

CODAN
RADIO COMMUNICATIONS

MILITARY **HF RADIO SOLUTIONS**

2013 PRODUCT CATALOGUE

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Available with the NGT™ series Transceivers



Available with 2110M™ series Transceivers



Available with 2110™ series Transceivers

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'HOW TO' GUIDE

1 Choose your Transceiver Variant*

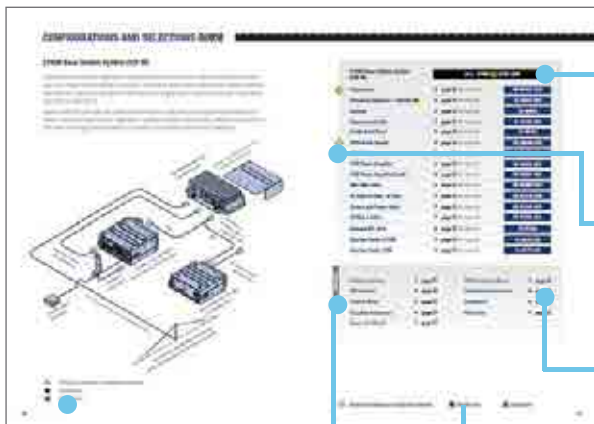
Codan has identified key systems for the 2110M Manpack and NGT Transceiver range. Before choosing your package from the **Systems and Configurations Guide** section please ensure you select a Transceiver Variant:



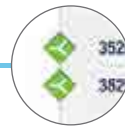
Once you've chosen your Transceiver Variant, make note of the unique code highlighted in yellow. You'll need to insert this code into the System Package Part-Number. **(see step 2).**

2 Choose your System Package

After selecting a 2110M Manpack or NGT *MR* Transceiver Variant please choose a System Package — Portable, Vehicular, Base or High-Power — listed in the **Systems and Selections Guide** section



Use the Part-Number in the black box to define your Package, remembering to insert the Transceiver Variant code **(from step 1).**



This table contains a list of Standard Package items. Some items may vary depending upon your Transceiver Variant choice.



You can find out more information on both Standard and Optional Package items by referring to the page number.



The bottom table contains a list of Optional items for your System Package.



Use this key as a guide to interpret the System Package tables.

3

Add your Options and Accessories

You can customise your System Packages by adding individual parts from the **2110M Manpack, NGT MR Transceiver** or general **Options and Accessories** sections.



Use the Part-Number in the grey box to define the individual accessories or options you require.



Build your own System

If the System Packages do not meet your requirements you can build your own system. It is recommended that you select a Transceiver Variant — either 2110M Manpack or NGT MR Transceiver — prior to adding options and accessories.



Select a Transceiver Variant, using the Part-Number in the blue box. There are important distinctions, such as colour options or Frequency Hopping capabilities, so please ensure you read the item description carefully.



2110M MANPACK TRAN

The Codan 2110M SSB Manpack Radio is designed for the harshest field conditions and environments, meeting MIL-STD-810F. At 2.9 kg the 2110M is the lightest, fully featured HF manpack radio available on the market offering up to 65 hours of operation from a rechargeable battery pack.

The 2110M operates from 1.6 to 30 MHz at 5 or 25 watts, offering USB/LSB, AM, AFSK and CW. A simple menu driven system with a 200 ID address book allows easy operation with a 'one' push emergency calling feature.



RECEIVER

STANDARD FEATURES

- ✓ Internal Antenna Tuner
- ✓ Internal GPS Receiver
- ✓ User and administrative access
- ✓ Intelligent battery system
- ✓ Text messaging
- ✓ Internal speaker
- ✓ FED-STD-1045 ALE/CALM
- ✓ DSP Noise Reduction — *Easitalk*

OPTIONAL FEATURES

- ✓ Encryption (COMSEC)
- ✓ Frequency Hopping (ECCM)
- ✓ MIL-STD-188-141B ALE (JITC Certified)
- ✓ STANAG 4538 (3G) ALE
- ✓ MIL-STD-188-110A/B High speed modem
- ✓ Digital Voice

KEY FEATURES

INTERNAL ANTENNA TUNER

The 2110M features an integrated antenna tuner that automatically detects the antenna and tunes it to the operating frequency. Initial tuning typically occurs within 2.5 seconds and takes only 50 milliseconds when tuning from memory. Silent Tuning is supported when changing channels.

The tuner is fully protected against unexpected antenna loads and mismatches, and overvoltage. A separate 50 ohm BNC connection is also available for broadband antennas.

INTERNAL GPS

The 2110M comes standard with an integrated 12-channel GPS receiver and internal antenna. This enables accurate time and location, providing latitude, longitude, altitude, speed and bearing of the user. A GPS tracking option enables monitoring of distance and bearing from other transceivers

within a HF network in fixed frequency, Selcall, ALE and Frequency Hopping modes of operation.

An external GPS antenna port is also provided on the front panel that allows connection of an optional "hockey puck" antenna. Use of an external antenna provides GPS data when the radio is located within a vehicle or building, not allowing a clear line of sight for the internal antenna.

INTELLIGENT BATTERY SYSTEM

Codan's unique battery management technology continuously monitors the battery condition and remaining capacity. The transceiver's front panel shows the remaining operating hours, based upon actual usage calculated against transmit and received call time.

The intelligent monitoring system monitors battery charging and prevents batteries from being overcharged. Charging can occur via the transceivers front panel whilst operating the radio.



TEXT MESSAGING

Utilising the full alpha-numeric keypad and large display, the operator can compose and edit text messages. These are sent as SMS in Fixed Frequency, Selcall and Frequency Hopping modes of operation. In MIL-STD-188-141B ALE, these are transmitted and received utilising the AMD feature.

INTERNAL SPEAKER

The front panel includes an internal speaker that can be muted with a single button press.

FED-STD-1045 ALE/CALM

The FED-STD-1045 ALE capability supports Codan's advanced link management technology (CALM), which improves the performance of normal FED-STD ALE by maintaining channel quality information (LQA) on a 24-hour basis and reducing the quantity of soundings.

Other advanced ALE features supported include:

- Automated messaging processing capability including Remote Diagnostics, GPS polling and position sending, Phone and Emergency calls
- Listen-Before Transmit capability preventing ALE transmission on channels that are already occupied
- Simultaneous Multiple Network Scanning capability

DSP NOISE REDUCTION — *EASITALK*

Codan's Digital Signal Processing techniques greatly reduce the effect of interference and channel noise to provide clearer communications. *Easitalk* operates at the press of a button, resulting in a loud and clear signal even under harsh conditions.



OPTIONAL FEATURES

ENCRYPTION (COMSEC)

The 2110M offers Voice Encryption options that can prevent third party monitoring of communications. The following devices are supported internally:

■ CES 128-Bit Encryptor

Supporting all modes of operation, the 128-Bit CES Encryptor provides a Type 3 encryption solution to customers, programmable from the front panel of the radio or via Codan's KMS — Key Management Software application.

■ DV AES-256 Bit Encryptor

Supporting Fixed Frequency, Selcall and ALE modes of operation, the 256-Bit AES Encryptor provides digital voice using a MELPe Digital Vocoder, complying with STANAG 4591. The MELPe Digital Vocoder supports rates of 2400 and 1200 bits/s. The AES encryption is programmable from the front panel of the radio or via Codan's KMS — Key Management Software application.

FREQUENCY HOPPING (ECCM)

Codan's Frequency Hopping offers additional protection against malicious jamming and signal interception.

The 2110M's ECCM is user configurable allowing selection of individual hop rates, 6/12/25 hops per second, along with a unique 18 digit (128 bit) security hopping key. These Frequency Hopping parameters are programmable from the front panel or via KMS — Key Management Software.

MIL-STD-188-141B ALE (JITC CERTIFIED)

Providing 600 channels and 20 nets, the 2110M supports JITC certified MIL-STD-188-141B ALE, enabling it to be interoperable with military transceivers using the JITC certified MIL-STD-188-141B ALE.

HIGH SPEED MODEM

The embedded AES-256 bit encrypted modem supports both MIL-STD-110A/B and STANAG 4539 waveforms offering data rates of 75 – 9600 bits/s. Supported by the STANAG 5066 RC50-C email client application, the modem provides an interoperable solution to other STANAG 5066 email clients on a HF network.

DIGITAL VOICE

Digital voice provides highly intelligible audio, free from the noise, interference and fading effects often heard over analogue voice. Supplied as standard with a 2,400 bit/s Vocoder. It can be ordered with AES-256 encryption and 1200 bit/s Vocoder.



CONFIGURATIONS AND SELECTIONS GUIDE

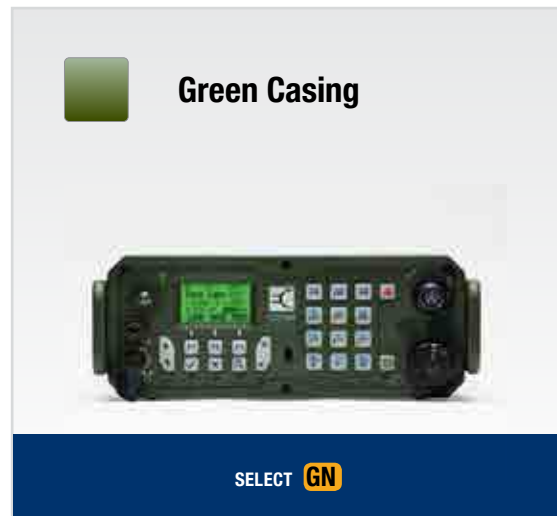
This section provides 2110M Manpack configuration packages developed with the core components needed for a complete Codan 2110M Manpack system. The Selections Guides also outline the options and accessories you can select for your package or choose to add to your manpack system.



The packages are a guide for your system requirements, a custom configuration for your 2110M Manpack system can be built to meet exact specifications. Please note that items shown in blue are standard parts and items in grey are optional.

MANPACK TRANSCEIVER SELECTION

The Codan 2110M HF Transceiver can be selected in green, with or without optional Frequency Hopping, or in black. Each transceiver model shown below and the black Frequency Hopping capable 2110M listed on page 21 are suitable to be used in the system packages.

Your initial selection of HF transceiver is suggested before proceeding to package selection or custom configuration. For more information on Transceivers please see page 21.



-  2110M GF and black Frequency Hopping capable 2110M Transceivers are subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.
-  For the black, Frequency Hopping capable 2110M, please see page 21, 2110M Manpack Transceivers.

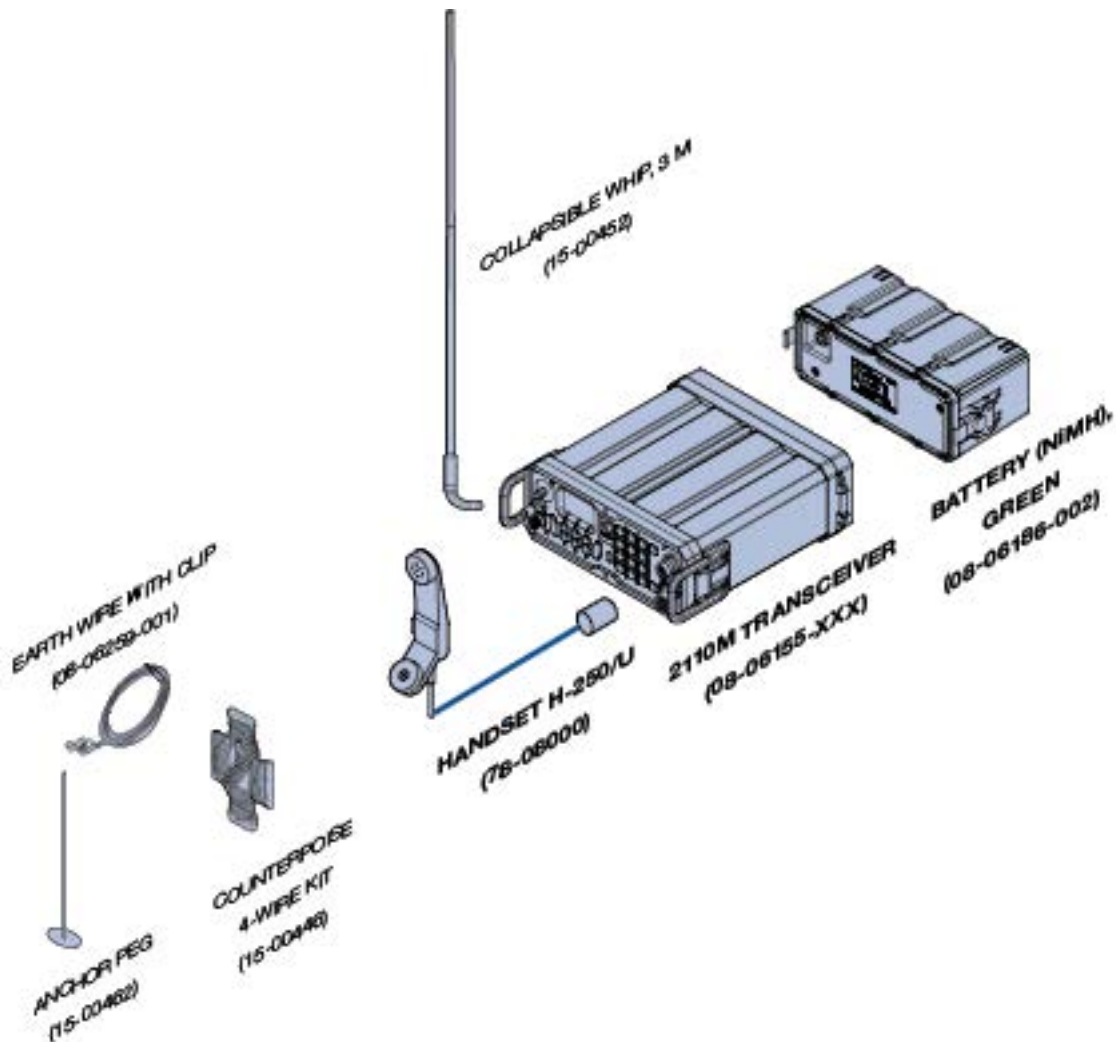
CONFIGURATIONS AND SELECTIONS GUIDE

2110M Portable System 25 W

This package contains the key components for a 2110M Vehicular HF System. Up to 50 hours of use (using RX/TX at 9:1 ratio) is provided by the 13Ah rechargeable lightweight battery. The 3 m collapsible whip antenna, coupled with the internal 2110M Antenna Tuner provides continuous coverage from 1.6 to 30 MHz. The internal GPS receiver that is standard on the 2110M provides

synchronisation support for Frequency Hopping. Maximum RF power output for this system configuration is 25 W.

Additional transceiver options and accessories can be selected to expand the capabilities of this configuration.



2110M Portable System 25 W

QUOTE 2110M-XX-PORTABLE



2110M Transceiver

➔ **page 21** for more info

08-06155-XXX



Frequency Hopping — only for GF

➔ **page 22** for more info

15-10542-000

Handset H-250/U

➔ **page 29** for more info

78-08000

Collapsible Whip

➔ **page 30** for more info

15-00452

Counterpoise 4-wire kit

➔ **page 31** for more info

15-00446

Earth Wire with Clip

➔ **page 31** for more info

08-06259-001

Anchor Peg

➔ **page 31** for more info

15-00462

Battery (NiMH), Green

➔ **page 26** for more info

08-06186-002

2110M Operator Guide

➔ **page 137** for more info

15-04153-EN

OPTIONAL

Software Options

➔ **page 22**

Batteries

➔ **page 26**

Hardware Options

➔ **page 23**

Chargers

➔ **page 27**

GPS Antenna

➔ **page 34**

Backpacks

➔ **page 33**

Portable Antennas

➔ **page 30**



Variable item (depends on configuration selection)



Standard item



Optional item

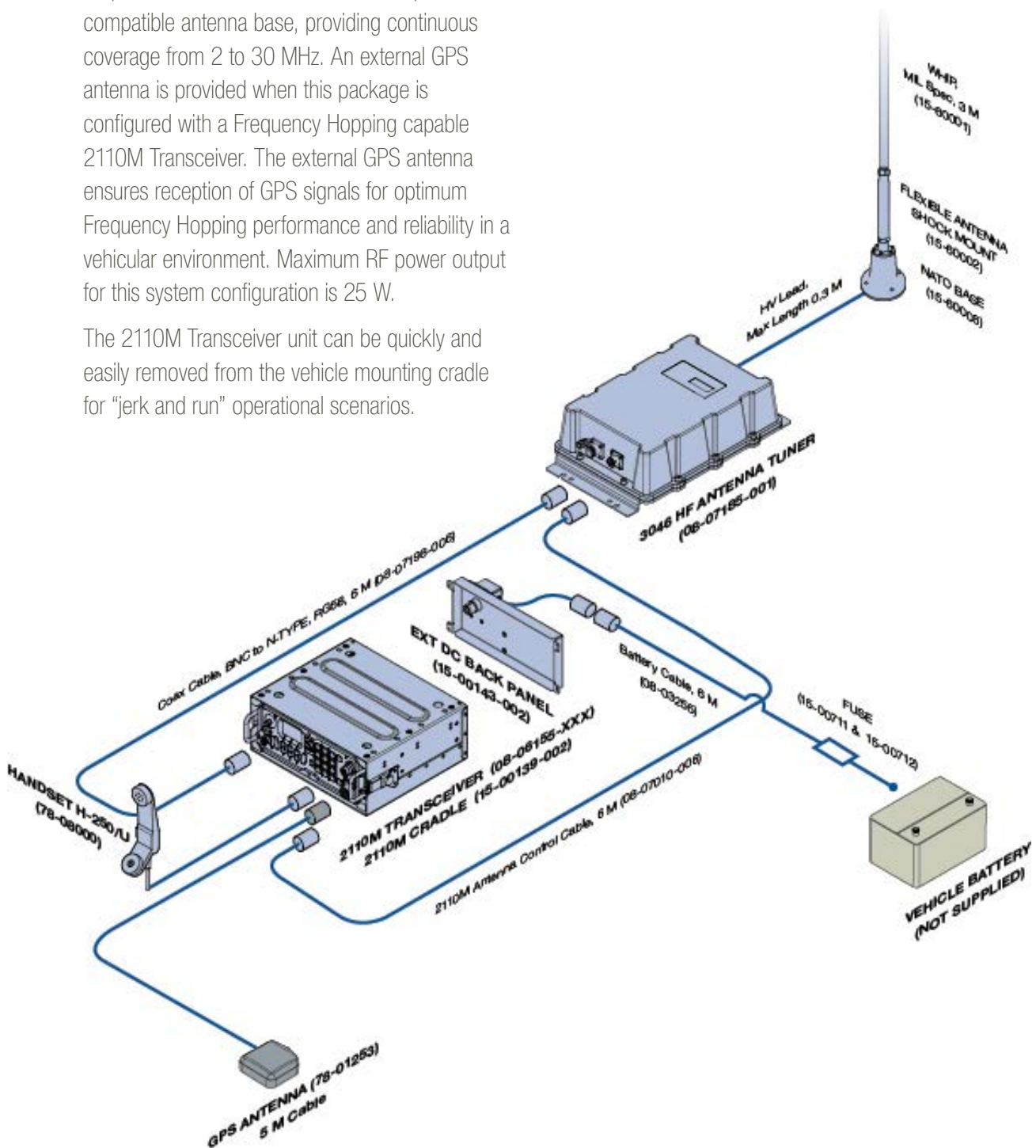
CONFIGURATIONS AND SELECTIONS GUIDE

2110M Vehicular System 25 W

This package contains the key components for a 2110M Vehicular HF System. Power is provided by the 12 V DC vehicle battery however with the addition of an optional 24/12 V voltage converter the system is also able to run from a 24 V DC supply. The antenna system comprises the 3046 automatic tuner coupled with a 3 m composite whip antenna mounted to a NATO hole pattern compatible antenna base, providing continuous coverage from 2 to 30 MHz. An external GPS antenna is provided when this package is configured with a Frequency Hopping capable 2110M Transceiver. The external GPS antenna ensures reception of GPS signals for optimum Frequency Hopping performance and reliability in a vehicular environment. Maximum RF power output for this system configuration is 25 W.

The 2110M Transceiver unit can be quickly and easily removed from the vehicle mounting cradle for "jerk and run" operational scenarios.

Optional shock mounts are available for both the transceiver vehicle mounting cradle and 3046 HF Antenna Tuner. These provide added protection when equipment is installed in environments that may sustain extreme levels of shock/vibration.



2110M Vehicular System 25 W

QUOTE 2110M-**XX**-VEHICLE-25W

 2110M Transceiver	 page 21 for more info	08-06155-XXX
 Frequency Hopping — only for GF	 page 22 for more info	15-10542-000
 GPS Antenna — only for GF	 page 34 for more info	78-01253
Handset H-250/U	 page 29 for more info	78-08000
2110M Antenna Control Cable	 page 119 for more info	08-07010-006
2110M Cradle	 page 35 for more info	15-00139-002
External DC Back Panel	 page 35 for more info	15-00143-002
Battery Cable	 page 67 for more info	08-03255
32 A Fuse	 page 68 for more info	15-00712
Fuse Holder	 page 68 for more info	15-00711
Coax Cable, BNC to N-type, RG58	 page 130 for more info	08-07198-006
3046 HF Antenna Tuner	 page 114 for more info	08-07185-001
3046 Installation Kit	 page 117 for more info	15-00146
NATO Base	 page 118 for more info	15-60006
Whip, MIL Spec	 page 118 for more info	15-60001
Flexible Antenna Shock Mount	 page 118 for more info	15-60002
2110M Operator Guide	 page 137 for more info	15-04153-EN
3046 Installation Handbook	 page 137 for more info	15-04175-EN

OPTIONAL

Software Options	 page 22	3042/3046 Shock Mounts	 page 117
Hardware Options	 page 23	3160 PA Shock Mount	 page 37
Vehicle Antenna Tuners	 page 102	2110M Cradle Shock Mount	 page 35
12/24 V Converter	 page 99		



Variable item (depends on configuration selection)

 Standard item

 Optional item

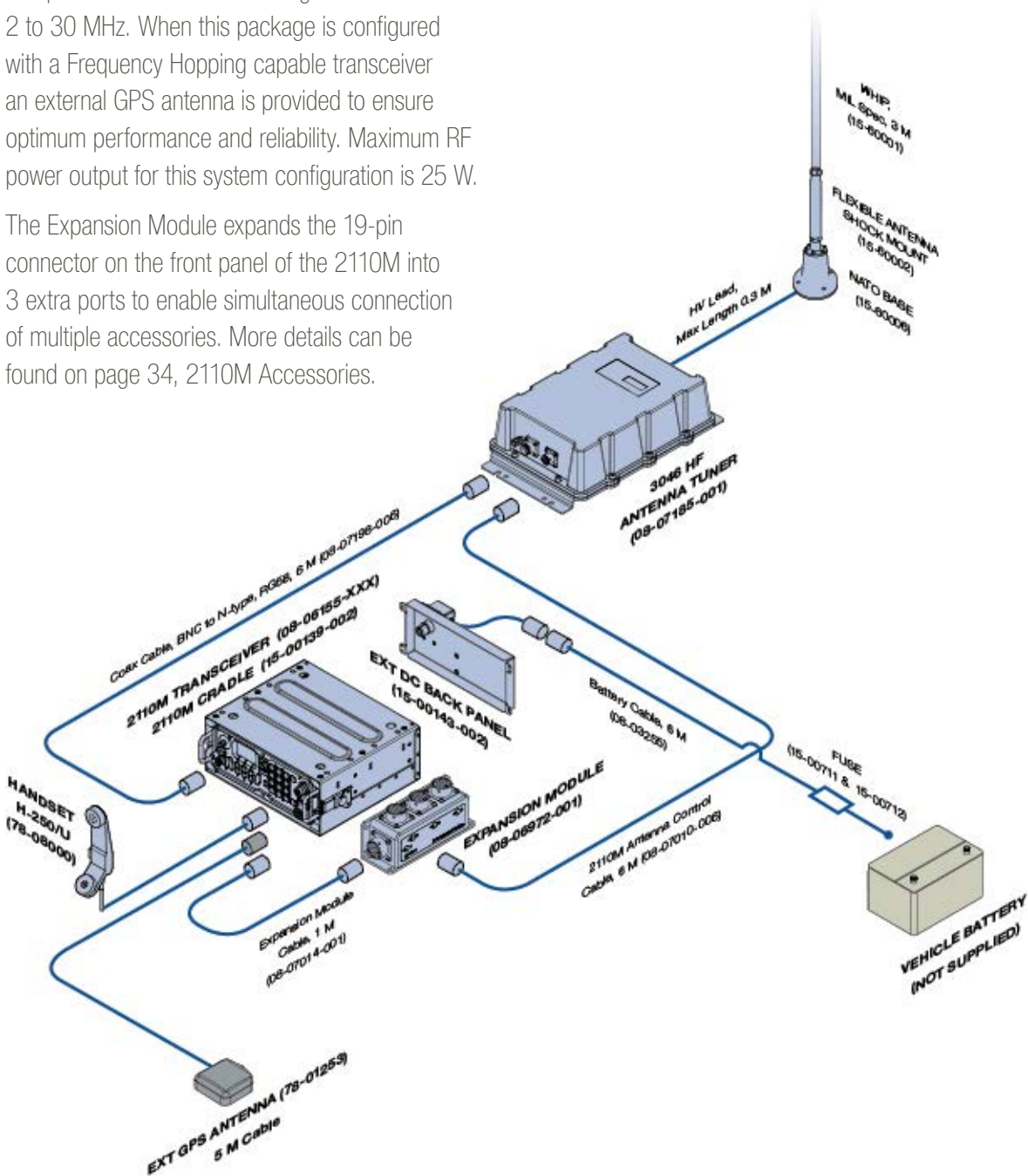
CONFIGURATIONS AND SELECTIONS GUIDE

2110M Vehicular System 25 W (Extended)

This package contains the key components for a 2110M Vehicular HF System. Power is provided by the 12 V DC Battery, and with the addition of a 24/12 V converter the system can run from a 24 V DC supply. The antenna system comprises the 3046 HF Antenna Tuner coupled with a 3 m composite whip antenna on a NATO base, and provides continuous coverage from 2 to 30 MHz. When this package is configured with a Frequency Hopping capable transceiver an external GPS antenna is provided to ensure optimum performance and reliability. Maximum RF power output for this system configuration is 25 W.

The Expansion Module expands the 19-pin connector on the front panel of the 2110M into 3 extra ports to enable simultaneous connection of multiple accessories. More details can be found on page 34, 2110M Accessories.

The 2110M Transceiver unit can be quickly and easily removed from the vehicle mounting cradle for “jerk and run” operational scenarios. Optional shock mounts are available for both the transceiver vehicle mounting cradle and 3046 HF Antenna Tuner for protection in extreme environments.






