



PROJECT 25 DIGITAL REPEATER AND NETWORKING

Westel's DRB-25 is a compact base station/repeater unit which is fully compatible with the requirements of the APCO Project 25 standard for secure digital mobile radio. Its high power, features and flexibility make it an ideal building block for creating conventional radio networks.

The DRB-25 supports simultaneous analog and digital APCO Project 25 operation. Its cross-band feature permits communication across different bands as well, making the DRB-25 a highly cost effective migration path to digital radio.



**PROJECT 25 INTEROPERABILITY
ANY TIME. ANY PLACE. ANYONE**



KEY FEATURES

Westel's DRB-25 has been designed to facilitate a smooth migration path from analog to digital operation by offering a digital capable unit which can be a simple plug-in replacement for existing analog equipment whilst, additionally, providing IP connectivity and interoperability between users operating in VHF and UHF bands.

Key features of the DRB-25 include:

- Inbuilt P25 IMBE vocoding and P25 DES-OFB encryption
- Simultaneous operation and linking of digital and analog terminals
- Simultaneous operation and linking of VHF and UHF subscribers
- Basestation and repeater operating modes
- Multiple call types (including individual calls and group calls)
- Inbuilt wireline capability providing direct connection to existing tone remote and console systems, PSTN and microwave links
- Inbuilt IP networking capability enabling direct connection to existing tone remote and console systems using IP links
- Inbuilt web-server providing access to real time user and diagnostic and alarm information
- Easy programming through Windows software
- Modular construction

This feature set allows unprecedented flexibility in providing users with a wide range of analog to digital migration paths and networking options.

APPLICATIONS

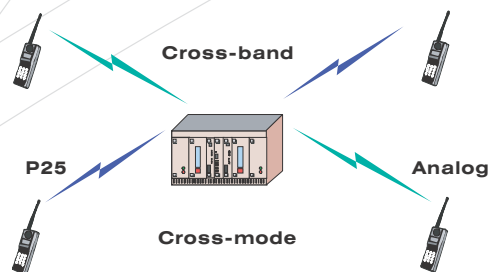
The DRB-25's modular design and software based features make it an extremely flexible building block for a wide range of network applications.

The DRB-25 may be configured with one or two independent channels. Each channel may operate as an analog and/or a P25 digital repeater or may also be programmed to autosense the mode of a received signal.

With built-in P25 IMBE vocoding and DES-OFB encryption the DRB-25 may be connected directly to existing tone-based remote and console equipment using 2W and 4W E/M circuits. Direct connection to 2W telephone lines for analog and P25 digital calls is also supported.

The DRB-25 can operate in a standalone mode or within a conventional network using remote repeaters. Its compact dual radio configuration is a very cost effective solution for remote locations where one channel can be used as a basestation or repeater for general communications, while the second channel acts as a link to other base stations or repeaters.

The DRB-25 is transparent to CTCSS/CDCSS and P25 signalling and it may be used to link users in different frequency bands such as where a VHF repeater is used to provide area coverage and a UHF repeater is used as the control link.



The DRB-25 can also be used to link users operating in different modes and may be chained to provide coverage over larger areas.





IP CAPABILITY

In addition to the inbuilt wireline connectivity supporting tone-based remote and console equipment the DRB-25 incorporates an inbuilt IP networking and diagnostic capability.

Westel's *IP Diagnostics* are hosted on an in-built web-server and allow the operation of the DRB-25 to be monitored over an IP network.

Westel's *IP Link* provides the ability to link two DRB-25's back to back over IP and supports both analog voice and unencrypted and encrypted P25 voice.

Consistent with the P25 Conventional Fixed Station Interface (Digital) *IP Link* provides true end-end encrypted traffic regardless of the encryption algorithm used in the mobile and portable subscriber units.

