

# ISDN Network termination with two analog interfaces



The NT1 Plus is a network termination for the ISDN basic rate access, which adds to the features of a standard ISDN network termination (Nt1) a dual interface to analogue terminals designed for connection to POTS (Plain Old Telephone System) networks. These terminals include standard phone sets, group three fax machines, automatic answering machines, data modems, small Private Branch Exchanges (PBX), Key Telephone Systems (KTS), cordless and DECT phones, etc. The NT1 Plus therefore allows network providers to overcome a major obstacle to the diffusion of ISDN in the Small Office And Home Office (SOHO) and in the residential markets: network providers can offer a complete ISDN service, aligned to current regulations and, at the same time, subscribers are not required to purchase any additional equipment, such as digital ISDN phones and/or terminal adapters to deploy basic telephony services.



## FUNCTIONAL CHARACTERISTICS

- A full ISDN service is to be provided to terminals connected to the So bus.
- NT1 Plus shall operate with all existing analogue equipment, and it shall support supplementary telephony services (3-way conferencing, call diversion, call waiting, etc.).
- Emergency operation is to be guaranteed to one POTS interface.
- Provision of convenient remote configuration, maintenance and diagnostics and the capability to remotely download the operating firmware.
- Support to both 2B1Q and 4B3T line code.

## STANDARD NT1 FEATURES

- 2-wire interface on the U reference point.
- 4-wire user bus on the S/T reference point.
- Emergency power supply to user terminals.

## ANALOGUE TERMINALS INTERFACE FEATURES

- Pulse and/or tone dialing.
  - 25 Hz low distortion asymmetric ringing signal.
  - PCM speech coder, according to G.711, A-law.
  - Emergency power to one POTS interface.
- ### ADDITIONAL FEATURES
- Easy installation, operation and maintenance.
  - Local or remote configuration through a standard DTMF phone.
  - Local or remote maintenance, including configuration and diagnostics on the POTT and the U interface.
  - Local and remote download of firmware upgrades.
  - Support for stimulus and ETSI supplementary services.

## POWER SUPPLY

The NT1 Plus has no batteries and is powered through an internal mains power supply or from the power supplied by the network over the line pair.

Power consumption from the network is limited to 1400 mW in the worst case (one POTS interface powered under emergency conditions).

## So INTERFACE

On the So interface the NT1 Plus 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.



## **POTS INTERFACES**

POTS interfaces support both pulse and DTMF dialing. Local tone generation (dial tone, congestion and call waiting) is provided when required. Register recall and hook-flash keys are also supported (e.g. to invoke supplementary services).

## **STANDARD SUPPLEMENTARY SERVICES**

- Multiple Subscriber Numbers (MSN).
- Calling Line Identification Presentation (CLIP).
- Connected Line Identification Presentation (COLP).

## **OPTIONAL SUPPLEMENTARY SERVICES**

- Call Forwarding (Unconditional - CFU, On User Busy - CFB, No Reply - CFNR).
- Call Completion on Busy Subscriber (CCBS).
- Malicious Call Identification (MCID).
- Calling Line Identification Restriction (CLIR).
- Line Identification Restriction (COLR).
- 3-Pty Conference (3PC).
- Closed User Group (CUG).
- Call Hold (CH).
- Advice of Charge (AOC).

## **SWITCH SETTINGS**

The front panel has a removable cover to access switch settings for:

- So bus configuration (short passive/extended)
- emergency power (one of the POTS inter-faces or the So bus)
- terminating resistors for the So Bus.

## **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 an Aethra TA1008 terminal adapter or an Aethra Front End.

## **LOCAL AND REMOTE MAINTENANCE**

The NT1 Plus 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