2110M Vehicular System 25 W (Extended)


QUOTE 2110M-XX-VEHICLE-25W-EXTENDED

 2110M Transceiver	 page 21 for more info	08-06155-XXX
 Frequency Hopping — only for GF	 page 22 for more info	15-10542-000
 GPS Antenna — only for GF	 page 34 for more info	78-01253
Handset H-250/U	 page 29 for more info	78-08000
2110M Antenna Control Cable	 page 119 for more info	08-07010-006
2110M Cradle	 page 35 for more info	15-00139-002
External DC Back Panel	 page 35 for more info	15-00143-002
Battery Cable	 page 67 for more info	08-03255
32 A Fuse	 page 68 for more info	15-00712
Fuse Holder	 page 68 for more info	15-00711
Coax Cable, BNC to N-type, RG58	 page 130 for more info	08-07198-006
Expansion Module	 page 34 for more info	08-06972-001
Expansion Module Interface Cable	 page 34 for more info	08-07014-001
3046 HF Antenna Tuner	 page 114 for more info	08-07185-001
3046 Installation Kit	 page 117 for more info	15-00146
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Flexible Antenna Shock Mount	 page 118 for more info	15-60002
2110M Operator Guide	 page 137 for more info	15-04153-EN
3046 Installation Handbook	 page 137 for more info	15-04175-EN

OPTIONAL

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Hardware Options	 page 23
Vehicle Antenna Tuners	 page 102

12/24 V Converter	 page 99
3042/3046 Shock Mounts	 page 117
2110M Cradle Shock Mount	 page 35

 Variable item (depends on configuration selection)

 Standard item

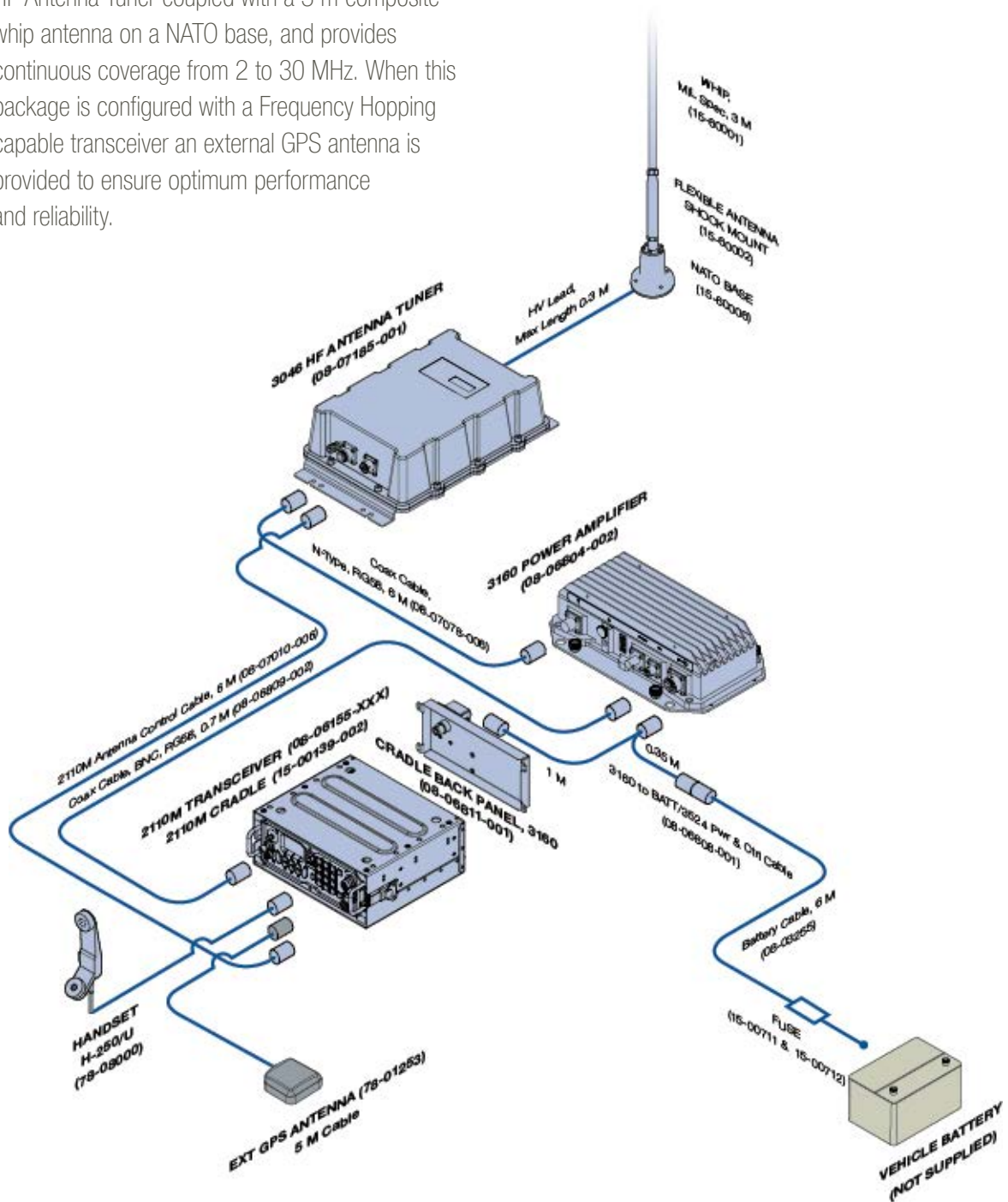
 Optional item

CONFIGURATIONS AND SELECTIONS GUIDE

2110M Vehicular System 125 W

This package contains the key components for a 2110M Vehicular HF System. Power is provided by the 12 V DC vehicle battery and by adding a 24/12 V voltage converter the system can run from a 24 V DC supply. The 3160 Power Amplifier boosts the maximum RF power output to 125 W. The antenna system comprises the 3046 HF Antenna Tuner coupled with a 3 m composite whip antenna on a NATO base, and provides continuous coverage from 2 to 30 MHz. When this package is configured with a Frequency Hopping capable transceiver an external GPS antenna is provided to ensure optimum performance and reliability.

The 2110M Transceiver unit can be quickly and easily removed from the vehicle mounting cradle for “jerk and run” operational scenarios. Optional shock mounts are available for the transceiver vehicle mounting cradle, 3160 Power Amplifier, and 3046 HF Antenna Tuner for protection in extreme environments.




2110M Vehicular System 125 W

QUOTE 2110M-**XX**-VEHICLE-125W

 2110M Transceiver	 page 21 for more info	08-06155-XXX
 Frequency Hopping — only for GF	 page 22 for more info	15-10542-000
 GPS Antenna — only for GF	 page 34 for more info	78-01253
Handset H-250/U	 page 29 for more info	78-08000
2110M Cradle	 page 35 for more info	15-00139-002
Cradle Back Panel, 3160	 page 37 for more info	08-06811-001
3160 Power Amplifier	 page 35 for more info	08-06804-002
3160 Installation Kit	 page 37 for more info	15-00146
3160 to BATT/3524 Pwr & Ctrl Cable	 page 36 for more info	08-06808-001
Coax Cable, BNC, RG58	 page 36 for more info	08-06809-002
2110M Antenna Control Cable	 page 119 for more info	08-07010-006
Coax Cable, N-type, RG58	 page 131 for more info	08-07078-006
Battery Cable	 page 67 for more info	08-03255
32 A Fuse	 page 68 for more info	15-00712
Fuse Holder	 page 68 for more info	15-00711
3046 HF Antenna Tuner	 page 114 for more info	08-07185-001
3046 Installation Kit	 page 117 for more info	15-00146
NATO Base	 page 118 for more info	15-60006
Whip, MIL Spec	 page 118 for more info	15-60001
Flexible Antenna Shock Mount	 page 118 for more info	15-60002
2110M Operator Guide	 page 137 for more info	15-04153-EN
3160 PA Installation Handbook	 page 137 for more info	15-04157-EN
3046 Installation Handbook	 page 137 for more info	15-04175-EN

OPTIONAL

Software Options	 page 22	3042/3046 Shock Mounts	 page 117
Hardware Options	 page 23	3160 PA Shock Mount	 page 37
Vehicle Antenna Tuners	 page 102	2110M Cradle Shock Mount	 page 35
12/24 V Converter	 page 99		

 Variable item (depends on configuration selection)

 Standard item

 Optional item

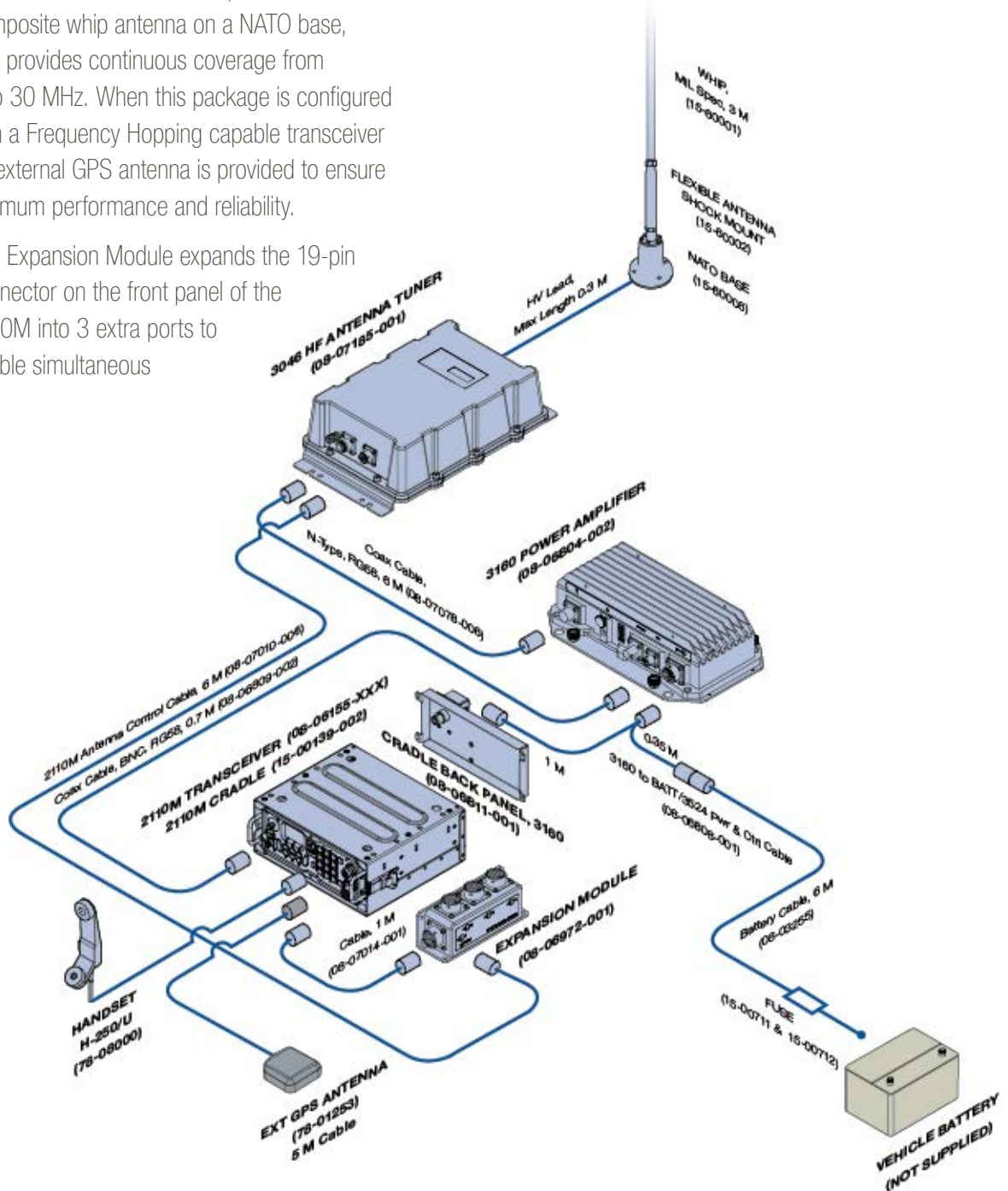
CONFIGURATIONS AND SELECTIONS GUIDE

2110M Vehicular System 125 W (Extended)

This package contains the key components for a 2110M vehicular HF system with added expansion capability. Power is provided by the 12 V DC vehicle battery and by adding a 24/12 V voltage converter the system can run from a 24 V DC supply. The 3160 Power Amplifier boosts the maximum RF power output to 125 watts. The antenna system comprises the 3046 HF Antenna Tuner coupled with a 3 m composite whip antenna on a NATO base, and provides continuous coverage from 2 to 30 MHz. When this package is configured with a Frequency Hopping capable transceiver an external GPS antenna is provided to ensure optimum performance and reliability.

The Expansion Module expands the 19-pin connector on the front panel of the 2110M into 3 extra ports to enable simultaneous

connections of multiple accessories. More details can be found on page 34, 2110M Accessories. The 2110M Transceiver unit can be quickly and easily removed from the vehicle mounting cradle for “jerk and run” operational scenarios. Optional shock mounts are available for the transceiver vehicle mounting cradle, 3160 Power Amplifier, and 3046 HF Antenna Tuner for protection in extreme environments.












2110M Vehicular System 125 W (Extended)

QUOTE 2110M-**XX**-VEHICLE-125W-EXTENDED

 2110M Transceiver	 page 21 for more info	08-06155-XXX
 Frequency Hopping — only for GF	 page 22 for more info	15-10542-000
 GPS Antenna — only for GF	 page 34 for more info	78-01253
Handset H-250/U	 page 29 for more info	78-08000
2110M Cradle	 page 35 for more info	15-00139-002
Cradle Back Panel, 3160	 page 37 for more info	08-06811-001
3160 Power Amplifier	 page 35 for more info	08-06804-002
3160 Installation Kit	 page 37 for more info	15-00146
3160 to BATT/3524 Pwr & Ctrl Cable	 page 36 for more info	08-06808-001
Battery Cable	 page 67 for more info	08-03255
32 A Fuse	 page 68 for more info	15-00712
Fuse Holder	 page 68 for more info	15-00711
Coax Cable, BNC, RG58	 page 36 for more info	08-06809-002
2110M Antenna Control Cable	 page 119 for more info	08-07010-006
Coax Cable, N-type, RG58	 page 131 for more info	08-07078-006
Expansion Module	 page 34 for more info	08-06972-001
Expansion Module Interface Cable	 page 34 for more info	08-07014-001
3046 HF Antenna Tuner	 page 114 for more info	08-07185-001
3046 Installation Kit	 page 117 for more info	15-00146
NATO Base	 page 118 for more info	15-60006
Whip, MIL Spec	 page 118 for more info	15-60001
Flexible Antenna Shock Mount	 page 118 for more info	15-60002
2110M Operator Guide	 page 137 for more info	15-04153-EN
3160 PA Installation Handbook	 page 137 for more info	15-04157-EN
3046 Installation Handbook	 page 137 for more info	15-04175-EN

OPTIONAL

Software Options	 page 22
Hardware Options	 page 23
Vehicle Antenna Tuners	 page 102
12/24 V Converter	 page 99
Crosspatch	 page 32

Morse Key	 page 67
3042/3046 Shock Mounts	 page 117
3160 PA Shock Mount	 page 37
2110M Cradle Shock Mount	 page 35



Variable item (depends on configuration selection)

 Standard item

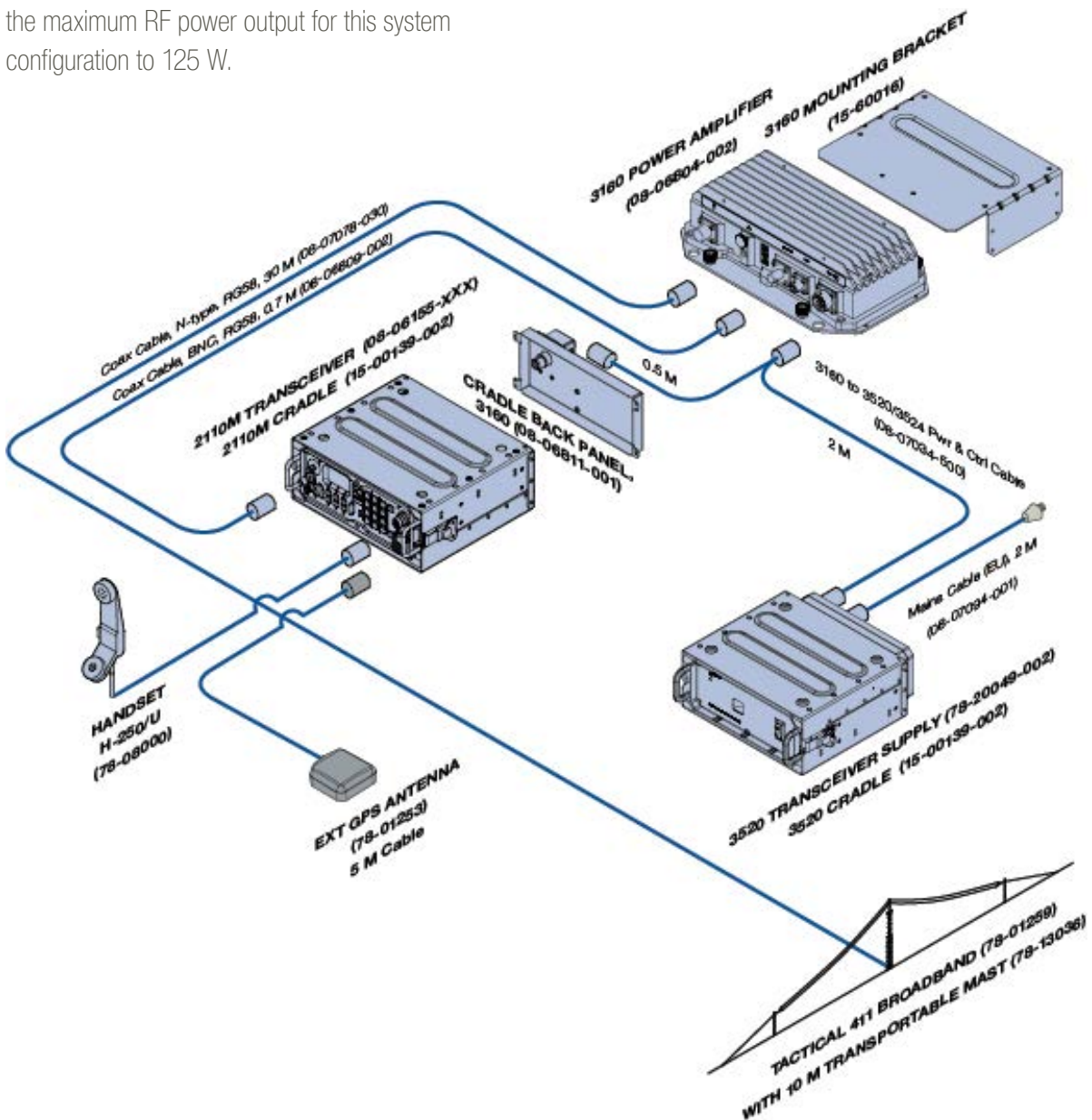
 Optional item

CONFIGURATIONS AND SELECTIONS GUIDE

2110M Base Station System 125 W

This package contains the key components for a 2110M Base HF system with added expansion capability. Power is provided by the 3520 AC Mains power supply. The antenna system comprises the tactical 411 broadband dipole antenna, together with a rugged 10 m transportable mast, providing continuous coverage from 2 to 30 MHz. An external GPS antenna is provided when this package is configured with a Frequency Hopping capable 2110M Transceiver. The external GPS antenna ensures reception of GPS signals for optimum Frequency Hopping performance and reliability in a indoor base environment. The 3160 Power Amplifier boosts the maximum RF power output for this system configuration to 125 W.

The Expansion Module expands the 19-pin connector on the front panel of the 2110M into 3 extra ports. This enables simultaneous connection of multiple accessories such as a Data Terminal, Crosspatch, PC access for transceiver profile and secure key programming etc. More details can be found on page 34, 2110M Accessories.













2110M Base Station System 125 W

QUOTE 2110M-**XX**-BASE-125W

	2110M Transceiver	 page 21 for more info	08-06155-XXX
	Frequency Hopping — only for GF	 page 22 for more info	15-10542-000
	GPS Antenna — only for GF	 page 34 for more info	78-01253
	Handset H-250/U	 page 29 for more info	78-08000
	2110M Cradle	 page 35 for more info	15-00139-002
	Cradle Back Panel, 3160	 page 37 for more info	08-06811-001
	3160 Power Amplifier	 page 35 for more info	08-06804-002
	3160 Mounting Bracket	 page 37 for more info	15-60016
	3160 to 3520/3524 Pwr & Ctrl Cable	 page 36 for more info	08-07034-500
	Coax Cable, BNC, RG58	 page 36 for more info	08-06809-002
	Coax Cable, N-type, RG58	 page 131 for more info	08-07078-030
	Mains Cable (EU)	 page 97 for more info	08-07094-001
	Tactical 411 Broadband Antenna	 page 121 for more info	78-01259
	Transportable Mast	 page 128 for more info	78-13036
	3520 Transceiver Supply	 page 96 for more info	78-20049-002
	3520 Cradle	 page 97 for more info	15-00139-002
	2110M Operator Guide	 page 137 for more info	15-04153-EN
	3160 PA Installation Handbook	 page 137 for more info	15-04157-EN
	3520 User Guide	 page 137 for more info	12-50180-EN

OPTIONAL

Software Options	 page 22	Base Masts	 page 129
Hardware Options	 page 23	Tactical Masts	 page 128
Expansion Module	 page 34	Crosspatch	 page 32
Base Antennas	 page 121	Morse Key	 page 67
Antenna Lightning Protection	 page 133		

 Variable item (depends on configuration selection)

 Standard item

 Optional item

2110M MANPACK TRANSCEIVERS

2110M Manpack Transceivers




The 2110M Manpack is available in three variations: Green with Frequency Hopping capability, Green Non-Frequency Hopping, and Black with Frequency Hopping capability.


The 2110M Transceiver meets the most demanding mission and user requirements with optional Frequency Hopping capability and optional voice encryption for secure communications. Interoperability with other military transceivers is achieved through advanced FED-STD or MIL-STD ALE. It also features up to 65 hours battery life per charge providing greater durability and a lighter carrying weight required for long duration tactical operations.

STANDARD FEATURES:

- FED-STD-1045 ALE/CALM
- 1.6–30 MHz, 400 channels, 10 networks
- 25/5 W (PEP)
- 12 V DC, USB/LSB/AM
- ±0.5 ppm frequency stability
- Internal automatic antenna tuner
- Multi-net scanning
- In-built *Easitalk* speech noise reduction
- Comprehensive calling capabilities, including Selective call, ALL call, Emergency call, Message call, Phone call, Remote Diagnostics
- Call logging
- Battery management and up to 65 hours use on a single charge
- 19-way external expansion connector for data terminal, crosspatch, etc.
- Computer interface (RS232) for PC control and programming
- Front panel programming
- Extensive Built-In-Test functions
- Meets MIL-STD-810F for shock, vibration, immersion, salt fog and dust







	2110M Transceiver	Green, Frequency Hopping Capable	GF	08-06155-006
	2110M Transceiver	Green, Non-Frequency Hopping	GN	08-06155-007
	2110M Transceiver	Black, Frequency Hopping Capable		08-06155-005

 This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

 These transceivers are capable of Frequency Hopping. In order to enable Frequency Hopping you must also add the Frequency Hopping option (part number 15-10542-000), see page 22 for details.

2110M MANPACK OPTIONS

2110M Manpack Software Options

	Frequency Hopping Provides additional protection from malicious jamming and signal interception.	QUOTE 15-10542-000
	MIL-STD-188-141B ALE Upgrade Provides JITC certified MIL-STD-188-141B ALE capabilities. With this option the transceiver has networks and 600 available channels.	QUOTE 15-10544
	GPS Calling Enable Enables sending and receiving of GPS position information using Selcall or ALE.	QUOTE 15-10486
	CIVS Voice Scrambler A cost effective software enabled voice scrambler capability offering 64 codes. Simple to use and provides a basic level of voice security. For a higher level of voice security refer to AES and CES options, see page 23 and page 24.	QUOTE 15-10551
	Amateur Mode Enables transmit capability with free dial frequencies within Amateur frequency bands. For use by licensed operators only.	QUOTE 15-10518
	TXD, Tx Program Disable Disables front panel programming of new transmit frequencies. For use in countries where front panel programming is prohibited by regulatory authorities, e.g. USA and Australia.	QUOTE 15-10481

2110M MANPACK OPTIONS

2110M Manpack Software Options (continued)



Upgrade, AES-256 Encryption

Adds AES-256 Encryption, with support for up to 256 preloaded keys. Suitable for use in conjunction with the MIL/STANAG 2G Data and Digital Voice options (part numbers 15-10584, 15-10585, 15-10586, 15-10587 or 15-10588). KMS/KFS Key Fill Software recommended, see page 94 for details.

QUOTE
15-10595



Upgrade, 1200 bit/s DV

Adds 1200 bit/s Vocoder, which enables operation of digital voice in severely degraded channel conditions. Suitable for use in conjunction with the Digital Voice option (part numbers 15-10585, 15-10586 or 15-10588).

QUOTE
15-10596

2110M Manpack Hardware Options



2.7 kHz BW Filter (Factory Fit)

Required when using Codan MIL-STD high-speed data modems.

NOTE: Required when using 2G Data / 3G ALE hardware options 15-10584, 15-10585, 15-10587, 15-10588 or external RM50e modem.

QUOTE
15-10529-000



500 Hz Filter (Factory Fit)

Delivers best performance with morse (CW) and narrow FSK data modem like Pactor-II.

QUOTE
15-10530-000



CES-128 Voice Encryptor (Factory Fit)

Provides high grade voice security with exceptional recovered audio quality.

Retro Kit: 15-10531

NOTE: KMS/KFS Key Fill Software is available for key fill purposes, see page 94 for details.

QUOTE
15-10531-000



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

2110M Manpack Hardware Options (continued)



AES-256 Voice Encryptor (Factory Fit)

Provides 256-bit voice security according to the Advanced Encryption Standard, with up to 256 user programmable encryption keys. Optimal voice clarity is provided through the use of a Mixed-Excitation Linear Predictive enhanced (MELPe) Vocoder, with 1200 bit/s and 2400 bit/s user selectable data rates.

Retro Kit: 15-10553

NOTE: KMS/KFS Key Fill Software is available for key fill purposes, see page 94 for details.

QUOTE
15-10553-000



MIL-STANAG 2G Data (Factory Fit)

Enables integrated data modem capability according to MIL-STD-110-188A/B and STANAG 4539. This provides a range of military-spec data waveforms from 75 to 9600 bit/s uncompressed, capable of operating across varying channel conditions. The modem utilizes adaptive equalization and turbo-decoding for maximum performance. Provides efficient email over HF when used in conjunction with RC50-C email gateway (part number 15-04161-CD), see page 92, "RC50-C HF Email Software".

AES-256 Encryption option (part number 15-10595) can be added, see page 23 for details.

Retro Kit: 15-10584

QUOTE
15-10584-000



MIL-STANAG 2G Data and Digital Voice (Factory Fit)

Integrates the MIL/STANAG 2G Data and Digital Voice options.

Requires RC50-C email gateway (part number 15-04161-CD) for data operation, see page 92, "RC50-C HF Email Software".

AES-256 Encryption option (part number 15-10595) and 1200 bit/s Vocoder Upgrade option (part number 15-10596) can be added, see page 23 for details.

Retro Kit: 15-10585

QUOTE
15-10585-000



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

2110M MANPACK OPTIONS

2110M Manpack Hardware Options (continued)



Digital Voice (Factory Fit)

Enables digital voice capability. Digital voice provides highly intelligible audio, free from the noise, interference and fading effects often heard over analogue voice. Supplied as standard with a 2400 bit/s Vocoder.

AES-256 Encryption option (part number 15-10595) and 1200 bit/s Vocoder Upgrade option (part number 15-10596) can be added, see page 23 for details.

Retro Kit: 15-10586

QUOTE
15-10586-000



S4538 3G ALE (Factory Fit)

Enables third-generation (3G) Automatic Link Establishment (ALE) according to STANAG 4538. This provides superior calling performance including faster linking, and the ability to link in extremely poor channel conditions. A variety of call types are supported including voice, message, over-the-air sync and GPS positioning.

AES-256 Encryption option (part number 15-10595) can be added, see page 23 for details.

Retro Kit: 15-10587

QUOTE
15-10587-000



S4538 3G ALE and Digital Voice (Factory Fit)

Integrates the S4538 3G ALE and Digital Voice options.

Retro Kit: 15-10588


QUOTE
15-10588-000



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

2110M MANPACK ACCESSORIES

2110M Batteries

	<p>Battery Pack, 12 V 8Ah (NiMH)</p> <p>Waterproof battery pack with 12 V, 8Ah rechargeable Nickel Metal Hydride battery and battery management controller.</p> <p>Recharges: ~500 (Retaining at least 80% capacity) Useable hours: ~30 hrs (using Rx/Tx 9:1)</p>	<p>FOR GREEN QUOTE 08-06185-002</p>	<p>FOR BLACK QUOTE 08-06185-001</p>
	<p>Battery Pack, 12 V 13Ah (NiMH)</p> <p>Waterproof battery pack with 12 V, 13Ah rechargeable Nickel Metal Hydride battery and battery management controller.</p> <p>Recharges: ~500 (Retaining at least 80% capacity) Useable hours: ~50 hrs (using Rx/Tx 9:1)</p>	<p>FOR GREEN QUOTE 08-06186-002</p>	<p>FOR BLACK QUOTE 08-06186-001</p>
	<p>Battery Pack, 12 V 17Ah (LiFePO₄)</p> <p>Waterproof battery pack with 12 V, 17Ah rechargeable battery and battery management controller. Uses lithium iron phosphate chemistry that is safe and has excellent shelf life.</p> <p>Recharges: ~2000 (retaining at least 80% capacity) Useable hours: ~65 hrs (using Rx/Tx 9:1 ratio)</p> <p> This battery is classified as dangerous goods and may impact freight cost and method. Please contact your Codan Sales Representative for further details.</p>	<p>FOR GREEN QUOTE 08-07009-002</p>	<p>FOR BLACK QUOTE 08-07009-001</p>
	<p>Battery Pack, 12 V 7Ah SLA</p> <p>Waterproof battery pack with 12 V, 7Ah rechargeable Sealed Lead Acid battery and battery management controller.</p> <p>Recharges: ~200 (Retaining at least 60% capacity) Useable hours: ~15 hrs (using Rx/Tx 9:1)</p>	<p>QUOTE 08-06188-001</p>	

2110M MANPACK ACCESSORIES

2110M Chargers

	3523 Battery Charger 3 A AC to DC	QUOTE 78-02015
	Charges the battery directly and 3x faster than the low noise 3522 DC Battery Charger. Does not support charging via the front panel. 3523 recommended when using the Manpack with spare batteries enabling power to the transceiver while the other is being recharged.	
	NOTE: AC mains input cables and DC output cables need to be ordered separately.	
	Cable, Mains, MIL	FOR AUSTRALIA 08-07095-001
	2 m AC Mains Cable, terminated in 2-pin MIL connector to suit 3523 Battery Charger.	
	NOTE: Different cables are available for specific regions (Australia, UK, USA and Europe). Please ensure you quote the correct part number when building your system.	FOR UNITED KINGDOM 08-07096-001
		FOR USA 08-07097-001
		FOR EUROPE 08-07098-001
	Cable, 3523 DC Output, 6-way	QUOTE 08-07103-001
	Used with 3523 Charger to charge battery directly.	
	3522 Battery Charger 1 A DC to DC	QUOTE 78-02016
	The low noise 3522 DC Battery Charger enables charging of batteries from a 12 V to 60 V DC source. With the use of detachable leads, the operator has the option of charging the battery via the transceiver's front panel or by direct connection to the battery. The front panel connection enables charging while operating the transceiver.	
	NOTE: DC input cables and DC output cables need to be ordered separately.	
	Cable, 3522 DC Input, Cigarette Lighter	QUOTE 08-07099-001
	DC input cable to connect an in-vehicle lighter socket to DC-DC 3522 Charger.	
	Cable, 3522 DC Input, Alligator Clips	QUOTE 08-07100-001
	DC input cable with spring clips to connect DC power source to DC-DC 3522 Charger.	

