Talla-Com Industries

VRC-120

ADVANCED VEHICULAR VHF/FM RADIO

The Perfect Drop-in Replacement for VRC-12 Series Radios

TALLA-COM
A Tadiran Com., Ltd. Company

THE OPERATIONAL NEED.

New times generate new requirements. Combat net radios produced and fielded in the 1960s are tactically and technologically obsolete. Equipment based on electro-mechanical elements, utilizing inefficient components cover a limited portion of the military frequency band and have an unacceptable Mean-Time-Between-Failure (MTBF). The result is a radio that cannot meet the communications requirements of the modern battlefield.

Performance-oriented yet budget-conscious armed forces currently using aging tactical radios require a new radio that provides improved operational and technical characteristics, excellent reliability and maintainability, and a lower life cycle cost. Indeed, acquisition of a new radio would provide a lower total life cycle cost than the continued use of the old radio. Old radio operating costs are high because of considerable maintenance costs, such as excessive spare parts consumption, use of logistical facilities, additional technical personnel man-hours, equipment unavailability, etc.

To overcome this challenge, Tadiran designed and developed the VRC-120; an ideal drop-in replacement for the VRC-12 series radios. The fixed frequency VRC-120 is designed for general purpose forces, including low-level tactical echelon troops that do not face Electronic Warfare threats and therefore do not require expensive ECCM capabilities.

THE VRC-120 RADIO SYSTEM.

The VRC-120 is an advanced and economical state-of-the art VHF/FM military radio operating in the extended 30-88 MHz tactical band at 25 kHz channel spacing and provides 2,320 channels. Its broadband antenna eliminates the need for antenna matching systems. Compatible with both old and new generation military VHF/FM radios, the affordable VRC-120 enables clear voice and X-mode data communications, and encrypted voice and data communications via external systems. Optional configurations with built-in encryption, digital data capability and GPS are also available. With special attention given to EMI/EMC during its design process, the VRC-120 provides excellent colocation performance, in dense electromagnetic environments.

VRC -120 IS THE IDEAL DROP-IN REPLACEMENT FOR THE VRC-12 SERIES RADIOS.

The VRC-120 uses the same mounting, cabling, accessories and ancillaries as the VRC-12 series radios. No need to drill new installation holes, change cable lengths or install additional items. No need for mechanical or electrical vehicular preparation. Simply replace the RT-524 or RT-246 (VRC-12 series transceivers) and antenna and the VRC-120 is ready for operation.

Modular auxiliary receivers are available in “top-hat” single-receiver and dual-receiver configurations. These “top-hat” configurations maintain the VRC-12 radio footprint and eliminate the need for additional receiver mounts, thereby saving space and cost compared to using stand-alone R-442 auxiliary receivers.

SUPERIOR TECHNICAL CHARACTERISTICS MEAN SUPERIOR PERFORMANCE.

Excellent receiver and transmitter specifications guarantee high quality communications. Improved colocation characteristics reduce mutual interference in communications-dense environments. A high MTBF rate of over 6,000 hours ensures high reliability and low operating cost. An extensive Built-In Test system yields a low Mean Time to Repair (MTTR). These factors maximize performance, reliability and maintainability, without sacrificing affordability.

FUTURE GROWTH CAPABILITIES.

An important feature of the VRC-120 Radio System is its Pre-Planned Product Improvement (P^3I) capability. P^3I gives the VRC-120 Radio System a built-in future growth capability which allows the performance upgrading and addition of new features with minimal or no external hardware changes. P^3I execution is accomplished via programmable hardware, modular software changes and the use of internally-available physical space. Additionally, a FLASH EEPROM enables VRC-120 software to be changed or upgraded via the DATA connector without having to open the VRC-120 receiver-transmitter.

