

### Internet Access and ISDN Telephony Service

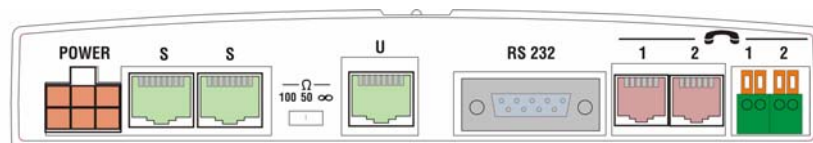
Network termination for ISDN basic access with 2 telephone ports and RS232 interface for fast and reliable connection to Internet Service Provider, remote access or e-mail access server

### Customer Equipment Preserved

All the advantages of the ISDN network, without the need to purchase additional equipment, subscribers can keep using standard devices like analogue phones, modems, group 3 fax, automatic answering machines or micro PBX's

### Always on/Dynamic ISDN

AO/DI allows the user to maintain a continuous connection and to allocate the B-Channels dynamically as actually needed. When a data session is set up on the D-Channel, up to three communications channels are available to the user



### Supplementary Services support

The NT-IP supports a range of supplementary telephony services like Call Hold, Call Waiting, Call Forwarding, etc. based on stimulus procedures and ETSI functional protocols. Additionally the POTS ports support standard supplementary services such as the Multiple Subscriber Numbers (MSN), the Calling Line Identification Presentation (CLIP) and the Connected Line Identification Presentation (COLP).

### ISDN Services

Subscribers can connect native ISDN terminals, such as videophones, group 4 fax machines, etc., directly on the S-bus.

### Dial-Up Data Services

A fully digital data service is provided by the NT-IP straight to the COM port of a PC with unrivalled performance compared to analogue modems, including sub-second call setup times and a virtually error free data channel to the service provider at a guaranteed bit rate. No additional hardware or software need to be installed to operate the service.

### Simple Provisioning and Management

The NT-IP fully supports remote monitoring, configuration, maintenance, and firmware upgrade: operators can therefore offer their customers a faster maintenance service at a lower cost by limiting the number of on-site interventions.

## Standard NT1

- 2-wire interface on the U reference point
- 4-wire user bus on the S/T reference point

## POTS Interfaces

Electrical:

- PCM speech coder/decoder, according to G.711, A-law
- Pulse and/or tone dialing, metering pulse generation
- One port available in emergency conditions (mains off)
- Local tone generation (dial tone, congestion and call waiting) is provided when required
- Register recall or hook-flash keys are also supported to invoke supplementary services
- To allow operation with a wide range of terminal, the NT-IP features high on hook battery voltage and high voltage ringing even on heavy ringer loads (~3 REN's)

Additional functions can be provided according to customer specifications

## RS232 PORT

- PPP asynchronous to synchronous conversion
- Enhanced AT command set
- Handling of control signals (DTR, DSR, CTS, etc)
- Implicit rate adaptation via the HDLC framing
- Other major features of the RS-232 port include:
  - Selectable hardware (CTS) or software (X-on, X-off) flow control One directory number (DN) can be allocated for the RS232 port
  - Internet Access on a single B-channel or on both B-channels using the multilink PPP (MP) protocol
  - Always on /Dynamic ISDN (AO/DI)
  - Bandwidth on Demand (BOD)
  - Bandwidth Allocation Protocol and Bandwidth Allocation Control Protocol (BAP/BACP)
  - Peer to peer communication according to ITU-T V.120 or V.110 recommendations
  - Enhanced AT command
  - Automatic bit rate recognition up to 230,4 kb/s

## PPP Operation

- Single link PPP
- Multilink PPP
- Call Bumping
- Bandwidth On Demand
- The Bandwidth Allocation Protocol
- Always On/Dynamic ISDN

## So Interface

On the So interface the NT IP provides the same quality of service as a standard NT1, including:

- Full compliance to regulatory standards
- Up to 8 terminals allowed on the S bus
- Complete transparency to the test procedures from the exchange

## So Power Supply

Standard PS1 phantom supply to the So bus is provided when the local a.c. power is available

## U Interface

The NT-IP fully complies to ETS Technical Report TS 102 080, except for higher power consumption when emergency power is provided to the POTS port

## System Operation

### LEDS

The following status monitoring LEDs are located near the front panel:

PWR	A.C. power supplied
U	Line interface connected
DTR	Data Terminal Ready (C108)
DCD	Line status or Carrier detect (C109)
CTS	Clear to Send (C106)
TD	Transmit Data (C103)
RD	Receive Data (C104)
B1	Channel B1 status
B2	Channel B1 status

### Switches

On the bottom side of the device two dip switches are available to:  
select the So bus configuration (short passive/extended)  
include terminating resistors for the So bus (100Ω/ off)  
All other settings are made via configuration procedures

## Installation and Configuration

Local and Remote installation and configuration procedures are available through a DTMF phone either connected to one of the POTS interfaces or from a "secured" ISDN access, through a normal telephone or a PC connected to a NT-IP or an Aethra TA-INET or TA-IP or Front End

## Local and Remote Maintenance

The NT-IP provides a list of diagnostic features:

- Download of firmware upgrades.
- Remote diagnostics for POTS interfaces.
  - ringing voltage
  - microphone current
  - capacity measurement on the POTS interfaces
  - short circuit control

## Technical Specifications

### Line interface

Line codes	2B1Q
Standard compliance	TS 102 080
Power consumption	max 1.4 W
Range	up to 1k (V remote supply > 90Vdc)

### RS232 port

Control circuit	TXD, RXD, RTS, CTS, DSR, DTR, DCD
Data rate	up to 230.4 kbit/s
Access protocol	PPP, internal async to sync converter, V120, V110
Dialling mode	Hayes® AT command set

### POTS interfaces

Dialling mode	DTMF, pulse
Impedance	600Ω or complex (optional)
Speech quality	Q.552
No load voltage	< 60 V
d.c. load	from 0 to 800Ω
Ringing Generator	
Ringing Voltage	> 40 V / 2k
Ringing load approx.	3 REN
Frequency	25 Hz, asymmetrical
Max distortion	10%

### Reference Standard for Environmental Quality

Safety	EN60950 (oct. 96)
EMC and protections	ETS 300 047, ETS 300 386-2-2
Transport	ETS 300 019-1-1 class 1.2
Storage	ETS 300 019-1-2 class 2.2
Operation	ETS 300 019-1-3 class 3.2
Overvoltages protection	exceeds ITU-T K21

### Mechanical

Dimensions	180x140x45 mm.
Weight	455 gr

### Power Supply

Current	<100 mA
Voltage	90÷250 Vac, 50÷60 Hz

### Operating System Requirements

Windows 95, 98, 98 SE, ME, 2000, NT4, Linux, Macintosh

## Connections

So bus	Two modular RJ-45 ISO8877 connectors (8p/4c)
POTS	Two modular RJ-11 connectors (6p/2c) 2-pole spring terminal DB-9 connector
RS232 port	DB-9 connector
Line pair (U)	2-pole screw terminal or RJ-45
Power supply	Plug (external feeder)