

RF2050 - EPM mobile transceiver



PN (RN): 2310.100.10

RF2050 EPM mobile multiband transceiver, belonging to the RF20 family of multiband tactical radios with increased resistance to radio-electronic warfare, is designed for installation into any kind of tracked or wheeled vehicles. Small footprint, robust design and outstanding features add to its great utility, especially in modernization of the existing vehicular installations. RF2050 transceiver is produced in two variants: without co-site filter var. 2310.100.10 and with co-site filter var. 2310.100.11. The built-in modem ensures data communication in tactical IP networks according to MIL-STD-188-220.

Operating features

a) in all operation modes

- automatic self-test after power-up, with failure indication on the transceiver display (BITE);
- operational data programming from external units;
- emergency erasure of operation data on fixed frequency channels, including encryption unit codes and information for FH networks including TRANSEC and COMSEC;
- acoustic signaling switching on/off by transceiver operator;
- transmission of tone calling (1000 ± 200 Hz, in VHF III band (1750 ± 25) Hz);
- display and keypad backlight;
- adjustable display contrast;
- transmission power signaling on the display, transmission signaling by LED on the top panel;
- operation channel signal reception signaling by a LED on the transceiver panel;
- transmitter overheat signaling LED on the transceiver panel with automatic switching to lower power output;
- signaling of active mode with co-site filter (version 2310.100.11);
- optional external cooling box for improved cooling efficiency;
- "reception only" mode, with transmission disabled;
- whisper mode with increased microphone sensitivity and decreased audio volume;
- loud received signal monitoring with volume regulation and LED signaling;
- transceiver remote control via PRC20 protocol;
- configurable transceiver output for operation with antennas for VHF I, VHF II and VHF III tactical bands;
- displaying of servicing information - firmware;
- easy to control.

b) in fixed frequency mode

- max. 10 presets from the entire frequency range 25 MHz to 145.9875 MHz, fewer preset channels if occupied by FH networks;
- simplex or semi-duplex operation;
- 150 Hz sub-tone squelch or signal squelch (only signal in VHF II);
- voice operation via internal encryption unit compatible with RF13, RF20;
- transmission and reception of short encrypted messages - FLASH, with the opposite transceiver identification;
- channel parameter programming from keypad;
- preset channel scanning;
- data transmission according to MIL-STD-188-220 compatible with modems MD13.1;
- direct dialing when calling from transceiver to a fixed telephone network;
- operation frequency setting in 6.25 kHz, 8.33 kHz, 25 kHz or 1 MHz steps;

- transmission band for digital voice and data transmission 16 kbit/s according to STANAG 4204, edition 2.

c) in FH operation

- max. 6 network presets;
- operation in frequency range 30.000 MHz to 87.975 MHz;
- secure operation TRANSEC and secret operation COMSEC;
- simplex and semi-duplex operation;
- compatibility with RF20 and RF2050 transceivers and RX2050 receiver on simplex and semi-duplex channels;
- selectable frequency hopping operation mode – FH, DFF, FCS and MIX with quick transition to HLC, HLG or HLA;
- iso-fixed frequency operation mode;
- establishing of connection with fixed frequency transceivers through HLC and HLG monitoring;
- 121.500 MHz (HLA) frequency monitoring and transition to HLA with transmission disabled;
- late net entry with synchronization request;
- master transceiver switching depending on the network condition;
- transmission of warning message to all network participants;
- all MASTER transceivers authentication request;
- MASTER transceiver selective communication with a selected slave transceiver;
- transmission and reception of short text message, maximum 156 characters;
- 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).

