We ask the questions, so you don't have to.

General Dynamics takes pride in developing new systems solutions for all of your Line-of-Sight applications. To better define your system needs, and to help us provide the system that's right for you, please answer the short list of questions below.

- ***Assess your basic requirements. Which type of communications do you utilize?***
  - __ **Voice**
  - __ **Data**
  - __ **Both**

This will help us to determine what the baseband I/O will be.

- ***What are the interface characteristics of the proposed installation? (Check all that apply)***
  - __ **Power Availability**
  - __ **Baseband**
  - __ **RF (antenna)**

This helps determine what types of accessories will be required. The more we know, the easier it will be to provide you with the right accessories for your system.

- ***Between what type of platform(s) do you wish to communicate? (Check all that apply)***
  - __ **Fixed**
  - __ **Mobile**
  - __ **Vehicle**
  - __ **Aircraft**
  - __ **Ship**
  - __ **Backpack**

This helps to identify input power supplies, shocktrays, antenna selections, and to determine whether adding a Power Amplifier is an option. Check out the typical system diagrams in the planning guide for help in deciding on a particular configuration that suits your needs.

- ***Between what locations or areas do you wish to communicate? What range (distance) is required?***
  - __ **Line-of-Sight**
  - __ **Remote Antenna(s)**
  - __ **Repeater**
- ***What other systems/operations do you need to interoperate with?***

Interoperability requirements go a long way toward defining your system requirements. You must plan for compatibility with any of the existing systems that you still plan to use.

- ***What type of modulation do you want to use?***

The URC does AM and FM (< 10 kHz deviation) in Voice (Plain Text) mode and Data (Cipher Text) mode.

The basic URC covers:
115 to 149.995 MHz (AM),
115 to 173.995 MHz (FM) and,
225 to 399.995 MHz (AM/FM)

The Frequency Expansion Options add:
EBN-30, 30 to 90 MHz (FM)
EBN-400, 400 to 420 MHz (FM)

- ***What tuning increments are required?***
  - __ **25 kHz**
  - __ **12.5 kHz**
  - __ **5 kHz**
  - __ **8.33 kHz (option)**

This determines whether the URC radio is suitable for the proposed application, or if you will need a Frequency Enhancement Option. The standard URC supports the above frequencies. The frequencies that you will be using will also influence your choice of antennas.

- ***What are the requirements for Remote Control/Operation of the radio?***
  The UEC-120/220 Remote Control Units offer hard-wired remote control of URC radios from up to 300 feet away, and interconnect with the PTSH-104 speakers to provide amplified audio and to allow remote Tx/Rx operation.

  Major functions of the radio can be controlled from a computer through the RS-232 ports. The PC can be hard-wired directly to the radio. Or it can be accessed through an off-site location anywhere in the world.

  For a better look at several remote control options, please check out the typical system configuration diagrams in the planning guide.

- ***Is Tone-Coded Squelch (CTCSS) required?***

Our Private Line Option (UPL-100) is compatible with CTCSS protocol and available as an option for the URC series of radios.

- ***What are your information security requirements?***

The URC radio can be used with external encryption devices (baseband only — diphase mode not supported).

- ***What are the operating conditions at the proposed installation?***

__ **Accessibility**
__ **Ambient (audio) noise**
__ **Electrical noise (EMI)**
__ **Co-location considerations**

Physical conditions will influence your selection of accessories. For example, limited accessibility might determine the need for remote control. High ambient noise might necessitate the use of headphones with a noise canceling microphone.

- ***What is the physical environment of your proposed installation?***

__ **Temperature**
__ **Humidity**
__ **Altitude**
__ **Vibration/Shock**
__ **Acceleration**

Environmental conditions of your location will help determine suitability of the URC radio for the application. For instance, if the radio is to be used in an environment with a high potential for vibration or mechanical shock, a UST-100 or UST-200 shock tray should be used.

- ***What type of antenna should I use?***

The chart below shows some basics of the standard antennas. Check out the typical system configuration diagrams in the planning guide for a better look at standard usage for various antennas.

