

# COUGAR 2000

PRM 5120  
Covert Personal Radio

## KEY FEATURES

- 136-174MHz coverage
- Analogue or digital voice
- Up to 100 programmable channels
- Meets ETSI approvals
- CTCSS Squelch
- Backwards compatible with existing Cougar
- Scanning and programming/cloning features
- Compact, rugged construction
- Optimised for use with covert ancillaries

## INTRODUCTION

The PRM 5120 is an extremely compact radio specifically designed for covert applications. The main case contains all the radio and cryptographic components packed in a compact, slim unit which is ideal for carrying unobtrusively about the person.

The Cougar 2000 covert radio provides traffic mode compatibility with the VRM 5110 mobile radio - 2 or 4 level Digital FSK modulation; Clear (Analogue) Mode operation in either 12.5 or 25kHz channels and CTCSS. The radio is also compatible with MSHR and existing Cougarnet equipment, providing 16kb/s (or optional 12kb/s) CVSD in 25kHz channels.

The radio operates in the high band-VHF 136-174MHz. RF output power is programmable for either 0.5W or 2W.

The optional internal digital encryption provides 4 crypto codes (A, B, C and D), by means of an embedded MA 5137/87 crypto module. The radio may be supplied without crypto fitted to operate in Clear mode only.

The PRM 5120 has no external operator controls (except Key zeroise) and supports audio ancillaries similar to the existing Cougar PRM 4735.

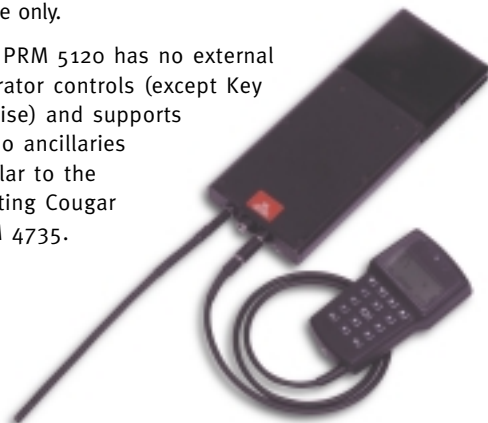


Operator control is provided by the MA 5125 RCU which is designed to fit unobtrusively in the palm of the hand and can be operated by touch alone. Alternatively, the MA 5130 CLU provides control facilities integrated with a loudspeaker/microphone in a convenient clip-on unit and is intended for users not requiring covert operation. 8 channels are available with the MA5125 and 100 channels with the MA5130.

Both units link to the radio via the TARIFF data format. Channel and mode programming will use common Cougar 2000 fill equipment. The battery may be attached directly to the radio or mounted remotely with an extension lead. The simple end-fed wire antenna is connected directly to the radio.

The radio is rugged and splashproof and is intended primarily for use by surveillance operators (Police, Customs and Excise, Drug-Squad, Government Agencies etc.). Covert operator warnings are provided by means of switched Rx signal or local sidetone thereby avoiding the use of unnatural tones which could be detected.

This compact Cougar 2000 compatible unit may be part of a simple short-range, point-to-point system, or integrated into large-area radio communications systems.



## TECHNICAL SPECIFICATION

### GENERAL

#### Frequency Range:

VHF: 136 – 174MHz  
UHF option: 440 – 512MHz

#### Frequency Stability:

VHF: Within  $\pm 5$ ppm  
(including ageing)  
UHF: Within  $\pm 1.5$ ppm  
(including ageing)

#### Channel Spacing:

12.5/25kHz pre-programmed per channel  
(20kHz and 30kHz available as variants)

#### Channels:

MA5125 RCU selects  
channels 0-7  
MA5130 CLU selects  
channels 0-99

#### Operating Modes:

Single or Two-  
frequency Simplex  
Analogue: 12.5/25kHz chans F3E  
(Narrowband FM)  
Digital: 25kHz chans only F1E  
(16kb/s data)

#### Embedded Encryption

MA 5137/87 internal digital speech security  
module, with Standard, Short and Long-term  
Key Retention options

#### Squelch:

Carrier, CTCSS, 150Hz

#### Scan Modes

Channel: Priority Channel  
monitor in Standby Rx  
mode, programmed for  
Hailing on Rx/Tx  
modes.  
Group: Best RSSI in group  
defines operating  
channel

#### Nominal Supply:

10V DC negative  
ground

#### Sidetone:

Nominally 6dB below  
the Received signal  
level

#### Data Programming

Programming via Serial Control Data  
interface, TARIFF format. Selected features  
may be entered from a Programmer, or  
Cloned from a previously enabled radio