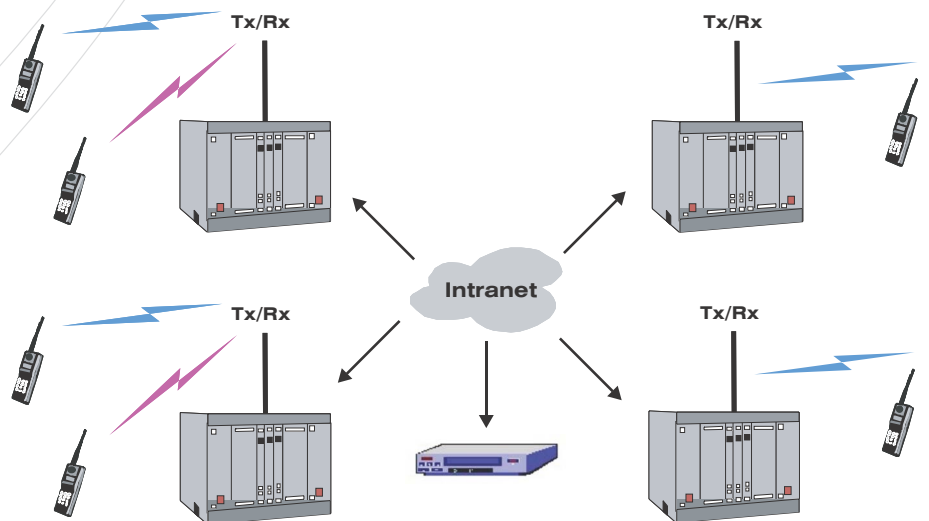
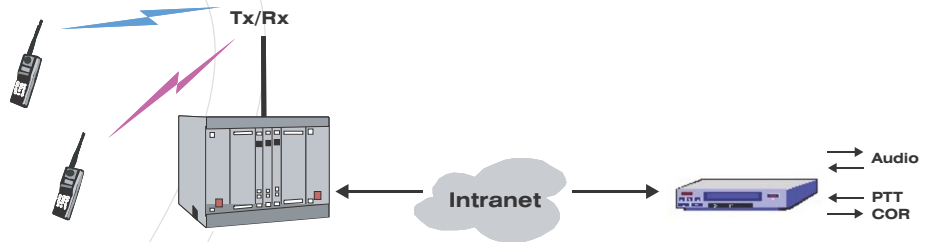
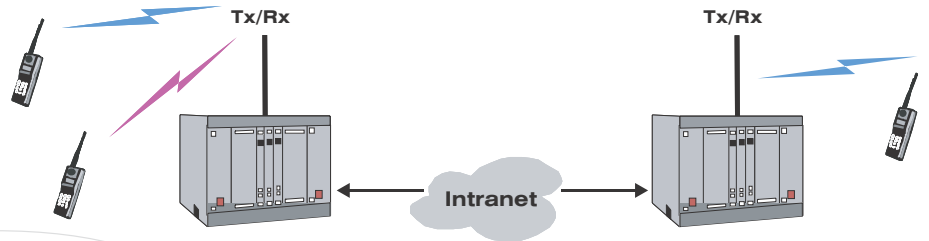
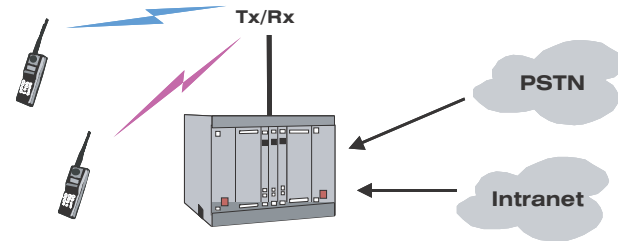
Westel's *Fixed Station Interface Access Point (FSIAP-25)* enables analog tone-based consoles and remotes to be connected to digital repeaters over an IP network using the P25 Conventional Fixed Station Interface (Digital). With in-built P25 IMBE vocoding and DES-OFB encryption this provides end-end encryption from the remote/console to the subscriber units.

The *FSIAP-25* is mounted in a 1RU 19" rack case. The analog interface is 4W and uses either industry standard tones or opto-isolated PTT. A Carrier Operated Relay (COR) opto-isolated output is available.

Westel's *Voter-25* provides the ability to link multiple DRB-25's over IP and enables coverage over a wider area using receiver voting to route the best signal to other repeaters and the console.

FSIAP-25 and Voter-25 are intended for use with Westel's DRB-25, *Centralis* and *Trunkissimo* multi-channel platforms and any repeater/basestation product supporting the Project 25 Conventional Fixed Station Interface (Digital).

Both *FSIAP-25 and Voter-25* incorporate in-built P25 IMBE vocoding and DES-OFB encryption together with a wireline interface to enable direct connection of analog tone-based consoles and remotes.



SPECIFICATIONS

FEATURES AND GENERAL SPECIFICATIONS

Analog Operation	Standard
P25 NB Operation	Standard
Inbuilt P25 IMBE vocoding	Standard
Repeater Operation	Standard
Basestation Operation	Standard
Tone Remote & Console Operation	Standard
12V DC Revert	Standard
Telephone Interconnect:	Analog Standard
	P25 Digital Standard
2/4W E/M Line Interfaces:	Analog Standard
	P25 Digital Standard
Licensed Software Options:	
Link Radio	LF-05001
P25 DES-OFB Encryption	LF-05002
VOIP	LF-05003
12 kbit/s CVSD Repeater	LF-05004
P25 GPS Data	LF-05005
Programmable Channels	512
Frequency Generation	Synthesised
Channel Spacing	12.5 kHz; 15 kHz; 25 kHz; 30 kHz
Analog Modulation	FM
Digital Modulation	C4FM
Operating Temperature Range	-30 – +60 C
Frequency Stability	0.5ppm (standard) 0.1ppm (optional)
Operating Modes	Simplex/Semi-Duplex/Duplex
Diagnostics	Inbuilt Web Server
Alarms	AC/DC Power fail, High VSWR, Low Output Power
Input Voltage AC	110V or 240V
AC Power Connector	IEC Type
Input Voltage DC	13.8V +/- 10%
DC Power Connector	Powerpole 45A
Antenna Connectors (Tx/Rx)	Type "N" female
Antenna Impedances (Tx/Rx)	50R

