



Defence  
Communications  
Industry Pty Ltd



## P1

### LAN Extensions over copper cables

Efficient and Reliable Command and Control  
Extensions for Defence, Emergency and Industrial  
Applications

- Increased Noise Immunity and Susceptibility
- DMT, RADSL Technology
- Sophisticated Modes of Management  
(including remote control)
- Software download  
(for functionality upgrades etc.)



## LAN Extensions over copper cables

Automatic Rate Adaption for any given distance, type and quality of copper cables (plug and forget)

Mil. Spec. binding posts, ruggedised design with increased operational tolerances  
Military Operations tested

### P1 Major Features

**RADSL (Rate Adaptive DSL) interface** is in accordance with ANSI T1.413 and capable of up to 8 Mbit/sec in the downstream direction (from P1-H to P1-L – where 'H' and 'L' indicate high and low data rates generated from the device) and up to 1 Mbit/sec in the upstream direction (from P1-L to P1-H). RADSL algorithm allows for dynamic allocation of the maximum transmission speed depending on the length and condition of the copper line between the two P1 modems

**Ethernet (10/100BT) Interface:** provides direct connectivity for UTP (unshielded twisted copper pairs) commonly used in LAN networks

**RS232 Interface:** provides access to the management and configuration functions of the device Note: a comprehensive set of management functions are also available via the LAN (Ethernet interface)

**Power Supply Unit** has been integrated into the design of the P1 and is a low profile solid state unit allowing wide operating voltage range (from 85 to 265 V AC)

**Mechanical Design:** allows for versatile deployment practices and provides for either free standing operation, stackable, wall mounting of subrack mount. P1 is equipped with both Mil. Spec. (WD-1A/TT) and RJ11 connector, for copper lines, as standard.

### P1 – Overview

'P1' Modems provide the most efficient way of interconnecting network computer equipment in the field over large distances (5 Km and further) using standard or reinforced copper cable as communications infrastructure.

This approach is significantly cheaper and more reliable than the traditionally used fibre-optic LAN systems and closely reflects the current policy of adopting COTS technology by Defence Forces.

Fibre-optic based LAN systems while offering faster transmission speeds; are susceptible to physical damage, much slower to deploy and practically impossible to repair in the field.

Copper on the other hand is much stronger, (esp. steel reinforced cables) and, significantly cheaper to deploy and retrieve.

Importantly too, copper cable is extremely easy to repair by soldiers.



'P1' Modems provide LAN inter-connection at speeds of up to 8 Mbit/sec with integrated Bridging and Routing functionality.

Based on DMT RADSL technology the 'P1' system offers superior noise immunity, as well as 'noise signature' generation. The overall noise immunity design is further enhanced by integrated 'RF' filters in all external data and power cables.

P1 is an effective point to point transmission system designed to extend LAN networks with flexibility and ease - important in field deployed computer networks.

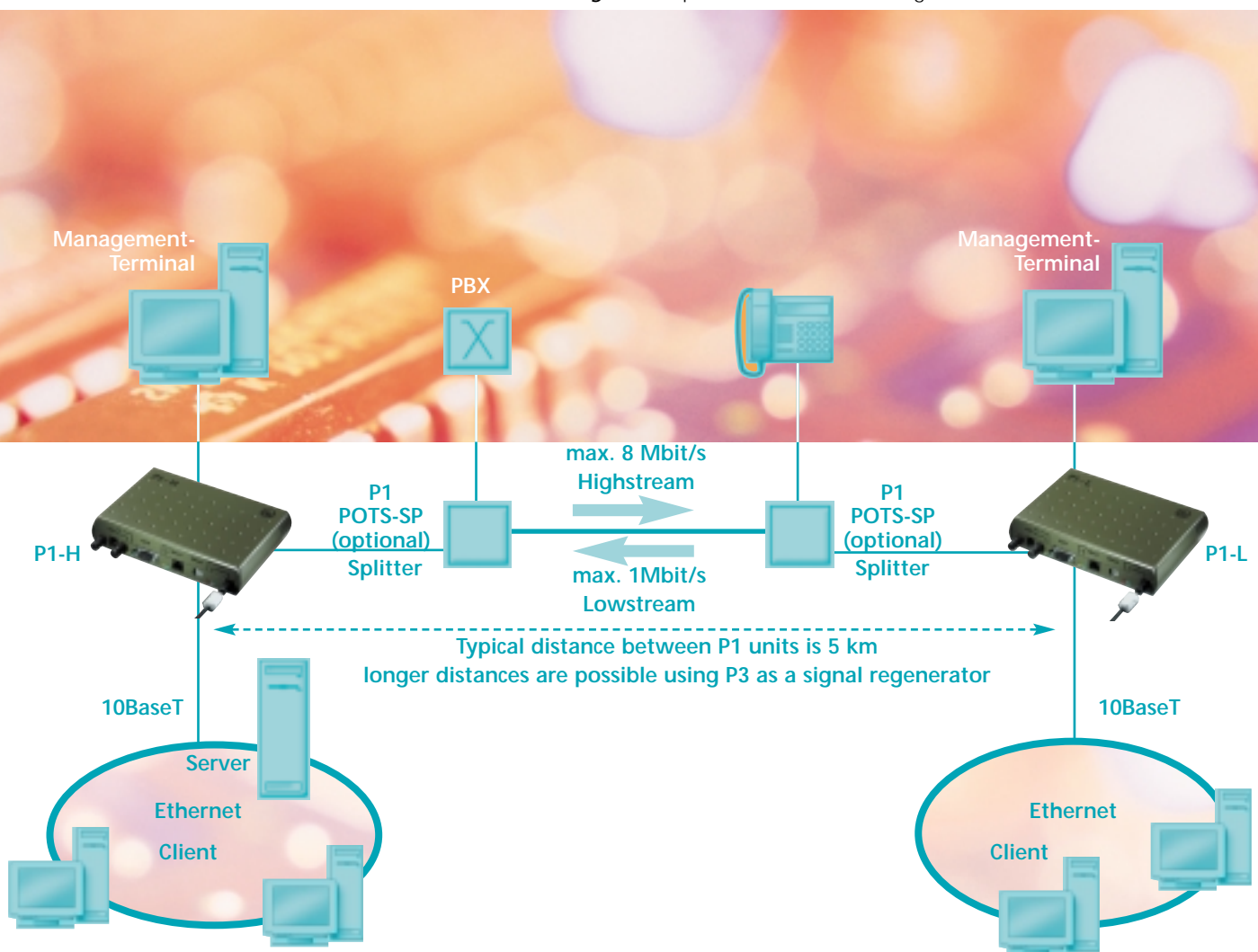
DMT modulation makes for secure and noise resilient transmission over copper.

