PANTHER EDR

PANTHER V (BCC 67/VRQ 327) VHF FREQUENCY HOPPING SECURE EPM TRANSCEIVER

KEY FEATURES

- **Frequency range 30 to 108 MHz**
- **Multi-role: integrated transceiver**
  - **- Manpack**
  - **- Vehicle clip-in**
  - **- 20 watt vehicle fit**
- **Smallest 20 Watt EPM manpack/ vehicle transceiver available**
- **Compact 50 Watt amplifier appliqué**
- **Integral vehicle harness interface**
- **Dedicated GPS interface**
- **Internal GPS option**
- **2 and 3 way re-broadcast facility**
- **Alphanumeric display**
- **Technology: >95% SMD**

Communications

- Fully automatic synchronisation
- Combat proven optimised frequency hopping algorithms
- Free channel search with frequency hopping interoperation
- Integral high level 16kbps digital encryption
- Custom crypto solutions
- Interoperable with fixed frequency transceivers (STANAG 4204)
- Interoperable in all Jaguar V EPM modes
- Hailing facility (STANAG 4292)
- Two frequency simplex operation
- Channel scanning capability
- Intercom facility

Advanced Data Services

- Tactical Inter-net data service support
- Dual 115kbps RS232 interface
- 9.6kbps data throughput with comprehensive FEC
- Integral CSMA for Packet data applications
- Multiple simultaneous data calls (MSA)
- TDMA support for weapon/sensor systems (option)
- Automatic voice/data recognition

Application Support

- Windows™ based Messaging / Email / file transfer application
- Packet data overlay support
- Situation awareness (GPS)
- Command Information Systems support
- Slow scan video transmission

Management Systems

- Windows™ based radio programmer software (option)
- Windows™ based extended control software development tool kit (option)
- Comprehensive Over The Air Re-programming with secure / hopping protection (OTAR)
- Key generation software (option)
- Comprehensive multi-level BIT
- Integral Electronic Log Record (ELR)
- Software upgrade package (option)

Advanced User Services

- Simultaneous multiple selective voice and data calls (MSA)
- Programmable net names
- Operator authentication and identification
- Alarm and alert functions (option)
- Commander break-in facility (option)
- Software radio architecture upgradeable for customer specific functionality
- Situation awareness with embedded GPS receiver (option)
- Panther Short Message Service

THALES

THE ULTIMATE MANPACK SOLUTION

The Panther V manpack transceiver provides 5 and 20 watts of RF power with un-matched co-site capability enabling operation in multi-radio locations where the majority of similar manpack radios would fail. The transceiver's superior co-site performance also enables the manpack to be operated in a vehicle clip-in configuration, with co-located 50 watt VHF radios, delivering up to 20 watts through the vehicle antenna.