### ENVIRONMENTAL SPECIFICATION

#### Operating Temperature

-20°C to +55°C

#### Storage Temperature

-30°C to +70°C

#### Sealing

Splashproof

### RELIABILITY

#### MTBF

GM in accordance with MIL-HBK-217F @25°C.  
>4000 hours

### TRANSMITTER

RF Power Output: 0.5W or 2W

#### Nominal Load Impedance

50 $\Omega$

#### Audio Input Impedance

5k $\Omega$

#### Modulation Sensitivity

Nominally 120 $\mu$ V rms. Optimised for use with  
covert microphones

#### Maximum Peak Deviation

Analogue (inc any squelch tones)  
25kHz channel +/- 5.0kHz peak  
12.5kHz channel +/- 2.5kHz peak  
Digital Signal:  
25kHz channel +/- 5.0kHz peak

#### Adjacent Channel Power

25kHz Analogue or  
16kb/s 4FSK Digital  $\leq -70$ dBc  
12.5kHz Analogue  $\leq -60$ dBc

#### Spurious Emissions

9kHz - 1GHz  $\leq 0.25$  $\mu$ W  
VHF: 1GHz - 4GHz  $\leq 1.0$  $\mu$ W  
UHF: 1GHz - 12GHz  $\leq 1.0$  $\mu$ W

#### AF Response

Analogue mode 300Hz to 3kHz

#### Audio Distortion

Analogue mode  $\leq 5\%$

#### Hum and Noise

$\geq 35$ dB

#### Transmit Timeout

Transmission programmable to be either  
continuous, or terminated after a time of 30s,  
60s, 90s or 120s

#### RCU Tone Signalling Mode

When enabled, an 800Hz tone is transmitted  
in place of the microphone signal. A  
transmission hang of nominally 1s after the  
tone PTT has been released allows an ICW  
(Morse like) transmission to be sent

#### Whisper Mode

Whisper microphone sensitivity can be  
programmed to any volume level (normally  
the lowest two)

### MECHANICAL CHARACTERISTICS

#### Nominal Dimensions

Length: 119mm  
Width: 75mm  
Depth: 17.6mm  
Length c/w MA5136C battery  
185mm

#### Weight

PRM 5120 only 250g approximately  
PRM 5120 c/w MA 5136 Battery, RCU,  
Mic/loop and antenna. 575g approximately

### RECEIVER

#### Maximum Usable Sensitivity

$\leq -117$ dBm for 12dB  
SINAD  
Data BER:  $\leq -117$ dBm for 1:10 BER

#### Adjacent Channel Selectivity

25kHz channel  $\geq 70$ dB  
12.5kHz channel  $\geq 60$ dB

#### Spurious Response Rejection

100kHz to 4GHz  $\geq 70$ dB

#### Intermodulation Response

$\geq 65$ dB

#### Blocking Ratio

$\pm 1$ MHz to  $\pm 10$ MHz from wanted  
 $\geq 84$ dB

#### Spurious Emissions

9kHz - 1GHz:  $\leq 2$ nW  
1GHz - 12.75GHz:  $\leq 20$ nW

#### Audio Output

At full volume into 8 $\Omega$   $\geq 500$ mW rms

#### AF Response

Analogue mode: 300Hz to 3kHz

#### Hum and Noise

$\geq 40$ db

#### Volume Control

(Controlled from the RCU/CLU)  
Full volume and 5 positions at - 6dB per  
position, giving a maximum of 30dB  
attenuation

### OPERATIONAL FACILITIES


#### Controls

The only control provided on the radio unit  
is zeroise. Disconnection of the Mic/loop  
lead also switches the radio OFF

Operator ON-OFF, Volume, Channel 0-7, Tone  
PTT and Clear/Crypto key controls are  
provided on the separate Covert Radio  
Control Unit MA 5125. Alternatively the Overt  
Control Loudspeaker Unit MA 5130 may be  
used, which in addition to the above  
provides selection of 100 channels plus LCD,  
Monitor and Scan enable

#### External Connections

Antenna Connector RCU Clone Connector  
Mic/CLU/Fill Connector Fill Connector  
Battery Contact

 Type Approved to ETS 300 086  
and ETS 300 219

# THALES

#### Thales Defence Ltd

Communications House, PO Box 3621, Western Road,  
Bracknell, Berkshire, RG12 1WJ, United Kingdom  
Telephone: +44 (0)1344 387000 Fax: +44 (0)1344 387403  
e-mail: enquiries@uk.thalesgroup.com www.thalesdefence.co.uk

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