2110M Chargers (continued)



Cable, 3522 DC Output, 6-way

Used to connect 3522 DC Charger output directly to battery.

QUOTE
08-07101-001



Cable, 3522 DC Output, 19-way

Used to connect 3522 DC Charger output to 19-pin connector on 2110M front panel for charging battery connected to transceiver.

QUOTE
08-07102-001

2110M Chargers (continued)



2110M Hand-Powered Battery Charger

A portable hand-powered battery charger that is compact and lightweight, and encased in a robust and waterproof aluminium housing. The charger comes with easy to use accessories for simple operation, and a convenient carrying case.

QUOTE
15-00578



2110M Solar Battery Charger

A portable solar-powered 15 W battery charger that uses solid state, thin film solar technology to meet your mobile power needs. It is lightweight, weatherproof and UV resistant, and durable with a tough rip-stop nylon backing. A special permit is required to air freight. Camo Pattern.

QUOTE
15-00581



Cable, Output, 2-pin Molex to 19-way

Connects to output of handcrank or solar panel charger to 19-pin front panel connector of 2110M to charge battery.

QUOTE
08-06215-001



Cable, Output, 2-pin Molex to 6-way

Connects output of handcrank or solar panel charger to battery for direct connect charging.

QUOTE
08-06214-001

2110M MANPACK ACCESSORIES

2110M Audio Accessories — Handsets and Headsets



Handset H-250/U

Lightweight, waterproof and rugged design with noise cancelling microphone and PTT switch. Includes coiled cable cord with standard H-229 military audio connector.

QUOTE
78-08000



Bone Conduction Headset with PTT

Lightweight and waterproof bone conduction headset. This enables clear reception of signal audio but maintains awareness of environmental sounds. Includes noise cancelling boom microphone and dedicated PTT box. Headset terminated with standard H-229 military audio connector.

QUOTE
15-00666



Lightweight Headset with PTT

Lightweight and waterproof low-profile Headset suitable for use with helmets. Includes noise cancelling boom microphone and in-line PTT switch. Headset terminated with standard H-229 military audio connector.

QUOTE
15-00667

2110M Portable Manpack Antennas — Long Wire, Dipoles and Whips



Long Wire and Adaptor, 1.6–30 MHz

Made from lightweight Kevlar and includes throw rope, antenna adaptor, winding spool, anchor peg and antenna deployment quick reference card.

QUOTE
15-00454



End-fed Broadband, 3–30 MHz

Made from lightweight Kevlar and includes 3 m coaxial feeding cable terminated with BNC connectors, broadband antenna balun, throw rope, counterpoise kit, winding spool, anchor peg and antenna deployment quick reference card.

QUOTE
15-00458



Broadband Dipole, 3–30 MHz

Made from lightweight Kevlar and includes 10 m coaxial feeding cable terminated with BNC connectors, broadband antenna balun, two lots of termination resistors, throw rope, counterpoise kits, winding spool, anchor pegs and antenna deployment quick reference card.

QUOTE
15-00456



Wire Dipole, 3–30 MHz

Made from lightweight Kevlar and includes 10 m coaxial feeding cable terminated with BNC connectors, dipole antenna balun, throw rope, antenna adaptor, winding spools, anchor peg and antenna deployment quick reference card.

QUOTE
15-00455



Dipole and Broadband Kit, 2–30 MHz

Made from lightweight Kevlar and includes 10 m coaxial feeding cable terminated with BNC connectors, broadband antenna balun, two lots of termination resistors, throw ropes, counterpoise kits, winding spools, anchor pegs, and antenna deployment quick reference cards.

QUOTE
15-00457



Collapsible Whip, 3 m

Lightweight 6-section whip with flexible gooseneck.

QUOTE
15-00452



Tape Whip, 1.5 m

Foldable tape whip antenna with flexible gooseneck.

QUOTE
15-00453



Knock Over Whip, 1.5 m

Lightweight collapsible 3 section knock over whip antenna with flexible gooseneck.

QUOTE
15-00459

2110M MANPACK ACCESSORIES

2110M Earthing



Counterpoise 4-wire Kit

Lightweight counterpoise reel. Used to provide 4-wire counterpoise for antenna system.

QUOTE
15-00446



Anchor Peg

Used in antenna kits to anchor the counterpoise reel.

QUOTE
15-00462



Earth Wire with Clip

Earthing wire 1 m (3') with spring clip.

QUOTE
08-06259-001

2110M Antenna Masts



Mast, Man-portable 6 m Tactical

Lightweight, compact man-portable mast system. The kit includes multi-section mast, guy ropes, guy stakes, halyard, base plate stakes and installation instructions. This mast is most suitable for use with lightweight, low power (25 W) antennas used with the 2110 series Manpack Transceiver (see page 30 for the Long Wire & Dipole antennas that can be used with this mast).

NOTE:

- The 6 m mast is not suitable for use with full size 125 W / 1 kW Broadband Antennas.
- Certain Manpack Transceiver antennas may require more than one mast. Please check specific mast requirements for each antenna before building your system.

QUOTE
78-13035



Mast, 10 m Transportable Fibreglass

Lightweight, compact vehicle transportable mast system. The kit includes, multi-section mast, guy ropes (2 sets), guy stakes, halyard, base plate stakes and installation instructions. This mast can be used with many antenna types however it is most suitable for use with lightweight, standard power (125 W) broadband antennas, for example the Tactical Code 411 Broadband Dipole (see page 125, "TFD411 Broadband").

QUOTE
78-13036

3031 Crosspatch for 2110M



Codan's leading edge 3031 Crosspatch enables you to carry 'HF on your belt' using a VHF/UHF radio and a Codan NGT/2110M Transceiver. It is the practical, effective and affordable solution for any organisation that needs to extend their current HF or VHF/UHF networks.

QUOTE
XPATCH-2110

3031 VHF/UHF to HF Crosspatch (2110M)		08-06730-002
3031 to VHF/UHF Transceiver Cable	▶ page 32 for more info	08-06766-001
Crosspatch 3031 CD Package (English)		15-04148-CD
3031 Quick Reference Cards (x2)	▶ page 33 for more info	06-02489-EN
Crosspatch 3031 Installation Kit	▶ page 32 for more info	15-00145

NOTE: For other 3031 accessories, see below and page 33, "3031 Accessories".

3031 Accessories



Cable, 3031 to VHF/UHF Transceiver Generic, 2 m

A 2 m shielded multi-core cable, with a miniature D15 connector terminated to bare ends, for user connection to a VHF/UHF transceiver.

QUOTE
08-06766-001





Crosspatch 3031 Installation Kit

Contains a variety of fasteners and fittings for mounting and grounding the 3031 Crosspatch.




QUOTE
15-00145

2110M MANPACK ACCESSORIES

3031 Accessories (continued)

	Quick Reference Card, Crosspatch 3031	QUOTE 06-02489-EN
	User Guide, Crosspatch 3031 Printed User Guide for the 3031 Crosspatch.	QUOTE 15-04148-EN

2110M Backpacks

	Backpack, External Frame (Olive) Available in Olive. Heavy duty design with adjustable, semi-flexible external frame and ergonomic shoulder harness for comfort (allows for additional loads up to 50 kg). Made from 1000 Denier bulked filament nylon and co-polymer frame.	QUOTE 15-00216-002
	Backpack, External Frame (Black) Available in Black. Heavy duty design with adjustable, semi-flexible external frame and ergonomic shoulder harness for comfort (allows for additional loads up to 50 kg). Made from 1000 Denier bulked filament nylon and co-polymer frame.	QUOTE 15-00216-001
	Backpack, External Frame (Desert) Available in US Desert Camouflage. Heavy duty design with adjustable, semi-flexible external frame and ergonomic shoulder harness for comfort (allows for additional loads up to 50 kg). Made from 1000 Denier bulked filament nylon and co-polymer frame.	QUOTE 15-00216-003

2110M Backpacks (continued)



Backpack, External Frame (Woodland)

Available in US Woodland Camouflage. Heavy duty design with adjustable, semi-flexible external frame and ergonomic shoulder harness for comfort (allows for additional loads up to 50 kg). Made from 1000 Denier bulked filament nylon and co-polymer frame.

QUOTE
15-00216-004



Backpack, Softpack (Black)

Available in Black. Ultra lightweight, compact and comfortable design providing storage for transceiver, all accessories as well as personal items.

QUOTE
15-00218

External GPS Antenna



External GPS Antenna

Active external GPS antenna with magnetic base. Plugs into GPS connector on front panel of 2110M Transceiver. Used to ensure reception of GPS signals when embedded GPS antenna is shielded e.g. 2110M installed in vehicular or indoor environment.

QUOTE
78-01253

Expansion Module



Expansion Module

The Expansion Module provides up to 3 connection points for external accessories to the 2110M Transceiver. The Expansion Module is provided complete with fasteners enabling mounting of the unit to the sides or top of the 2110M Transceiver cradle.

NOTE:

- The interface cable below that is required to connect the Expansion Module to the 2110M Transceiver must be ordered separately.
- Simultaneous connection of some combinations of accessories may not be supported. Please contact your Codan Representative for advice if multiple connections via the Expansion Module is required.

QUOTE
08-06972-001



Expansion Module Interface Cable, 1 m

Used to connect the Expansion Module to the 2110M front panel 19-way interface connector.


QUOTE
08-07014-001

2110M MANPACK ACCESSORIES

2110M Cradle Accessories

	Vehicle Mounting Cradle, 2110M with Screws <p>Heavy duty design used to secure the 2110M Manpack in a vehicle. With quick release latches and screw kit the radio can be easily docked with battery pack attached.</p>	FOR GREEN QUOTE 15-00139-002
	Cradle Back Panel, 3160 <p>Used to provide external DC and control to 3160 and DC to 2110M when installed in a cradle (part number 15-00139 or 15-00139-002).</p>	QUOTE 08-06811-001
	External DC Back Panel <p>Used to provide external DC to 2110M when installed in a cradle (part number 15-00139 or 15-00139-002).</p>	FOR GREEN QUOTE 15-00143-002
	Vehicle Shock Mount <p>Recommended for installations likely to experience extreme levels of vibration or shock.</p>	QUOTE 15-60010

3160 Power Amplifier

	3160 Power Amplifier <p>The 3160 auxiliary Power Amplifier (PA) boosts the RF output power of the Codan 2110M Transceiver from 25 to 125 W. The Amplifier is suitable for both vehicular and base station configurations, and provides full duty cycle operation for all modes, including voice, data and Frequency Hopping. Fan recommended for high duty-cycle usage e.g. Data.</p> <p>STANDARD FEATURES:</p> <ul style="list-style-type: none">■ 125 W PEP average output power■ 12 V DC nominal supply voltage■ Fully protected against all load conditions■ Interface cables for 2110M Transceiver (coaxial and control cables)■ Meets MIL-STD-810F for shock, vibration, immersion and dust	QUOTE 08-06804-002
<p>NOTE: For operation in vehicles with 24/26 V systems, Codan recommends using the 20 A voltage regulator (part number 78-03051). For details, see page 99, "3524 DC-DC Converter".</p>		

3160 Accessories — Cables for separated 3160 and 2110M



Cable, Coax Assembly, BNC to BNC Type Connectors, RG58, 2.5 m

Connects 2110M RF output to 3160 PA input; this length is used when units are installed separately.

QUOTE
08-06809-001



Cable, 3160 to 3520/3524 Power & Control, 2 m

This cable allows up to 2 m cable length between 3160 PA and back panel of 2110M cradle, and up to 2 m from 3160 PA and 3520 Transceiver Supply or 3524 DC converter. Requires fitment of Cradle Back Panel (part number 08-06811-001) to transceiver cradle.

QUOTE
08-07034-002



Cable, 3160 to BATT/3524 Power & Control, 1 m

This cable allows up to 1 m cable length between the 3160 PA and back panel of 2110M cradle fitted with the cradle back panel (part number 08-06811-001). DC power can be provided from a 12 V battery using the Battery cable (part number 08-03255) or from a 3520/3524 using the cable (part number 08-07032-001).

QUOTE
08-06808-001

3160 Accessories — Cables for co-sited 3160 and 2110M



Cable, Coax Assembly, BNC to BNC Type Connectors, RG58, 0.7 m

Connects 2110M Transceiver RF output to 3160 PA input; this length is used when units are co-sited.

QUOTE
08-06809-002



Cable, 3160 to 3520/3524 Power & Control, 0.5 m

This cable allows up to 0.5 m cable length between 3160 PA and back panel of 2110M cradle, and up to 2 m from 3160 PA and 3520 Transceiver Supply or 3524 DC converter. Requires fitment of cradle back panel (part number 08-06811-001) to transceiver cradle.

QUOTE
08-07034-500





Cable, 3160 to BATT/3524 Power & Control, 0.5 m

This cable allows up to 0.5 m cable length between the 3160 PA and back panel of 2110M cradle fitted with the cradle back panel (part number 08-06811-001). DC power can be provided from a 12 V battery using the battery cable (part number 08-03255) or from a 3520/3524 using cable (part number 08-07032-001).

QUOTE
08-06808-500

2110M MANPACK ACCESSORIES

3160 Accessories

	<p>Mounting Bracket, 3160</p> <p>Used for mounting 3160 PA to the 2110M cradle.</p> <p>NOTE: It is not recommended to mount the 3160 to the 2110M mounting cradle in vehicular environments.</p>	<p>QUOTE 15-60016</p>
	<p>Cradle Back Panel, 3160</p> <p>Used to provide external DC and control to the 3160 and DC to the 2110M when installed in a cradle (part number 15-00139-002).</p>	<p>QUOTE 08-06811-001</p>
	<p>Shock Mount</p> <p>Recommended for installations likely to experience extreme levels of vibration or shock.</p>	<p>QUOTE 15-60015</p>
	<p>Fan Unit</p> <p>Provides additional cooling in high ambient temperatures. Recommended with systems using the 3160 PA for data applications.</p>	<p>QUOTE 08-06900-002</p>
	<p>3160 Installation Kit</p> <p>Kit containing a selection of fasteners for mounting the 3160 Power Amplifier.</p>	<p>QUOTE 15-00146</p>
	<p>Installation Handbook, 3160 Power Amplifier</p>	<p>QUOTE 15-04157-EN</p>



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NGT *MR* TRANSCEIVER

With 125 W of output power packed into a rugged and small unit the NGT *MR* Transceiver is suited to mobile and base configurations. The NGT *MR* is fully interoperable with the 2110M Manpack Transceiver, and is more affordable than manpack based 125 W solutions while delivering the same critical HF needs such as reliable, secure and interoperable communications.



STANDARD FEATURES

- ✓ 125 W output power
- ✓ 4/6 digit Selcall (compatible with UN)
- ✓ FED-STD-1045 ALE/CALM
- ✓ Excellent on-air performance
- ✓ 3 year warranty
- ✓ Service and support

OPTIONAL FEATURES

- ✓ GPS Positioning
- ✓ Encryption (CES-128 and AES-256)
- ✓ MIL-STD-188-141B ALE (JITC Certified)
- ✓ Frequency Hopping (ECCM)
- ✓ Independent Sideband (ISB) for high speed (19K2) data communications

KEY FEATURES

RUGGED DESIGN

The NGT *MR* is built to survive the world's harshest environments. The product meets MIL-STD-810F for shock, vibration and dust ingress. Electrical protection is provided against reverse polarity, over-voltage, under-voltage, antenna VSWR mismatch.

INNOVATIVE USER INTERFACE

Codan's cleverly designed NGT *MR* Handset and intuitive interface provides many benefits over traditional removable front panel designs. Its small size and light weight make it simple to install in many locations, especially in vehicles where space is limited. The menu system includes a call address list and the keypad is arranged like a mobile phone to ensure that radio operation is simple, familiar and intuitive. With convenient access to the programming port, located on the base of the Handset, users will find it quick and easy to program the RF unit.

AUTOMATIC LINK ESTABLISHMENT

The NGT *MR* is fully compliant with both FED-STD-1045 and JITC certified MIL-STD-188-141B ALE waveforms.

Codan's implementation of ALE incorporates unique capabilities such as maintenance of channel quality information (LQA) on a 24-hour basis. This enables the Transceiver to select a suitable channel at any time of the day, from the moment it is switched on. This results in faster channel selection than conventional ALE system with significantly less sounding activity required.

The Listen-Before-Transmit capability detects voice and data traffic on the channel before initiating ALE. This prevents calling on channels that already have traffic.

The NGT *MR* provides an extensive range of ALE and Selcall based call facilities, including Phone calls, GPS polling and sending, Emergency calls, and Remote Diagnostics.



The multiple network scanning capability enables multiple networks to be scanned simultaneously. An ability to simultaneously decode voice, Selcall and ALE calls on the same channel maximises efficient use of bandwidth and ensures interoperability in mixed mode network environments.

SMART MONITORING AND SCANNING

When an operator is absent, the NGT *MR* generates an automatic log containing the caller's identity, time and channel number that can be displayed upon their return.

With multiple net adaptive scanning, the NGT *MR* automatically adjusts scan times for multiple networks according to the channels' preset scan times.

This feature gives the most efficient scanning time possible for Selcall, ALE and voice detection.

The NGT *MR* features flexible scanning networks, with up to 20 scan tables containing up to 100 channels. Scan rates of up to 8 channels per second are possible, which provides increased capacity for HF networks based on the *MR*.

With the syllabic Voice Mute, the NGT *MR* effectively detects voice patterns even in high-noise environments. This ensures mute is only opened after it detects speech on any scanned or monitored channels.

When Selcall or ALE selective calling is implemented, users are able to scan multiple channels or networks. The operator is only alerted when a call addressed to them specifically is received. This relieves the operator from continuous manual monitoring for relevant incoming traffic.



OPTIONAL FEATURES

FREQUENCY HOPPING (ECCM)

Codan's NGT *MR* provides 128-bit security strength Frequency Hopping. It operates during scanning, and during reception and transmission of ALE calls to enable silent operation. Users can optimise performance via three user-switchable hopping rates of 6/12/25 hops per second. An additional level of security can be achieved through the use of a 10-digit user PIN.

VOICE ENCRYPTION (COMSEC)

The NGT *MR* has a choice of three internally fitted voice encryption options to suit all levels of communications security.

The CIVS voice encryption option is a cost effective software enabled voice scrambler capability that is simple to use and provides a basic level of voice security.

The CES voice encryption option provides high level 128 bit voice security. Up to 97 16-digit user programmable keys are provided.

An additional layer of security is provided through the ability to assign a PIN number during a secure communications session.

The AES voice encryption option provides 256-bit security according to the Advanced Encryption Standard, with up to 256 user programmable encryption keys.

Optimal voice clarity is provided through the use of a Mixed Excitation Linear Predictive enhanced (MELPe) Vocoder. The MELPe Vocoder supports 1200 bit/s and 2400 bit/s user selectable data rates.

All voice encryption options for the NGT *MR* are fully integrated with core transceiver functions like Selcall and ALE scanning to ensure simplicity of operation.

GPS SUPPORT

The NGT *MR* supports connection of GPS via NMEA0183 compatible GPS receivers. This enables polling and sending of GPS positions over air. Distance and bearing to other users can be displayed. When used with Internav™ CHF tracking PC software, up to 100 vehicles can be tracked. Internav™ provides advanced features such as corridor and alarm zones, waypoints, and recording of emergency events.

DATA COMMUNICATIONS

The NGT *MR* supports Codan's high speed RM50e HF Data Modem. This provides MIL-STD-188-110A/B data waveforms up to 9600 bit/s, or 19200 bit/s with the ISB option. Codan's RC50-C Email software works with the NGT *MR* and RM50e Modem, to provide email capability over conventional SMTP/POP mail clients such as MS Outlook. Features include compression and Data Rate Control (DRC), ensuring transmission speed is optimised to the channel conditions.



CONFIGURATIONS AND SELECTIONS GUIDE


This section provides NGT *MR* Transceiver configuration packages developed with the core components needed for a complete Codan NGT *MR* Transceiver system. The Selections Guides also outlines the options and accessories you can select for your package or choose to add to your transceiver system.

The packages are a guide for your system requirements, a custom configuration for your NGT *MR* Transceiver system can be built to meet exact specifications. Please note that items shown in blue are standard parts and items in grey are optional.

NGT *MR* TRANSCEIVER SELECTION


Codan's NGT *MR* Transceiver can be selected in green, with or without optional Frequency Hopping. Each transceiver model shown below is suitable to be used in the system packages.

Your initial selection of HF transceiver is suggested before proceeding to package selection or custom configuration. For more information on Transceivers please see page 55.



Green Casing

Frequency Hopping



QUOTE **GF**



Green Casing



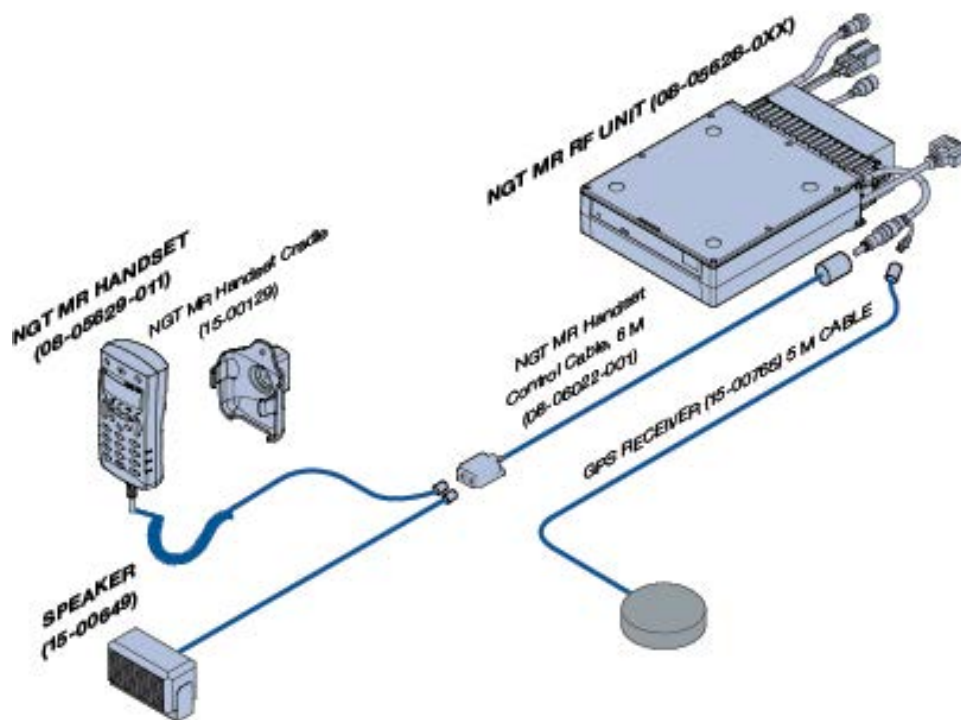
QUOTE **GN**

CONFIGURATIONS AND SELECTIONS GUIDE

NGT *MR* Transceiver System













This package contains the key components required for a basic NGT *MR* Transceiver system. The main RF Unit is controlled via the *MR* Handset via the 6 m Handset control cable which also provides a connection point for the Speaker. A GPS receiver accessory is provided as part of the package when a Frequency Hopping capable variant of the *MR* RF Unit is selected.

The NGT *MR* Transceiver is designed to operate from a 12 V DC source. Maximum RF power output from this system is 125 W.












NGT MR Basic

QUOTE NGTMR-XX-TCVR

 NGT MR RF Unit	 page 55 for more info	08-05628-0XX
 Frequency Hopping — only for GF	 page 57 for more info	15-10542-000
 GPS Receiver — only for GF	 page 67 for more info	15-00765
NGT MR Handset	 page 56 for more info	08-05629-011
NGT MR Handset Cradle	 page 68 for more info	15-00129
NGT MR Handset Control Cable	 page 69 for more info	08-06022-001
Speaker	 page 56 for more info	15-00649
Self Adhesive Rubber Feet (x4)		30-11208-000
Earth Wire	 page 67 for more info	08-04515-001
NGT MR Operator Guide	 page 137 for more info	15-04151-EN

OPTIONAL

Software Options	 page 57	Tactical Masts	 page 128
Hardware Options	 page 58	12/24 V Converter	 page 99
Vehicle Antenna Tuners	 page 102	RM50e Modem	 page 70
Base Antennas	 page 121	Crosspatch	 page 65
Base Masts	 page 129	Telephone Interconnect	 page 72

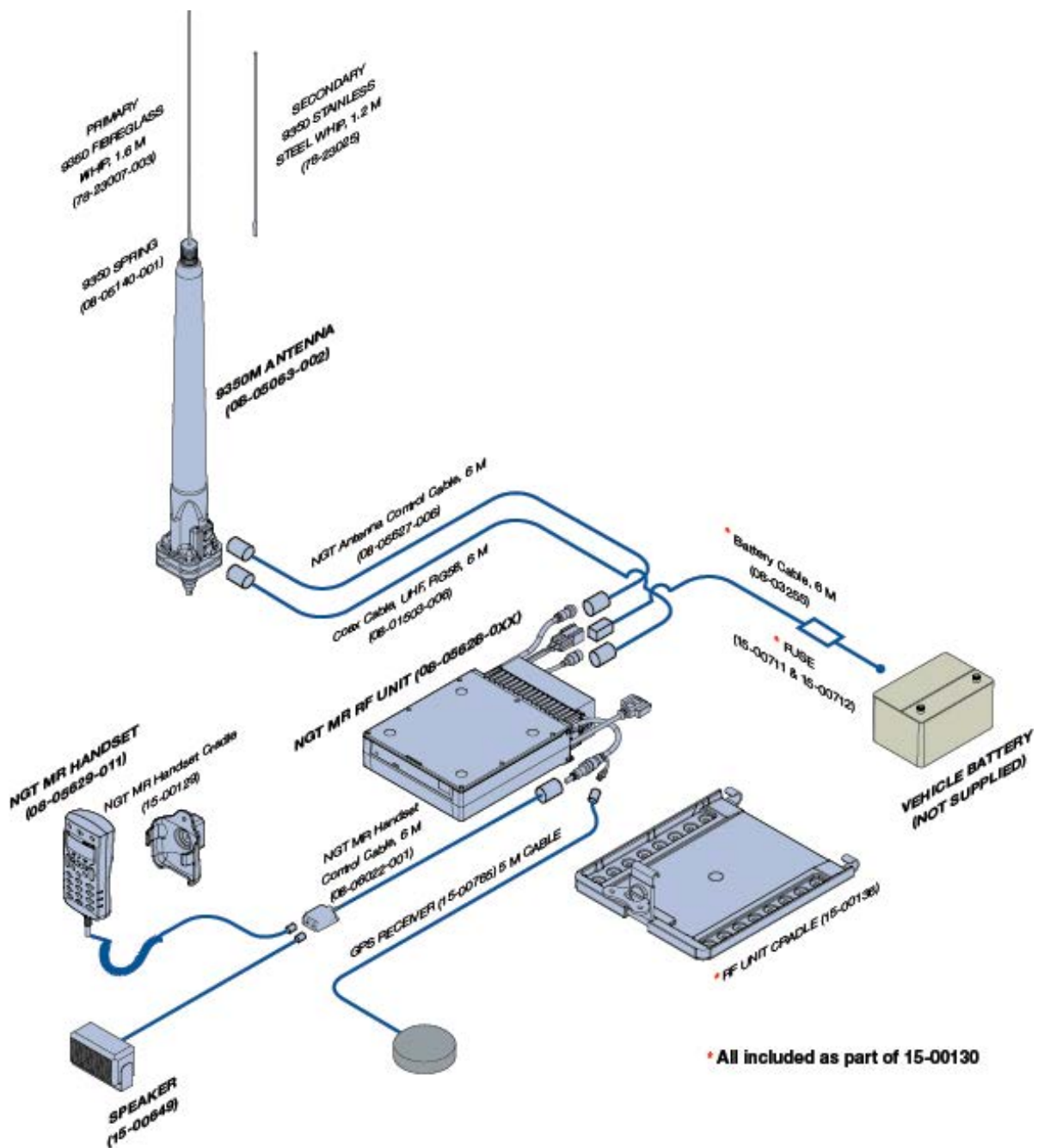
CONFIGURATIONS AND SELECTIONS GUIDE

NGT MR Vehicle

This package contains the key components required for a NGT MR Vehicular system. The main RF Unit is controlled via the MR Handset via the 6 m handset control cable which also provides a connection point for the Speaker. A GPS receiver accessory is provided as part of the package when a Frequency Hopping capable variant of the MR RF Unit is selected.

The antenna system comprises the 9350M Automatic Tuning unit complete with a choice of fibreglass and stainless steel whips.

The NGT MR Transceiver is designed to operate from a 12 V DC source. Maximum RF power output from this system is 125 W.



