RF23 - EPM handheld transceiver

Type designation: **RF23**

PN (RN): **2300.100.40**

An EPM handheld multiband transceiver with enhanced resistance to radio-electronic warfare designed for tactical command level for all military branches. The RF23 complements the RF20 radio system and is therefore fully compatible with all transceivers of this system in terms of voice and data communication. It differs from the RF20 handheld transceiver in particular by its connectivity to standardized accessories used by other radio manufacturers - antennas and electro-acoustic sets. Using TNC-type antenna connector significantly expands the range of suitable antennas, including products by RADIALL and TRIVAL ANTENNE. Standardized audio-frequency electro-acoustic sets are connected with the U-229/U audio-frequency connector (according to MIL-DTL-55116). The connector can be connected to acoustic devices by SONETRONICS, CJ COMPONENT PRODUCTS, POWER TIME etc.

RF23 transceiver offers new accessories and features, including built-in GPS receiver with automatic position reporting behind voice or data broadcast – the G-track system.

Operation features

a) in all modes of operation

• automatic transceiver self-test after power-up with failure indication on the display (BITE);
• programming with operational data using PK23 fill gun set;
• emergency erasing of operational data in fixed frequency channels, including encryption unit codes and FH network data, including TRANSEC and COMSEC;
• tone dialing (1000 ± 200) Hz, in VHF III band (1750 ± 25) Hz;
• acoustic signaling turning on/off by the transceiver operator;
• enabling of the display and keypad illumination;
• display contrast setting;
• battery pack voltage signaling;
• transmitter power signaling on the display;
• "receive-only" operation with suppressed transmission;
• operation mode with increased modulator sensitivity and reduced AF power;
• automatic transition from increased power to nominal power in case of supply voltage drop;
• service information displaying - firmware;
• simple control;
• displaying of position, time and speed on LCD with updates from GPS;
• AF connector configuration;
• AF connector status monitoring;
• remote transceiver control via PRC20 protocol;

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• easy dismantling of the GPS antenna and connecting of external active or passive antenna via SMA connector;
• can be used with modular carrier system bags.

b) when operating at fixed frequency
• up to 10 preset channels from the entire frequency range, number of preset channels decreased when occupied with FH networks;
• simplex or semi-duplex operation;
• 150 Hz subtone squelch or signal squelch (only signal squelch in VHF II);
• voice operation via built-in encryption unit compatible with RF13, RF20, RF2050, RF2350 in VHF I;
• transmission and reception of short coded messages - FLASH with opposite transceiver identification;
• programming of radio channel parameters from the keypad;
• preset channel scanning;
• data transmission according to MIL-STD-188-220 (NET);
• operation frequency setting in 6.25 kHz, 8.33 kHz, 25 kHz or 1 MHz step;
• bandwidth for 16 kbit/s digital transmission of voice and data according to STANAG 4204, 2nd edition.

c) in FH mode
• up to 6 preset networks;
• operation in the 30.000 MHz to 87.975 MHz frequency band;
• secure TRANSEC operation and encrypted COMSEC operation;
• simplex or semi-duplex operation with frequency hopping;
• compatible with RF20, RF2050, RF2350 transceivers;
• selectable frequency hopping operating mode - FH, DFF, FCS, MIX and IFF with rapid transition to HLC/HLG or HLA;
• communication on the channel with a continuous carrier;
• establishing of communication with transceivers in fixed frequency operation mode through HLC/HLG monitoring;
• 121.500 MHz (HLA) frequency monitoring and transition to HLA with suppressed transmission;
• late net entry with synchronization request;
• master transceiver switching according to the network situation;
• transmission of warning message to all network participants;
• mutual authentication;
• selective communication of MASTER with a selected SLAVE transceiver;
• send and receive short text messages with a maximum length of 156 characters;
• preparation, saving and reading of up to 10 short text messages;
• transmission over notification (BREAK IN) by all transceivers;
• INTERLEAVING switching off for close-to-the-limits communication;
• data transmission at adjustable rates – 7100 bit/s, 4800 bit/s and 2400 bit/s (P2P);
• data transmission according to MIL-STD-188-220 (NET);
• CW mode suitable for use with external frequency converters;
• G-track, sending position reports via radio channel;
• own position sending by SMS.