ANTENNA CHARACTERISTICS

	FREQUENCY RANGE OF OPERATION			
Input Power Limit	**LVHF 30-90 MHz**	**VHF 115-174 MHz**	**UHF 225-420 MHz**	**Typical Application**
30 W		UVU-100	UVU-100	Ball Joint Backpack
30 W		UVU-100S	UVU-100S	Spring Joint Mobile, Light Duty
30 W		UVU-110	UVU-110	Ball Joint and Mount
30 W		UVU-110S	UVU-110S	Spring Joint and Mount, Light Duty
30 W	UVL-100			Backpack LVHF
50 W		UVU-115	UVU-115	Mobile/ Base Station
50 W		UVU-130	UVU-130	Mobile/ Base Station
50 W	UVL-150			Mobile Whip LVHF
50 W	UVU-300	UVU-300	UVU-300	Base Station Dipole
70 W	UVL-250	UVL-250		UH-60 Helicopter (Aircraft) LVHF & VHF
250 W		UVU-200	UVU-200	Base Station Dipole

Application Descriptions

10 WATT BACKPACK SYSTEM

Portable LOS command and control communication system for field operations, it uses rechargeable NiCad batteries. A backpack is available for storing necessary accessories for portable operation and is excellent for use in emergency situations where rapid "jerk and run" communications is a necessity.

TYPICAL 10 WATT BASE SYSTEM

For LOS air-to-ground or ground-to-ground command and control communications from a non-mobile base station, this station is used with a powerful, dual-band discone antenna to maximize communications range. It can be powered via any AC voltage from 85VAC to 250VAC or, through use of the UDD100A, by any DC voltage from 10VDC to 20VDC.

TYPICAL 50 WATT BASE SYSTEM

For LOS air-to-ground or ground-to-ground command and control communications from a non-mobile base station, this system is used with a powerful, dual-band discone antenna to maximize communications range.It also features a 50W(FM)/30W(AM) RF amplifier to boost your signal for even greater range capability and can be powered via any AC voltage from 95VAC to 265VAC.

10 WATT MOBILE SYSTEM

This system is used for LOS air-to-ground or ground-to-ground command and control communications from mobile platforms. Accessories allow mounting and remote control in just about any type of mobile platform: Automobiles, trucks, APCs, boats, etc. The UVU-110S Antenna Kit can be used in any light duty mobile system that has a 12-volt DC supply. If a 28-volt DC supply is available, the DC/DC supply is not required.

10 WATT AIRCRAFT MOBILE SYSTEM

This system configuration can be used in aircraft with a 28-volt DC supply. It is primarily used in aircraft where space is available, as the URC-200 is not packaged in a standard aircraft package. However, it does offer a quick solution to multiband/multimode communications for aircraft with little modification required to the aircraft. This same system can also be used on other mobile platforms.

TYPICAL 50 WATT MOBILE SYSTEM

From a mobile platform, this system provides LOS air-to-ground or ground-to-ground command and control communications. It features a 50W(FM)/30W(AM) RF amplifier to boost your signal for even greater range capability. The system is powered from a 12-volt DC to 28-volt DC High Power Converter that allows installation into Automobiles, trucks, APCs, boats, etc. If a 28-volt DC supply is available, the converter is not required.

TYPICAL REPEATER/RETRANSMIT SYSTEM

This system allows the user to extend the range beyond LOS. Located on a mountain top, the URC-200 repeater system will extend the range by receiving a signal at one frequency from a user below and then will retransmit at a second frequency to a user on the other side. This system can also be used as a cross band repeater with transmit and receive or receive and transmit at different frequency bands and modes: Transmit at VHF/AM and receive at UHF/FM and vice versa. Excellent for operations where different users operate at different frequencies and modes, it can also be installed in an aircraft as a flying repeater to further extend the range. All radio frequency extension and encryption options can be used in this system.

REMOTE CONTROL OF THE URC-200 TRANSCEIVER

An operator can set the key performance parameters (frequency, mode, power, etc.) on the radio, then as required the operator can transmit/receive through the radio. The radio system can be installed as either a 10 Watt or 50 Watt system with the addition of a power amplifier. This provides a solution for air traffic command and control communications as well as other applications where it is not possible to have the operators near the radio.