NGT MR Vehicle

QUOTE NGTMR-**XX**-VEHICLE

 NGT MR RF Unit	 page 55 for more info	08-05628-0XX
 Frequency Hopping — only for GF	 page 57 for more info	15-10542-000
 GPS Receiver — only for GF	 page 67 for more info	15-00765
NGT MR Handset	 page 56 for more info	08-05629-011
NGT MR Handset Cradle	 page 68 for more info	15-00129
Speaker	 page 56 for more info	15-00649
RF Unit Cradle and Battery Cable	 page 68 for more info	15-00130
Coax Cable, UHF, RG58	 page 130 for more info	08-01503-006
NGT MR Handset Control Cable	 page 69 for more info	08-06022-001
9350M Antenna	 page 107 for more info	08-05063-002
9350M Stainless Steel Whip, 1.2 m	 page 109 for more info	78-23025
9350M Fibreglass Whip, 1.6 m	 page 109 for more info	78-23007-003
9350M Spring	 page 109 for more info	08-05140-001
Vehicle Installation Kit	 page 68 for more info	15-00112
NGT Antenna Control Cable	 page 119 for more info	08-05627-006
NGT MR Operator Guide	 page 137 for more info	15-04151-EN
9350M Installation Handbook	 page 137 for more info	15-04142-EN

OPTIONAL

Software Options	 page 57	12/24 V Converter	 page 99
Hardware Options	 page 58	RM50e Modem	 page 70
Vehicle Antenna Tuners	 page 102	Crosspatch	 page 65

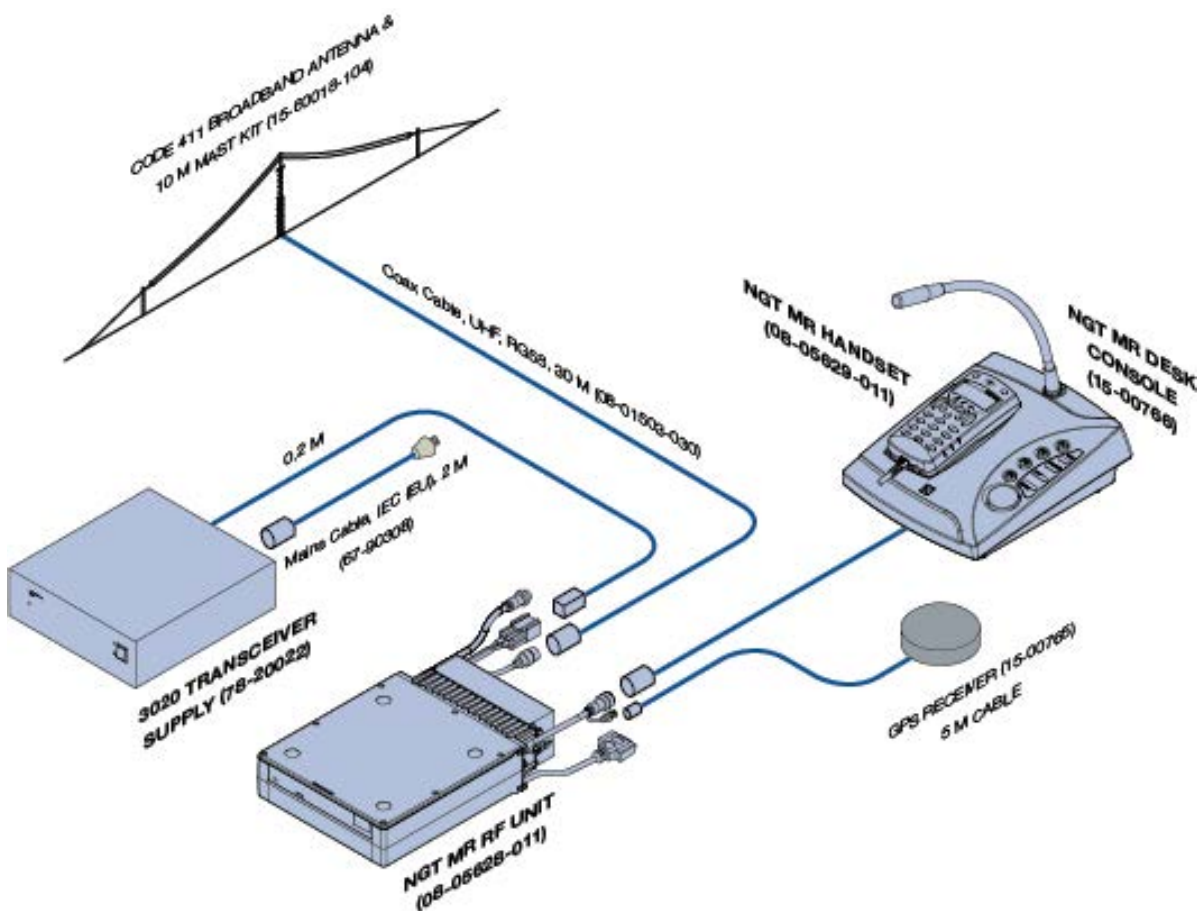
CONFIGURATIONS AND SELECTIONS GUIDE

NGT MR Base

This package contains the key components required for a NGT MR Base System. The main RF Unit is controlled using the MR Desk Console via a 2 m control cable. The Desk Console has a built in microphone, speaker, dedicated PTT and has the convenience of being able to use the standard MR Handset for transceiver control and configuration. Power is provided by the 3020 AC Mains power supply. A GPS receiver is provided as part of the package when a Frequency Hopping capable variant of the MR RF Unit is selected.



The antenna system comprises the Code 411 broadband dipole and 10 m mast antenna kit, providing continuous coverage from 2 to 30 MHz.

Maximum RF power output from this system is 125 W.








NGT MR Base

QUOTE NGTMR-**XX**-BASE

 NGT MR RF Unit	 page 55 for more info	08-05628-0XX
 Frequency Hopping — only for GF	 page 57 for more info	15-10542-000
 GPS Receiver — only for GF	 page 67 for more info	15-00765
NGT MR Desk Console	 page 56 for more info	15-00766
NGT MR Handset	 page 56 for more info	08-05629-011
 Self Adhesive Rubber Feet (x4)		30-11208-000
C411 / 10 M Mast Kit	 page 127 for more info	15-60018-104
Earth Braid	 page 133 for more info	05-06374
3020 Transceiver Supply	 page 77 for more info	78-20022
Coax Cable, UHF, RG58	 page 130 for more info	08-01503-030
Mains Cable, IEC (EU)	 page 77 for more info	67-90308
NGT MR Operator Guide	 page 137 for more info	15-04151-EN

OPTIONAL

Software Options	 page 57
Hardware Options	 page 58
Base Antennas	 page 121
Antenna Lightning Protection	 page 133
Base Masts	 page 129

Tactical Masts	 page 128
RM50e Modem	 page 70
Crosspatch	 page 65
Telephone Interconnect	 page 72

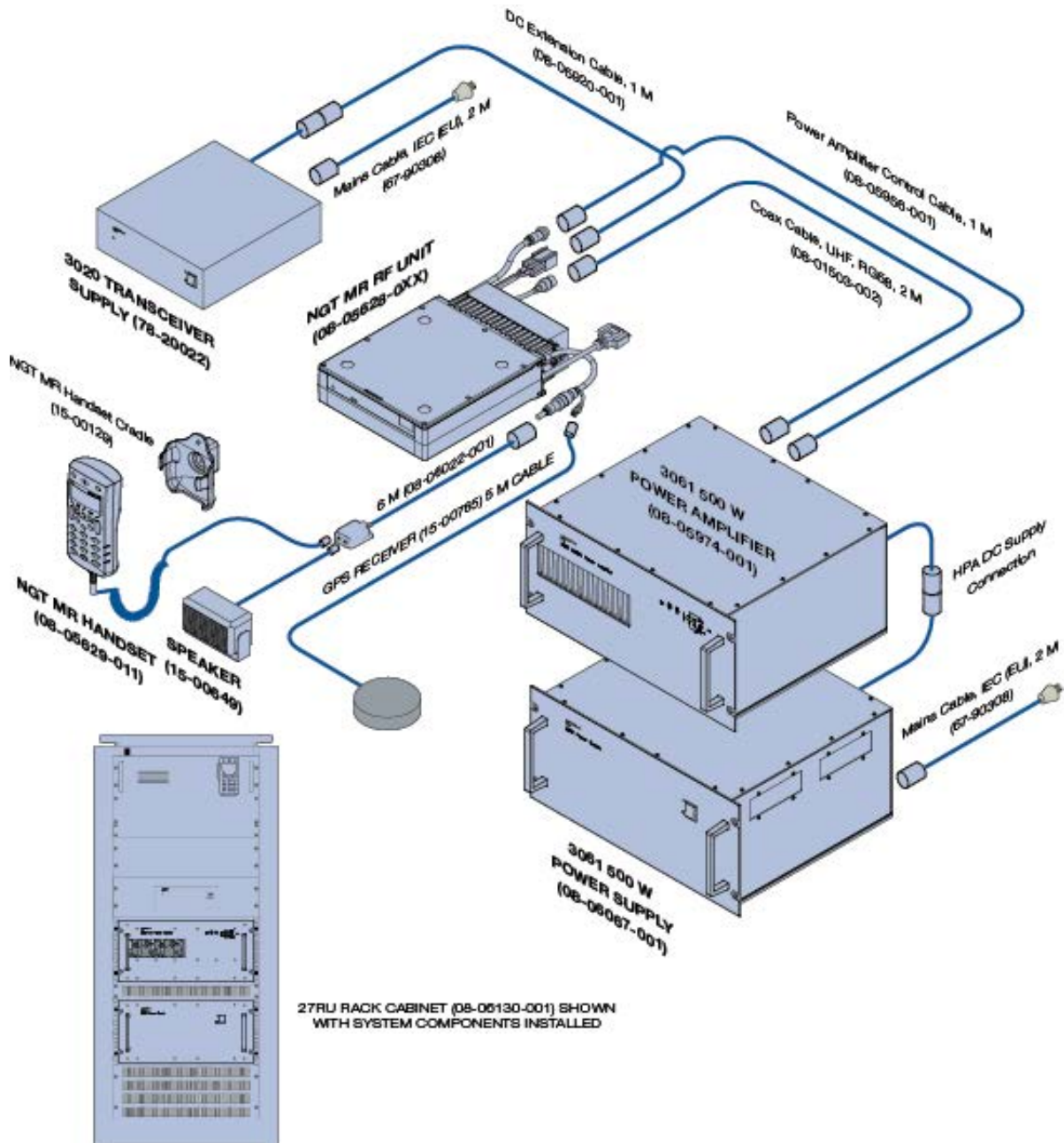
CONFIGURATIONS AND SELECTIONS GUIDE

NGT MR High Power 500 W

This package contains the key components required for a NGT MR Base system with RF power output boosted to 500 W and housed in a 27RU, 19" rack cabinet. Control of the system is via the MR Handset mounted on the upper most rack tray. A GPS receiver is provided as part of the package when a Frequency Hopping capable variant of the MR RF Unit is selected.

Primary power for the NGT MR RF Unit is provided by the 3020 AC Mains Power Supply and the High Power Amplifier is supplied via its own dedicated 3061 AC Mains Power Supply.

No antenna is provided with this package and should be selected as a separate item.












NGT MR High Power 500 W

QUOTE NGTMR-**XX**-HP-500W

	NGT MR RF Unit	 page 55 for more info	08-05628-0XX
	Frequency Hopping — only for GF	 page 57 for more info	15-10542-000
	GPS Receiver — only for GF	 page 67 for more info	15-00765
	NGT MR Handset	 page 56 for more info	08-05629-011
	NGT MR Handset Cradle	 page 68 for more info	15-00129
	NGT MR Handset Control Cable	 page 69 for more info	08-0602 2-001
	Speaker	 page 56 for more info	15-00649
	External ALC Option (Factory Fit)	 page 58 for more info	15-10504-000
	3061 500 W Power Amplifier	 page 74 for more info	08-05974-001
	Power Amplifier Control Cable	 page 76 for more info	08-05956-001
	Coax Cable, UHF, RG58	 page 130 for more info	08-01503-002
	DC Extension Cable	 page 80 for more info	08-05920-001
	3061 500 W Power Supply	 page 74 for more info	08-06067-001
	3020 Transceiver Supply	 page 77 for more info	78-20022
	Mains Cable, IEC (EU) for 3020 PSU	 page 76 for more info	67-90308
	Mains Cable, IEC (EU) for 3061 PSU	 page 76 for more info	67-90308
	Standard Rack Cabinet	 page 78 for more info	08-06130-001
	NGT MR Operator Guide	 page 137 for more info	15-04151-EN
	3061/3062 PA Reference Manual	 page 137 for more info	15-04131-EN

OPTIONAL

Software Options	 page 57	Base Masts	 page 129
Hardware Options	 page 58	RM50e Modem	 page 70
SG235C 500 W Tuner	 page 60	Crosspatch	 page 65
Base Antennas	 page 121	Telephone Interconnect	 page 72
Antenna Lightning Protection	 page 133		



Variable item (depends on configuration selection)



Standard item



Optional item

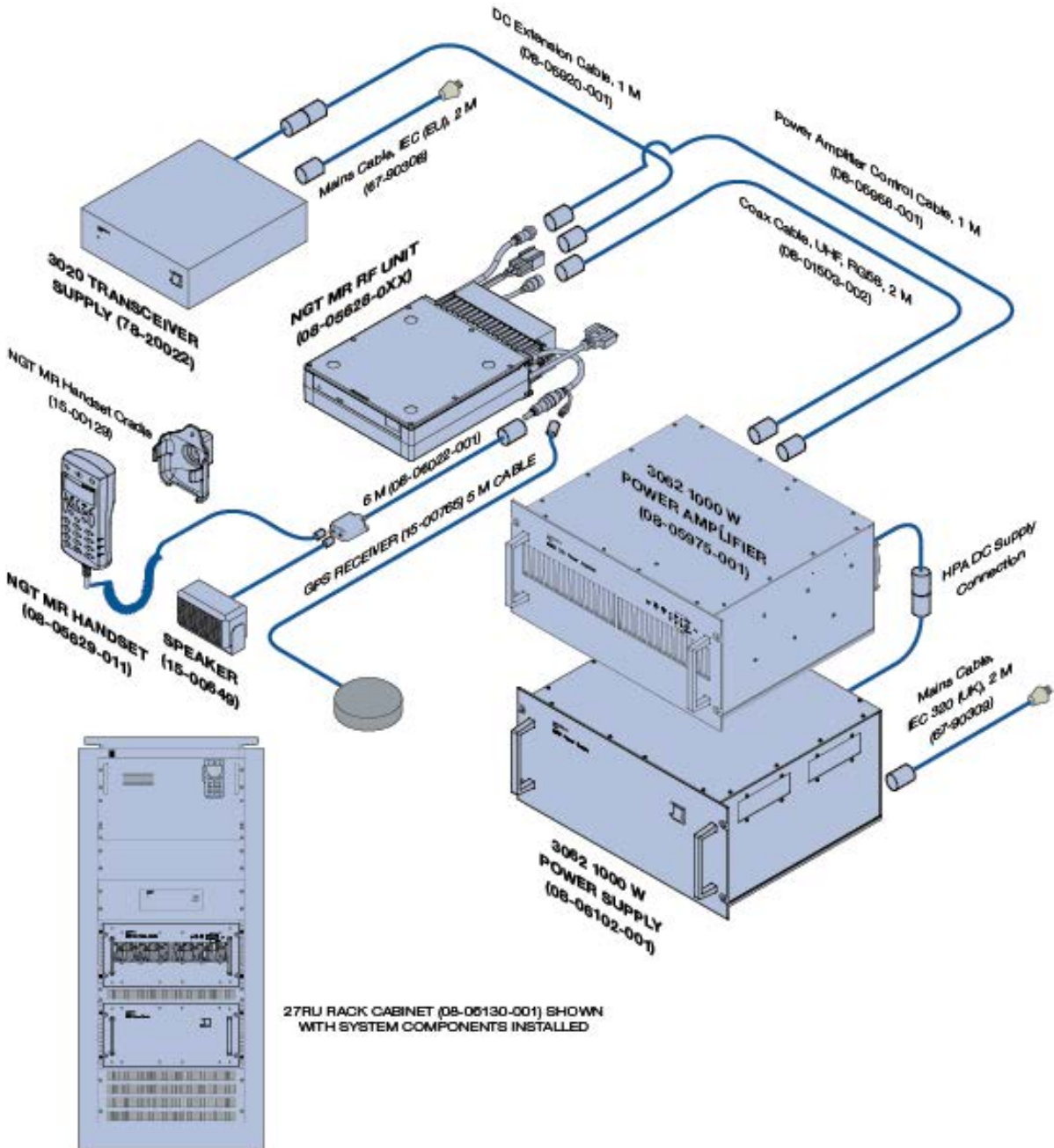
CONFIGURATIONS AND SELECTIONS GUIDE

NGT MR High Power 1000 W

This package contains the key components required for a NGT MR Base system with RF power output boosted to 1000 W and housed in a 27RU, 19" rack cabinet. Control of the system is via the MR Handset mounted on the upper most rack tray. A GPS receiver is provided as part of the package when a Frequency Hopping capable variant of the MR RF Unit is selected.

Primary power for the NGT MR RF Unit is provided by the 3020 AC Mains Power Supply and the High Power Amplifier is supplied via its own dedicated 3062 AC Mains Power Supply.

No antenna is provided with this package and should be selected as a separate item.



NGT MR High Power 1000 W









QUOTE NGTMR-**XX**-HP-1000W

	NGT MR RF Unit	 page 55 for more info	08-05628-0XX
	Frequency Hopping — only for GF	 page 57 for more info	15-10542-000
	GPS Receiver — only for GF	 page 67 for more info	15-00765
	NGT MR Handset	 page 56 for more info	08-05629-011
	NGT MR Handset Cradle	 page 68 for more info	15-00129
	NGT MR Handset Control Cable	 page 69 for more info	08-06022-001
	Speaker	 page 56 for more info	15-00649
	External ALC Option (Factory Fit)	 page 58 for more info	15-10504-000
	3062 1000 W Power Amplifier	 page 75 for more info	08-05975-001
	Power Amplifier Control Cable	 page 76 for more info	08-05956-001
	Coax Cable, UHF, RG58	 page 130 for more info	08-01503-002
	DC Extension Cable	 page 80 for more info	08-05920-001
	3062 1000 W Power Supply	 page 75 for more info	08-06102-001
	3020 Transceiver Supply	 page 77 for more info	78-20022
	Mains Cable, IEC (EU) for 3020 PSU	 page 76 for more info	67-90308
	Mains Cable, IEC 320 (UK) for 3062 PSU	 page 76 for more info	67-90309
	Standard Rack Cabinet	 page 78 for more info	08-06130-001
	NGT MR Operator Guide	 page 137 for more info	15-04151-EN
	3061/3062 PA Reference Manual	 page 137 for more info	15-04131-EN



High current type cable terminated with UK plug. May need to be re-terminated to suit region.

OPTIONAL

Software Options	 page 57	Base Masts	 page 129
Hardware Options	 page 58	RM50e Modem	 page 70
Base Antennas	 page 121	Crosspatch	 page 65
Antenna Lightning Protection	 page 133	Telephone Interconnect	 page 72



Variable item (depends on configuration selection)



Standard item



Optional item

NGT *MR* TRANSCEIVERS

NGT MR Transceivers — RF Units



The NGT *MR* Transceiver is available in two variations: Green with Frequency Hopping capability, and Green non-Frequency Hopping.

The NGT *MR* Transceiver is a cost-effective solution to meet your military HF needs. With optional Frequency Hopping capability and optional voice encryption, full in-built 125 W PEP RF output power, and interoperability through FED-STD-ALE or optional J1TC certified MIL-STD-188-141B ALE. It is capable of voice, data, email, fax and GPS tracking — all in a single cost effective unit.

STANDARD FEATURES:

- Frequency Hopping for secure communications
- General Purpose Interface Port (GPIO)
- 400 channels, 1.6–30 MHz, 10 networks
- Scanning of multiple networks
- 125 W PEP, 12 V DC, USB/LSB/AM
- In-built *Easitalk* speech noise reduction
- Morse capability
- Meets MIL-STD-810F for shock, vibration and dust



NGT <i>MR</i> Transceiver RF Unit	Green, Frequency Hopping Capable	GF	08-05628-011
NGT <i>MR</i> Transceiver RF Unit	Green, Non-Frequency Hopping	GN	08-05628-012


- This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.
- This transceiver is capable of Frequency Hopping. In order to enable Frequency Hopping you must also add the Frequency Hopping option (part number 15-10542-000), see page 57 for details.

NGT *MR* TRANSCEIVER OPTIONS

NGT *MR* Transceiver — Vehicular Parts







	<p>NGT <i>MR</i> Handset</p> <p>Handset style user interface for NGT <i>MR</i> Transceiver, providing full operation and configuration control through direct connection to RF Unit via Handset Control Cable or with Desk Console. Handset incorporates PTT button, curly cord, built in microphone, full keyset, LCD display and PC programming port.</p>	<p>QUOTE 08-05629-011</p>
	<p>Speaker</p> <p>External speaker with 4 m lead. Connects to Handset Control Cable.</p>	<p>QUOTE 15-00649</p>
	<p>NGT <i>MR</i> Handset Control Cable, 6 m</p> <p>Used to connect the NGT <i>MR</i> Handset to the NGT <i>MR</i> RF Unit.</p>	<p>QUOTE 08-06022-001</p>

NGT *MR* Transceiver — Base Station Parts

	<p>NGT <i>MR</i> Desk Console</p> <p>An optional NGT Desk Console for the NGT <i>MR</i> Transceiver, incorporating an in-built speaker, hand PTT switch, goose-neck microphone, in-built headphone output, and a 2 m interface cable.</p>	<p>QUOTE 15-00766</p>
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NGT MR TRANSCEIVER OPTIONS

NGT MR Transceiver Software Options

	Frequency Hopping Provides additional protection from malicious jamming and signal interception.	QUOTE 15-10542-000
	MIL-STD-188-141B ALE Upgrade Provides JITC certified MIL-STD-188-141B ALE capabilities. With this option the transceiver has networks and 600 available channels.	QUOTE 15-10544
	GPS Calling Enable Enables sending and receiving of GPS position information using Selcall or ALE.	QUOTE 15-10486
	CIVS Voice Scrambler A cost effective software enabled voice scrambler capability offering 64 codes. Simple to use and provides a basic level of voice security. For a higher level of voice security, see page 58 for AES and CES options.	QUOTE 15-10551
	TXD, Tx Program Disable Disables front panel programming of new transmit frequencies. For use in countries where front panel programming is prohibited by regulatory authorities, e.g. USA and Australia.	QUOTE 15-10481
	Amateur Mode Enables transmit capability with free dial frequencies within Amateur frequency bands. For use by licensed operators only.	QUOTE 15-10518

NGT MR Transceiver Hardware Options



External ALC (Factory Fit)

Required when using an NGT high power system.

Retro Kit: 15-10504

QUOTE
15-10504-000



High Speed Data (Factory Fit)

Hardware modification required for use with Codan HF Data Modems using high speed waveforms (RM50e, 3212).

QUOTE
15-10541-000



CES-128 Voice Encryptor (Factory Fit)

Provides high grade voice security with exceptional recovered audio quality.

Retro Kit: 15-10507

NOTE: KMS/KFS Key Fill Software is available for key fill purposes, see page 94 for details.

QUOTE
15-10507-000



AES-256 Voice Encryptor (Factory Fit)

Provides 256-bit voice security according to the Advanced Encryption Standard, with up to 256 user programmable encryption keys. Optimal voice clarity is provided through the use of a Mixed-Excitation Linear Predictive enhanced (MELPe) Vocoder, with 1200 bit/s and 2400 bit/s user selectable data rates.

Retro Kit: 15-10552

NOTE: KMS/KFS Key Fill Software is available for key fill purposes, see page 94 for details.

QUOTE
15-10552-000



2.7 kHz BW Filter (Factory Fit)

Required when using Codan MIL-STD high-speed data modems.

NOTE: The RM50e HF Data Modem requires this option to be fitted.

QUOTE
15-10514-000



500 Hz Filter (Factory Fit)

Delivers best performance with morse (CW) and narrow FSK data modem like Pactor-II.

QUOTE
15-10506-000



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

NGT MR TRANSCEIVER OPTIONS

NGT MR Transceiver Hardware Options (continued)



ISB Mode (Factory Fit)

This option is used to provide Independent Sideband (ISB) high speed data capability when the transceiver is combined with an ISB capable RM50e HF Data Modem. Data rates of up to 19200 bit/s are possible in this configuration.

QUOTE
15-10556-000



Option Fan (Factory Fit)

Fan unit for continuous data transmission for NGT series Transceivers.

QUOTE
15-10469-000

NGT *MR* Tuners



Tuner, 9103 Automatic Antenna with 10 m Cables

Designed to suit NGT *MR* Transceiver. Rated to 150 W PEP voice or data, 2 to 30 MHz.

Includes: mounting bracket, control cable (10 m) to suit NGT *MR* Transceiver, coaxial cable (10 m) and installation/operation handbook

QUOTE
08-04835-013



Tuner, 9103 Automatic Antenna with 30 m Cables

Designed to suit NGT *MR* Transceiver. Rated to 150 W PEP voice or data, 2 to 30 MHz.

Includes: mounting bracket, control cable (30 m) to suit NGT *MR* Transceiver, coaxial cable (30 m) and installation/operation handbook

QUOTE
08-04835-015



Tuner, SG235C 500 W PEP

Designed to suit 500 W high power NGT *MR* systems for voice and data, 2 to 30 MHz.

Includes: mounting bracket and installation/operation handbook




QUOTE
08-06739-001

NOTE:

- Maximum power input in data mode 300 W average.
- Control and coaxial cables are not supplied. For the control cable, see page 61, "NGT *MR* Tuner Accessories". For coaxial cables, see page 130, "Coaxial Cables Type RG58".

NGT MR TRANSCEIVER OPTIONS

NGT MR Tuner Accessories

	<p>Copper Earth Strip 50 mm x 0.46 mm (26 gauge) supplied in units of 1 m</p>	<p>QUOTE 30-37601-002</p>
	<p>Cable, SG235C Control, 30 m Used to connect the Antenna Control output (9-pin D) of the 500 W 3061 PA to the 4-pin NANA connector on the SG235C Antenna Tuner unit.</p>	<p>QUOTE 08-06740-030</p>
	<p>Cable, Coax Assembly, UHF Type Connectors, RG58, 30 m For coaxial cable lengths, For coaxial cables, see page 130, "Coaxial Cables Type RG58". NOTE: Only required with the 500 W SG235C Tuner.</p>	<p>QUOTE 08-01503-030</p>

NGT *MR* Base Whips



Base Whip

The Base Whip Antenna is 9.5 m (31 ft) in height, and requires an automatic antenna tuner. It is mounted vertically on a suitable ground plane or metal roof. An earth mat may be required where a suitable ground plane cannot be found.

This antenna may be used where space is restricted and omni-directional coverage is required.

Antenna rated to 500 W PEP. See page 60, "NGT MR Tuners" for available tuner options.

Ant, Base Whip, Ground Mounting (9.5 m / 31 ft Unloaded)

Comes complete with ground plate base.

NOTE:

- Coaxial cable and tuner are not supplied.
- Requires earth mat for ground installations.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".

QUOTE
15-00406-001

Ant, Base Whip, Roof Mounting (9.5 m / 31 ft Unloaded)

Comes complete with roof plate base.

NOTE:

- Coaxial cable and tuner are not supplied.
- Requires radial ground plane for roof installations.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".

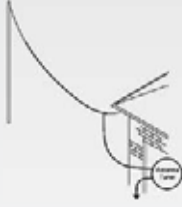
QUOTE
15-00406-002

NGT *MR* TRANSCEIVER OPTIONS

NGT *MR* Base Whip Accessories

Earth Mat for Base Whip Antenna, Ground Installations	QUOTE 15-00158
Radial Ground Plane for Base Whip Antenna, Roof Installations	QUOTE 15-00159

NGT *MR* Broadband Base Station Antennas



Ant, Tuned Long Wire (2–30 MHz)

This antenna exhibits a good combination of space efficiency and broadband capability. It is designed to be used with the 9103 and SG235C Antenna Tuners.

A suitable antenna where space is limited.

NOTE:

- Automatic antenna tuner is required, see page 60, “NGT MR Tuners”.
- Support mast not supplied. For masts, see page 129, “Antenna Masts”.
- Lighting protection is recommended for fixed base station installations, see page 133, “Lightning Protection”.

QUOTE
15-00403

NGT MR TRANSCEIVER OPTIONS

3031 Crosspatch for NGT



Codan's leading edge 3031 Crosspatch enables you to carry 'HF on your belt' using a VHF/UHF radio and a Codan NGT/2110M Transceiver. It is the practical, effective and affordable solution for any organisation that needs to extend their current HF or VHF/UHF networks.

**QUOTE
XPATCH-NGT**

3031 VHF/UHF to HF Crosspatch (NGT)		08-06730-001
3031 to VHF/UHF Transceiver Cable	▶ page 66 for more info	08-06766-001
Crosspatch 3031 CD Package (English)		15-04148-CD
3031 Quick Reference Cards (x2)	▶ page 66 for more info	06-02489-EN
Crosspatch 3031 Installation Kit	▶ page 66 for more info	15-00145

NOTE: For other accessories, see page 66, "3031 Accessories".

