

ENHANCED VHF/UHF FM TRANSCEIVERS

500K/e series



- ★ System Oriented Transceiver
- ★ **DVP Interface**
- ★ Detachable Control Panel
- ★ Ergonomic Controls
- ★ Effective Indications
- ★ Extended Sel Call Features
- ★ Large Choice of Ancillaries

DESCRIPTION

Outstanding electrical features characterize the generic 500e transceivers family. The advanced synthesizer design provides spectral purity of the transmitter and spurious free receiver. Linked to the helical resonators pre-selector and elaborated active mixer, this led to a hardened receiver, able to cope with the spectral overcrowding.

500Ke series transceivers are designed as a system oriented equipment in order to provide the basic radio unit, with built-in interface circuitry for external DVP Module, in order to meet all configurations, encountered in the Military, as well as in the Professional Mobile Radio (PMR).

Robust and reliable construction provides operation in severe working conditions.

The modular concept of the transceivers and a wide range of the available dedicated ancillary equipment enable the following configurations:

- Mobile (Vehicular) Station, direct control
- Mobile (Vehicular) Station, extended control
- Fixed Station
- Fixed Station with telephone line-to-radio trunking
- Base (Master) Station, Sel Call processing and telephone line-to-radio trunking.

This group consist of the following transceivers:

- **520V/Ke** - 2-m Band, S+SD+SD, intended for Land forces, colour Olive gray;

- **520M/Ke** - covering channels of 520V/Ke + Maritime Service (App.18. of IRR), intended for Marine forces, colour Olive gray;

- **500B/Ke** - covers up to 99 channels (S+SD +SD) in 2-m Band (VHF High Band) or in 0.7-m Band (UHF), intended for Police forces and Government agencies, standard colour Black mat.

Thanks to its detachable Control Panels all three types of transceivers fit the helicopter on board installation.

Sel Call subsystem's features are μ C based, allowing for enhanced options. "Select five" sequential type of coding is applied, according to CCIR Rec 257-1 100ms or 70ms. The sixth character is used for transmitting the STATUS (1 do 9). Available features are:

In reception: Personal Call and "Silent" Call followed by automatic acknowledgement, Group Calls (10;100;1000) and Circular Call (All Call). Except for "Silent" Call, all other are followed by different light and audio signalizations.

In transmission: Identity and Emergency Call (Alarm).

Status: When selected, Status is transmitted with Identity and call acknowledgement.

The Marine type transceivers (520M/Ke) suspends Sel Call and DVP features when change to the International Maritime Channels - "P" network.

DVP module is based on CVSD speech sampling by a rate of 9,6 kB/s. Duo Binary bit stream is filtered prior to reach FM modulator, keeping the transmitter spectra within the 16 kHz width of radio channel.

Module's Controls -Clear/Secure, Ciphering Key selection and Key Destroying - are conveyed onto transceiver's Control Panel. On receive the Module it self switches to the incoming signal mode of operation (C/S), remaining prompt for adequate answer within the next 30 sec. When necessary during this period, a forced Clear emission control is provided.

Sel Call signal are transmitted always non-digitized.

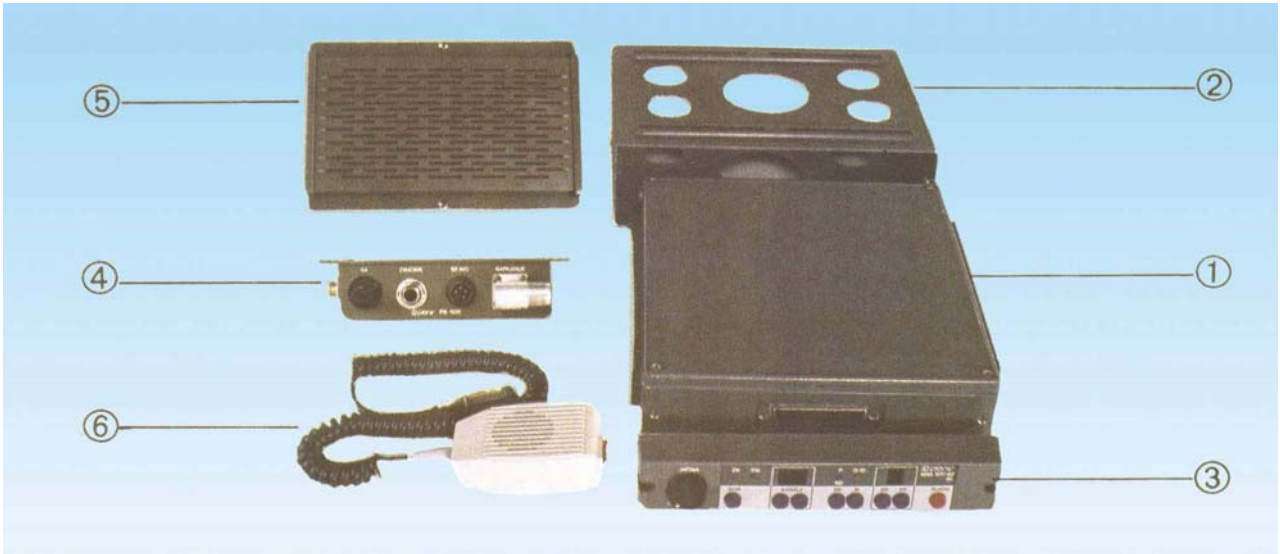
Supply of the transceivers is provided: directly from a 12V, negative ground vehicle battery, or via DC/DC converter PIS-500 from a 24V floating battery (as on ships) or by Voltage Regulator/Battery Charger SIP-500 from 220V/50Hz mains.