*P1 represents a starting block in the series of Portable RADSL systems of which the 'P3' is the most versatile and highly featured system in the market today (see the P3 brochure). Whereas P1 is a portable single channel system for simple point to point extensions, the P3 features three configurable (master/slave) RADSL channels with a number of integrated features (analogue and VoIP telephony, rechargeable battery and six user interfaces suitable for video-conference, telemetry, sensors and other Ethernet compatible devices.*

Integrated Bridging and Routing capability, advanced noise immunity, 'plug and forget' modes of operation and ruggedised design make P1 an ideal choice for emergency and other field deployed LAN extensions. Large scale P1 deployments are possible with highly featured local and remote management functionality that comes as standard with each unit.

## P1 – Configuration and Management Overview

- **External Status Monitoring:** provided by six LEDs comprehensively indicating RADSL and Ethernet connectivity and activity
- **RS232 Interface:** provides further status monitoring and management control features for both the directly connected P1 and the remotely located P1 units
- **Ethernet Interface:** allows remote P1 management (via Telnet, SNMP and WEB-based packages)
- **Software Download:** for easy 'on-line' product upgrades, as well as new features introductions
- **Bridging Mode:** as a default configuration (ideal for 'Plug and Forget' applications)
- **Routing Mode:** provides IP address setting
- **Device Parameters Setting:** including Signal to Noise Ratio and other physical layer parameters
- **Performance Data:** actual operational performance parameters including, RADSL data rates, interface conditions and data packets statistics



Typical P1 Configuration

## Specifications overview

RADSL Interface	ANSI T1.413.Issue 2 / full rate over analogue telephone lines POTS)
Type of interface	two wire (twisted pair)
Connector Type	RJ11, WD-1A/TT (spring loaded Mil. Spec. binding pots)
Line code	Discrete Multi-tone (DMT) Frequency Division Multiplexing
Downstream Rate Range	32 kbps ... 8 Mbps (in 32 kbps increments)
Upstream Rate Range	32 kbps ... 1 Mbps (in 32 kbps increments)
Distance	To 5 km (longer with thicker gauge copper)
Copper Cable type	Symmetrical twisted pair (shielded or unshielded) Military grade (steel reinforced copper cable) WD-1A/TT type or similar
Ethernet interface	IEEE 802.3 compatible
Interface Type	10 Base-T
Connector type	RJ45
Distance	Patch cable < 3 m
Cable type	UTP-3 (enhanced quality cables UTP5 or STP are provided as a standard with P1s)
Data Protocols	MAC Bridging (self learning, ageing) static IP routing, ARP, TPC, UDP, Telnet, TFTP, HDLC-encapsulation
RS 232 interface	Sub D, 9 pin connector
Data Rates	9,6 kbps to 115 kbps (default set to 38,4 kbps)
Distance	< 3 m
Data format	10 bit // 1 start bit // 8 data bits // 1 stop bit
Power Supply	180 ... 265 VAC/45 ... 55 Hz 85 ... 155 VAC/55 ... 65 Hz
Power Input	Max 10 VA
Connector Type	AS 3112
Diagnostic and Management	6 LEDs indicating; - Power/Alarm, - RADSL connectivity/activity - Ethernet connectivity/activity Self Testing Diagnostics and management functions, RS232 Interface for comprehensive monitoring, Telnet management channel for remote access

### Mechanical Design

Dimensions	45 x 215 x 155 mm (height x width x depth)
Weight	600 g
Environmental and Safety Specs.	
EMC	CENELEC EN 50 082-1
Electrical Safety	EN 55 022, CENELEC EN 60 950
Storage	Class 1.1 in accordance with ETSI ETS 300 019-1-1
Temperature Range	-5 ... 45 °C
Humidity	5 ... 95 %
Transport	Class 2.3 in accordance with ETSI ETS 300 019-1-2
Temperature range	-40 to 70 °C
Humidity	max 95 %
Operational	Class 3.1 in accordance with ETSI ETS 300 019-1-3
Temperature range	5 ... 40 °C
Humidity	5 ... 85 %

(Information on compatibility with further standards on request)



## Defence Communications Industry



4 Nirvana Crescent  
Bulleen VIC 3105  
Australia

Phone +613 9850 6110  
Fax +613 9850 6113

[www.defence-comms.org](http://www.defence-comms.org)  
[info@defence-comms.org](mailto:info@defence-comms.org)