The Panther V is a core element of the latest generation Panther Enhanced Digital Radio (EDR) family. It represents the smallest and lightest tactical 20 watt manpack and vehicle radio available today, offering unparalleled EPM, data and user capabilities in the 30 to 108 MHz military radio band.
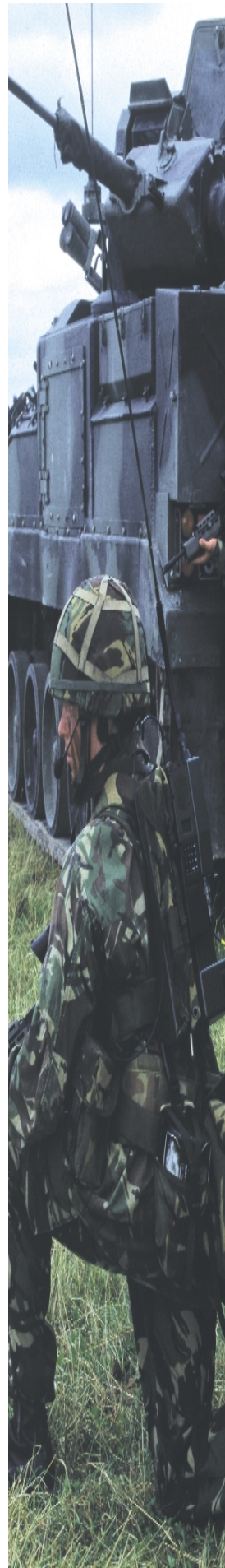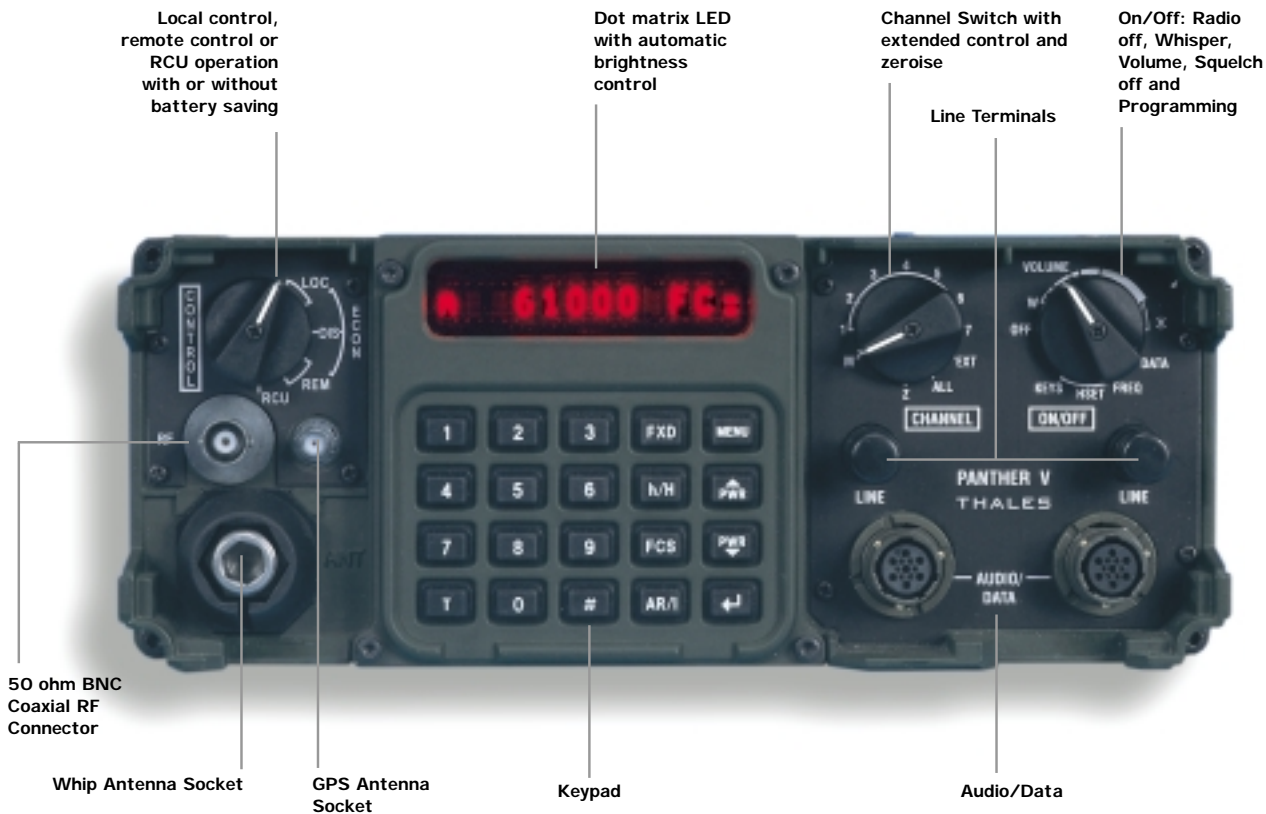
THE COMPACT VEHICLE SOLUTION

The Panther V transceiver can be installed as a dedicated compact 20 watt vehicle radio in land based tracked and wheeled vehicles as well as airborne and naval platforms. Vehicle harness interfacing and power conditioning have been integrated within the transceiver, thus providing a single unit solution.

For high RF power vehicle and base station operation, the Panther V transceiver interfaces to the BCC 767 amplifier unit providing 50 watts in a compact size that similar systems have been unable to achieve.

Panther EDR

Local control, remote control or RCU operation with or without battery saving

Dot matrix LED with automatic brightness control

Channel Switch with extended control and zeroise

On/Off: Radio off, Whisper, Volume, Squelch off and Programming

Line Terminals

50 ohm BNC Coaxial RF Connector

Whip Antenna Socket

GPS Antenna Socket

Keypad

Audio/Data

Unparalleled compatibility

■ Drop-in replacement and full over the air compatibility with the world's most widely used tactical EPM radio, Jaguar V

■ Compatible with a range of vehicle harness systems including Thales BCC 600 series, VIS, and VIC1

■ Drop-in replacement option for VRC 12

■ Built in compatibility to existing weapon systems including:-
  - Patriot missile system data modes (option)
  - M1A2 tank IVIS data modes (option)

Panther V is easy to use

Panther V, which is now in service in many countries around the world, has been described as the easiest to use tactical VHF EPM radio available today. Fully automatic initial and late entry synchronisation in all EPM modes, coupled with the user friendly controls, ensures that communicating is easy and reliable even for inexperienced operators.

The advanced facilities provided in the new Panther V EDR further simplify and enhance the radio's operation, including the introduction of a full dot matrix alphanumeric display for mode indication, easy to use menu structure, and programmable radio net names.

Technology

The Panther V Enhanced Digital Radio incorporates the very latest in Digital Signal Processing technology providing a truly software configurable digital architecture radio design.

To a customer this means that the flexible design and processing power available will ensure that future upgrades, to meet specific operational requirements, can be achieved throughout the in-service life of the radio. Software upgrades are achieved without the need to open the radio, thus ensuring that future requirements can be met in the field.

To achieve the compact design and high reliability of the radio, comprehensive use of surface mount technology has been made with over 95% of the components being SMDs.