Two models of loudspeakers are available: 1W in a rugged metal box and 4W in a shock-resistant plastic oval box. Power supply equipment are doted by 4W built-in loudspeaker.

Type notation: **5xyZ/Ke**: **xy** - meter band: 507 (0,7m); 520 (2m); **Z** - User group: V, M, B; **e** - extendable



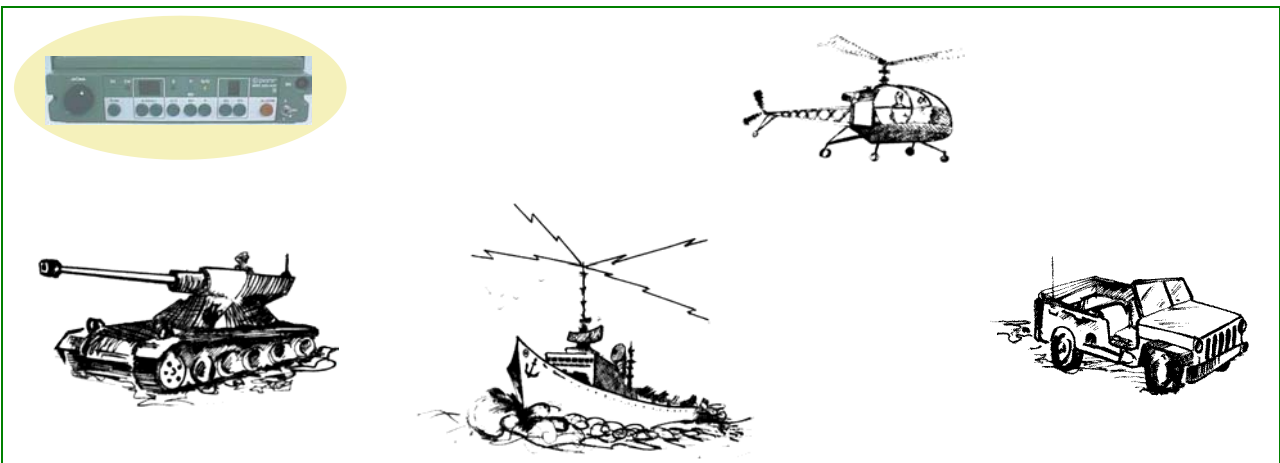
Detachable Control Panel of the MRS-520B/Ke



Vehicular Set MRS-520B/Ke, Direct Control



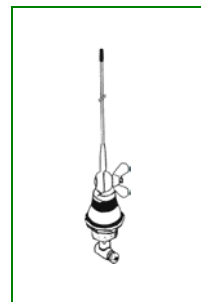
Vehicular Set MRS-520B/Ke, Extended Control



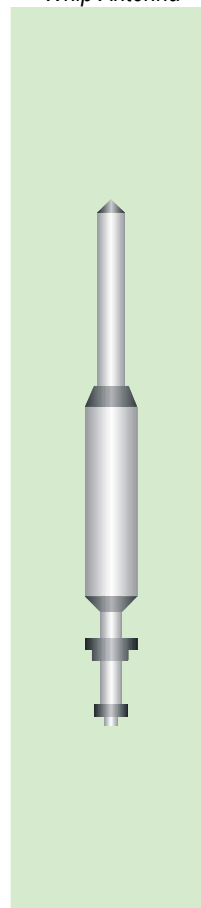
Applications of different Vehicular Sets MRS-500/Ke series

