



The R-450A series band III radio relay

R-450A-01, R-450A-02

R-450A-01 and R-450A-02 Digital Radio Relays belong to the latest generation of High Capacity Line of Sight (HCLOS) radio relays for the extended III band. It offers up to 51 Mb/s trunk capacity and is equipped with advanced algorithms for protection against jamming, interference and interception of information.

R-450A-01 and R-450A-02 are extremely easy to use and maintain thanks to its user-friendly control panel and multi-color display unit. In addition, this radios can be managed remotely with the use of SNMPv.3 protocol, or Military Signals Management Subsystem (with planning radio profiles software and real time remote control software).

It is highly integrated, easily reconfigurable and modular, designed with the aim to fulfill the demanding military requirements.

Thanks to applied software defined radio (SDR) approach, various transmission modes can be used (e.g., Stanag 4212, EE), what make this radios both backward and forward compatible with other communication systems.

The big advantages of these series of radio relays are lightweight antennas, which makes possible of using cheap 24 m high lightweight masts, and a huge communications distances.



TECHNICAL PARAMETERS

RADIO RELAY TYPE	R-450A-01	R-450A-02
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GENERAL

Frequency range [MHz]	1350-2690	1350-2690
Transmission capacity [kbps]	256, 512, 1024, 2048, 4x2048, 8448, 34368	256, 512, 1024, 2048, 2x2048, 4096, 4x2048, 8448, 16896, 34368
Number of RF Channels (at 256 kbps ... 8448 kbps)	10720, Channel Spacing 0.125 MHz	10720, Channel Spacing 0.125 MHz
(at 34368 kbps)	1340, Channel Spacing 1 MHz	1340, Channel Spacing 1 MHz
Minimum duplex spacing	50 MHz (at 256 kbps ... 8448 kbps) 75 MHz (at 34368 kbps)	50 MHz (at 256 kbps ... 8448 kbps) 75 MHz (at 34368 kbps)

INTERFACES

Electrical	Eurocom D/1, Stanag 4210, G.703, 4xE1, E3	Eurocom D/1, Stanag 4210, G.703, 4xE1, E3
Optical (recommended)	All rates from 256 kbps up to 34368 kbps Other electrical interfaces due to opto/electrical converters	All rates from 256 kbps up to 34368 kbps Other electrical interfaces due to opto/electrical converters

RECEIVER

Noise figure	6 dB	6 dB
Image rejection	90 dB	90 dB
Spurious Attenuation	80 dB for $fc \pm 3\%$	80 dB for $fc \pm 3\%$
Sensitivity (BER = $10e-6$) at:		
256 kbps CPFSK	-100 dBm	-100 dBm
512 kbps CPFSK	-97 dBm	-97 dBm
1024 kbps CPFSK	-95 dBm	-95 dBm
2048 kbps CPFSK	-92 dBm	-92 dBm
256 kbps QPSK*	-	-106 dBm
512 kbps QPSK*	-	-103 dBm
1024 kbps QPSK*	-	-101 dBm
2048 kbps QPSK*	-	-98 dBm
4096 kbps QPSK*	-	-95 dBm
8448 kbps QPSK*	-87 dBm	-90 dBm
16896 kbps QPSK*	-	-87 dBm
34368 kbps QAM*	-78 dBm	-80 dBm
(*) FDM, FEC+interleaving		
Scanner range	Full Band	Full Band

TRANSMITTER

Output power	36 dBm at 256 kbps ... 8448 kbps 33 dBm at 34368 kbps	36 dBm at 256 kbps ... 8448 kbps 33 dBm at 34368 kbps
Power control (automatic/manual)	20 dB	20 dB
Frequency stability	± 5 ppm	± 5 ppm
Spurious radiation	-70 dBc	-70 dBc
Harmonics radiation	-70 dBc	-70 dBc



RADIO RELAY TYPE	R-450A-01	R-450A-02
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PATH LOSS CAPABILITY INCLUDING FEEDER LOSS (5 DB) AND ANTENNA GAINS (25 DBI) AT BER 1E-04		
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256 kbps CPFSK	170 dBm	174 dBm
512 kbps CPFSK	167 dBm	171 dBm
1024 kbps CPFSK	165 dBm	169 dBm
2048 kbps CPFSK	162 dBm	166 dBm
256 kbps QPSK*	-	180 dBm
512 kbps QPSK*	-	177 dBm
1024 kbps QPSK*	-	175 dBm
2048 kbps QPSK*	-	172 dBm
4096 kbps QPSK*	-	170 dBm
8448 kbps QPSK*	157 dBm	167 dBm
16896 kbps QPSK*	-	159 dBm
34368 kbps QAM*	145 dBm	145 dBm

(*) FDM, FEC+interleaving

OTHER		
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Operating temperature	-30°C, +60°C	-30°C, +60°C
Weight	37 kg	37 kg
Dimension (HxWxD)	260x500x500 mm	260x500x500 mm
Maintenance	EOW Digital 16 kb/s CVSD	EOW Digital 16 kb/s CVSD
SWR measurement	1..18	1..18
Power disconnection	Manual Automatic (if SWR >3)	Manual Automatic (if SWR >3)
Received signal level measurement	- 40 dBm/-105 dBm Low level indicator	- 40 dBm/-105 dBm Low level indicator
BER measurements	Off line	Online Low level of BER signal indicator
Testing loops	RF, on all interfaces	RF, on all interfaces

POWER PARAMETERS		
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Input voltage	20-32 VDC or 230 VAC (external power supply)	20-32 VDC or 230 VAC (external power supply)
Power consumption	120 W	120 W



MISCELLANEOUS

Built in Test Equipment in/ all module, repairing method by module change.

Built in frequency scanner – allows to see occupied or jammed frequencies.

Communications Planning Software with digital maps for radio profiles and frequencies calculating.

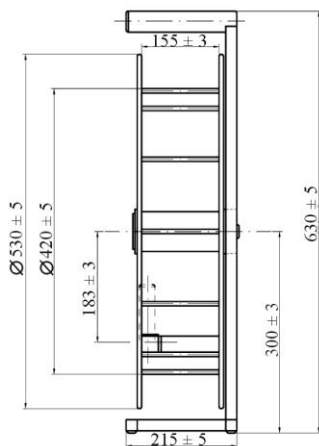
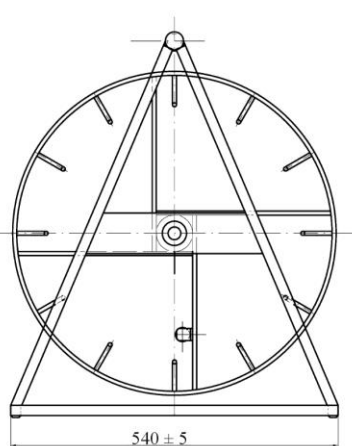
Built in Bit Error Rate equipment (in service and out of service).

Loudspeaker for EOW channel (can be used one for two radios).

Immersion in water possible after preparation (all connectors should be closed by the caps, accessories should be closed in accessories carrying case).

Antenna type – ARL09/20M (see separated information), lightweight, 90 cm diameter, with gain 25 dBi. Two antennas can be placed on one EXA141/24 mast. Additionally, heavy 130 cm diameter antenna with 30 dBi gain can be used, but only one this type antenna can be placed on one EXA141/24 mast. This antenna can be used for very long distance communications in bed radio profile. The ARL09/20M lightweight antenna is a part of R 450A series Radios, heavy antenna should be ordered separately.

Antenna feeder – FA-450A/40, length 40 m on the drum (see dimensions on picture below).



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