3031 Accessories



Cable, 3031 to VHF/UHF Transceiver Generic, 2 m

A 2 m shielded multi-core cable, with a miniature D15 connector terminated to bare ends, for user connection to a VHF/UHF transceiver.

QUOTE
08-06766-001



Crosspatch 3031 Installation Kit

Contains a variety of fasteners and fittings for mounting and grounding the 3031 Crosspatch.

QUOTE
15-00145



Quick Reference Card, Crosspatch 3031

QUOTE
06-02489-EN








User Guide, Crosspatch 3031

Printed User Guide for the 3031 Crosspatch.

QUOTE
15-04148-EN

NGT MR TRANSCEIVER OPTIONS

NGT MR Accessories

	<p>Battery Cable, 6 m</p> <p>Used to provide 12 V DC to NGT MR, 2110M or 2110M/3160 system from vehicle battery.</p>	<p>QUOTE 08-03255</p>
	<p>Earth Braid, 1.5 m</p> <p>Terminated in lugged ends to suit earth screws on Codan Transceiver and accessory equipment for long earth connections.</p>	<p>QUOTE 05-06374</p>
	<p>Earth Wire, 0.5 m</p> <p>Terminated in lugs to suit earth screws on Codan Transceiver and accessory equipment for short earth connections.</p>	<p>QUOTE 08-04515-001</p>
	<p>Morse Key</p> <p>Morse key to suit NGT MR for desktop operation.</p>	<p>QUOTE 15-00662</p>
	<p>GPS Receiver</p> <p>Includes receiver/antenna, magnetic mounting bracket, NGT interconnecting cables. Features integrated antenna and GPS receiver, and tracking up to 12 satellites.</p>	<p>QUOTE 15-00765</p>

NGT MR Accessories — Vehicular



RF Unit Cradle and Battery Cable

Includes mounting cradle, fuse holder and fuse, earth wire and battery cable.

QUOTE
15-00130



Vehicle Installation Kit

Includes assorted screws, cable ties and grommets.

QUOTE
15-00112



RF Unit Mounting Cradle

Used to securely mount NGT MR RF Unit for vehicular installations.

QUOTE
15-00136



NGT MR Handset Cradle

Provides secure mounting of NGT MR Handset in vehicular installations.

QUOTE
15-00129



Fuse Holder with 32 A Fuse

To suit fuse (part number 15-00712). Recommended to be fitted in line with DC battery supply for protection against accidental short circuits in vehicular installations.

QUOTE
15-00711



Fuse, 32 A

To suit fuse holder (part number 15-00711). Recommended to be fitted in line with DC battery supply for protection against accidental short circuits in vehicular installations.

QUOTE
15-00712

NGT *MR* TRANSCEIVER OPTIONS

NGT *MR* Accessories — Base



Desk Console Headphones

Headphones suitable for NGT *MR* Desk Console.

QUOTE
15-00602

NGT *MR* Transceiver Getting Started Guide



NGT *MR* Transceiver Operator Guide

Printed Getting Started Guide for the NGT *MR* Transceiver (includes Reference Manual on CD). Available in various languages (English, French, Portuguese).

NOTE: Operator Guides are available in different languages (English, French and Portuguese). Please ensure you quote the correct part number when building your system.

FOR ENGLISH
15-04151-EN

FOR FRENCH
15-04151-FR

FOR PORTUGUESE
15-04151-PT

NGT *MR* Cables



NGT *MR* Handset Control Cable

Used to connect the NGT *MR* Handset to the NGT *MR* RF Unit. Includes 3.5 mm socket for connection of loudspeaker.

QUOTE
08-06022-001

HF Data Modems



RM50e HF Data Modem

The RM50e is a high performance MIL Spec HF modem designed to connect to the NGT family of radios. On-air compatible with the RM50 in the 2110M series Manpacks, this modem provides legacy interoperability with systems running Fixed Frequency and ALE networks operating STANAG 5066 email.

The RM50e operates using the most highly advanced Military Standard (MIL-STD) waveforms, including STANAG 4539 and MIL-STD-188-110A/B, providing adaptive rates from 75–9600 bit/s coded. When used in conjunction with an ISB capable NGT, even higher rates of up to 19200 bit/s are available using MIL-STD-188-110B Appendix F waveforms.

The RM50e modem must be used in conjunction with RC50-C Email software, see page 92, "RC50-C HF Email Software".

NOTE: For optimum performance, the NGT *MR* must be fitted with the 2.7 kHz BW Filter option (part number 15-10514-000) and the High Speed Data option (part number 15-10541-000), see page 58, "2.7 kHz BW Filter (Factory Fit)".

STANDARD FEATURES:

- On-air compatible with RM50 (2110M Manpack Internal Modem)
- MIL-STD Waveforms (MIL-STD-188-110A, MIL-STD-188-110B (Inc. Appendix F), STANAG 4285, STANAG 4529, STANAG 4415, STANAG 4539)
- ISB capable
- Data Encryption (AES-256 bit Algorithm, up to 256 stored keys, Key fill via Codan Key Management Software (KMS)), see page 94, "Key Management Software (KMS)".
- MIL-STD-810F Immersion, Dust, Vibration
- Transceiver and data cables must be ordered separately, see page 71, "Modem Accessories"





QUOTE
08-06978-001



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

NGT MR TRANSCEIVER OPTIONS

Modem Accessories

	Cable, RM50e to NGT Transceiver Interface, 1 m	QUOTE 08-07167-001
	Cable, RM50e to NGT Transceiver Interface, 6 m	QUOTE 08-07167-006
	Cable, Data Interface 19way MIL to USB A, 2 m USB to 19-way MIL Interface Cable for PC control (using RC50-C) and security key programming (KMS/KFS) of the RM50e HF Data Modem and embedded RM50 Modem (2110M only). Also used for programming of the 2110M Transceiver using NSP.	QUOTE 08-06901-001
	Operator Guide, RM50e HF Data Modem Printed user guide for the RM50e HF Data Modem.	QUOTE 15-04167-EN

3033 Telephone Interconnect



Codan's telephone interconnect equipment can link into the telephone system enabling you to make or receive telephone calls on your HF transceiver. Comes with all cables and User Guide.

**QUOTE
RTI-3033-NGT**








STANDARD FEATURES:

- Fully automated and intuitive operation
- Multilingual voice prompts
- Flexible configuration and remote management
- Worldwide compliance (Telephone and EMC)
- Radio user can access public telephone network
- Telephone users can contact radio users
- Designed for extreme conditions

3033 Telephone Interconnect		08-06797-001
3033 to Transceiver Interface Cable	▶ page 73 for more info	08-06820-001
3033 to 3020 Transceiver Supply Cable	▶ page 73 for more info	08-06819-001
3033 User Guide on CD (English)		15-04156-CD

NGT MR TRANSCEIVER OPTIONS

3033 Accessories

	Cable, 3033 to Transceiver Interface	QUOTE 08-06820-001
	Cable, 3033 to 3020 Transceiver Supply	QUOTE 08-06819-001
	Cable, 6-way Phone	QUOTE 08-04146-001
	Earth Wire, 0.5 m	QUOTE 08-04515-001
	Cable, Ethernet Crossover CAT-5E, Red — 2 or 10 m	QUOTE 67-90800
		QUOTE 67-90801
	Cable, Ethernet Straight CAT-5E, Blue — 2 or 10 m	QUOTE 67-90802
		QUOTE 67-90803
	User Guide, 3033 Telephone Interconnect	QUOTE 15-04156-EN

3061 500 W Power Amplifiers



A reliable and affordable high power solution for voice and data communication.

QUOTE
HIGH-PWR-500

STANDARD FEATURES:

- 500 W PEP / 300 W average output power
- 100% continuous mode
- 100–270 V AC 50/60 Hz supply voltage
- Fully protected against all load conditions
- Fan forced cooling with thermostatically controlled fans
- 125 W PEP in bypass mode
- 19" rack mount (5RU + 5RU)
- Interface cables for NGT *MR* Transceiver (coaxial and control cables)

3061 500 W Power Amplifier		08-05974-001
3061 500 W Power Supply		08-06067-001
External ALC Opt (Retro Fit) for NGT <i>MR</i>	➔ page 58 for more info	15-10504
Earth Braid	➔ page 76 for more info	05-06374
Coax Cable, UHF, RG58	➔ page 130 for more info	08-01503-002
Power Amplifier Control Cable	➔ page 76 for more info	08-05956-001
Mains Cable, IEC	➔ page 76 for more info	67-9030X
3061/3062 PA Reference Manual	➔ page 137 for more info	15-04131-EN

- ⚠ Specify the mains cable (AU, EU, UK or US) at the time of ordering the Power Amplifier and Power Supply Unit.
- ⚠ The 3061 Power Amplifier is suitable for use with NGT *MR* systems, it is *not* suitable for use with the 2110M Transceiver.
- ⚠ Ensure the antenna used is suitable for 500 W operation.
- ⚠ Order External ALC Option (Factory Fit), part number 15-10504-000, when purchasing the Power Amplifier with an NGT *MR* Transceiver.

NGT *MR* TRANSCEIVER OPTIONS

3062 1000 W Power Amplifiers



A reliable and affordable high power solution for voice and data communication.

QUOTE
HIGH-PWR-1000

STANDARD FEATURES:

- 1000 W PEP / 600 W average output power
- 100% continuous mode
- 100–270 V AC 50/60 Hz supply voltage
- Fully protected against all load conditions
- Fan forced cooling with thermostatically controlled fans
- 125 W PEP in bypass mode
- 19" rack mount (5RU + 5RU)
- Interface cables for NGT *MR* Transceiver (coaxial and control cables)

3062 1000 W Power Amplifier		08-05975-001
3062 1000 W Power Supply		08-06102-001
External ALC Opt (Retro Fit) for NGT <i>MR</i>	➔ page 58 for more info	15-10504
Earth Braid	➔ page 76 for more info	05-06374
Coax Cable, UHF, RG58	➔ page 130 for more info	08-01503-002
Power Amplifier Control Cable	➔ page 76 for more info	08-05956-001
Mains Cable, IEC 320	➔ page 76 for more info	67-90309
3061/3062 PA Reference Manual	➔ page 137 for more info	15-04131-EN

- ⚠ Specify the mains cable (AU, EU, UK or US) at the time of ordering the Power Amplifier and Power Supply Unit.
- ⚠ The 3062 Power Amplifier is suitable for use with NGT *MR* systems, it is *not* suitable for use with the 2110M Transceiver.
- ⚠ Ensure the antenna used is suitable for 1000 W operation.
- ⚠ Order External ALC Option (Factory Fit), part number 15-10504-000, when purchasing the Power Amplifier with an NGT *MR* Transceiver.

3061/3062 Accessories



Earth Braid, 1.5 m

Used to connect RF Unit to ground point.

QUOTE
05-06374



Cable, Power Amplifier Control

Provides control signalling between the 3061/3062 PA and the NGT MR Transceiver.

QUOTE
08-05956-001



Cable, 3C Blk Mid IEC, 2 m

AC mains cable for use with 3020 Transceiver Supply and 3061 500 W Power Supply.

NOTE: Different cables are available for specific regions (Australia, UK, USA and Europe). Please ensure you quote the correct part number when building your system.

FOR AUSTRALIA
67-90305

FOR UNITED KINGDOM
67-90306

FOR USA
67-90307

FOR EUROPE
67-90308









Cable, 3C Blk Mid IEC 320-UK, 2 m

This is the only mains cable available for use with the 3062 1 kW PA. If required for use in countries other than the UK, the cable will need to be re-terminated accordingly.

QUOTE
67-90309

NGT MR TRANSCEIVER OPTIONS

3020 Transceiver Supply

	<p>3020 Transceiver Supply</p> <p>Universal AC input (100 to 240 V AC) heavy duty power supply providing a regulated 13.8 V DC Output for the NGT MR. Designed for environments with unreliable and fluctuating mains systems. Suitable for use with either voice or data stations.</p>	<p>QUOTE 78-20022</p>
	<p>Cable, 3C Blk Mid IEC, 2 m</p> <p>AC mains cable for use with 3020 PSU and 500 W 3061 PSU.</p> <p>NOTE: Different cables are available for specific regions (Australia, UK, USA and Europe). Please ensure you quote the correct part number when building your system.</p>	<p>FOR AUSTRALIA 67-90305</p> <p>FOR UNITED KINGDOM 67-90306</p> <p>FOR USA 67-90307</p> <p>FOR EUROPE 67-90308</p>
	<p>Earth Braid, 1.5 m</p> <p>Used to connect RF Unit to ground point.</p>	<p>QUOTE 05-06374</p>
	<p>Cable, DC Extension, 1 m</p> <p>Required to connect the 3020 to NGT MR when both items are rack mounted.</p>	<p>QUOTE 08-05920-001</p>
	<p>Cable Kit for Float Charge</p> <p>Cable kit for float charging lead-acid storage battery for uninterrupted supply.</p>	<p>QUOTE 15-00702</p>
	<p>3RU Rack-mounting Frame for 3020</p>	<p>QUOTE 15-00175</p>

NGT *MR* 19" Racks and Accessories — Standard Rack Configurations

Standard High Power Rack Configuration



Designed to rack mount an NGT *MR* High Power 500 W or 1000 W system.

QUOTE
08-06130-001




COMPRISING:

- 19" 27RU rack complete with rear door, vented top and side panels
- NGT rack mount tray for an NGT Transceiver
- NGT rack mount tray for 3020 Transceiver Supply
- Rack mount blanking panels 1RU, 2RU and 3RU supplied
- Pre-fitted equipment rails
- Assorted cable ties, screws, washers and cage nuts




NOTE: Rack comes pre-assembled ready for a NGT Transceiver and high power amplifier to be mounted. 6RU of space available for additional equipment. NGT Transceiver, power amplifier and power supplies are ordered separately. Does not include a 1 m DC Extension Cable for the NGT Transceiver.

NGT MR TRANSCEIVER OPTIONS

19" Rack Mount System Trays

	NGT Universal 19" Rack-mounting Tray 3RU with Blank Front Panel Suitable for NGT RF Units, 3030 NGT Remote Interface.	QUOTE 15-00172-001
	NGT Universal 19" Rack-Mounting Tray 3RU, Front Panel Speaker Grill and Mounting Holes Suitable for NGT RF Unit. Speaker can be mounted behind Grill and handset can be mounted on front panel using cradle.	QUOTE 15-00172-002
	19" Rack-Mounting Frame Suitable for 3020 Transceiver Supply, and 3012 or 3212 HF Data Modems.	QUOTE 15-00176

19" Rack Mount Blanking Panels

	Set of 1RU + 2RU Blank Front Panels Suitable for covering gaps or holes in rack fascia.	QUOTE 15-00173
	19" 4RU Vent Panel	QUOTE 30-35002-019
	19" 1RU Vent Panel	QUOTE 30-35002-006

19" Rack Mount Accessories



Fixed Equipment Rail, 457 mm long

Suitable for 27RU rack cabinet only.

QUOTE
30-35002-020



Cable, DC Extension, 1 m

Required to connect the 3020 to NGT *MR* when both items are rack mounted.

QUOTE
08-05920-001



Earth Braid, 1.5 m

Terminated in lugged ends to suit earth screws on Codan Transceiver and accessory equipment for long earth connections.

QUOTE
05-06374



Earth Wire, 0.5 m

Terminated in lugs to suit earth screws on Codan Transceiver and accessory equipment for short earth connections.

QUOTE
08-04515-001



MRX TRANSPORTABLE

The MRX Transportable Systems are housed in a fully ruggedised (MIL-STD-810F) field deployable case, and support voice, data and an array of encryption options. Providing a deployable backbone communication system, the MRX can be quickly installed and interconnected with local infrastructure. When combined with a MRX-I Interoperability System, the MRX delivers full spectrum communications support to ground operators through HF, VHF, UHF and Satellite systems.



SYSTEMS

STANDARD FEATURES

- ✓ Easy to use
- ✓ Legacy system interoperability
- ✓ AC Supply
- ✓ 125 W standard (NGT *MR*)
- ✓ FED-STD-1045 ALE/CALM (NGT *MR*)


OPTIONAL FEATURES

- ✓ MIL-STD-141B ALE (JITC Certified) and FED-STD-1045 ALE/CALM
- ✓ Data Capable (email & chat messaging)
- ✓ GPS Tracking
- ✓ 500/1000 W system options
- ✓ IP Remote Control
- ✓ COMSEC Solution (CES 128-bit & AES 256-bit)

MRX TRANSPORTABLE SYSTEMS

The MRX series of ruggedised cases provide the foundation on which to build ruggedised, transportable HF communications systems based around the NGT *MR* and 2110M Manpack series Transceivers.

The products represented by the part numbers below are the transit cases only, Codan HF equipment, accessories and third party products must be ordered separately. The cases are supplied with the necessary equipment mounting trays and hardware for the various configurations that are supported by them — [please contact your Codan Sales Representative for further details.](#)

 Radio equipment and cases are shipped separately. It is highly recommended that allowances be made to provide end user support for installation and system commissioning when quoting these products.

MRX Headquarters System

	<p>Case, MRX NGT <i>MR</i> System</p> <p>Designed to mount quantity one of any model NGT Transceiver using a Handset control point as well as one hardware HF data modem (RM50e). Cases are available in Black, Green or Orange.</p>	<p>FOR BLACK QUOTE 08-07288-001</p>
		<p>FOR GREEN QUOTE 08-07288-002</p>
		<p>FOR ORANGE QUOTE 08-07288-003</p>

MRX Interoperability System

	<p>Case, MRX NGT <i>MR</i> Interoperability System</p> <p>Designed to mount quantity one of any model NGT Transceiver using a Handset control point and interoperability system (1 x OIU and 1 x RIU)</p>	<p>FOR BLACK QUOTE 08-07284-001</p>
		<p>FOR GREEN QUOTE 08-07284-002</p>
		<p>FOR ORANGE QUOTE 08-07284-003</p>

MRX High Power System Expansion



Case, MRX 500/1000 W High Power Amplifier

Designed to mount one 3061 500 W or 3062 1000 W PA.

NOTE: A High Power system comprises both High Power Amplifier and corresponding Power Supply Unit.

FOR BLACK QUOTE
08-07285-001

FOR GREEN QUOTE
08-07285-002

FOR ORANGE QUOTE
08-07285-003



Case, Power Amplifier Power Supply

Designed to mount one 3061 500 W or 3062 1000 W Power Supply.

NOTE: A High Power system comprises both High Power Amplifier and corresponding Power Supply Unit.

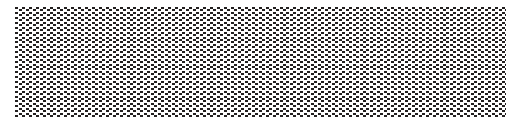
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FOR GREEN QUOTE
08-07286-002

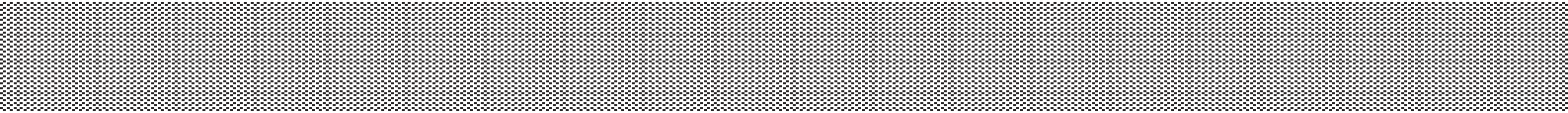
FOR ORANGE QUOTE
08-07286-003



ACCESSORIES



The 2110M and NGT *MR* Transceivers are available with a wide range of ancillary equipment and accessories. Codan offers a complete communications solution with voice encryption options, email and programming software, power supplies, vehicle antenna tuners, and antennas and masts.



VOICE ENCRYPTORS & PRODUCTS

3590 AES-256 DV Encryptor



The 3590 AES-256 DV Encryptor is designed for use with legacy HF transceivers, providing voice encryption compatible with the AES-256 DV options for NGT *MR* and 2110M. It provides a high grade 256-bit AES Encryption with a MELPe digital Vocoder supporting 1200/2400 bit/s data rates. The unit's compact size supports multiple deployment scenarios from manpack to mobile to base platforms.

Available in standard and flange mounting configurations.

QUOTE
3590-STANDARD

QUOTE
3590-FLANGE



3590 AES-256 DV Encryptor

08-07080-001



3590 AES-256 Encryptor (Flange Mount)

08-07080-002

Transceiver to 3590/3591 Cable

page 90 for more info

08-07085-001

3590 AES-256 DV Encryptor User Guide

page 137 for more info

15-04172-EN

3590 Quick Reference Card

page 91 for more info

06-02757-EN



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

NOTE: Cables, handset and key fill software must be ordered separately, see page 90, "3590/3591 Accessories".



Variable item (depends on configuration selection)

3591 CES-128 Encryptor



The 3591 CES-128 Voice Encryptor is designed for use with legacy HF transceivers, providing voice encryption compatible with the CES-128 options for NGT *MR* and 2110M. Communications security (COMSEC) is provided through use of a proprietary 128-bit encryption algorithm. The unit's compact size supports multiple deployment scenarios from manpack to mobile to base platforms.

Available in standard and flange mounting configurations.

QUOTE
3591-STANDARD

QUOTE
3591-FLANGE



3591 CES-128 Encryptor

08-07080-003



3591 CES-128 Encryptor (Flange Mount)

08-07080-004

Transceiver to 3590/3591 Cable

➔ **page 90** for more info

08-07085-001

3591 CES-128 Encryptor User Guide

➔ **page 137** for more info

15-04173-EN

3591 Quick Reference Card

➔ **page 91** for more info

06-02768-EN



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

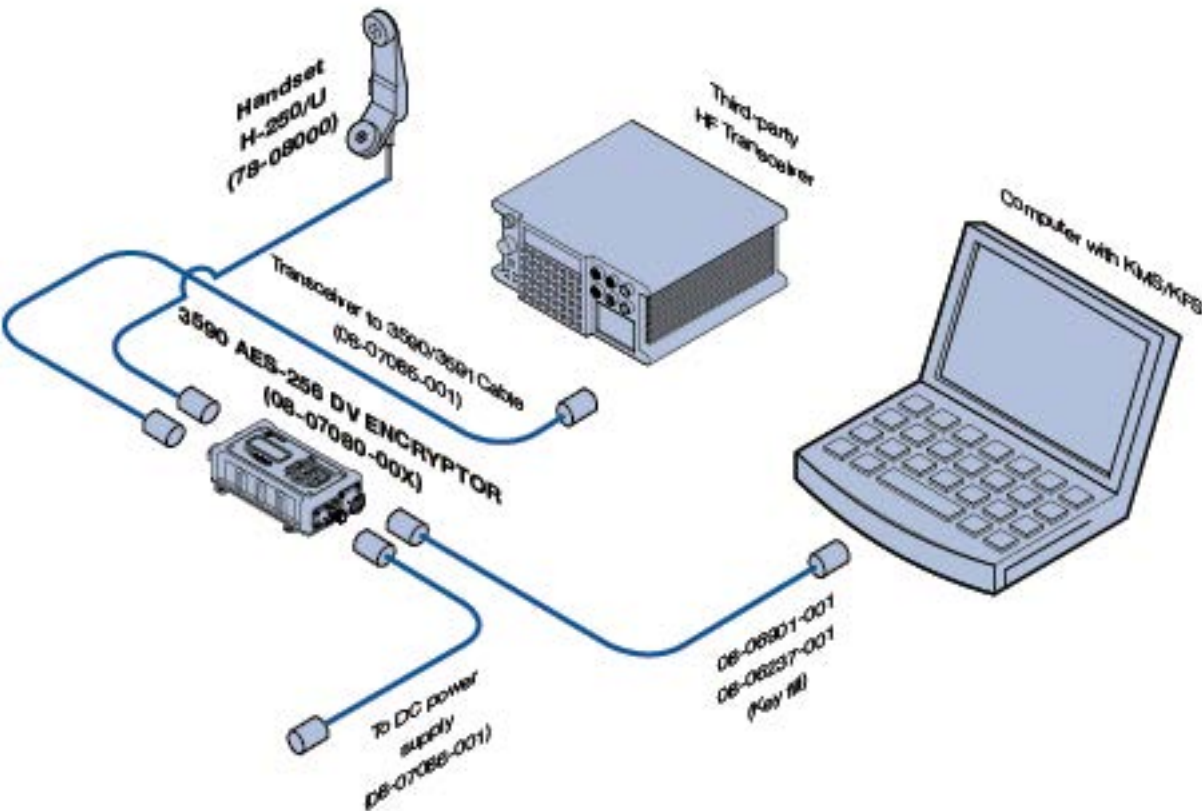
NOTE: Cables, handset and key fill software must be ordered separately, see page 90, "3590/3591 Accessories".



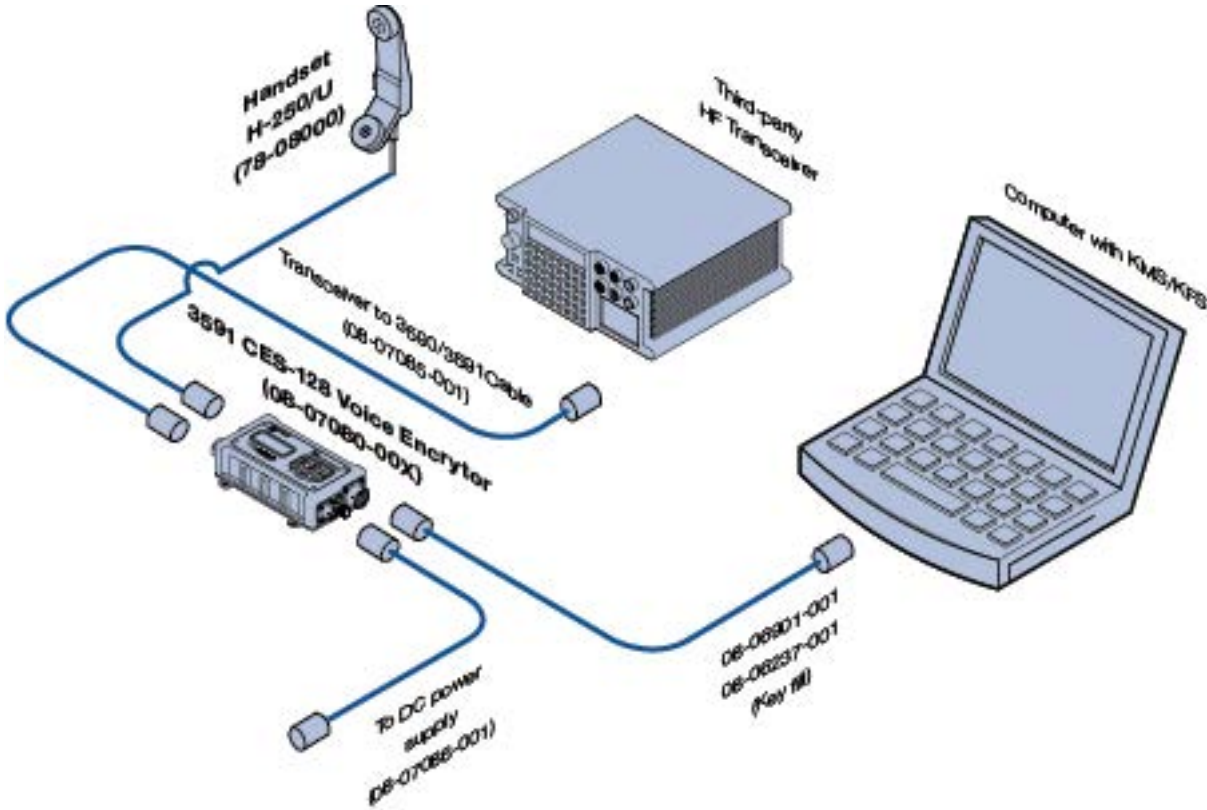
Variable item (depends on configuration selection)

VOICE ENCRYPTORS & PRODUCTS

3590 AES-256 DV Encryptor System Diagram



3591 CES-128 Encryptor System Diagram



3590/3591 Accessories



Handset H-250/U

Lightweight military handset with noise cancelling microphone and PTT switch. Used for local voice operation of 3590/3591.

QUOTE
78-08000



Cable, Transceiver to 3590/3591 (Unterminated), 2 m

Used for connecting the 3590/3591 to a third party transceiver for receive and transmit audio, PTT control and DC supply. The unterminated end of the cable has stripped, tinned wire ends.

QUOTE
08-07085-001



Cable, Power to 3590/3591 (Unterminated), 3 m

Used for connecting the 3590/3591 to a 10 to 36 V DC power source where a third party transceiver cannot supply power. The unterminated end of the cable has tripped, tinned wire ends.

QUOTE
08-07086-001



Cable, Remote Control & Balanced Interface, 2 m

Used for remote control of the 3590/3591. Supports balance audio input/output, PTT and serial control of the 3590/3591.

QUOTE
08-07087-001



Cable, Data Interface 19way MIL to USB A, 2 m

Used for security key programming of the 3590/3591 via KMS/KFS.

QUOTE
08-06901-001



Key Management Software

Key Management Software (KMS) enables you to manage and program encryption keys for Codan's NGT MR/2110M Transceivers and stand-alone encrypted devices, e.g. RM50e HF Data Modem, 3590/3591 Encryptors.

