Per G.823	Jitter	Per G.823
Clocks	Through	Clocks	Through

datasheet CE Interface Data

All ATM DSUs General Specifications

Environment		Compliance	
Temp	0 - 50 deg C	Safety	EN60950
Humidity	0 - 95% RH, non-condensing	EMC	EN55022, EN50082
Pressure	86-106 KPA	Management	RFC 1213 (MIB II), RFC 495 (Telnet), RFC 1157 (SNMP), RFC 1406 (E1), RFC 1407 (E3, DS3), RFC 1595 (Sonet), RFC 1215 (Traps)
Power supply options		Statistics	Per G.821, AT&T 54016: 15 minute, 24 hour totals
DC Supply	-36 to -72 VDC, 200-100 mA	Status display & Diagnostics	
AC Mains	220-240 VAC, 50-400 Hz, 250mA, IEC connector	Loopbacks	Local per port
Packaging		L0/1 Stats	Transmission faults
Type	Modem, 1U high without feet	L2 Stats	Cell throughput, good cells, bad cells, corrected cells
Dimensions	W x Dx H mm	Alarms	
Rackmount	425 x 213 x 44 (without feet)	Line	Major, Minor
Tabletop	425 x 213 x 48 (with feet)	UNI	ATM UNI Fault

Installation

All DSUs are shipped with plug and play standard default settings. The menu system is accessed via a local or remote terminal and permits the unit to be set up in a logical and coherent way.

All models can be supplied with integral 100-250 VAC or -48VDC power supplies. Mounting can be table top or 19inch rack.

Security options

The DSU can perform cell address filtering. The propagation of specified VPI/VCI traffic permits the construction of ATM Firewalls to give security to the enterprise site.

Management

All DSUs are shipped with an LM1100 SNMP Enabler fitted, permitting an SNMP stack and 2 telnet sessions to be supported. The Line performance monitoring feature gathers performance data over 15 minute & 24 hour periods.

Metrodata reserves the right to change specifications without notice.
Please check when ordering equipment.



ATM DSU Range

Ordering Information

ATM switched DSUs have two ATM interfaces operating at different speeds. NTU DSUs support two ATM interfaces as shown in the table and provide the port options most commonly needed for conversion or optimisation of transport media.

ATM CE DSUs present one Network interface and a Constant Bit Rate interface to the Customer CE equipment.



ATM SW DSU

Two Electrical ATM Interfaces	100-250 VAC	-48VDC	Fibre to Electrical ATM I/Fs	100-250 VAC	-48VDC
E3 - E1	80-10-002	80-22-002	STM-1 MM SC - E1	80-10-050	80-22-050
E3 - E2	80-10-009	80-22-009	STM-1 MM SC - E2	80-10-052	80-22-052
DS3 - E1	80-10-003	80-22-003	STM-1 MM SC - E3	80-10-054	80-22-054
DS3 - E2	80-10-010	80-22-010	STM-1 MM SC - DS3	80-10-056	80-22-056
DS3 - E3	80-10-016	80-22-016	STM-1 MM SC - E4	80-10-058	80-22-058
STM-1 RJ45 NE - E1	80-10-100	80-22-100	STM-1 SM SC SH - E1	80-10-051	80-22-051
STM-1 RJ45 NE - E2	80-10-101	80-22-101	STM-1 SM SC SH - E2	80-10-053	80-22-053
STM-1 RJ45 NE - E3	80-10-102	80-22-102	STM-1 SM SC SH - E3	80-10-055	80-22-055
STM-1 RJ45 NE - DS3	80-10-103	80-22-103	STM-1 SM SC SH - DS3	80-10-057	80-22-057
STM-1 RJ45 NE - E4	80-10-104	80-22-104	STM-1 SM SC SH - E4	80-10-059	80-22-059
			STM-1 SM SC LH - E1	80-10-111	80-22-111
			STM-1 SM SC LH - E2	80-10-112	80-22-112
			STM-1 SM SC LH - E3	80-10-113	80-22-113
			STM-1 SM SC LH - DS3	80-10-114	80-22-114
			STM-1 SM SC LH - E4	80-10-115	80-22-115

ATM CE DSU

Electrical Network & CE I/Fs	100-250 VAC	-48VDC	Fibre to Electrical CE I/Fs	100-250 VAC	-48VDC
E3 - E1 CE	80-11-002	80-23-002	STM-1 MM SC - E1 CE	80-11-026	80-23-026
E3 - E2 CE	80-11-009	80-23-009	STM-1 MM SC - E2 CE	80-11-028	80-23-028
DS3 - E1 CE	80-11-003	80-23-003	STM-1 MM SC - E3 CE	80-11-030	80-23-030
DS3 - E2 CE	80-11-010	80-23-010	STM-1 MM SC - DS3 CE	80-11-032	80-23-032
DS3 - E3 CE	80-11-016	80-23-016	STM-1 SM SC SH - E1 CE	80-11-027	80-23-027
STM-1 RJ45NE - E1 CE	80-11-038	80-23-038	STM-1 SM SC SH - E2 CE	80-11-029	80-23-029
STM-1 RJ45NE - E2 CE	80-11-039	80-23-039	STM-1 SM SC SH - E3 CE	80-11-031	80-23-031
STM-1 RJ45NE - E3 CE	80-11-040	80-23-040	STM-1 SM SC SH - DS3 CE	80-11-033	80-23-033
STM-1 RJ45NE - DS3 CE	80-11-041	80-23-041	STM-1 SM S C LH - E1 CE	80-11034	80-23-034
			STM-1 SM SC LH - E2 CE	80-11-035	80-23-035
			STM-1 SM SC LH - E3 CE	80-11-036	80-23-036
			STM-1 SM SC LH - DS3 CE	80-10-037	80-23-037

ATM NTU

Electrical Interfaces	100-250 VAC	-48VDC	Fibre Interfaces	100-250 VAC	-48VDC
RJ45 - BNC STM-1	80-10-110	80-22-110	MM SC - BNC STM-1	80-10-098	80-22-098
RJ45 - SM SC SH STM-1	80-10-108	80-22-108	MM SC - SM SC SH STM-1	80-10-080	80-22-080
RJ45 - SM SC LH STM-1	80-10-109	80-22-109	MM SC - SM SC LH STM-1	80-10-089	80-22-089

Other variants of these products are available on request.
 Metrodata reserves the right to change specifications without notice.
 Please check when ordering equipment.