VRC-120 Vehicular Radio Set with Accessories

VRC-121 (left) is a VRC-12/VRC-47 (right) replacement with single "top-hat" auxiliary receiver

VRC-122 (left) is a VRC-44/VRC-48 (right) replacement with dual "top-hat" auxiliary receiver

RADIO SET COMPONENTS

COMPONENT		CONFIGURATION			VRC-12 COMPONENT REPLACEMENT
DESCRIPTION	DESIGNATION	VRC-120	VRC-121	VRC-122	
Basic Receiver-Transmitter	RT-120	1	1	1	Drop-in for VRC-43 & VRC-46
Single Auxiliary Receiver	R-121	–	1	–	Drop-in for VRC-12 & VRC-47
Dual Auxiliary Receiver	R-122	–	–	1	Drop-in for VRC-44 & VRC-48
Antenna	AS-1288	1	2	2	Drop-in for AS-1729
Mounting	MT-1029	1	1	1	Same as VRC-12 series
Antenna Cable	CG-1773	1	1	1	Same as VRC-12 series
Power Cable	CX-4720	1	1	1	Same as VRC-12 series
Loudspeaker	LS-454	1	2	3	Same as VRC-12 series
Handset	H-250	1	1	1	Same as VRC-12 series

OPTIONAL ACCESSORIES

COMPONENT		VRC-12 SERIES COMPONENT COMMONALITY
DESCRIPTION	DESIGNATION	
Vehicular Intercommunications System	VIC-1	Yes
Electrical Cable to VIC-1	CX-4723	Yes
Channel Selector Control	C-2742	Yes
Electrical Cable to C-2742	CX-7059	Yes
Headset	H-140	Yes
Headset-Microphone	H-161	Yes

VRC-120

RT PERFORMANCE CHARACTERISTICS

GENERAL

Frequency	30.000 to 87.975 MHz
No. of Channels:	2320 at 25 kHz spacing
Preset Channels:	11
Modulation:	F3 Simplex
Modes of Operation:	Clear Voice & Data (X-Mode); Secure Voice & Digital Data
Frequency Stability	10 ppm
Built-In Test (BIT):	On-line and operator initiated, microprocessor controlled
Power Source:	20 to 32 VDC, per MIL-STD-1275
Power Consumption at high power	
RT-120:	7 Amps
RT-121:	8 Amps
RT-122:	9 Amps
Environmental	
Operating Temperature:	-40°C to +65°C
Dynamic Mechanical:	Military tracked and wheeled vehicles per MIL-STD-810D/E
EMI:	Per MIL-STD-461C
Dimensions (HxWxD):	(less handles)
RT-120:	5.51" x 15.07" x 12.04" 140 x 383 x 306 mm
RT-121:	6.69" x 15.07" x 12.04" 170 x 383 x 306 mm
RT-120:	6.69" x 15.07" x 12.04" 170 x 383 x 306 mm
LED Display:	Channel Number, Channel Frequency, Receive & Transmit signal strength, BIT results
Indicators:	Call, Fault

RECEIVER

Sensitivity (for 10 dB SINAD)	
RT-120:	Main receiver: 0.5µV Auxiliary receiver: 0.5µV
RT-121:	Main receiver: 0.5µV Auxiliary receiver: 0.5µV
RT-122:	Main receiver: 0.5µV Auxiliary receivers: 0.9µV (using single antenna)
Selectivity:	40 dB at ± 25 kHz
IF Rjection:	100 dB
Audio Outputs	
Adjustable:	100 mW/600 ohm (earphone) 1 W/600 ohm (speaker)
Fixed Level:	220 mV/150 ohm
Audio Distortion:	Less than 5%
Squelch:	OFF, ON: 150 Hz tone
Front End Protection:	+46 dBm

TRANSMITTER

Power Output:	0.25 W (low power) 5 W (medium power) 35 W (high power)
Frequency Deviation:	5.6 kHz narrowband 4.75 kHz wideband
Spurious Emmision:	-100 dBc
Spurious Response:	-90 dBc
Harmonics:	-55 dBc
Wideband Noise Level:	-135 dBm/Hz at 10% off carrier

Note:
RT-121 consists of RT-120 Receiver-Transmitter and R-121 Single Auxiliary Receiver.
RT-122 consists of RT-120 Receiver-Transmitter and R-122 Dual Auxiliary Receiver.

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