RX2050 - EPM receiver

Type designation: **RX2050**

PN (RN): **2310.100.81**

RX2050 receiver is a device intended for installation in mobile devices. It ensures reception of RF signals from transceivers operating in 25 MHz to 146 MHz fixed frequency band. Transceiver modulation in 30 MHz to 108 MHz band meets the requirements of STANAG 4204 standard. In other bands, the receiver is capable of receiving signals from RF2050 or other transceivers that are compatible with the RF2050 in terms of modulation at these frequencies. The RX2050 receiver also receives signals in frequency hopping mode and it is fully compatible with the RF2050 and RF20 transceiver modes. The receiver includes an effective co-site filter that allows simultaneous operation of the RX2050 receiver with RF2050 transceivers in a single vehicle in 30 MHz to 90 MHz operating band. The condition of compatible operation is the distance between recommended vehicle antenna types of at least 1.5 m and receiving and transmitting frequencies differing by at least 10 %. The RX2050 receiver is not designed for data transmission.

Operation features

a) in all operation modes

• built-in test equipment (BITE) with error indication on the transceiver display;
• operating data programming from external equipment;
• emergency erasure of operating data on fixed frequency channels including encryption unit codes and information for FH networks, including TRANSEC and COMSEC;
• switching on/off of acoustic signaling by transceiver operators;
• backlit display and keypad;
• adjustable display contrast;
• operating channel signal reception signaling by a LED on the transceiver panel;
• whisper mode with reduced audio frequency output power;
• received signal loud monitoring with volume regulation and LED monitor signaling;
• service information display – firmware;
• remote receiver control via REMOTE connector and RS232 or RS485 communication link and PRC20 protocol;
• simple control.

b) in fixed frequency operation

• up to 10 channel presents from the entire 25 MHz to 145.9875 MHz frequency range, number of preset channels is reduced when occupied by FH networks;
• simplex reception;
• 150 Hz sub-tone squelch or signal squelch (only signal in VHF II);
• reception via built-in encryption unit compatible with RF13, RF20, RF2050;
• reception of short coded messages – FLASH with opposite transceiver identification;
• keypad channel programming;

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• fixed frequency channel preset scanning;
• operating frequency setting in 6.25 kHz. 8.33 kHz, 25 kHz or 1 MHz steps.

c) in FH operation
• up to 6 network presets;
• operation in 30.000 MHz to 87.975 MHz frequency range;
• secured TRANSEC operation and encrypted COMSEC operation;
• compatible with RF20, RF2050, RF23 and RF2350 transceivers;
• HLC, HLG and 121.500 MHz (HLA) frequency monitoring;
• optional frequency hopping operating modes – FH, DFF, FCS and MIX with quick transition to HLC, HLG or HLA reception;
• reception of alert message to all network users;
• reception of selective communication from MASTER transceiver;
• reception of short text messages (maximum 156 characters);
• INTERLEAVING switching off for close-to-the-limits communication.

Technical parameters

BASIC SPECIFICATION	
Operating frequency	25 MHz to 145.9875 MHz
Nominal input impedance	50 Ω
Frequency sub-bands	
HF	25 MHz to 29.975 MHz
VHF I	30 MHz to 108 MHz
VHF II	117.975 to 140 MHz
VHF III	140.025 to 145.9875 MHz
Type of received modulation	
HF	F3E (FM)
VHF I	F3E (FM)
VHF II	A3E (AM)
VHF III	F3E (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 operating channels for 25 kHz channel spacing	
HF	200

VHF I	3121
VHF II	882
VHF III	239
Number of preset channels	up to 10
Number of frequency-hopping channels	up to 6
RECEIVER SPECIFICATIONS	
Receiver sensitivity	
25 MHz to 29,975 MHz	0.6 µV
30 MHz to 90 MHz	0.7 µV
90.00625 MHz to 108 MHz	0.5 µV
117.975 MHz to 140 MHz	0.5 µV
140.025 MHz to 145.9875 MHz	0.5 µV
Dynamic two-signal selectivity for adjacent channel	min. 57 dB
Suppression of intermediate frequencies	min. 80 dB
Suppression of image-channel frequencies	min. 60 dB
Suppression of spurious receptions at > 10 % detuning from operating frequency	min. 70 dB
AUDIO FREQUENCY OUTPUT SPECIFICATIONS	
Range of effectively transmitted frequencies	
narrow band audio	300 Hz to 3000 Hz
wide band audio	20 Hz to 11000 Hz
Audio frequency levels on AF connector	
narrow band audio	min. 200 mW, adjustable level up to 8 Ω
narrow band audio	min. 775 mV, constant level up to 600 Ω
wide band audio	1000 mV, constant level up to 600 Ω
Acoustic pressure of the built-in speaker	min. 85 dB at maximum volume
Non-linear distortion factor	up to 10 %

POWER SUPPLY SPECIFICATIONS	
Nominal supply voltage	12 V or 24 V
Limit supply voltage range	10 V to 33 V
Maximum consumption	0.625 A at 24 V 1.25 A at 12 V
Consumption during synchronization hold	up to 0.015 A from 24 V backup supply
SPECIAL OPERATION MODES SPECIFICATIONS	
Range of operating frequencies in FH modes	30 MHz to 87.975 MHz
Number of monitored frequencies in FH modes	3 (two programmable, third 121.5 MHz)
Frequency hopping modes	
FH	secure frequency hopping
DFF	secure digital fixed frequency
FCS	secure free channel search
MIX	mix mode FH + FCS
Time to initial synchronization	up to 5 s
Synchronization hold	48 hours
Synchronization hold with disconnected power supply	50 s
Minimum number of operation frequencies in FH mode	1
Hopping rate	100 hops/s
MECHANICAL SPECIFICATIONS	
Maximum dimensions	184 mm x 196 mm x 175 mm [w x h x d]
Maximum weight	up to 6.5 kg
Resistances	
Operating temperature	-40° C to +70 °C
Mechanical and climatic resistance	according to MIL-STD-810E
EMC immunity	according to MIL-STD-461E
Mains power immunity	according to MIL-STD-1275B

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Documentation

RX2050 operating instructions	2310.010.81
RF2050 short operating instructions	2310.011.12

Set

Type designation	PN (RN)	Name
RX2050	2310.000.81	EPM receiver set

Accesories

Type designation	PN (RN)	Name
	7007.100.14	Mobile set frame
RF13.3	2022.100.52	Handset
	2026.700.01	Handset holder
	1050.126.02	Power supply cable 3 m
	1050.993.01	Grounding
	2036.100.23, 2036.100.24	2.6 m VHF vehicle antenna
	2036.100.84	Vehicle antenna VHF/UHF 1.3 m
	2036.100.85	Vehicle antenna VHF 1.6 m
	2036.100.86	Vehicle antenna VHF/UHF 2.7 m
	2036.100.40	1.88 m VHF vehicle antenna
	2036.100.68	Discon antenna
	2036.100.38	Groundplane antenna
RF13.8	2036.100.11	Hang-up antenna
PD13	2036.100.10	Long-wire antenna

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	2036.100.70	Telescopic winch driven mast 10 m
	2036.100.39	Antenna mast
PK20	2320.000.02	Fill gun set
RC20	2312.000.01	Remote control unit set
	2011.904.02	Antenna cable (10 m)
	2011.904.01	Antenna cable (3 m)
	1050.405.02	RF cable
	5605002002	High frequency protection 1 GHz 200 V 400 W
		RF headsets