Tailored Customer options

■ Thales provides tailored language options for Panther V's display, keypad and switches

■ Thales provides tailored encryption solutions to meet national security requirements

■ Thales provides tailored functionality to meet both current and future needs

■ Thales provides tailored Integrated Logistic Support solutions

■ Thales provides transfer of technology, in partnership with industry, to manufacture the complete Panther V in a customer's country

TECHNICAL SPECIFICATION

Frequency Range:
30 to 108MHz fixed frequency
30 to 88MHz frequency hopping
(3120 frequencies at 25kHz spacing)

Preset Channels:
8 programmable nets storing all operational information and synchronisation status (battery back-up)

On air communications Modes:
Fixed clear (FC) & fixed secure (FS) multimedia (voice, data, video, messaging, situation awareness)
Frequency hopping secure (FHS) multimedia - optimised at 100hps
Mixed Free Channel Search (FCS), frequency hopping automatic net operation

On air interoperability:
Fixed clear voice (STANAG 4204 interoperable - F3E Simplex)
Frequency hopping hailing (STANAG 4292)
Jaguar V EPM modes
Channel Scanning Mode (8 channels - FC)
Two Frequency Simplex (FS)

Frequency hopping:
All frequency hopping
4/16/256 user specified frequencies
256 channels orthogonal hopping (8 guaranteed orthogonal sets)
256 channels narrow band hopping (in 9 bands)
32 barred bands per programmed channel

Synchronisation:
Fully automatic for both initial set up and late entry procedures
Passive and active late net entry
Independent of external time of day information
All synchronisation takes place in frequency hopping mode using the chosen frequency hopset at the full hop rate
Synchronisation can be achieved without a Master Station in the radio net
Radio silence – indefinite

Encryption:
High level digital stream cypher encryption covering all media transmissions
Number of keys greater than 10^{22}

Baseband interfaces:
Dual audio input / integral vehicle harness interface
Dual RS232 data ports with flow control
Connection to Combat Net Radio Interface / Radio Access Point
Gateway capability to Allied Forces EPM CNR (option)

Data:
Baseband data connections up to 115kbps
Asynchronous / synchronous data throughput up to 16kbps
Asynchronous / synchronous data throughput up to 9.6kbps with FEC
Reed Solomon Forward Error Correction (FEC), binary block coding and interleaving
Multiple Simultaneous Access (MSA) – up to 100 selective FHS data calls per net (50 simultaneous)
Carrier Sense Multiple Access (CSMA) with dynamic net management
Automatic voice / data recognition

User services:
Selective call and radio banning
Multiple Simultaneous Access (MSA) – up to 100 selective FHS voice calls per net (50 simultaneous)
Integral Over the Air Re-keying (Frequency, key, and net information)
Authentication with operator and transceiver identification
Panther Short Message Service

Integrated Logistic Support:
Comprehensive multi-level Built In Test (BIT)
Integral Electronic Log Record
includes: serial number, user defined record, automatic fault log, radio duty cycle
In field software upgrade capability

Remote Control:
In-built 2 wire remote control /retransmission (up to 4km)
2 and 3 way re-broadcast capability
Intercom facility over D10 field wire
Extended control and programming from a PC based Windows application

Co-site:
5W / 20W Manpack radio:	5MHz frequency separation; 1.5 metres	
20W / 50W Vehicle radio:	5MHz frequency separation; 1.5 metres	

Transmit:
RF Output Power: (nominal)	Manpack configuration: 100mW, 5W at 12V DC 100mW, 5W, 20W at 24 V DC
Vehicle/base station configuration:	100mW, 5W, 20W, 50W (with amplifier) at 24 V DC
Harmonic Suppression:	Better than 50dB below carrier
Spurious Emissions:	Better than 60dB below carrier for greater than 25kHz offset
AF Response:	Voice 300Hz to 3.0kHz

Receive:
Sensitivity:	Better than -115dBm at 10dB SINAD
Spurious Response:	Better than 85dB
AF Response:	Voice 300Hz to 3.0kHz
AF Output Power:	20mW nominal for each socket in to 300 ohms
Squelch:	Carrier, 150Hz tone and 16kb/s

Power Supplies:
Supply Voltage:	12V or 24V DC nominal Primary or rechargeable batteries or vehicle supply
Protection Against:	Supply polarity reversal Open/Short circuit RF connection RF input 65V (EMF) applied Spike/Surge DEF STANDARD 61-05 (Q STAG 307) 24V DC at Remote Line Terminals

Environmental:
Temperature range:	-40˚C to +70˚C
Environmental Specification:	MIL STD 810E
Nuclear Hardened:	EMP protected
EMI/EMC:	MIL STD 461C

Physical characteristics (nominal):
Transceiver:	Height	90mm
	Width	230mm
	Depth	205mm
	Weight	4.4kg
	Volume	4.24 litres
50W Amplifier:	Height	70mm
	Width	230mm
	Depth	230mm
	Weight	4.2kg
	Volume	3.70 litres

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