QUOTE
15-04168-EN



Key Fill Software

Key Fill Software (KFS) enables you to program encryption keys into Codan's NGT MR/2110M Transceivers and stand-alone encryption devices, e.g. RM50e HF Data Modem, 3590/3591 Encryptors.

QUOTE
15-04171-EN



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

VOICE ENCRYPTORS & PRODUCTS

3590/3591 Accessories (continued)



Cable, Data Interface 19way MIL to D9F

9-way D to 19-way MIL Interface Cable for keyfill 2110M CES-128 / AES-256 Encryptors, and for 3590/3591 Encryptors. Also used for programming the 2110M Transceiver using NSP.

QUOTE
08-06237-001



Plug, 2way for External DC Input

Plug to suit the DC connector on the 3590/3591 for applications requiring a fully customised DC cable design.

QUOTE
60-00021-003



Plug, 14way for Transceiver Interface

Plug to suit the Transceiver Interface connector on the 3590/3591 for applications requiring a fully customised transceiver interface cable design.

QUOTE
60-00141-001



Plug, 19way for Key Fill/Remote Control/Line Audio Interface

Plug to suit the Fill and Remote Control Interface connector on the 3590/3591 for applications requiring a fully customised Fill and Remote Control cable design.

QUOTE
60-00191-001



User Guide, 3590 AES-256 DV Encryptor

QUOTE
15-04172-EN



Quick Reference Card, 3590 AES-256 DV Encryptor

QUOTE
06-02757-EN



User Guide, 3591 CES-128 Voice Encryptor

QUOTE
15-04173-EN



Quick Reference Card, 3591 CES-128 Voice Encryptor

QUOTE
06-02768-EN

HF Email Software



RC50-C HF Email Software

Codan's RC50-C HF Email software provides fast, efficient, error free email capability over HF radio. Operating in conjunction with Codan's HF Transceivers and RM50 range of Data Modems, the software operates on a standard Windows™ PC using a single USB port with no specialised PC hardware requirements. When installed, the software runs in the background requiring no user interaction.

QUOTE
15-04161-CD

STANDARD FEATURES:

- Adaptive rates up to 19200 bit/s (ISB only) or 9600 bit/s
- Compatible with ALE/CALM
- Intranet/Internet gateway
- NATO interoperable
- ISB capable

SYSTEM REQUIREMENTS:

- Windows™ XP Professional SP2, Windows™ 2000
- Professional SP4 or Windows™ 7
- Inter Pentium IV 800 MHz or better
- 6 GB or more of free space for email storage
- 512 MB or more of RAM
- CD-ROM drive
- POP3/SMTP compliant email client
- Access to any commercial POP3/SMTP compliant email server for internet connectivity

NOTE: Requires Data Interface Cable (part number 08-06901-001) for connecting the PC to a 2110M Manpack Transceiver or RM50e HF Data Modem.

SOFTWARE

NSP-M System Programmer Software

	NSP-M System Programmer Software CD (English)	QUOTE 15-04165-EN
	Software used to profile and firmware upgrade the NGT <i>MR</i> /2110M Transceivers. NSP interface cable needs to be ordered separately.	

NSP-M Cables

	Cable, NSP Interface for NGT Interface cable to program NGT <i>MR</i> Transceiver from a PC with a 9-pin D serial port.	QUOTE 08-05123-001
	Cable, NSP Interface for 2110M Interface cable to program 2110M Transceiver from a PC with a 9-pin D serial port.	QUOTE 08-06237-001
	Adaptor, USB to DB-9, Serial Port Used with above cables to convert PC USB Port to serial. USB V1.1 compliant and supports Microsoft Windows™ 2000/XP/Vista/WIN7. Not recommended to be used when upgrading transceiver firmware.	QUOTE 78-01031

Key Management Software (KMS)



Key Management Software

Key Management Software (KMS) enables you to manage and program encryption keys for Codan's NGT *MR/2110M* Transceivers and stand-alone encrypted devices, e.g. RM50e HF Data Modem, 3590/3591 Encryptors.

QUOTE
15-04168-EN



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

Key Fill Software (KFS)



Key Fill Software

Key Fill Software (KFS) enables you to program encryption keys into Codan's NGT *MR/2110M* Transceivers and stand-alone encryption devices, e.g. RM50e HF Data Modem, 3590/3591 Encryptors.

QUOTE
15-04171-EN



This product is subject to Australian Government Export controls. A signed end-user Declaration must be provided for supply of this product.

Cables for NGT *MR* Key Fill



Cable, Serial 6-way to D9F

9-way D to 6-way Molex Interface Cable for transceiver serial control or security key programming (KMS/KFS) of NGT *MR* Transceiver via GPS Interface connector.

QUOTE
08-06380-001



Cable, Data Interface D9F to D15M

9-way D to 15-way D Interface Cable for transceiver serial control or security key programming (KMS/KFS) for NGT *MR* Transceiver via GPIO connector.

QUOTE
08-06266-001



Adaptor, USB to DB-9, Serial Port

Used with above cables to convert PC USB Port to serial. USB V1.1 compliant and supports Microsoft Windows™ 2000/XP/Vista/WIN7.

QUOTE
78-01031

Not recommended to be used when upgrading transceiver firmware.

Cables for 2110M Key Fill



Cable, Data Interface 19way MIL to USB A

USB to 19-way MIL Interface Cable for PC control (using RC50-C) and security key programming (KMS/KFS) of the RM50e HF Data Modem, embedded RM50 Modem (2110M only), and keyfill for 3590/3591 Encryptors. Also used for programming of the 2110M Transceiver using NSP.

QUOTE
08-06901-001



Cable, Data Interface 19way MIL to D9F

9-way D to 19-way MIL Interface Cable for keyfill 2110M CES-128 / AES-256 Encryptors, and for 3590/3591 Encryptors. Also used for programming the 2110M Transceiver using NSP.

QUOTE
08-06237-001

POWER SUPPLIES

3520 Transceiver Supply




The 3520 Transceiver Supply is a universal AC input (100 to 240 V AC) heavy duty power supply, providing a regulated 13.8 V DC Output for the NGT *MR* and 2110M. Vehicle mounting cradle available.

3520 Transceiver Supply (Green)	➔ page 96 for more info	QUOTE PSU-3520-GN
Mains Cable (EU)	➔ page 97 for more info	08-07094-001
3520 User Guide	➔ page 137 for more info	12-50180-EN

NOTE: For mains cables and other accessories, see page 97, "3520 Accessories".

3520 Transceiver Supply Variants



3520 Transceiver Supply (Green)	QUOTE 78-20049-002
3520 Transceiver Supply (Black)	QUOTE 78-20049-001

POWER SUPPLIES

3520 Accessories

	Vehicle Mounting Cradle, 3520 with Screws	FOR GREEN QUOTE 15-00139-002
<p>Heavy duty cradle used to secure the 3520 Transceiver Supply in a vehicle. Installation kit is included.</p>	FOR BLACK QUOTE 15-00139	
	Vehicle Shock Mount	QUOTE 15-60010
<p>Used with the 3520 cradle to provide additional shock and vibration protection for the 3520 Transceiver Supply in extreme environments.</p>		QUOTE 08-07091-001
Cable, Mains Input with AU plug, 2 m		QUOTE 08-07092-001
Cable, Mains Input with UK plug, 2 m		QUOTE 08-07093-001
Cable, Mains Input with US plug, 2 m		QUOTE 08-07094-001
Cable, Mains Input with EU plug, 2 m		

3520 Accessories (continued)



Cable, Power 2110 to 3520/3524, 2 m

Used to power a 2110M in a vehicle cradle fitted with the Cradle Back Panel (part number 08-06811-001).

QUOTE
08-07033-001



Cable, Power NGT to 3520/3524, 2 m

Used to connect the 12 V DC output of the 3520/3524 to the NGT *MR* Transceiver. Can also be used to provide power to a 2110M in a vehicle cradle fitted with the External DC Back Panel (part number 15-00143-002).

QUOTE
08-07032-001



Cable, Battery Backup, 4 m

Cable kit for float charging lead-acid storage battery bank for uninterrupted supply.

QUOTE
15-00773

POWER SUPPLIES

3524 DC-DC Converter



3524 DC-DC Converter

Operates in a 24 V DC automotive electrical system providing a safe 12 V output for 12 V equipment. It is a low noise voltage regulator designed for use with sensitive radio communications equipment. The maximum output is 25 Amps. The conversion efficiency at full load is more than 85%.

QUOTE
78-03051



Cable, Power NGT to 3520/3524, 2 m

Used to connect the 12 V DC output of the 3520/3524 to the NGT *MR* Transceiver. Can also be used to provide power to a 2110M in a vehicle cradle fitted with the External DC Back Panel (part number 15-00143-002).

QUOTE
08-07032-001



Cable, Power 2110 to 3524, 2 m

Used to power a 2110M Transceiver in a vehicle cradle fitted with the Cradle Back Panel (part number 08-06811-001).

QUOTE
08-07033-001

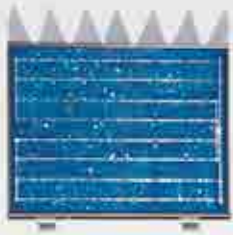


Cable, Battery to 3524, 6 m

Used to connect a 24 V battery system to the input of the 3524 DC-DC Converter.

QUOTE
08-07035-001

Solar Power Supplies



Solar Power Supply 40 W

Recommended for voice (light duty).

Comprises: single 40 W solar panel, mounting frame complete with anti-bird spikes, solar battery regulator, heavy duty twin core cable, battery lugs

QUOTE
15-00531



Solar Power Supply 80 W

Recommended for voice (heavy duty).

Comprises: single 80 W solar panel, mounting frame complete with anti-bird spikes, solar battery regulator, heavy duty twin core cable, battery lugs

QUOTE
15-00532



Solar Power Supply 240 W

Recommended for fax and data (heavy duty).

Comprises: three 80 W solar panel, mounting frame complete with anti-bird spikes, solar battery regulator, heavy duty twin core cable, battery lugs

QUOTE
15-00533

POWER SUPPLIES

Solar Power Supply Accessories

	Cable, Battery Paralleling (+ve)	QUOTE 08-05399-001
	Cable, Battery Paralleling (-ve)	QUOTE 08-05399-002

Batteries

	Battery, Lead Acid 12 V 90Ah (supplied dry charged)  This battery is classified as dangerous goods and may impact freight cost and method. Please contact your Codan Sales Representative for further details.	QUOTE 65-72000-012
	Battery, 12 V 100Ah Gelcell	QUOTE 65-72003
	Battery, 12 V 185Ah Gelcell	QUOTE 65-72004

VEHICLE ANTENNA TUNERS

3040 Automatic Tuning Whip Antenna



The 3040 Automatic Whip Antenna is a low profile, rugged, lightweight unit designed for mobile installations. It provides fast automated tuning across the HF band.

The 3040 is easy to install and meets MIL-STD-810F for shock, immersion, dust and vibration. Available only in black.

STANDARD FEATURES:

- 2.5 to 30 MHz
- 125 W PEP voice or data
- Fast tuning typically < 1 sec
- Tune from memory

QUOTE
ANT-3040-NC

QUOTE
ANT-3040-6M-NGT

QUOTE
ANT-3040-6M-2110M

QUOTE
ANT-3040-6M-2110M-125W

3040 Main Assembly		08-07007-001
3040 Spring	▶ page 104 for more info	08-07148-001
Fibreglass Riser, 0.8 m	▶ page 104 for more info	78-18058
3040 Fibreglass Whip, 1.6 m	▶ page 104 for more info	78-23085
3040 Stainless Steel Whip, 1.65 m	▶ page 104 for more info	78-23086
3040 Installation Handbook	▶ page 137 for more info	15-60012

NOTE:

- For the cables that are included in each package, see page 103, "Cables Included in Packages".
- For other accessories, see page 104, "3040 Accessories".

VEHICLE ANTENNA TUNERS

Cables Included in Packages

CABLES	PACKAGES			
	ANT-3040-NC	ANT- 3040-6M-NGT	ANT- 3040-6M-2110M	ANT-3040-6M-2110M-125W
NGT ANTENNA CONTROL CABLE, 6 M 08-05627-006		<input checked="" type="checkbox"/>		
COAX CABLE, UHF, RG58, 6 M 08-01503-006		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
COAX CABLE, UHF TO BNC, RG58, 1 M 08-06357-001			<input checked="" type="checkbox"/>	
COAX CABLE, UHF TO N-TYPE, RG58, 6 M 08-05837-006				<input checked="" type="checkbox"/>
2110M ANTENNA CONTROL CABLE, 6 M 08-07010-006			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

3040 Accessories



3040 Spring

Flexible mounting for whip antennas. The spring is highly recommended when using the fibreglass whip and/or riser.

QUOTE
08-07148-001



3040 Stainless Steel Whip, 1.65 m

A 1.65 m stainless steel whip offered as a more flexible and less visually obstructive alternative to the fibreglass version.

QUOTE
78-23086



3040 Fibreglass Whip, 1.6 m

This is a 1.6 m fibreglass whip and is recommended to be used with the spring and the riser section. In this configuration the antenna will operate over a transmit frequency range of 2.5 to 30 MHz.

QUOTE
78-23085



Riser, Fibreglass, 0.8 m

A 0.8 m fibreglass section used to extend the overall length of the antenna element when using the 1.6 m fibreglass or stainless steel whips to achieve maximum possible frequency range (2.5 to 30 MHz) and radiation performance.

QUOTE
78-18058



3040 NVIS Antenna Kit

Suits the 3040 Automatic Tuning Whip Antenna for improved short range (0 to 500 km) near vertical incidence skywave communications mode over frequency range 2 to 12 MHz. This antenna replaces the standard whips for NVIS operation.

Includes: 2 section lightweight NVIS whip antenna sections, tie down cord kit, instruction card and canvas storage bag.

QUOTE
78-14010

VEHICLE ANTENNA TUNERS

3040 Accessories (continued)



Cable, Control NGT to 9350M/304X — 2, 6, 10 or 20 m

Provides antenna control between the NGT *MR* and 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner.

QUOTE
08-05627-002

QUOTE
08-05627-006

QUOTE
08-05627-010

QUOTE
08-05627-020



Cable, Control 2110M to 9350M/304X — 2, 6, 10 or 20 m

Provides antenna control between the 2110M and the 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner. Cable connects to the 2110M via the 19-pin front panel connector or via the 2110M Expansion Module.

QUOTE
08-07010-002

QUOTE
08-07010-006

QUOTE
08-07010-010

QUOTE
08-07010-020



Cable, Coax Assembly, UHF Type Connectors, RG58, 6 m

Connects the RF output of the NGT *MR* to the 3040 Automatic Tuning Whip Antenna. Requires addition of the BNC to UHF adaptor coaxial cable (part number 08-06357-001) to connect the coaxial cable (part number 08-01503-XXX) directly to the front panel of the 2110M Transceiver.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

NOTE: Maximum length useable with 3040 is 20 m.

QUOTE
08-01503-006

3040 Accessories (continued)



Cable, Coax Assembly, UHF to BNC Type Connectors, RG58, 1 m

Used to convert 2110M front panel BNC RF output connector to a UHF socket.

QUOTE
08-06357-001



Cable, Coax Assembly, UHF to N-Type Connectors, RG58, 6 m

Used to connect RF output of 3160 PA to 3040 RF input.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

NOTE: Maximum length useable with 3040 is 20 m.

QUOTE
08-05837-006

VEHICLE ANTENNA TUNERS

9350M Automatic Tuning Whip Antenna



State-of-the-art robust antenna designed for Frequency Hopping transceivers in mobile installations requiring flexible, high performance HF communications. It provides fast automated tuning over the entire HF frequency range.

The 9350M is easy to install, and meets MIL-STD-810F for shock, vibration and immersion.

STANDARD FEATURES:

- Frequency Hopping compatible
- 125 W PEP Voice or Data
- Tuning time typically 2 seconds
- Transmit frequency range 2 to 30 MHz depending on antenna
- Receive frequency range 250 kHz to 30 MHz

- QUOTE
ANT-9350M-NC
- QUOTE
ANT-9350M-6M-NGT
- QUOTE
ANT-9350M-6M-2110M
- QUOTE
ANT-9350M-6M-2110M-125W

9350M Main Assembly		08-05063-002
9350M Spring	▶ page 109 for more info	08-05140-001
9350M Fibreglass Whip, 1.6 m	▶ page 109 for more info	78-23007-003
9350M Stainless Steel Whip, 1.2 m	▶ page 109 for more info	78-23025
9350M Installation Handbook	▶ page 137 for more info	15-04142-EN

NOTE:

- For the cables that are included in each package, see page 108, "Cables Included in Packages".
- For other accessories, see page 109, "9350M Accessories".

Cables Included in Packages

CABLES	PACKAGES			
	ANT-9350M-NC	ANT- 9350M-6M-NGT	ANT- 9350M-6M-2110M	ANT- 9350M-6M-2110M-125W
NGT ANTENNA CONTROL CABLE, 6 M 08-05627-006		<input checked="" type="checkbox"/>		
COAX CABLE, UHF, RG58, 6 M 08-01503-006		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
COAX CABLE, UHF TO BNC, RG58, 1 M 08-06357-001			<input checked="" type="checkbox"/>	
COAX CABLE, UHF TO N-TYPE, RG58, 6 M 08-05837-006				<input checked="" type="checkbox"/>
2110M ANTENNA CONTROL CABLE, 6 M 08-07010-006			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

VEHICLE ANTENNA TUNERS

9350M Accessories



9350M Spring

Strain relief for 9350M Fibreglass Whip.

QUOTE
08-05140-001



9350M Fibreglass Whip, 1.6 m

This is the primary whip normally supplied with the 9350M. It is a copper wire encased in a polyurethane covered fibreglass rod. The whip is designed to withstand substantial flexing and rugged conditions. It operates over the transmit frequency range of 2 to 30 MHz.

NOTE: Must be used with the spring (part number 08-05140-001).

QUOTE
78-23007-003



9350M Tapered Stainless Steel Whip, 1.65 m

This whip enables use over the transmit frequency range of 2 to 30 MHz and provides a more flexible and less visible alternative to the fibreglass whip.

NOTE: Can be used without the spring (part number 08-05140-001).

QUOTE
78-23056



9350M Tapered Stainless Steel Whip, 1.2 m

This whip is designed as an emergency backup to the primary whip (part number 78-23007-003) in case of damage. It is only suitable for operation over a transmit frequency range of 2.5 to 30 MHz and is less efficient than the primary whip.

NOTE: Can be used without the spring (part number 08-05140-001).

QUOTE
78-23025

9350M Accessories (continued)



NVIS Antenna Kit

Suits the 9350M Automatic Tuning Whip Antenna for improved short range (0 to 500 km) near vertical incidence skywave (NVIS) communications over frequency range 2 to 12 MHz.

Includes: two piece whip antenna, angle adaptor, extension riser, tie down cord kit and fitting instructions in a canvas bag

QUOTE
15-00323



Cable, Control NGT to 9350M/304X — 2, 6, 10 or 20

Provides antenna control between the NGT *MR* and 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner.

QUOTE
08-05627-002

QUOTE
08-05627-006

QUOTE
08-05627-010

QUOTE
08-05627-020



Cable, Control 2110M to 9350M/304X — 2, 6, 10 or 20

Provides antenna control between the 2110M and the 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner. Cable connects to the 2110M via the 19-pin front panel connector or via the 2110M Expansion Module.

QUOTE
08-07010-002

QUOTE
08-07010-006

QUOTE
08-07010-010

QUOTE
08-07010-020

VEHICLE ANTENNA TUNERS

9350M Accessories (continued)



Cable, Coax Assembly, UHF Type Connectors, RG58, 6 m

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

QUOTE
08-01503-006



Cable, Coax Assembly, UHF to BNC Type Connectors, RG58, 1 m

Used to convert 2110M front panel BNC RF output connector to a UHF socket.

QUOTE
08-06357-001



Cable, Coax Assembly, UHF to N-Type Connectors, RG58, 6 m

Used to connect RF output of 3160 PA to 9350M RF input.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

QUOTE
08-05837-006

NOTE: Maximum length useable with the 9350M is 30 m.

3042 HF Antenna Tuner



The 3042 is a low profile, 125 W HF antenna tuning unit designed to deliver high performance and reliability in the world's harshest environments. It provides high speed and efficient tuning of short whip antennas across the full operational HF band.

STANDARD FEATURES:

- 2 to 30 MHz
- 125 W RF power handling
- Fast tuning typically < 1 sec
- High efficiency
- Waterproof
- MIL-STD-810G Environmentals
- N-type RF Connector
- Used with Vertical (short whip) & NVIS Whip Antennas
- Flexible mounting
- ALE compatible
- Internal receive mode amplifier

QUOTE
ANT-3042-NC

QUOTE
ANT-3042-6M-NGT

QUOTE
ANT-3042-6M-2110M

QUOTE
ANT-3042-6M-2110M-125W

3042 HF Antenna Tuner (Green)

➔ [page 113](#) for more info

08-07154-002

3042 Installation Kit

➔ [page 117](#) for more info

15-00146

3042 Installation Handbook

➔ [page 117](#) for more info

15-04174-EN

NOTE:

- For the cables that are included in each package, see page 113, "Cables Included in Packages".
- For antennas and other accessories that can be used with the tuner, see page 116, "3042/3046 Accessories".

VEHICLE ANTENNA TUNERS

Cables Included in Packages

CABLES	PACKAGES			
	ANT-3042-NC	ANT-3042-6M-NGT	ANT-3042-6M-2110M	ANT-3042-6M-2110M-125W
NGT ANTENNA CONTROL CABLE, 6 M 08-05627-006		✓		
COAX CABLE, UHF TO N-TYPE, RG58, 6 M 08-05837-006		✓		
COAX CABLE, BNC TO N-TYPE, RG58, 6 M 08-07198-006			✓	
COAX CABLE, N-TYPE, RG58, 6 M 08-07078-006				✓
2110M ANTENNA CONTROL CABLE, 6 M 08-07010-006			✓	✓

3042 HF Antenna Tuner Variants

	3042 HF Antenna Tuner (Green)	QUOTE 08-07154-002
	3042 HF Antenna Tuner (White)	QUOTE 08-07154-001

3046 HF Antenna Tuner



The 3046 is a low profile, 125 W HF antenna tuning unit designed to deliver high performance and reliability in the world's harshest environments. It provides high speed and efficient tuning of short and long whip (up to 9 m) antennas across the full operational HF band.

STANDARD FEATURES:

- 2 to 30 MHz
- 125 W RF power handling
- Fast tuning typically < 1 sec
- High efficiency
- Waterproof
- MIL-STD-810G Environmentals
- N-type RF Connector
- Used with Vertical & NVIS Whip Antennas
- Flexible mounting
- ALE compatible
- Internal receive mode amplifier

QUOTE
ANT-3046-NC

QUOTE
ANT-3046-6M-NGT

QUOTE
ANT-3046-6M-2110M

QUOTE
ANT-3046-6M-2110M-125W

3046 HF Antenna Tuner (Green)

➔ [page 115](#) for more info

08-07185-001

3046 Installation Kit

➔ [page 117](#) for more info

15-00146

3046 Installation Handbook

➔ [page 117](#) for more info

15-04175-EN

NOTE:

- For the cables that are included in each package, see page 115, "Cables Included in Packages".
- For antennas and other accessories that can be used with the tuner, see page 116, "3042/3046 Accessories".

VEHICLE ANTENNA TUNERS

Cables Included in Packages

CABLES	PACKAGES			
	ANT-3046-NC	ANT-3046-6M-NGT	ANT-3046-6M-2110M	ANT-3046-6M-2110M-125W
NGT ANTENNA CONTROL CABLE, 6 M 08-05627-006		✓		
COAX CABLE, UHF TO N-TYPE, RG58, 6 M 08-05837-006		✓		
COAX CABLE, BNC TO N-TYPE, RG58, 6 M 08-07198-006			✓	
COAX CABLE, N-TYPE, RG58, 6 M 08-07078-006				✓
2110M ANTENNA CONTROL CABLE, 6 M 08-07010-006			✓	✓

3046 HF Antenna Tuner Variants

	3046 HF Antenna Tuner (Green)	QUOTE 08-07185-001
	3046 HF Antenna Tuner (White)	QUOTE 08-07185-002

3042/3046 Accessories



Single Hole Mount Base

The single hole mount antenna base is designed for lighter duty installations and provides the convenience of a small installation footprint. The mounting stud requires a single 14 mm hole.

QUOTE
15-60020



Flange Mount Base

The flange mount antenna base is designed to provide a sturdy antenna mount for installations requiring the high voltage feed line to pass through a vehicle panel. Flange mount includes rubber gasket and mounting hardware.

QUOTE
15-60021



Flange Mount Bracket

The flange mount bracket provides external side mounting of the flange mount antenna base above. Fasteners for mounting the bracket are not supplied.

QUOTE
15-60022



Spring

Flexible mounting for whip antennas with either the single hole mount or flange mount bases. The spring is highly recommended when using the fibreglass whip and/or riser.

QUOTE
08-07148-001



Fibreglass Whip, 1.6 m

This is a 1.6 m fibreglass whip and is recommended to be used with the spring and the riser section. In this configuration the antenna will operate over a transmit frequency range of 2.5 to 30 MHz.

QUOTE
78-23085



Fibreglass Riser, 0.8 m

A 0.8 m fibreglass section used to extend the overall length of the antenna element when using the 1.6 m fibreglass or stainless steel whips to achieve maximum possible frequency range (2 to 30 MHz) and radiation performance.

QUOTE
78-18058



Stainless Steel Whip, 1.65 m

A stainless steel whip offered as a more flexible and less visually obstructive alternative to the fibreglass version. The whip is 1.65 m in length.

QUOTE
78-23086

VEHICLE ANTENNA TUNERS

3042/3046 Accessories (continued)



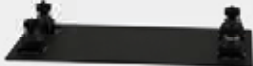
3042/3046 NVIS Antenna Kit

Suits the 3042/3046 HF Antenna Tuner for improved short range (0 to 500 km) near vertical incidence skywave communications mode over frequency range 2 to 12 MHz.

Includes: 2 section lightweight NVIS whip antenna sections, tie down cord kit, instruction card and canvas storage bag.

NOTE: NVIS Antenna mounts directly to the single hole or flange mount bases, spring not required.

QUOTE
78-14010



Shock Mount

The shock mount for the antenna tuner is recommended for installations likely to experience extreme levels of vibration or shock. The mount features quick fit/release fasteners that require no tools to use. Fitting instructions are supplied, and an installation kit that will suit most applications.

QUOTE
15-60023



3042/3046 Installation Kit

Kit containing a selection of fasteners for mounting the antenna tuner.

QUOTE
15-00146



Installation Handbook, 3042 Automatic Antenna Tuner

QUOTE
15-04174-EN



Installation Handbook, 3046 Automatic Antenna Tuner

QUOTE
15-04175-EN

3046 Military Grade Accessories



MIL Spec Antenna Base, NATO Hole Pattern

MIL Spec four hole pattern NATO antenna base to suit the Flexible Antenna Shock Mount below. Mount supplied with sealing gasket and mounting fasteners.

QUOTE
15-60006



MIL Spec Carbon Fibre Whip, 3 m

Two section, 3 m MIL Spec carbon fibre whip designed for use with the NATO base above.

NOTE: Must be ordered with the Flexible Antenna Shock Mount.

QUOTE
15-60001



Flexible Antenna Shock Mount

MIL Spec rubber spring to provide flexible mount for the 3 m Carbon Fibre Whip above.

NOTE: Recommended for use with 3 m Carbon Fibre Whip and Whip Extension Kit.

QUOTE
15-60002



Whip Extension Kit

Used with the standard 3 m Carbon Fibre Whip to extend the total antenna length to 7 m for extended communications range. The Whip Extension Kit consists of 3 whip sections, 4 guy kit, guy stakes, and laminated installation instructions housed in a canvas bag for transportation.

NOTE: The extended whip antenna configuration is for temporary, stationary use only.

QUOTE
15-60030



Longwire Antenna

Used with the MIL Spec NATO base to deploy a 9 m long wire antenna configuration for improved communications. The long wire design enables customised installation e.g. vertical, horizontal or sloping to match with communications requirements and environmental constraints.

NOTE:

- The long wire antenna configuration is for temporary, stationary use only.
- For masts that are suitable to support the Longwire Antenna configuration, see page 128, "Antenna Masts".

QUOTE
15-60029

VEHICLE ANTENNA TUNERS

Cables



Cable, Control NGT to 9350M/304X — 2, 6, 10 or 20 m

Provides antenna control between the NGT *MR* and 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner.

QUOTE
08-05627-002

QUOTE
08-05627-006

QUOTE
08-05627-010

QUOTE
08-05627-020



Cable, Control 2110M to 9350M/304X — 2, 6, 10 or 20 m

Provides antenna control between the 2110M and the 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner. Cable connects to the 2110M via the 19-pin front panel connector or via the 2110M Expansion Module.