Technical parameters

Frequency range	25.0000 MHz to 145.9875 MHz

Nominal input output impedance	50 Ω
Frequency ranges	
HF	25.000 MHz to 29.975 MHz
VHF I	30.000 MHz to 108.000 MHz
VHF II	117.975 MHz to 140.000 MHz
VHF III	140.025 MHz to 145.9875 MHz
Modulation type	
HF	FM
VHF I	FM
VHF II	AM
VHF III	FM
Channel spacing	
HF	25 kHz
VHF I	25 kHz; 12.5 kHz; 6.25 kHz
VHF II	25 kHz; 8.33 kHz
VHF III	25 kHz; 12.5 kHz
Number of operation channels at 25 kHz channel spacing	
HF	200
VHF I	3121
VHF II	882
VHF III	239
Preset channels	10
Number of channels monitored in all special operation modes	3 (two selectable, third fixed – 121.500 MHz)
Maximum number of programmable networks	6
Nominal supply voltage	7.4 V
Limit supply voltage	6.5 V to 9.5 V
Frequency band with special modes of operation	30.000 MHz to 87.975 MHz
Types of special operation modes	
FH	frequency hopping

DFF	digital fixed frequency
FCS	free channel search
MIX	mixed operation FH and FCS
IFF	iso-fixed frequency
CW	continuous wave
Time to initial synchronization	max. 5 s
Synchronization hold with transceiver off and battery pack attached	min. 48 h
Synchronization hold with battery pack disconnected	min. 50 s
Hopping rate	100 hops/s
Transceiver power consumption	
- transmission (nominal power)	1.6 A
- transmission (reduced power)	0.65 A
- transmission (increased power)	3.2 A
- reception	0.25 A
- stand-by	0.18 A
Operating time (transmission [2 W] : reception : stand-by = 1 : 1 : 10)	
- with LP1302	min. 14 h
- with LP20	min. 26 h
TRANSMITTER PARAMETERS	
Nominal power of FM transmitter	2 W
Nominal power of AM transmitter	1 W
Reduced power of FM transmitter	0.2 W
Reduced power of AM transmitter	0.1 W
Increased power of FM transmitter	5 W
Harmonics suppression	min. 40 dB
Spurious suppression at mistuning > 25 kHz	min. 60 dB
RECEIVER PARAMETERS	
Sensitivity	0.5 µV at 12 dB SINAD
Non-linear distortion factor	10 %
Loudspeaker output power	200 mW/8 Ω

Audio bandwidth	
narrow band	300 Hz to 3000 Hz
wide band	20 Hz to 11000 Hz
MECHANICAL PROPERTIES AND RESISTANCE	
Resistance to immersion	to 1 m
Operating temperature range	-40 °C to +70 °C
Transceiver dimensions with the battery pack LP1302	97 mm x 217 mm x 44 mm [w x h x d]
Battery pack dimensions	
LP1302	79 mm x 61 mm x 44 mm [w x h x d]
LP20	76 mm x 95 mm x 45 mm [w x h x d]
Transceiver weight	max. 0.85 kg
Battery pack weight	
LP1302	max. 0.3 kg
LP20	max. 0.45 kg
GPS RECEIVER PARAMETERS	
Service	L1-SPS
Number of channels	50
RANGES	
Average ranges in medium undulating terrain at nominal power in FF and open voice operation	5 km with 1.1 m long tape antenna

Documentation

RF23 operating instructions	2300.010.42
RF23 short operating instructions	2300.011.42

Set

Type designation	PN (RN)	Name
RF23	2300.000.42	EPM handheld transceiver set

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Accesories

Type designation	PN (RN)	Name
LP1302	7029.100.02	Battery pack
	2036.100.42	1.1 m long tape antenna
	7020.116.01	Battery pack bag
	6000010032	Transceiver bag
	6000010012	Set bag
LP20	7029.100.11, 7029.100.13	Battery pack
PP20	7029.100.50	Battery holder
NU1302	7027.000.02	Universal charger set
NM1302	7028.000.02	Mobile charger set
PC20	7046.000.12	Small mains charger set
PD13	2036.100.10	Long-wire antenna
RF13.8	2036.100.11	Hang-up antenna
	2328.100.01	Handset
	2328.100.11, 2328.100.12	Headset
RM23	2313.100.40	Handset with control
PK23	2320.000.42	Fill gun set
	6000010038	Transceiver bag
	6000010039	Battery pack bag extended
	1050.285.01	Data cable (USB)
	1050.285.02	Data cable (RS232C)
	4290330401	TNC M/BNC F adaptor
	2025.500.51	CD for modem configuration