



PARK AIR ELECTRONICS | SERIES 3000DV2

Defence Radios

Description

FEATURES

VHF/UHF 100 to 163/225 to 399.975 MHz operation

25 kHz and 8.33 kHz channel spacing to ICAO standards

Transceiver or split-site receiver/transmitter

Optional built-in VHF/UHF GUARD receiver

Embedded Have Quick II operation

Multimode AM/FM/Marine operation

Link II and secure voice compatible

Advanced Built-in Test (BIT)

Power amplifier and auto-tune filter interfaces

Flexible antenna port configurations

The PAE series 3000DV2 radios operate in the VHF 100 to 163 MHz and/or UHF 225 to 399.975 MHz frequency bands.

They are designed for military, civil aeronautical and maritime communication applications.

The series comprises the following models:

	VHF/UHF	UHF	VHF
TRANSCEIVERS	3060V2	3040V2	3070V2
TRANSMITTERS	3160V2	3140V2	3170V2
RECEIVERS	3260V2	3240V2	3270V2

The 3000DV2 series is designed to meet military transportable environmental requirements including temperature, vibration, shock, sand/dust and EMC. Equipment construction is both rugged and highly modular. Either fixed site 19" rack mounting or vehicular shock mounting arrangements may be used.

The 3000DV2 supports multimode operational requirements including AM/FM narrowband voice and wideband data, 8.33 kHz channel spacing to ICAO requirements and simplex marine band channels with pre-set ship/shore modes.

ECCM includes embedded Have Quick II or Quick Fox capability and compatibility with Link II and 16 kb crypto systems.

Full function control can be local, using the front panel keypad and associated LED display, or remote via PAE series 3000V2 or MARC systems.

A high performance synthesiser is employed to provide frequency control. The synthesiser has an exceptionally low broadband noise floor that enables maximum benefit to be obtained from both the inherent dynamic range of the receiver and the low noise design of the transmitter power amplifiers. These features give the 3000DV2 series unrivalled performance in co-located installations.

Antenna port configuration is highly flexible and any combination of Tx/Rx/VHF/UHF can be accommodated including a single combined VHF/UHF connection. This flexibility enables simple configuration for use with separate auto-tune filters and power amplifiers (PAE 3640) where overall system requirements dictate their use. In standard form, individual antenna connections are provided for VHF and UHF operation. These can also have common interconnection to the optional guard receiver.

The BIT provides comprehensive monitoring of the equipment. Each module has a series of addressable test points that are monitored and compared with specification limits stored in memory. Any errors detected are displayed on a multifunction front panel LED that indicates module and test point location. In addition to continuous monitoring, a full performance test can be initiated.

The radios have full remote control capability via a serial port that can be configured for dc (RS422) operation or for tone (CCITT V23) via a built-in modem. The protocol is compatible with PAE 3000V2HQ or MARC control systems. Output facilities include an interface to auto-tune filters, and connections for secure speech and data modems. A variant of the radio is available for Quick Fox operation.



PARK AIR ELECTRONICS

Defence Radios | Specification



General Characteristics

Frequency ranges:

100 to 163 MHz and 225 to 399.975 MHz

Frequency error:

≤ 1.5 ppm between -20°C and 0°C

≤ 1 ppm between 0°C and +55°C

Ageing:

≤ 1 ppm/year

Channel spacing:

25 kHz (8.33 kHz available between

118 and 136.975 MHz)

Pre-set channels: 99

Classes of emission:

A3E, AXX, F3E, FXX, HQ II, & Link II (UHF)

Simplex marine channels (156 to 163 MHz)

Power Supply

ac: 110/120 V or 220/240 V, 45 to 65 Hz

± 10% from selected tap

Consumption:

Rx models: 175 VA

Tx/TR models: 700 VA

dc: 22 to 32 V. Negative earth

Consumption:

Rx models: 3 A

Tx/TR models: 18 A

Dimensions and Weight

Width: 430 mm

Height: 178 mm

Depth: 597 mm

Weight: 32 kg (nominal)

Environmental

Temperature range:

Operating: -20°C to +55°C

Storage: -40°C to +70°C

Duty cycle: Continuous operation

up to +55°C

Relative humidity (to Mil Std 810C):

95% at 55°C (operating)

85% at 40°C (storage)