DIMENSIONS, WEIGHT AND POWER CONSUMPTION

Dimensions (w x h x d):	19 x 14 x 17.5 (") 483 x 355 x 440 (mm)
Weight:	
Single Channel Configuration	61 lbs (28 kg)
Dual Channel Configuration	85 lbs (39 kg)
Power Consumption:	
Single Channel – Standby	55W
Transmit	380W
Dual Channel – Standby	81W
Transmit 1 channel	406W
Transmit 2 channels	720W

TRANSMITTER

	VHF	UHF
Tunable Frequency:	136 – 174 MHz	380 – 420 MHz 400 – 470 MHz 450 – 520 MHz
Switching Bandwidth:	Full Sub-Band	
Power Output:	100W	50W
Adjustable level		
(in 1dB steps):	10 – 100W	5 – 50W
Modulation Method:	Direct Digital Synthesis	
Spurious & Harmonic Attenuation:	100 dB	90 dB

WESTEL WIRELESS SYSTEMS

Westel products are manufactured in Australia and exported worldwide.

For local distributor details, contact:

Westel Wireless Systems Pty Ltd
Suite 14, Level 1
23 The Corso
Manly NSW 2095 Australia

Maximum Deviation:	WB Analog	+/- 5kHz
	NB Analog	+/- 2.5 kHz
	NB Digital	+/- 3.6 kHz
Audio Response:	WB and NB Analog	+1, -3 dB from 6dB per octave pre-emphasis from 0.3 – 3 kHz referenced to 1 kHz
Audio Distortion:	WB Analog	<2%
	NB Analog	<2%
Audio Input:	Line	0dBm (nominal) adjustable
	Microphone	~100 mV
FM Hum & Noise:	WB Analog	50 dB
	NB Analog	45 dB
Emission Designators:	WB Analog	16KOF3E
	NB Analog	11KOF3E
	NB Digital	8K10F1E

TYPE APPROVALS

	VHF	UHF
FCC ID:	P6ZC100066	P6ZC100063
IC:	5397A-CI00066	-
ACA:	-	yes
FCC Part 68:	ALT-AUS-36133-NI-E	

RECEIVER

	VHF	UHF
Tunable Frequency:	136 – 174 MHz	380 – 420 MHz 400 – 470 MHz 450 – 520 MHz

Switching Bandwidth:	Full Sub-Band	
Min Transmit/Receive spacing: for full duplex operation	~700 kHz	~2.0 MHz
IF Frequency:	21.4 MHz	72 MHz
Demodulation Method:	Direct Down Conversion	
Receive Sensitivity:		
Analog (12dB SINAD)	-118 dBm/0.25uV	-118 dBm/0.25uV
Digital (5% BER)	-118 dBm/0.25uV	-118 dBm/0.25uV

Adjacent Channel Rejection:		
25 kHz WB Analog	83 dB	80 dB
12.5 kHz NB Analog	70 dB	70 dB
12.5 kHz NB Digital	70 dB	65 dB

Spurious & Image Response Rejection:		
WB Analog	90 dB	90 dB
NB Analog	90 dB	90 dB
NB Digital	90 dB	90 dB

Intermodulation Rejection:		
WB Analog	85 dB	85 dB
NB Analog	85 dB	85 dB
NB Digital	85 dB	85 dB

Audio Response:	+1 dB, -3dB from 6 dB per octave de-emphasis from 0.3 – 3 kHz ref 1 kHz	
WB and NB Analog		

Audio Distortion:	WB Analog	2%
	NB Analog	2%
Audio Input:	Line	0dBm (nominal) adjustable
	Loudspeaker	1W into 4R
FM Hum and Noise:	WB Analog	50 dB
	NB Analog	45 dB

Specifications & Methods per TIA102CAAA/CAAB and TIA/EIA603 as applicable. Local Type Approvals do not necessarily cover all specified operating bands.



P: +61 2 9948 6564
F: +61 2 9948 9832
W: www.westelwireless.com
E: wws_sales@westelwireless.com