

**SERVICE CREATION TO
SERVICE REALISATION PROVIDING
INNOVATIVE BUSINESS SOLUTIONS**



TelMax

Access Network Solutions

Telspec Experience

For many years Telspec digital pair-gain systems have been an indispensable building block at the heart of many PTT's access networks throughout the world. Telspec's TelMax family of digital pair-gain products provide a range of solutions offering between 2 and 12 direct exchange lines over one copper pair. This has allowed PTT's to provide trouble-free service to their customers at a fraction of the cost of laying new copper cable.

The TelMax system recognises the phenomenal growth of ISDN and Internet (IP) based access and services. Utilising the latest SDSL technology, the TelMax system provides a future proof access platform for the delivery of POTS and ISDN data services over a single copper pair, thus enabling the delivery of fast internet access to your customers.

Market Drivers

Advances in technology have resulted in more choices and more services for the user. However, as different technologies have traditionally delivered different services the result has been a competing and disparate collection of networks, interfaces and equipment.

As we move into the new millennium, users now demand portability and advanced services such as home shopping, video on demand, and on-line banking. Consequently, instead of having many networks each carrying a unique set of services, operators require a unified network, which is capable of providing the mixture of services demanded by their customers across whatever carriers exist to whatever equipment they connect into.

Open legislation, universal standards and common interfaces supported by ever more powerful and intelligent service sensing equipment now enable operators to provide universal service on unified networks with guaranteed performance.

Telspec has addressed this development by evolving products which work with the interfaces and access methods required by the unified network. It specialises in providing innovative Access Network and Flexible Switching solutions incorporating a variety of options.

The TelMax family of products provide cost effective and scaleable xDSL based solutions to the most demanding copper access network requirements. From voice to data, TelMax is an essential ingredient of the unified network.

Product Overview

System Configuration

The TelMax system consists of a high density exchange subrack located at the local telephone exchange, remote units are located close to the customer premises. The exchange subrack consists of 17 slots, one of which is reserved for the System Management Control Card (SMC). The remaining slots will accommodate any combination of Exchange Unit (EU) cards. Remote Units (RU) are connected to the corresponding Exchange Unit (EU) cards via a single copper pair, to provide any of the following combinations:

4 channel EU card	4 POTS
4i EU card	4 POTS and 1 ISDN
8 channel EU card	8 POTS
8i EU card	8 POTS and 1 ISDN
10 channel EU card	10 POTS
10i EU card	10 POTS and 1 ISDN
12 channel EU card	12 POTS

Also available is a dual 4 channel EU card which will deliver 8 POTS lines from 2 remotes connected via two copper pairs. This configuration is provided to maximise the density of the exchange sub-rack.

In its maximum configuration a total of 192 subscribers can be connected to a single exchange subrack. The range between the EU card and the RU may be extended by the use of the Optional Repeater Units.

Powering Alternatives

The EU and FIU cards located in the exchange subrack are powered directly from the exchange 48V supply.

The RU can have several powering combinations, it can be power fed via the telephone line from the Exchange Unit or powered from a local independent power supply, or alternatively the RU may have its own battery supplying power. The battery is charged by a reduced line feed voltage derived from the Exchange Unit.

Exchange Unit Card (EU)

The function of the EU cards is to combine the analogue line inputs and optional ISDN port from the exchange and to transmit them to the RU in a digital format using SDSL technology. All voice, signalling and metering requirements of the telephone line, are handled by the EU.

Management Control System (MCS)

The MCS monitors system performance and alarm management facilities for the exchange subrack and remote unit. Faults are reported from the EU, RU and subscriber line and reported locally at the exchange via LED's. Optionally alarms can be transmitted to a central local management terminal or to a central network management system over ethernet or PSTN modem connection via a permanent RS232 modem connection. The MCS can also conduct line testing and permit system configuration both of which can be done locally at the exchange or remotely from the central SNMP based terminal.

Remote Unit (RU)

The Remote Unit receives the digital signal from the EU and processes the signal back into individual analogue circuits and regenerates the ISDN port for feeding to the customer premises telephone equipment.

Connection to the RU is via a cable tail using standard cable joining techniques or optionally via a terminal block located on the RU housing. The RU is line powered from the Exchange Unit and thus requires no local power supply.

Repeater Unit

The repeater is installed in the line between the EU and the RU units and this extends the range of the RU from the Central Office/Exchange. The repeater is line powered from the EU and itself provides the line power for the RU. Two lines are required between the EU and Repeater in order to provide the line power for the RU.