QUOTE
08-07010-002

QUOTE
08-07010-006

QUOTE
08-07010-010

QUOTE
08-07010-020



Cable, Coax Assembly, UHF to N-Type Connectors, RG58, 6 m

Used to connect the RF input of the 9350M/3040 Automatic Tuning Whip Antenna or the 3042/3046 HF Antenna Tuner to the RF output of the 3160 PA.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

QUOTE
08-05837-006

Cables (continued)



Cable, Coax Assembly, BNC to N-type Connectors, RG58, 6 m

Used to connect the RF input of the 3042/3046 HF Antenna Tuner to the front panel RF output of the 2110M Transceiver.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

QUOTE
08-07198-006



Cable, Coax Assembly, N-Type to N-type Connectors, RG58, 6 m

Used to connect the RF input of the 3042/3046 HF Antenna Tuner to the 3160 PA RF output.

For coaxial cable lengths, see page 130, "Coaxial Cables Type RG58".

QUOTE
08-07078-006

Tactical Base Antennas



TAC 411 Broadband

The TAC 411 is a 2-wire terminated folded dipole broadband antenna suitable for fixed operation in tactical environments. The antenna is designed for optimum NVIS and medium distance performance when installed with the Codan 10 m Transportable Mast (part number 78-13036) in the inverted V configuration. The design of the central spreader of the antenna enables the antenna to be raised using a halyard attached to the balun or simply dropped into the open end of the top mast section. The antenna is constructed of Kevlar reinforced antenna wire for strength, long life and immunity to kinking.

The antenna kit is supplied complete with guy stakes, laminated installation instructions and canvas carry bag for transportation and storage. It is designed for 100% duty cycle voice and data operation at 125 W and over the full 2 to 30 MHz HF band.

NOTE:

- Antenna is fitted with an N-Type RF connector.
- Power rating is 125 W PEP, 60 W average.
- Recommended anchor stake spacing is 31 m.
- Suits mast ID of 32 mm.
- Packed weight is 5 kg (without coaxial cable).
- Coaxial cable and mast not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58". For masts, see page 128, "Antenna Masts".

QUOTE
78-01259

Broadband Base Station Antennas



Travelling Wave Dipole

The Travelling Wave Dipole Antenna is efficient for short to medium distance communications. Its radiation patterns are generally omni-directional, resulting in a consistent coverage over the frequency range. Designed for 100% duty cycle voice and data operation at the rated power level.

This antenna requires a substantial cleared area at ground level for installation, and is more suitable for permanent fixed site installations. Refer to the antenna data sheet for more details.

Includes: pulleys, halyards and installation hardware

NOTE:

- Antenna is fitted with UHF type RF connector.
- Antenna lengths quoted are required mast to mast distances.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".
- Coaxial cable and mast not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58". For masts, see page 129, "Antenna Masts".

**Ant, Travelling Wave Dipole, 125 W PEP,
2–30 MHz, 53 m**

QUOTE
78-01248

**Ant, Travelling Wave Dipole, 125 W PEP,
3–30 MHz, 40 m**

QUOTE
78-01249

**Ant, Travelling Wave Dipole, 1000 W PEP,
2–30 MHz, 53 m**

QUOTE
78-01250

**Ant, Travelling Wave Dipole, 1000 W PEP,
3–30 MHz, 40 m**

QUOTE
78-01251

BASE ANTENNAS

Broadband Base Station Antennas (continued)



Delta

The Delta Antenna is a high performance, omni-directional broadband antenna that performs well over very short to medium distances. Designed for 100% duty cycle voice and data operation at the rated power level.

This antenna requires a substantial cleared area at ground level for installation, and is more suitable for permanent fixed site installations. Refer to the antenna data sheet for more details.

NOTE:

- Antenna is fitted with UHF type RF connector.
- Requires a 15 m central mast, see page 129, "Mast, Guyed 15 m with Erection Kit".
- Antenna width is 46 m.
- Mast guy radius is 12.5 m.
- The Delta Antenna is *not* recommended for rooftop installations.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".
- Coaxial cable, mast and gibbet not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58". For masts, see page 129, "Antenna Masts".

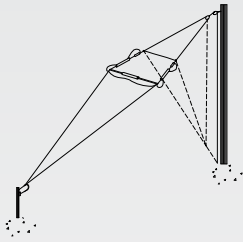
Ant, Full Delta, 125 W, 3–30 MHz

QUOTE
78-01022

Ant, Full Delta, 1000 W PEP, 3–30 MHz

QUOTE
78-01247

Broadband Base Station Antennas (continued)



Semi-delta

The Semi-delta Antenna is a high performance, omnidirectional broadband antenna that performs well over short to medium distances.

This antenna requires a large cleared area at ground level for installation, and is more suitable for permanent fixed site installations.

NOTE:

- Antenna is fitted with UHF type RF connector.
- Pay attention to antenna counterpoise, especially when mounted on rooftop locations or at ground level where the soil conditions are poor.
- Where soil conditions are very poor, an additional counterpoise kit may be required.
- Recommended main mast height is 15 m, stub mast height 1.5 to 2 m.
- Distance between main mast and stub mast is 20 m.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".
- Coaxial cable and mast not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58". For masts, see page 129, "Antenna Masts".

Ant, Semi-delta, 125 W PEP, 2–30 MHz

Includes: pulleys, halyards, basic counterpoise and installation hardware

QUOTE
78-01012

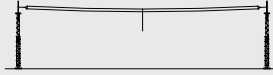
Ant, Semi-delta, 1000 W PEP, 2–30 MHz

Includes: pulleys, halyards, basic counterpoise and installation hardware

QUOTE
78-01246

BASE ANTENNAS

Broadband Base Station Antennas (continued)



TFD411 Broadband

The Code 411 TFD is a 2-wire terminated folded dipole antenna designed for broadband operation. Designed for 100% duty cycle voice and data operation at the rated power level.



The antenna is easy to install and can be mounted horizontally between two support systems, or as an inverted V using a single central support mast. A large cleared area at ground level is required for installation. Refer to the antenna data sheet for more details.

Includes: mounting arm for inverted V configuration, stainless steel antenna wiring, pulleys, rope, halyard, UHF coaxial connector and detailed erection details

NOTE:

- Antenna is fitted with UHF type RF connector.
- Always select the longest antenna variant possible to maximise propagation efficiency and performance.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".
- Coaxial cable and mast not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58". For masts, see page 129, "Antenna Masts".

Ant, TFD411, 125 W, 2–30 MHz, 27 m

QUOTE
15-00411-005

Ant, TFD411, 125 W, 2–30 MHz, 34 m

QUOTE
15-00411-004

Ant, TFD411, 125 W, 2–30 MHz, 43 m

QUOTE
15-00411-003

Ant, TFD411, 1000 W, 2–30 MHz, 34 m

QUOTE
15-00411-011

Ant, TFD411, 1000 W, 2–30 MHz, 43 m

QUOTE
15-00411-012

TFD411 Broadband/Mast Kits



The Terminated Folded Dipole 411 Antenna and Mast Kit provides an easy to deploy and economical antenna solution for 125 W base station applications. The kits are available with different mast finishes and antenna lengths to meet customer requirements. The kits are designed for inverted V antenna configuration to minimise installation footprint and optimise short to medium distance HF communications.

NOTE:

- Antennas are fitted with a UHF type RF connector.
- Always select the longest antenna variant possible to maximise propagation efficiency and performance.
- The antennas and masts are designed to work together, and are not intended to be used separately.
- Lightning protection is recommended for fixed base station installations, see page 133, "Lightning Protection".
- Coaxial cable is not supplied. For coaxial cables, see page 130, "Coaxial Cables Type RG58".

Antenna/Mast — Mast Bare Aluminium Finish

**Ant, TFD411, 125 W, 2–30 MHz, 27 m c/w
Lightweight Premium Mast, 10 m**

**QUOTE
15-60018-005**

**Ant, TFD411, 125 W, 2–30 MHz, 34 m c/w
Lightweight Premium Mast, 10 m**

**QUOTE
15-60018-004**

**Ant, TFD411, 125 W, 2–30 MHz, 43 m c/w
Lightweight Premium Mast, 10 m**

**QUOTE
15-60018-003**

BASE ANTENNAS

TFD411 Broadband/Mast Kits (continued)

Antenna/Mast — Mast Matt Black Paint Finish	
Ant, TFD411, 125 W, 2–30 MHz, 27 m c/w Lightweight Premium Black Painted Mast, 10 m	QUOTE 15-60018-105
Ant, TFD411, 125 W, 2–30 MHz, 34 m c/w Lightweight Premium Black Painted Mast, 10 m	QUOTE 15-60018-104
Ant, TFD411, 125 W, 2–30 MHz, 43 m c/w Lightweight Premium Black Painted Mast, 10 m	QUOTE 15-60018-103

TACTICAL MASTS

Antenna Masts



Mast, 6 m Tactical Fibreglass

Lightweight, compact man-portable mast system. The kit includes multi-section mast, guy ropes, guy stakes, halyard, base plate stakes and installation instructions.

This mast is most suitable for use with lightweight, low power (25 W) antennas used with the 2110 series Manpack Transceiver (see page 30, "2110M Portable Manpack Transceiver — Long Wire, Dipoles and Whips" and page 121, "TAC 411 Broadband").

NOTE:

- The 6 m mast is not suitable for use with full size 125 W/1 kW Broadband Antennas.
- Certain Manpack Transceiver antennas may require more than one mast. Please check specific mast requirements for each antenna before ordering.

QUOTE
78-13035



Mast, 10 m Transportable Fibreglass

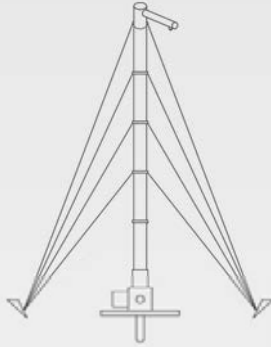
Lightweight, compact vehicle transportable mast system. The kit includes, multi-section mast, guy ropes (2 sets), guy stakes, halyard, base plate stakes and installation instructions.

This mast can be used with many antenna types however it is most suitable for use with lightweight, standard power (125 W) broadband antennas, for example the Tactical Code 411 Broadband Dipole (see page 121, "TAC 411 Broadband").

QUOTE
78-13036

BASE MASTS

Antenna Masts (continued)



Mast, Guyed 12 m with Erection Kit

Four section 12 m mast.

Suitable for supporting Travelling Wave Dipole, Tuned Long Wire, and 2-wire and 3-wire Broadband Dipole antennas.

Guyed tubular aluminium mast with ground plate, halyard pulley, RF transparent guy kit, full erection kit, mast head gibbet and erection instructions.

Designed to withstand wind speeds up to 144 kph (40 m/s) in clear air with head loads up to 12 kg, subject to ground anchoring.

NOTE: Mast suitable for air freight.

QUOTE
15-00422-012



Mast, Guyed 15 m with Erection Kit

Five section 15 m mast. Suitable for supporting Travelling Wave Dipole, Semi-delta, Full Delta, Tuned Long Wire, and 2-wire and 3-wire Broadband Dipole antennas.

Guyed tubular aluminium mast with ground plate, halyard pulley, RF transparent guy kit, full erection kit, mast head gibbet and erection instructions.

Designed to withstand wind speeds up to 144 kph (40 m/s) in clear air with head loads up to 12 kg, subject to ground anchoring.

NOTE: Mast suitable for air freight.

QUOTE
15-00422-015



Mast, Guyed 10 m, Lightweight Mast

Lightweight guyed aluminium mast, supplied with mast head gibbet, halyard, and all hardware for ground mounting.

Suitable for use with the 2-wire (Code 411) Broadband Dipole antenna.

QUOTE
15-60013





ANTENNA ACCESSORIES

Coaxial Cables Type RG58







	Cable, Coax Assembly, UHF Type Connectors, RG58 — 2, 6, 8 or 30 m	QUOTE 08-01503-002
		QUOTE 08-01503-006
		QUOTE 08-01503-008
		QUOTE 08-01503-030
	Cable, Coax Assembly, UHF to N-type Connectors, RG58 — 2, 6, 10, 20 or 30 m	QUOTE 08-05837-002
		QUOTE 08-05837-006
		QUOTE 08-05837-010
		QUOTE 08-05837-020
		QUOTE 08-05837-030
	Cable, Coax Assembly, BNC to N-type Connectors, RG58 — 2, 6, 10 or 20 m	QUOTE 08-07198-002
		QUOTE 08-07198-006
		QUOTE 08-07198-010
		QUOTE 08-07198-020

ANTENNA ACCESSORIES

Coaxial Cables Type RG58 (continued)



	Cable, Coax Assembly, N-type to N-type Connectors, RG58 — 2, 6, 8 or 30 m	QUOTE 08-07078-002
		QUOTE 08-07078-006
		QUOTE 08-07078-008
		QUOTE 08-07078-030
	Cable, Coax Assembly, UHF to BNC Type Connectors, RG58, 1 m Used to adapt the BNC RF connector on the front panel of the 2110M Transceiver to UHF socket.	QUOTE 08-06357-001
	Cable, Coax Assembly, BNC to BNC Type Connectors, RG58 — 0.7 or 2.5 m Used to connect the 50 ohm RF output on the 2110M front panel to the RF input of 3160 PA.	QUOTE 08-06809-002
		QUOTE 08-06809-001
	Plug, UHF (RG58) W/proof Waterproof UHF type connector for terminating RG58 type coaxial cable. Requires soldering process.	QUOTE 60-11163-221

Coaxial Cables Type RG213




	<p>Cable, Coax Assembly, UHF Type Connectors, RG213 — 10, 30, 50 or 100 m</p>	<p>QUOTE 08-04971-010</p>
		<p>QUOTE 08-04971-030</p>
		<p>QUOTE 08-04971-050</p>
		<p>QUOTE 08-04971-100</p>
	<p>Cable, Coax Assembly, UHF to N-type Connectors, RG213 — 10, 30 or 40 m</p>	<p>QUOTE 08-07053-010</p>
		<p>QUOTE 08-07053-030</p>
		<p>QUOTE 08-07053-040</p>
	<p>Cable, Coax Assembly, N-type to N-type Connectors, RG213 — 10, 30 or 40 m</p>	<p>QUOTE 08-07079-010</p>
		<p>QUOTE 08-07079-030</p>
		<p>QUOTE 08-07079-040</p>
	<p>Strain Relief Reduces strain on connector when supporting RG213 cable assemblies.</p>	<p>QUOTE 08-01233</p>
	<p>Shackle Used to attach strain relief to the antenna mount point.</p>	<p>QUOTE 30-38000-002</p>
	<p>Plug, UHF (RG213) W/proof Waterproof UHF type connector for terminating RG213 type coaxial cable. Requires soldering process.</p>	<p>QUOTE 60-11163-204</p>

EARTHING & LIGHTNING PROTECTION

Earthing

	Earth Braid, 1.5 m Terminated in lugged ends to suit earth screws on Codan Transceiver and accessory equipment for long earth connections.	QUOTE 05-06374
	Earth Wire, 0.5 m Terminated in lugs to suit earth screws on Codan Transceiver and accessory equipment for short earth connections.	QUOTE 08-04515-001

Lightning Protection

	Lightning Arrestor Self-resetting spark gap arrestor. Requires a good earth to divert energy from a nearby lightning strike. Suits UHF type connectors. NOTE: Extra length of coaxial cable or extra UHF plug may need to be ordered to fit lightning arrestor into RF feed system.	QUOTE 15-00464
	Copper Earth Strip 50 mm x 0.46 mm (26 gauge) supplied in units of 1 m.	QUOTE 30-37601-002
	Earth Stake 1.8 m long x 13 mm with clamp for earth wire/strip.	QUOTE 15-00163

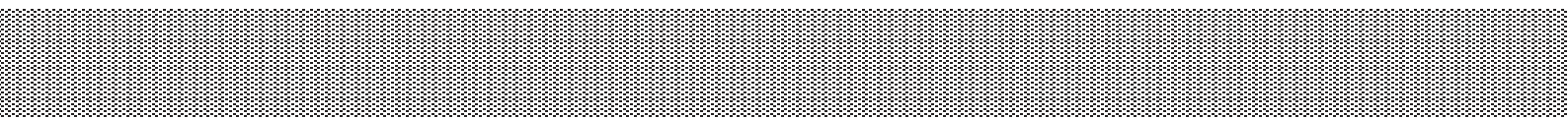


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SUPPORT

The 2110M and NGT *MR* Transceivers, and accessory equipment are supported with user manuals in a range of languages.










LANGUAGE SUPPORT

English Manuals




	Operator Guide, Manpack Transceiver 2110M	QUOTE 15-04153-EN
	Operator Guide, NGT <i>MR</i> Transceiver	QUOTE 15-04151-EN
	Getting Started Guide, NGT Transceiver	QUOTE 15-04127-EN
	Operator Guide, RM50e HF Data Modem	QUOTE 15-04167-EN
	User Guide, 3033 Telephone Interconnect	QUOTE 15-04156-EN
	User Guide, 3031 Crosspatch	QUOTE 15-04148-EN
	Installation Handbook, 3160 Power Amplifier	QUOTE 15-04157-EN
	Reference Manual, Power Amplifiers 3061/3062	QUOTE 15-04131-EN

English Manuals

	User Guide, 3520 Transceiver Power Supply	QUOTE 12-50180-EN
	User Guide, 3590 AES-256 DV Encryptor	QUOTE 15-04172-EN
	User Guide, 3591 CES-128 Voice Encryptor	QUOTE 15-04173-EN
	Installation Handbook, 3040 Automatic Whip Antenna, c/w antenna connector sealing kit	QUOTE 15-60012
	Installation Handbook, Automatic Tuning Whip Antenna 9350M	QUOTE 15-04142-EN
	Installation Handbook, 3042 Automatic Antenna Tuner	QUOTE 15-04174-EN
	Installation Handbook, 3046 Automatic Antenna Tuner	QUOTE 15-04175-EN

LANGUAGE SUPPORT

French Manuals

	Operator Guide, NGT <i>MR</i> Transceiver	QUOTE 15-04151-FR
	Getting Started Guide, NGT Transceiver	QUOTE 15-04127-FR
	Installation Handbook, Automatic Tuning Whip Antenna 9350M	QUOTE 15-04142-FR

Spanish Manuals



Getting Started Guide, NGT Transceiver

QUOTE
15-04127-ES



**Installation Handbook, Automatic Tuning
Whip Antenna 9350M**

QUOTE
15-04142-ES




**Reference Manual, Power Amplifiers
3061/3062**

QUOTE
15-04131-ES

LANGUAGE SUPPORT

Portuguese Manuals

	Operator Guide, Manpack Transceiver 2110M	QUOTE 15-04153-PT
	Operator Guide, NGT <i>MR</i> Transceiver	QUOTE 15-04151-PT

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STANDARD TERMS

"Codan's Standard Terms and Conditions and International Product Warranty (as updated from time to time) apply to all Orders for the supply of Products by Codan to the Purchaser."

Dictionary

In the Standard Terms and Conditions of Supply, the words below have the following meanings:

\$ means AUD, unless specifically otherwise specified;

ACDC means the Australian Commercial Dispute Centre Limited A.C.N. 003 042
840 of Level 6, 50 Park Street, Sydney, NSW, 2000, Australia;

Agreement means the contract between Codan and The Purchaser as described in clauses 1.4 and 1.5;

Anything of Value includes cash or cash equivalents, gifts, services, employment offers, loans, travel expenses, entertainment, political contributions, charitable donations, subsidies, per diem payments, sponsorships, honoraria or provision of any other asset, even if nominal in value.

AUD means Australian dollars;

Business Day means any day except a Saturday, Sunday or public holiday in South Australia;

Calendar Day means a calendar day with periods expressed in Calendar Days subject to extension if necessary to allow for public holidays in South Australia and/or the location where the Product (if imported) is sourced as the case may be;

Catalogue means any and all catalogues of Codan products published and distributed by Codan in hard copy and electronically (including by making available for viewing through its official website) to its actual and prospective customers, setting out product details and current prices, as updated and replaced by Codan from time to time in its discretion;

Codan or Company means Codan Limited A.C.N. 007 590 605 of 81 Graves Street, Newton, South Australia, 5074, Australia;

Confidential Information means all information disclosed by Codan or The Purchaser and includes:

- (a) the fact that the parties will have, or are having, discussions, and the substance of those discussions;
- (b) financial information and other trade secrets and confidential know-how;
- (c) information regarding each party's business; and
- (d) all information generated by the parties which is based on the information referred to in these paragraphs (a) to (c) inclusive, but excludes information that:
 - (e) the parties create or develop (whether alone or jointly with any person) independently of the Confidential Information;
 - (f) is public knowledge (otherwise than as a result of a breach of confidentiality by either party or any person to whom it has disclosed the information);
 - (g) is rightfully known to, or in the possession or control of either party or any of its personnel and not subject to an obligation of confidentiality in accordance with the terms of this Agreement; or
 - (h) becomes available to either party from a source other than the parties and which source has the right to use and disclose and is not bound by any obligation of confidentiality in respect of the same;

Credit Limit means the AUD value of any credit facility extended by Codan to The Purchaser;

Duties means any stamp, transaction or registration duty or similar charge imposed by any Government Agency and includes, but is not limited to, any interest, fine, penalty, charge or other amount imposed but excludes any income tax;

EUR or € means the euro (the official currency of the Eurozone);

Existing Arrangements means any arrangements and agreements between Codan and The Purchaser in effect as at the date an Order is submitted, as agreed by Codan in writing;

Facilitating Payment means a payment to an individual to secure or expedite the performance of a routine government action by Government Officials;

Force Majeure Event means anything outside a party's reasonable control including, without limitation, shortages of materials, fire, storm, flood, earthquake, explosion, accident, enemy acts, war, rebellion, insurrection, sabotage, epidemic, quarantine restriction, labour dispute, labour shortage, transportation embargo or failure or delay in transportation;

Government Agency means any government or governmental, semi governmental, administrative, fiscal or judicial body, department, commission, authority, tribunal, agency or entity;

Government Official means:

- (a) any officer or employee of a government or any department, agency or instrument of a government (including but not limited to any Government Agency);
- (b) any person acting in an official capacity for or on behalf of a government or any department, agency, or instrument of a government (including but not limited to any Government Agency);
- (c) any officer or employee of a company or business owned in whole or part by a government;
- (d) any officer or employee of a public international organisation such as the World Health Organisation or United Nations;
- (e) any officer or employee of a political party or any person acting in an official capacity on behalf of a political party; and/or
- (f) any candidate for political office;

GST has the meaning it does in section 195-1 of the GST Act;

GST Act means A New Tax System (Goods and Services Tax) Act 1999 (Cth), as amended, varied or replaced from time to time;

Insolvency Event, in relation to The Purchaser, means any of the following events:

- (a) The Purchaser is unable to pay its creditors (or any class of them) in the ordinary course of business;
- (b) a receiver, receiver and manager, administrator, liquidator or similar officer is appointed to The Purchaser or any of its assets;
- (c) The Purchaser enters into, or resolves to enter into, a scheme of arrangement, compromise or composition with any class of creditors;
- (d) a resolution is passed or an application to a court is taken for the winding up, dissolution, official management or administration of The Purchaser; or
- (e) anything having a substantially similar effect to any of the events specified above happens under the law of any applicable jurisdiction;

Intellectual Property Rights means any and all intellectual and industrial property rights anywhere in the world, including but not limited to the rights comprised in any patent, copyright, design, trade mark, eligible layout or similar right whether at common law or conferred by statute, rights to apply for registration under a statute in respect of those or like rights and rights to protect trade secrets and know how, throughout the world for the full period of the rights and all renewals and extensions;

International Product Warranty means the warranty set out in the document on page 153, "International Warranty", which is incorporated into and forms part of these Standard Terms and Conditions;

Order means an order for Products created as the result of The Purchaser's issue of a formal purchase order to Codan in hard copy or electronically (in a form agreed by Codan). Issuance of an Order (whether or not a Quotation is first issued by Codan) is deemed to constitute acceptance of these Standard Terms and Conditions by The Purchaser. In the event that a Quotation is issued by Codan, issuance of an Order is also deemed to constitute acceptance of the Quotation by The Purchaser;

Order Acknowledgement means Codan's written confirmation that an Order has been received from The Purchaser, and the Agreement brought into existence;

Order Value means the total price charged by Codan to The Purchaser for any Order, and including any amounts payable by The Purchaser and charged by Codan in accordance with clause 3.1;

Payment refers to and includes any direct or indirect offer to pay, promise to pay, authorisation of payment of, or transfer of, Anything of Value;

Perfectd has the meaning given to that term in the PPSA;

PPSA means the Personal Properties Securities Act 2009 (Cth) and any regulations made under it;

PPS Register means the register established under the PPSA;

Products means the products to be manufactured and/or imported by Codan for The Purchaser as listed in the Order;

Quotation or **Quote** means the quote, if any, issued by Codan to The Purchaser in respect of the Products to which these Standard Terms and Conditions of Supply are attached;

Security Agreement has the meaning given to that term in the PPSA;

Security Interest has the meaning given to that term in the PPSA;

Supply has the same meaning it does in section 9-10 of the GST Act and excludes any "GST-free supplies" and "input taxed supplies" as those terms are defined in section 195-1 of the GST Act;

STANDARD TERMS

Tax or Taxes means any tax, levy, charge, impost, fee, deduction, compulsory loan or withholding (including corporate tax, personal income tax, fringe benefits tax, payroll tax, withholding tax, excise and import duties, GST, consumption tax, value added tax or any other taxes, levies or charges), which is assessed, levied, imposed or collected by any Government Agency, and includes any interest, fine, penalty, charge, fee or any other amount imposed on or in respect of any such amounts;

The Purchaser means the entity requesting that Products be supplied and sold to it by Codan by the issuance of an Order, as listed in the Quotation (if applicable); and **USD** means US dollars.

1. Catalogue/Credit Offers, Quotations and Agreement

- 1.1 The Purchaser acknowledges and agrees:
 - (a) that the Catalogue and/or approval of a Credit Limit by Codan following a request for a credit facility received from The Purchaser in the form specified by Codan constitutes an offer by Codan to sell the Products to The Purchaser on the terms and conditions set out in these Standard Terms and Conditions of Supply, at the standard prices for the Products set by Codan which are current on the date The Purchaser submits an Order to Codan, as notified by Codan to The Purchaser (subject always to clause 2.1 below) (**Catalogue/Credit Offer**); and
 - (b) that the Catalogue/Credit Offer may be accepted by The Purchaser at any time by submitting an Order with Codan.
- 1.2 By submitting an Order in response to a Catalogue/Credit Offer, The Purchaser warrants and represents to Codan that:
 - (a) it has been provided with a copy of Codan's current Product Price list and that it has reviewed this list prior to submitting the Order; and
 - (b) it has read and understood these Standard Terms and Conditions of Supply prior to submitting the Order, and agrees to be bound by them in full.
- 1.3 In addition to the Catalogue/Credit Offer, Codan may, in its discretion and following a request by The Purchaser, make an offer to The Purchaser for the sale of Products by issuing a Quotation. Unless otherwise specified in the Quotation issued by Codan to The Purchaser (if any) or agreed to in writing by Codan, all Quotations issued by Codan are valid for 30 days from the date of issue (Acceptance Period). The Purchaser must accept a Quotation by submitting an Order with Codan during the Acceptance Period. Any Quotation not accepted by The Purchaser during the Acceptance Period will lapse.
- 1.4 A contract between Codan and The Purchaser for the supply by Codan, and the purchase by The Purchaser, of the Products will come into existence:
 - (a) in cases where a Quotation is issued by Codan, on the date The Purchaser accepts the Quotation by submitting a valid Order with Codan within the Acceptance Period; and
 - (b) in all other cases, on the date that The Purchaser submits a valid Order with Codan, in response to the Catalogue/Credit Offer.
- 1.5 Codan will determine in its sole discretion whether an Order Form has been validly completed and submitted by The Purchaser.
- 1.6 The contract will comprise:
 - (a) these Standard Terms and Conditions of Supply;
 - (b) the Quotation issued by Codan, if any;
 - (c) the Product details listed in the Order; and
 - (d) the invoice issued by Codan to The Purchaser,
to the exclusion of any other terms and conditions (including but not limited to any variations to either these Standard Terms and Conditions or the terms of the Quotation or the Catalogue/Credit Offer (as applicable) purported to be made by The Purchaser in the Order) and apart from any terms, conditions or guarantees implied or provided for by applicable law which cannot lawfully be excluded. Codan may (but is not obliged to) issue an Order Acknowledgement to The Purchaser, confirming the terms of the contract.
- 1.7 In the event of an inconsistency between any of the documents listed in clause 1.5 above, the terms of these Standard Terms and Conditions will prevail to the extent of the inconsistency, with the terms of the Quotation (if any) prevailing thereafter. To the extent of any inconsistency between the document in clause 1.6(c) and 1.6(d) above, the document described in clause 1.6(d) will prevail.
- 1.8 Neither this Agreement nor any Order that has been submitted can be cancelled by The Purchaser except with the prior written consent of Codan. Codan can cancel and terminate any Order or this Agreement in its sole discretion, without penalty, if it considers that an Order Form has not been validly completed and/or submitted by The Purchaser.

2. Prices

- 2.1 Prices specified by Codan for the Products in a Quotation or any current Product Price list issued by Codan, as applicable, are based upon the prevailing currency exchange rates generated by the Codan system. Subject to Codan deciding in its sole discretion that it would be fair and reasonable in the circumstances to do so, Codan may pass on any variation in currency exchange rates to The Purchaser in any invoice issued in accordance with clause 3.2.
- 2.2 If a Quotation has been issued by Codan, The Purchaser acknowledges that it has been prepared by Codan on the basis of, and in reliance upon, the information provided by The Purchaser, and further acknowledges that the provision of incomplete or misleading information by The Purchaser, unforeseen circumstances, misinterpretations, variations and similar events may result in charges additional to those set out in the Quotation being payable by The Purchaser for the Products. The Purchaser agrees to pay any such additional amounts to Codan, in full.
- 2.3 Unless otherwise expressly specified by Codan, all prices stated are exclusive of Product delivery costs and freight charges.