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URC-200

Accessory Application Matrix

	Typical 10 Watt Backpack System	Typical 10 Watt Base Station System	Typical 50 Watt Base Station System	Typical 10 Watt Mobile System		Typical 10 Watt Helicopter Mobile System		Typical 50 Watt Mobile System		Typical Repeater Retransmit System	Remote Control of Multiple Transceivers using UMX-200
				SINGLE SYSTEM	DUAL SYSTEM	SINGLE SYSTEM	DUAL SYSTEM	SINGLE SYSTEM	DUAL SYSTEM		
URC-200 Transceiver	1	1	1	1	2	1	2	1	2	2	1
Input/Output Devices											
PTHS-110 Handset	1	1	1								1
PTMP-150 Palm Mic				1	2	1	2	1	2		
PTSH-104 Rmt. Speaker				1	2	1	2	1	2		1
LSCA-103A Audio Cable											1
LSCA-110 Audio Extender Cable											1
Power Sources											
UBC-100 Battery Case	1										
BB-590/U NiCad Battery	2										
UAC-100 Power Supply		1								2	
UAC-350 Hi Pwr. Power Supply			1								1
UDD-100A 12V-28V Converter				1	2						
UDD-400 12-28V Hi Pwr. Converter								1	2		
Power Amplifiers											
UPA-50 VHF/UHF Power Amplifier			1					1	2		1
UPK-50 Mounting Kit for UPA-50			1					1	2		1
AM-1077MOT 30-90MHz Power Amplifier	(50 Watt 30-90 MHz applications; URC-200 must have the EBN-30 Option installed)										
Power Distribution Boxes											
UFB-100 Filtered Interface Box						1	2				
UFB-100A Filtered Interface Box w/add'l Power Connector	(to be used in lieu of the UFB-100 when both the UPA-50 and AM-1077MOT are used)										
UIB-100 Interface Box			1					1	2		1
UIB-100A Interface Box w/add'l Power Connector	(to be used in lieu of the UIB-100 when both the UPA-50 and AM-1077MOT are used)										

URC-200

Accessory Application Matrix (continued)

	Typical 10 Watt Backpack System	Typical 10 Watt Base Station System	Typical 50 Watt Base Station System	Typical 10 Watt Mobile System		Typical 10 Watt Helicopter Mobile System		Typical 50 Watt Mobile System		Typical Repeater Retransmit System	Remote Control of Multiple Transceivers using UMX-200
				SINGLE SYSTEM	DUAL SYSTEM	SINGLE SYSTEM	DUAL SYSTEM	SINGLE SYSTEM	DUAL SYSTEM		
Remote Control Interfaces											
UEC-120 Remote Control Head				1		1		1			
UEC-220 Remote Control Head					1		1		1		
URE-U-A10-LLL-X Remote Cable for UEC-120/220 in a 10 Watt System				1	2	1	2				
URE-U-A50-LLL-X Remote Cable for UEC-120/220 in a 50 Watt System								1	2		
UMXC-101 RS232 Rmt. Cable											1
IBM Compatible PC (user to provide)											(1)
Shock Trays & Rack Mounts											
URM-100 Rackmount Tray		1	1								1
UST-100 Shock Tray						1	2				
UST-200 Shock Tray								1	2		
Antennas & Antenna Cables											
UVL-250 Helicopter Antenna						1	2				
URF-A61-LLL Aircraft RF Cable Kit						1	2				
UVU-100 Backpack Antenna	1										
UVU-110S Vehicular Ant w/Mounting Kit				1	2						
UVU-130 Vehicular Antenna, 39"								1	2		
URF-V61-LLL Vehicular RF Cable								1	2		
UVU-200 Base Station Discone Antenna		1	1							2	1
URF-B61-LLL Base Station RF Cable Kit		1	1							2	1
Other Miscellaneous Accessories											
UCA-100 Retransmit Cable										1	
UCB-200 Backpack, Camo	1										
UCAY-101 "Y" Cable											1

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