Safety

For the safety of technical staff installing and servicing the product, line feed voltage is only applied after the Remote Unit is connected. The line feed voltage and current are continuously monitored and has a high-speed voltage shut down to protect the safety of technical staff.

Suitable for all Environments

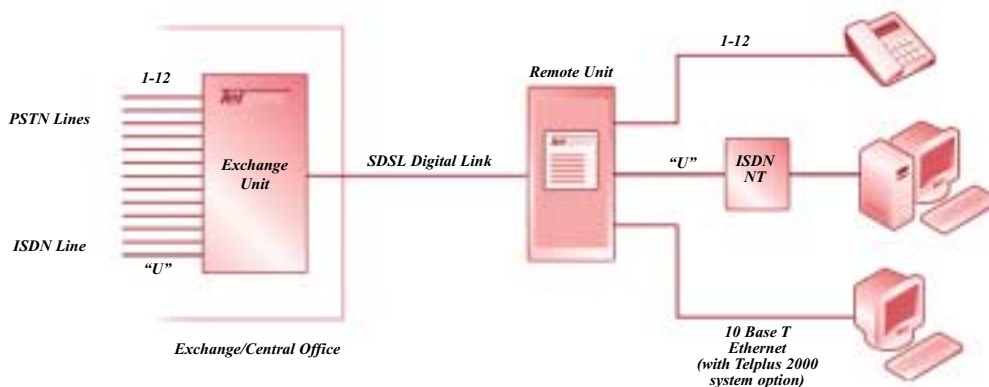
Designed for harsh all-weather environments, the Remote Unit is hermetically sealed for external mounting on poles or in underground manholes or pits. The Remote Unit is suitable for use in extended temperature and humidity conditions. Built-in over voltage and lightning protection are standard for increased reliability in areas of severe lightning activity.

International Standards

The TelMax range of products conforms to international standards and specifications, providing compatibility with all types of exchanges, both analogue and digital, and an extensive range of telephone equipment. The product is constantly being updated as new international standards are released, ensuring long service life and flexibility to deploy new value-added services as and when they become available.

Key Benefits

- Digital transmission to latest SDSL standards
- Integrated support for ISDN NT's
- Optional Ethernet data port
- Robust and reliable
- Designed for environmental extremes
- Inbuilt overvoltage and lightning protection
- Line-test system inbuilt
- Comprehensive SNMP based network management
- Compatible with all exchange types
- Future proof
- Sustainable whole life costs



Technical Specification*

Digital Transmission System

Line Coding: ETSI SDSL
 Data Rate: Up to 2.3mbits/sec
 Range: 3.0km (0.4mm copper wire)
 5.1km (0.64mm copper wire)
 Line resistance, EU to RU: 800 Ohms max

Analogue Performance

4dB Insertion Loss between analogue ports
 Resistive or Complex impedance at RU and EU Interfaces
 Rings 4 high impedance bells at each subscriber
 Supports high speed modem and Group 3 facsimile machines
 Transparent to ring cadence
 Constant current feed to telephone (21mA (preferred) or other option)
 High voltage and lightning protection on RU and EU
 12kHz or 16kHz Subscriber Private Metering (SPM)
 CLASS Features supported
 Regenerates reversals and breaks (optional)

ISDN Basic Rate Interface

ETSI U interface
 Complies with ETR080

Exchange Unit (EU) with Subrack

Standard 19 inch equipment practice
 Temperature Range: -10°C to +40°C
 Relative Humidity: 10% to 95% Non Condensing
 Subrack Size: 267(6U) x 482 x 310mm
 Power: Exchange Battery -42V to -75VDC
 Line Feed: (Line powered RU): up to 300V DC at up to 60mA
 (Locally powered RU): 60V DC at 10mA

Remote Unit (RU)

Fully sealed outdoor housing or splash proof indoor housing
 Temperature Range: -20°C to +60°C
 Size: 182 x 96 x 318mm
 Power: Line power. RU: 300V DC
 Local power. RU: 18V to 75V DC (optional)
 Loop resistance: 750 ohms (including subscriber telephone)

Repeater Unit (REP) (option)

Repeater doubles the effective range
 Fully sealed outdoor housing
 Temperature Range: -20°C to +60°C
 Size: 182 x 96 x 318mm
 Power: Line power REP: 300V DC

Local Power Supply for RU (option)

AC input Country dependent
 Current limited
 Two hours battery back up operation

**This data is provided for information purposes only and is designed to show the outline capabilities of the system.
 Actual specification may vary between different countries.*



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