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	140.0250 MHz to 145.9875 MHz
Type of 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 operation channels with 25 kHz spacing	
HF	200
VHF I	3121
VHF II	882
VHF III	239
Preset channels	10
Monitored channels in all special operation modes	3 (two selectable, third fixed – 121.500 MHz)
Maximum number of programmable nets	6
Special operation modes (usable in 30 MHz to 88 MHz band)	
FH	secure frequency hopping
DFF	secure digital fixed frequency
FCS	secure free channel search
MIX	secure mixed operation FH and FCS

IFF	secure iso-fixed frequency
Time to initial synchronization	max. 5 s
Time of autonomous synchronization holding	48 h
Minimum number of operation frequencies for FH operation	1
Hopping rate	100 hops/s
Interface for data transmission	USB/RS232
POWER SUPPLY (according to MIL-STD-1275B)	
Nominal supply voltage	12 VDC or 24 VDC
Limit supply voltage	10 VDC to 33 VDC
Current consumption	
• Transmission - nominal output power (at 12 V)	max. 25 A
• Transmission - nominal output power (at 24 V)	max. 12 A
• Reception	
1 A (12 V)	2310.100.10
1.25 A (12 V)	2310.100.11
0.5 A (24 V)	2310.100.10
0.625 A (24 V)	2310.100.11
TRANSMITTER PARAMETERS	
Nominal output power	FM 50 W
Nominal output power	AM 15 W
Reduced output power	FM 5 W
Reduced output power	AM 2 W
Harmonic suppression	min. 60 dB
Spurious suppression at $\Delta f > 25$ kHz	min. 70 dB
Time of continuous operation at +50 °C at duty cycle reception : transmission = 1 : 1	without limit
Average ranges in medium undulated terrain at nominal power FF mode (with antenna 2.6 m)	25 km
RECEIVER PARAMETERS	
Sensitivity 2310.100.10 (VHF I, VHF II, VHF III)	0,5 μ V at 12 dB SINAD
Sensitivity 2310.100.10 (HF)	0.6 μ V at 12 dB SINAD
Sensitivity 2310.100.11	
(30-90) MHz	0.7 μ V
(90-145.9875) MHz	0.5 μ V
(25-29.975) MHz	0.6 μ V
AF output	1 W
Range of effectively transmitted frequencies	
• narrow band	300 Hz to 3000 Hz
• wide band	10 Hz to 11000 Hz
ENVIRONMENTAL SPECIFICATION (according to MIL -STD-810E)	
Operating temperatures	-40 °C to +70 °C
EMI	according to MIL-STD-461E
Power requirements	MIL-STD-1275B
MECHANICAL SPECIFICATION	
Dimensions [w x h x d]	
• without cooling block	202 mm x 210 mm x 186 mm
• with cooling block	202 mm x 231 mm x 186 mm
Weight	
• without co-site filter	8.5 kg
• with co-site filter	9 kg

Set

EPM mobile transceiver set RF2050 - (2310.000.10)

Documentation

RF2050 operating instructions 2310.010.12

RF2050 short operating instructions 2310.011.12

Accessories

Mobile set frame	(7007.100.14)
Handset	RF13.3 - (2022.100.52)
Handset holder	(2026.700.01)
Power supply cable 3 m	(1050.126.02)
Grounding	(1050.993.01)
CD for modem configuration	(2025.500.51)
Vehicle antenna VHF/UHF 1.3 m	(2036.100.84)
Vehicle antenna VHF 1.6 m	(2036.100.85)
Vehicle antenna VHF/UHF 2.7 m	(2036.100.86)
Groundplane antenna	(2036.100.38)
1.88 m VHF vehicle antenna	(2036.100.40)
Discon antenna	(2036.100.68)
2.6 m VHF vehicle antenna	(2036.100.23, 2036.100.24)
Telescopic winch driven mast 10 m	(2036.100.70)
Antenna mast	(2036.100.39)
Fill gun set	PK20 - (2320.000.02)
Cooling block	(2310.270.01)
Antenna cable (3 m)	(2011.904.01)
Antenna cable (10 m)	(2011.904.02)
PC interconnection cable	(1050.299.01)
Handheld microphone/speaker	RM1301 - (2009.100.01)
Remote control unit set	RC20 - (2312.000.01)
Radio data expander	RDE20 - (2360.100.01)
RF headsets	