Salt fog: to Mil Std 810C

Sand and dust: to Mil Std 810C

Shock: 40 g, 6 ms

Vibration: 10 to 500 Hz to Mil Std 810C

EMC: to Mil Std 461/462D Part 4

Transmitter RF Characteristics

Carrier power output:

40 W AM; 60 W FM

± 0.5 dB over operating band

± 1 dB over temperature range

0 to 10 dB front panel adjustment

Power reduction:

Output power is automatically reduced under the following conditions:

VSWR ≥ 2.5:1 (gradual reduction to -10 dB

at infinite VSWR)

dc supply ≤ 26 V (1 dB nominal)

Permissible mismatch: Infinite VSWR

Harmonic outputs:

Better than -70 dBc (-60 dBc between 225 and 230 MHz)

Spurious outputs:

Better than -80 dBc > 500 kHz from carrier

Broadband noise:

Better than -155 dBc/Hz, 3 MHz from carrier

Modulation Characteristics

Narrowband (A3E, F3E)

Frequency response

(25 kHz channel spacing):

300 Hz to 3.4 kHz ± 1.5, -3 dB (ref 1 kHz)

75 Hz, -20 dB; 6.8 kHz, -30 dB

Frequency response

(8.33 kHz channel spacing):

300 Hz to 2.5 kHz +2, -4 dB (ref 1 kHz)

75 Hz, -20 dB; 3.2 kHz, -25 dB

Modulation index: M = 0.9 AM, ± 5 kHz FM

Distortion: ≤ 5% THD at M = 0.9

S/N ratio: ≥ 45 dB ref M = 0.9 1 kHz

Line input: -20 dBm to +10 dBm, 600 Ω balanced

Microphone input:

600 Ω adjustable 0.5 mV to 30 mV

Speech processing:

VOGAD: Dynamic range 30 dB for ± 2% change in modulation depth

RF clipper: Clipping depth 6 dB ± 2 dB

Provides increase in average modulation depth

Mute: Adjustable to open from 3 mV mic input

Wideband (AXX, FXX)

Modulation index: M = 0.9 AM, 20 kHz FM

Frequency response:

25 Hz to 20 kHz ± 3 dB (ref 5.5 kHz)

Line input: 600 Ω nominal balanced

Level adjustable -20 dBm to +10 dBm

Receiver RF Characteristics

Sensitivity for (S+N):N of 10 dB:

A3E: ≤ 2 μV (-101 dBm);

M = 0.3 at 1 kHz modulation

F3E: ≤ 1.5 μV (-104 dBm);

deviation 3.5 kHz with 1 kHz modulation

Spurious suppression:

≥ 80 dB (two exceptions 70 dB)

Desensitisation for (S+N):N ≥ 6 dB:

Wanted signal: 2 μV M = 0.3

Interfering signal: 0 dBm at ± 5 MHz

Cross modulation (for a 20 dB ratio):

≥ 100 dB at ± 5 MHz (ref 1 μV emf)

Intermodulation (ref 1 μV emf):

≥ 80 dB for equal amplitude signals, ± 100 kHz or greater from fc

AGC:

RF: ≤ 3 dB change in audio output for input

signals in the range 2 μV to 700 mV

AF: ≤ 1 dB change in audio output for

M = 0.3 to M = 0.9

AF Characteristics

Narrowband (A3E, F3E)

Line output:

600 Ω balanced transformer

Level adjustable -20 dBm to +6 dBm

Noise blanking:

AM only. Impulse noise removed by audio blanker that operates for M = 0.9 or greater

Mute:

S/N operated with carrier override adjustment

Range 6 to 16 dB (S+N):N

8.33 kHz channel spacing uses carrier operated mute

Wideband (AXX, FXX)

Wideband output:

600 Ω nominal balanced

Adjustable -20 dBm to 0 dBm

Remote control:

Audio circuits: Tone or dc keying, max line loss 17 dB

Data control circuits: Full function control using CCITT V23 or RS422

Options

Option 01:

Guard receiver

Mode: AM speech

Frequency: 121.5 or 243 MHz

Option 04:

Customer defined antenna port configuration

Option 07:

Have Quick II operation

This option comprises an internal Have Quick module and a Fill Gun port

Variants:

A Quick Fox variant of the radio is available.

This model is fitted with an internal Quick Fox module and a Fill Gun port. The radio's front panel is marked for Quick Fox functions



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