TECHNICAL SPECIFICATIONS

TRANSCEIVER TYPE	MRS-520V/K	MRS-520M/K	MRS-520B/K MRS-507B/K	
GENERAL				
Frequency range (MHz)	149÷154	149÷164	VHF: 146-174 UHF: 430-470	
Number of channels (S+SD+SD) <i>(SD channels are frequency reversed SD)</i>	A* network: 16+34+33=83 P* network: No	A* network: 16+34+33=83 P* network: 20+35+00=55	Up to 99	
System rated channel spacing (kHz)	25			
SD and SD frequency separation (MHz)	4.5	A net:4.5 P net:4.6	VHF: 4.5 UHF: 10	
Class of emission	16G3E; 16K3E			
Selective Call availability	Yes	A network: Yes P network: No	Yes	
Operating temperature range (°C)	-25 to +55			
Frequency stability (±kHz)	0.9	0.9	V: 0.9; U: 1.2	
Supply voltage (V)	13,5 DC, negative ground			
Dimensions (mm)	WHD: 197x55x220			
Weight, approximate (kg)	2,8			
TRANSMITTER				
Output RF power	20/10W±1dB			
Spurious signals (dBc)	Better than -64			
Switchable bandwidth (MHz)	4.8	8.1	V: 8; U: 25	
Deviation (±kHz)	Analog Voice	Nomin.: 3; Max.: 5		
	Encrypted Voice	4.5		
AF response (Analog Voice)	+1dB to -3dB resp. +6dB/oct (300 to 3000Hz)			
Microphone	200 Ohm, dyn.			
RECEIVER				
Sensitivity (µV)	AV: 12 dB SINAD	0.35	0.35	V:0.35; U:0.4
	EV: 5x10 ⁻³ BER	0.45	0.45	V:0.45; U:0.55
Switchable bandwidth (MHz)	5**	5**	V: 5**; U: 10	
Adjacent channel selectivity (dB)	Better than 70			
Intermodulation rejection (dB)	Better than 70			
Spurious response rejection (dB)	Better than 70			
Output audio level for 5% THD (W)	2			
Loudspeaker	4-Ohm; 4W			
A* = Army network, P* = International Maritime ;** - for each of two inputs (S and SD)				
SEL CALL				
"Select-five" - sequential: CCIR Rec 257-1 (100ms or 70ms)				



Vehicular 1/4 Whip Antenna



Fixed Antenna Wide-Band Dipole

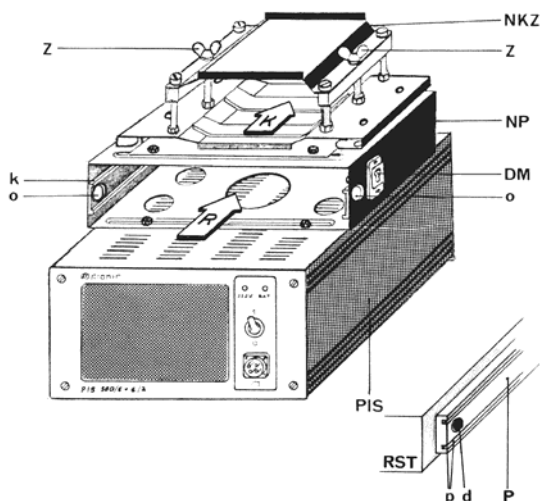
- May change without notice -

BASIC CONFIGURATIONS

Item	Equipment/Unit	Mobile station		Fixed station		Base (Master) station
		Direct	Extended	without	with	
1	Transceiver TR1-520V/K	●	●	●	●	●
2	Transceiver's Holder NP-1V	●	●	●	●	●
3	Control Panel CP 520V/Ke	●	●	●		
4	Junction Box PK-505NV	●				
5	Loudspeaker ZV-1 or ZV-4	●	●			●
6	Microphone (dyn.) Mi-2	●	●	●		
7	Universal junction Box UPK-501V		●		●	●
8	Control Panel Interface ACP-501V		●			
9	Extended Control DK-500FK				●	
10	Control Console DK-600FK					●
11	Regulated Power Supply SIP-500(6+6)ZV			●	●	●

For more details see: [VHF/UHF FM Transceivers - 500K series, Configurations and Ordering Information](#)