3. Payment

- 3.1 The Purchaser is solely responsible for payment of all freight, insurance, delivery costs, Taxes and other charges levied or payable in respect of the Products, unless otherwise agreed by the parties in writing.
- 3.2 Codan will invoice The Purchaser for the Order Value of the Order at any time following receipt of such Order.
- 3.3 Unless otherwise stated in the Quotation the due date for payment by The Purchaser to Codan for the Order (Due Date) is as follows:
 - (a) 30 days from the date on which the invoice was issued, if the following conditions are satisfied at the time that the Order was submitted to Codan (i) The Purchaser has a pre-approved credit facility with Codan and (ii) the Order Value, combined with any outstanding payments due to Codan by The Purchaser at the time of the Order, fall within The Purchaser's approved Credit Limit; and
 - (b) in all other cases, payment is immediately due at the time that The Purchaser places the Order with Codan.
- 3.4 If The Purchaser fails to make any payment by the Due Date, then, without prejudice to any other right or remedy available to Codan, Codan may, in its sole discretion elect to:
 - (a) suspend any further deliveries to The Purchaser arising from the Order;
 - (b) cancel the Order for Products not yet supplied to The Purchaser in whole or in part by Codan;
 - (c) enter the property of The Purchaser in order to repossess the Products;
 - (d) appoint a receiver or receiver and manager to do anything the law allows a receiver or receiver and manager to do;
 - (e) charge The Purchaser interest (both before and after any judgement) on the unpaid amount at the rate of 10% per annum until payment is made in full; and/or
 - (f) withdraw any Credit Limits or credit facilities previously approved and extended to The Purchaser.

4. Delivery

- 4.1 Unless otherwise stated in any Order Acknowledgement issued by Codan to The Purchaser, Codan will deliver the Products to The Purchaser in the manner (i) specified in the Order or (ii) if a Quotation has been issued, in the manner specified in the Quotation, regardless of what is stated in the Order submitted by The Purchaser.
- 4.2 Codan will use its reasonable endeavours to deliver the Products described in the Order on the delivery date requested by The Purchaser.
- 4.3 Risk of damage to or destruction or loss of the Products will pass to The Purchaser at the time of delivery to The Purchaser or its nominated carrier, as appropriate.
- 4.4 Notwithstanding delivery and the passing of risk in the Products, the parties acknowledge and agree that the title to, and property and ownership of, the Products supplied under this Agreement will not pass to The Purchaser until Codan has received, in cleared funds, payment in full for the Products and any other sums which are or may become due to Codan under this Agreement or any other agreement or arrangement between the parties.

STANDARD TERMS

- 4.5 Until such time as full title, property and ownership of the Products passes to The Purchaser in accordance with clause 4.4, and while the Products remain in The Purchaser's full control and possession:
- (a) The Purchaser must hold the Products as Codan's fiduciary agent and bailee;
 - (b) The Purchaser must keep the Products properly stored, protected and insured;
 - (c) Codan may at any time after payment is overdue require The Purchaser to deliver up the Products to Codan and, if The Purchaser fails to deliver up the Products immediately, Codan may enter the premises of The Purchaser or any third party where the Products are stored and repossess them; and
 - (d) The Purchaser must not pledge or in any way charge by way of security for any indebtedness, any of the Products which remain the property of Codan. If The Purchaser does pledge or in any way charge by way of security for any indebtedness any of the Products for which property and ownership has not passed to The Purchaser, all moneys owing by The Purchaser to Codan will (without prejudice to any other right or remedy of Codan) immediately become due and payable to Codan.

5. PPSA

- 5.1 The Purchaser acknowledges that until such time as full title, property and ownership of the Products passes to The Purchaser under clause 4.4, this Agreement constitutes a Security Agreement for the purposes of the PPSA, and Codan has a Security Interest in the Products.
- 5.2 Without limiting clause 17.6, The Purchaser agrees to do such things as Codan may require from time to time to ensure that any Security Interest of Codan arising from or connected with this Agreement is Perfected under the PPSA for whatever period Codan determines in its sole discretion, including signing documents and providing Codan with all further information required to enable Codan to register its Security Interests on the PPS Register, and to otherwise protect Codan's position under the PPSA. The Purchaser must keep Codan fully informed of all relevant information regarding it and its activities, including by providing not less than 14 days notice in writing of any proposed change in its name or contact details, and immediately advising Codan of material changes in its business activities.
- 5.3 The Purchaser agrees to indemnify Codan for all expenses incurred by Codan in registering its Security Interests on the PPS Register, and will reimburse Codan for all such expenses immediately upon demand.
- 5.4 The Purchaser waives its rights under section 157 of the PPSA to receive a notice in relation to the registration events to which section 157(3)(a) of the PPSA applies, including without limitation, the right to receive a copy of a verification statement confirming registration of a financing statement or financing change statement relating to the Security Interest created by this Agreement.
- 5.5 The Purchaser agrees that nothing in sections 118, 121(4), 125, 130, 142 or 143 of the PPSA will apply to this Agreement or any Security Interest in the Products created by this Agreement, and waives its rights to receive any of the following documents:
- (a) a notice of removal of an accession under section 95 of the PPSA;
 - (b) a notice of an intention to seize collateral under section 123 of the PPSA;
 - (c) a notice of a disposal of collateral under section 130 of the PPSA;
 - (d) a statement of account under section 132(3)(d) of the PPSA;
 - (e) a statement of account under section 132(4) of the PPSA;
 - (f) a notice of retention of collateral under section 135 of the PPSA; and
 - (g) any notice from Codan under each of the provisions listed in section 144 of the PPSA.

6. The Purchaser's Obligations

- 6.1 Codan and The Purchaser agree that The Purchaser:
- (a) is solely responsible for consideration and validation of Product designs and Product functionality, to confirm suitability for particular applications, as desired by The Purchaser;
 - (b) must advise Codan of all statutory, regulatory and other official standards and/or requirements which the Product must comply with, at the time of submitting the Order to Codan and immediately upon becoming aware of these at any other time; and
 - (c) must provide Codan with any other information which Codan may request in respect of the intended application/use of the Products.

7. Warranty

- 7.1 Codan agrees to provide the International Product Warranty in respect of the Products.
- 7.2 The International Product Warranty will not apply in the event of termination of this Agreement by Codan pursuant to clauses 12.4, 13.4 or 15.3.

8. Exclusion and Limitations of Liability

- 8.1 The Purchaser acknowledges and agrees that notwithstanding clause 4.2, any delivery dates quoted by Codan for delivery of the Products are approximate only, and will not be binding upon Codan.
- 8.2 Codan does not exclude or limit the application of any provision of any applicable statute, legislation or other regulation (including the Competition and Consumer Act 2010 (Cth) and its Schedules and Regulations) where to do so would contravene that statute, legislation or regulation or cause any part of this clause to be void and nothing in this Agreement is to be interpreted as doing so.
- 8.3 Subject always to clause 8.2, to the extent permitted by law Codan excludes from this Agreement:
 - (a) all conditions, warranties, guarantees and terms implied by statute, general law, international convention or custom, except any implied term, condition, guarantee or warranty the exclusion of which would contravene any statute or cause this clause to be void (**Non-excludable Condition**);
 - (b) all liability to The Purchaser for consequential or indirect damages arising out of or in connection with this Agreement even if Codan knew they were possible, or they were otherwise reasonably foreseeable, and including without limitation, loss of profits and damage suffered as a result of claims by any third person, such as a customer of The Purchaser; and
 - (c) all liability to The Purchaser in negligence for acts or omissions of Codan, its employees, agents and contractors arising out of or in connection with this Agreement.
- 8.4 To the extent permitted by law, Codan will not be responsible for any consequences of any modification to the Products (whether or not authorised) or for any loss, damage or claim arising from such actions. The Purchaser agrees to indemnify, defend and hold harmless Codan against any and all claims, demands, suits, causes of action, damages and legal fees (on a solicitor-own client basis) or expenses or costs whatsoever arising, directly or indirectly, from any modification of the Products, and unconditionally frees, releases and discharges Codan and its officers, agents, contractors and employees from any claim or cause of action arising in connection with such matters, to the fullest extent permitted by applicable law.
- 8.5 To the extent permitted by law, Codan will not be liable or otherwise responsible for any loss, accident, damage or injury arising in connection with The Products, or any failure of the Products to operate in the manner required by The Purchaser, whether or not caused by a defect or fault in the Products or due to Codan's negligence. The Purchaser unconditionally frees, releases and discharges Codan and its officers, agents, contractors and employees from any claim or cause of action arising in connection with the use of the Products by The Purchaser, to the fullest extent of the law.
- 8.6 To the extent permitted by law, Codan's liability to The Purchaser for breach of any Non-excludable Condition which is applicable (and other than one implied by sections 51, 52 or 53 of Schedule 2 of the *Competition and Consumer Act 2010* (Cth)) is limited to any one of, at Codan's option, repairing or replacing the Products in respect of which the breach occurred, supplying equivalent products, payment of the cost of replacing the Products or acquiring equivalent products, or payment of the cost of having the Products repaired.
- 8.7 Notwithstanding anything to the contrary in this Agreement, and to the extent permitted by law, Codan's maximum liability to The Purchaser for any cause of action or claim in connection with the Products or this Agreement shall be limited to a total aggregate amount equal to the Order Value of the Order in connection with which the cause of action or claim arose.

9. Intellectual Property

- 9.1 The Purchaser expressly acknowledges and agrees that Codan is the sole proprietor and owner of all existing and future Intellectual Property Rights associated with the Products (including all modifications and improvements), and that this Agreement does not grant or transfer to it any rights to the Intellectual Property Rights associated with the Products.
- 9.2 The Purchaser must not copy, reverse engineer, improve, enhance, develop, refine, modify or otherwise alter any aspect of the Products or any Intellectual Property Rights associated with the Products, or permit or assist a third party to undertake any of these actions.
- 9.3 Notwithstanding anything to the contrary in this Agreement, The Purchaser acknowledges and agrees that Codan will own all rights in any improvements, enhancements developments, modifications or refinements to the Products or associated Intellectual Property Rights developed or created by The Purchaser, and The Purchaser will have no claim to such materials. The Purchaser agrees that it will execute, procure and deliver to Codan all assignments required to give effect to this clause 9.3, and hereby waives any and all rights to any such improvements, developments, enhancements modifications or refinements.

10. Confidentiality

- 10.1 Each party:
- (a) may use Confidential Information of the other party solely for the purposes of this Agreement;
 - (b) must keep confidential all Confidential Information of the other party; and
 - (c) may disclose Confidential Information of the other party only to (i) employees and contractors who (A) are aware and agree that the Confidential Information of the other party must be kept confidential and (B) either have a need to know (and only to the extent that each has a need to know), or have been specifically approved by the other party, or (ii) as required by law or stock exchange regulation.
- 10.2 Each party must notify the other party immediately once it becomes aware of any breach of confidentiality and must take all reasonable steps necessary to prevent further unauthorised use or disclosure of the Confidential Information.

11. Taxes and Government Charges

- 11.1 The amounts payable by The Purchaser to Codan for, or in connection with this Agreement do not include any amounts on account of Taxes and Duties. The Purchaser shall be solely liable for and shall pay, when due and payable, all Taxes and Duties which may be imposed in relation to the Products, or which is assessed or chargeable in respect of this Agreement and any associated documents or transactions.
- 11.2 The Purchaser agrees to indemnify Codan in respect of any liability for Taxes and Duties, and shall pay any Taxes and Duties notified to it by Codan immediately upon request. The Purchaser must provide Codan with all necessary tax invoices, receipts and other documentation as required by Codan in accordance with applicable laws, legislation and regulations.
- 11.3 In the case of GST payable in Australia, if applicable, The Purchaser must pay to Codan an additional amount on account of GST equal to the amounts payable by The Purchaser for the Supply multiplied by the prevailing GST rate. Notwithstanding anything to the contrary in this clause, The Purchaser is not required to pay any additional GST amount until such time as The Purchaser has been provided with a tax invoice by Codan, which is in an approved form for GST purposes.
- 11.4 The additional amounts due to Codan on account of Taxes and Duties are payable at the same time and in the same manner as the price and any other amounts payable by The Purchaser are required to be paid to Codan under this Agreement.

12. Government Approvals

- 12.1 Codan agrees, at its cost, to use its reasonable endeavours to obtain all necessary export licences, clearances and other consents and approvals from Government Agencies which are necessary for the sale and supply/export of the Products to The Purchaser. The Purchaser agrees to complete and provide to Codan any documentation required by Codan to obtain any required approvals and consents.
- 12.2 The parties agree that Codan's obligations under this Agreement are conditional upon Codan being issued all necessary export licences, clearances and other consents and approvals by the relevant Government Agencies.
- In the event that Codan is unable to secure all necessary licences, clearances, permits, approvals and other necessary consents from appropriate Government Agencies, Codan shall be entitled to immediately terminate this Agreement by written notice, and Codan shall not be required to supply the Products to The Purchaser.
- In no circumstances shall Codan be liable to The Purchaser or any other person for any loss or damage (including without limitation indirect or consequential loss or loss of profits) arising in connection with Codan's failure to obtain any necessary documentation from Government Agencies required for the sale and supply/export of the Products to The Purchaser, or the termination of this Agreement pursuant to this clause 12.2, and The Purchaser unconditionally frees, releases and discharges Codan and its officers, agents, contractors and employees from any claim or cause of action arising in connection with Codan's failure to obtain any export licence, clearances and other necessary consents and approvals from appropriate Government Agencies.
- 12.3 The Purchaser is solely responsible, at its sole cost and expense, for ensuring that the Products meet the requirements of any country into which they are imported, and must obtain and maintain any necessary import licences and permits, and all other clearances and consents from Government Agencies required for the acquisition and use of the Products by The Purchaser (including but not limited to customs approvals and clearances). Codan shall supply The Purchaser with any documents reasonably requested by The Purchaser for the purposes of complying with its obligations under this clause 12.3.
- 12.4 Codan may at any time require that The Purchaser supply it with copies of licences, permits, clearances and approvals issued by Government Agencies and obtained by The Purchaser as required by clause 12.3, and The Purchaser agrees to immediately comply with any such request. If at any time Codan becomes aware that The Purchaser has failed to comply with its obligations under clause 12.3, it may immediately terminate this Agreement by written notice, and all outstanding amounts shall become immediately due and payable by The Purchaser. The Purchaser agrees to indemnify, defend and hold harmless Codan against any and all claims, demands, suits, causes of action, damages and legal fees (on a solicitor own client basis) or expenses or costs whatsoever arising, directly or indirectly, from any failure by The Purchaser to comply with its obligations under clauses 12.3 or 12.4.

13. Anti-Bribery and Corruption Requirements

- 13.1 It is a material term of this Agreement that The Purchaser must comply with the following:
- (a) The Purchaser must comply fully at all times with all applicable laws and regulations, including but not limited to applicable anti-corruption laws of the territory in which The Purchaser conducts business with Codan.
 - (b) The Purchaser must not, and covenants that it will not, in connection with the performance of this Agreement, directly or indirectly promise, authorise, ratify, offer to make or make, or take any action, in furtherance of any Payment of Anything of Value to any individual, or to an intermediary for payment to any individual, including a Government Official, for the purpose of influencing or inducing or as a reward for any act, omission or decision to secure an improper advantage or to improperly assist The Purchaser or Codan in obtaining or retaining business.
 - (c) The Purchaser must not, and covenants that it will not, in connection with the performance of this Agreement, directly or indirectly promise, authorise, ratify or offer to make or make any Facilitating Payment to any individual, or to an intermediary for payment to any individual, including a Government Official.
 - (d) The Purchaser must not contact, or otherwise meet with any Government Official with respect to any transactions required under this Agreement, without the prior written approval of Codan and, when requested by Codan, only in the presence of a Codan designated representative.

14. Insurance

- 14.1 The Purchaser must take out and maintain at all times, with reputable insurers, valid and enforceable insurance policies in respect of the following:
- (a) product and public liability insurance, for an amount not less than \$10 million per incident or event;
 - (b) all necessary statutory workers compensation insurance; and
 - (c) such other risks that a reasonable, prudent person carrying on the business of The Purchaser would be likely to insure against.

15. Termination

- 15.1 Codan may terminate this Agreement with immediate effect by written notice to The Purchaser if:
- (a) The Purchaser is the subject of an Insolvency Event; or
 - (b) at the time of termination, a Force Majeure Event has persisted for greater than 40 Business Days.
- 15.2 The Purchaser may terminate this Agreement with immediate effect by written notice to Codan if Codan breaches any material term of this Agreement, which is capable of remedy, and fails to remedy the breach within 20 Business Days after receiving a notice requiring it to do so.
- 15.3 Without limiting Codan's other rights under this Agreement, Codan may terminate this Agreement with immediate effect by written notice to The Purchaser if:
- (a) The Purchaser breaches any term of this Agreement, which is capable of remedy, and fails to remedy the breach within 20 Business Days after receiving a notice requiring it to do so;
 - (b) The Purchaser breaches any term of this Agreement and such breach is not capable of remedy; or
 - (c) The Purchaser repeatedly breaches any term of this Agreement and, within 20 Business Days after receiving a notice requiring it to do so, fails to satisfy Codan that a breach of that term will not recur.
- 15.4 Termination of this Agreement will not affect any accrued rights or remedies a party may have as at the date of termination, unless explicitly stated otherwise in this Agreement.

STANDARD TERMS

16. Dispute Resolution

- 16.1 A party will not commence arbitration or court proceedings (except proceedings seeking interlocutory relief) in respect of a dispute arising out of this Agreement (Dispute) unless it has complied with this clause.
- 16.2 A party claiming that a Dispute has arisen will notify the other party of the Dispute in writing.
- 16.3 Each party to the Dispute will ensure that during the 30 Calendar Day period after a notice is given under clause 16.2 (or a longer period agreed between the parties) the chief executive officers (or equivalents) of the parties will use their best reasonable endeavours to resolve the dispute in good faith.
- 16.4 If after fourteen (14) days the parties are unable to resolve the Dispute under clause 16.3, the parties will attempt to settle the dispute by mediation conducted in accordance with the Commercial Mediation Guidelines of the ACDC.
- 16.5 The parties shall attempt to agree on the appointment of a mediator for the purposes of mediation of the Dispute pursuant to clause 16.4, and if the parties cannot agree on the identity of a mediator within seven (7) Calendar Days, the mediator will be appointed by ACDC within seven (7) Calendar Days thereafter. Mediation will be held within seven (7) Calendar Days of the appointment of the mediator.
- 16.6 Each party will bear its own costs of resolving a Dispute under this clause 16, and will bear equally the costs of any mediator required to be engaged.
- 16.7 If mediation does not proceed within the timetable set out in clauses 16.4 and 16.5, or is not successful in resolving the Dispute, the parties will be entitled to terminate the Dispute resolution process by giving notice in writing to all other parties and commence arbitration or court proceedings in respect of the Dispute. Nothing in this clause 16 prevents a party from seeking urgent interlocutory relief.
- 16.8 Nothing in this clause 16 prevents or limits The Purchaser from exercising its rights and requiring remedies from Codan in respect of a breach of a Non-Excludable Condition (subject always to clause 8 above).

17. Miscellaneous

- 17.1 Interpretation – In these Standard Terms and Conditions of Supply:
 - (a) the singular includes the plural and vice versa;
 - (b) the word person includes a firm, a body corporate, an unincorporated association, body or organisation established pursuant to international treaty, intergovernmental body, or government authority and other official authority;
 - (c) a reference to a document or legislation includes a reference to that document or legislation as varied, amended, novated or replaced from time to time;
 - (d) a reference to a person includes a reference to the person's executors, administrators, successors, substitutes (including, but not limited to, persons taking by novation) and permitted assigns; and
 - (e) headings are inserted for convenience and do not affect the interpretation of these Standard Terms and Conditions of Supply.
- 17.2 Survival – The provisions of clauses 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 16 and 17 of these Standard Terms and Conditions of Supply survive the expiry or termination of this Agreement.
- 17.3 Force Majeure – If a Force Majeure Event precludes Codan from partially or wholly complying with its obligations under this Agreement then:
 - (a) as soon as reasonably practicable after that Force Majeure Event arises, Codan must notify The Purchaser of the Force Majeure Event, and Codan's obligation to perform in accordance with this Agreement will be suspended for the duration of the actual delay arising directly out of the Force Majeure Event or 40 Business Days, whichever is shorter, provided that Codan does everything reasonably possible to mitigate the effects of the Force Majeure Event.
 - (b) If a Force Majeure Event persists for greater than 40 Business Days, Codan shall be entitled to terminate this Agreement in accordance with clause 15.1(b).

- 17.4 Governing Law – This Agreement will be governed by and construed in accordance with the laws applicable in South Australia. The parties submit to the exclusive jurisdiction of the courts of South Australia in respect of matters arising out of or in connection with this Agreement (including Disputes). The parties agree that the United Nations Convention on Contracts for the International Sale of Goods (adopted at Vienna, Austria on 10 April 1980) (including as incorporated into South Australian law by the Sale of Goods (Vienna Convention) Act 1986 (SA)) will not apply to this Agreement.
- 17.5 No Assignment – The Purchaser must not assign or otherwise deal with its rights and obligations under this Agreement without the prior written approval of Codan, to be provided by Codan in its reasonable discretion.
- 17.6 Further Action – Each party must (a) do all acts necessary or desirable to give full effect to this Agreement, and (b) refrain from doing anything which might prevent full effect being given to this Agreement.
- 17.7 Variation – A variation or modification of this Agreement must be in writing and signed by an authorised representative of each party.
- 17.8 Severability – If any provision of this Agreement is held by any competent authority to be invalid or unenforceable in whole or in part the validity of the other provisions of this Agreement and the remainder of the provision in question will not be affected.
- 17.9 No Waiver – No waiver by a party of any breach of this Agreement by another party shall be considered as a waiver of any subsequent breach of the same or any other provisions.
- 17.10 Entire Agreement – This Agreement constitutes the entire agreement between the parties about its subject matter (without limiting clause 8.2 in any way) and subject to the remainder of this clause, supersedes all previous representations, understandings and agreements in connection with that subject matter. This Agreement overrides any terms for the sale and supply of Products tendered to Codan by The Purchaser, irrespective of whether such terms are tendered before or subsequent to the date of the Order. However, the parties agree that the Existing Arrangements continue in full force and effect, and that nothing in this document supersedes, alters or otherwise affects the Existing Arrangements. In the event of an inconsistency between the obligations of the Parties under this Agreement and any Existing Arrangements, the Existing Arrangements prevail to the extent necessary.
- 17.11 Relationship – The relationship between the parties is and will remain that of independent contractors, and nothing in this document constitutes the parties as partners or joint venturers or constitutes any party as the agent of another party or gives rise to any other form of fiduciary relationship between the parties.
- 17.12 Notices – Notices by a party must be delivered by (i) prepaid post (ii) facsimile or (iii) hand, and sent to the address of the receiving party specified in the Order. Notices shall be deemed to have been received by hand upon delivery, by post within two (2) Business Days of sending and by facsimile upon receipt of a successful transmission report.

INTERNATIONAL WARRANTY

1. In this document:
 - (a) **ACL** means the Australian Consumer Law as set out in Schedule 2 of the Australian *Competition and Consumer Act 2010* (Cth);
 - (b) **Codan** means Codan Limited A.C.N. 007 590 605 of 81 Graves Street, Newton, South Australia, 5074, Australia (Ph: +61 (8) 8305 0311);
 - (c) **Codan Products** means products manufactured by or on behalf of Codan, including all Land Mobile Radio products manufactured in Canada;
 - (d) **Material** means a material or component used by Codan in the manufacture of Codan Products;
 - (e) **Warranty Period** means a period of three (3) years from the date of shipment of Codan Products to the purchaser; and
 - (f) **Workmanship** means the handling, assembly and manufacturing processes performed by or on behalf of Codan in order to manufacture Codan Products.
2. **Codan warrants that for the duration of the Warranty Period, all Warranted Products will be free of faults arising from defects in design, Workmanship or Materials, on the terms and conditions set out in this document.**
3. Should any fault due to bad design, Workmanship or Materials be proven in Warranted Products acquired by the purchaser at any time within the prescribed Warranty Period, Codan will, subject to the terms of this document as set out below, remedy such fault free of charge provided the Codan Products are returned to Codan or to a service centre authorised by Codan.
4. All Codan Products returned for warranty repair must be sent to 81 Graves Street, Newton, South Australia, 5074, Australia if returned to Codan, and if returned to a service centre authorised by Codan must be sent to the address for the service centre as listed on Codan's website. The purchaser is responsible for all freight, insurance, taxes, duties and any costs of returning the Codan Products to Codan or a service centre authorised by Codan for warranty repairs. Codan is only responsible for the freight costs of returning the repaired Codan Products to the purchaser.
5. All Codan Products returned for warranty repair must have a valid Return Material Authorisation (**RMA**) number issued by Codan or a Codan authorised service centre prior to return by the purchaser. This RMA number must be clearly indicated and marked on all documentation and packaging by the purchaser when returning the Codan Products in accordance with item 4 of this document.
6. This express warranty shall not extend to damage of Codan Products during transit or transportation, or any abuse, accident or improper installation, connection, adjustment, repair or use of goods otherwise than in accordance with instructions issued by Codan. This express warranty does not apply to any Codan Products in respect of which the serial number has been altered, defaced or removed.
7. This express warranty is incorporated into, and forms part of, Codan's Standard Terms and Conditions of Supply. Accordingly, it is subject to the terms of Codan's Standard Terms and Conditions of Supply, including but not limited to clauses 8.2 – 8.7.
8. Subject to the matters set out in this express warranty, and to the full extent permitted by law, no liability (whether expressed or implied) of any nature whatsoever, is accepted by Codan for any consequential loss, damage or injury arising as a result of any fault in the Codan Products.
9. This express warranty does not extend to goods supplied by Codan, which are not designed or manufactured by or on behalf of it. Some goods supplied but not manufactured by or on behalf of Codan, or Materials manufactured by third parties which are used in Codan Products, benefit from specific warranties provided by their manufacturers. Codan will make reasonable endeavours to ensure that the purchaser receives the full benefit of any warranty given by the manufacturer in respect of goods supplied but not manufactured by or on behalf of Codan, and Materials manufactured by third parties which are used by or on behalf of Codan in Codan Products. To the extent permitted by law, such action will be the sole remedy available to the purchaser in respect of any faulty or defective goods or Materials not manufactured by or on behalf of Codan.
10. This express warranty is valid for Codan Products purchased from Codan anywhere in the world. Warranty service will be provided in accordance with this express warranty in any country of the world where there is a service centre authorised by Codan.
11. The benefits conferred by this express warranty are in addition to all other non-excludable rights and remedies which the purchaser may have under the ACL and any similar laws in Australia or elsewhere.

12. To the extent permitted by law, Codan's liability for any non-excludable term, condition, guarantee or warranty applicable under the ACL or its equivalents is limited to (at Codan's option):
- (a) In the case of goods – repairing, replacing or supplying equivalent goods, or paying the cost of any of those remedies to the purchaser; or
 - (b) In the case of services – supplying the services again or paying the cost of having the services supplied again.
13. Codan provides the following advice to all purchasers who are consumers as defined by the ACL and to whom the ACL applies, as required by the ACL:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

BATTERY CELL WARRANTY

Codan Limited ("Codan") warrants that all batteries supplied by Codan will be free of faults arising from defects in design, workmanship or materials in accordance with this express warranty.

In addition to Codan's International Product Warranty period and conditions, the following conditions apply to battery cells supplied by Codan.

Codan warrants the Nickel Metal Hydride (NiMH) battery cells to be free from defects in material and workmanship for a period of three (3) years after shipment from the factory.

Codan warrants the Lithium Iron Phosphate (LiFePO₄) battery cells to be free from defects in material and workmanship for a period of three (3) years after shipment from the factory.

Codan warrants the Sealed Lead Acid (SLA) battery cells to be free from defects in material and workmanship for a period of one (1) year after shipment from the factory.

The liability of Codan under this warranty shall be limited to the repair or replacement free of charge of NiMH battery cells, LiFePO₄ battery cells, or SLA battery cells provided notification of such failures or defect is given to Codan immediately upon the same becoming apparent.

This warranty does not extend to cover defects in the battery cells that are due to fair wear and tear, negligent use, tampering, improper handling, improper use, improper operation, improper storage, improper battery management or where the batteries have not been charged, discharged or serviced as per Codan's instructions.

Note that battery cell capacity reduces through time and usage and that this is normal. The degree of reduction depends upon the battery cell type. This warranty will be rendered void if a battery pack has been disassembled unless such disassembly has been agreed to by Codan. The warranty is not transferable to third parties.

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SALES OFFICE LOCATIONS

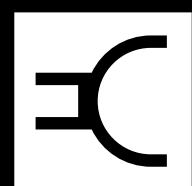


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Note that all specifications in this document are subject to change.



CODAN
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