Details of Mechanical Fastening		
Notation	Name	Type
PIS	Power Supply Equipment	
	- For Ship on board Set	PIS-00 (6+6) Z
	- For Fixed (Peripheral and Master) Stations	SIP-500 (6+6) ZV
NP	Transceiver Holder, fastened onto the upper cover of the Power Supply	NP-1V
NKZ	DVP Holder, fastened onto Transceiver Holder	NKZ-02
DM	Microphone Support	DM-01
Z	Wing Nut	-
P	Plastic support on Transceiver's Chassis	-
k	Knife on NP-1V for slide-in the Support P	-
p	Slots on plastic Support	-
d	Tab Button	-
o	Holes on NP-1V for Tub Buttons' passing	-
R	Space for Radio Transceiver	
K	Space for DVP Module	



DVP-96 Module's Front Panel	
Notation	Function
T/R	Transceiver's connector (Cable KK-2/7)
FG	Fill-Gun Connector
KD	Button for ciphering Key Destroying Covered by a metal foil

In the storage, connectors are protected by the appropriate covers in rubber, as shown on the picture.



Transceiver's Back Side	
Notation	Function
K _A	Connector for Antenna Cable (Reduced UHF)
K _{TR}	Connector for Transceiver linking to Power Supply and AF terminals
KS	Short-Circuiting Plug inserted into the connector for DVP Module (Cable KK-2/7), enables the transceiver usage in absence of DVP Module



Dynamic Microphone Mi-2



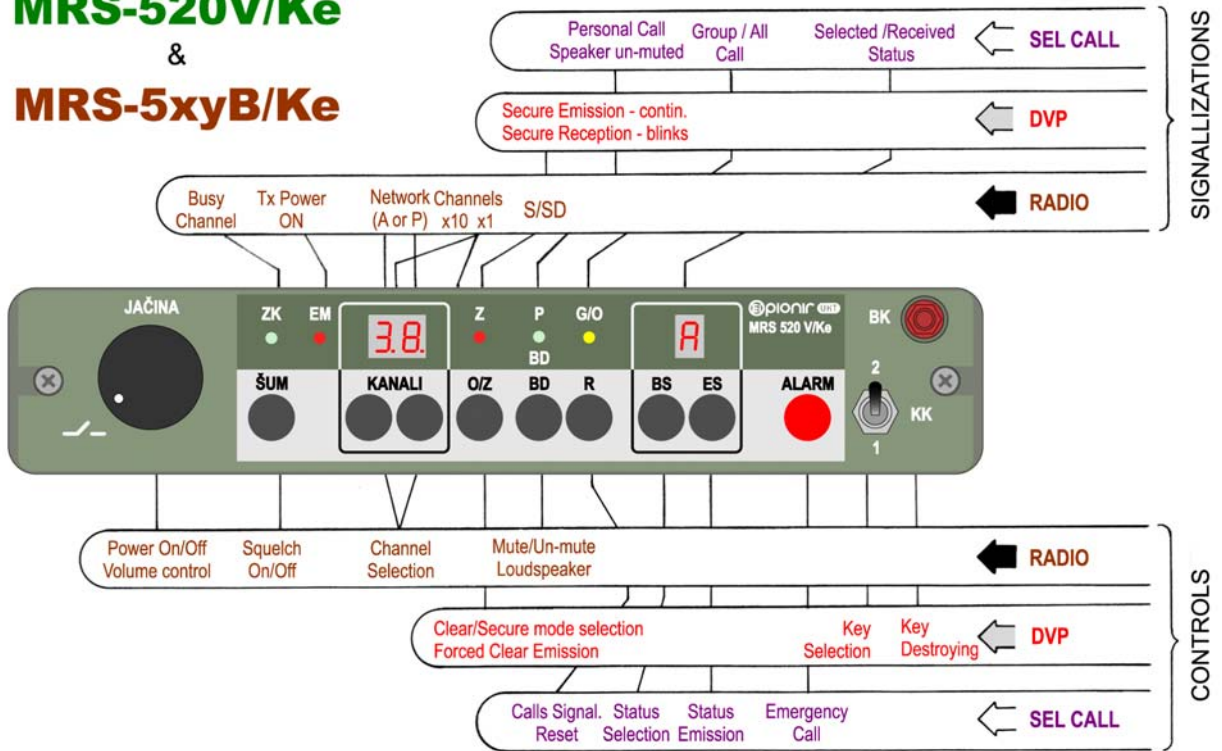
Metal Box Loudspeaker ZV-2

CONTROLS and INDICATIONS on THE FRONT PANELS

MRS-520V/Ke

&

MRS-5xyB/Ke



MRS-520M/Ke

