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HF Antenna Tuning Unit R&S® FK3150



The Antenna Tuning Unit R&S FK3150 is part of the R&S M3TR tactical transceiver family. It allows automatic matching of HF antennas, in particular of electrically short antennas, as are usually found in vehicular applications. The sturdy and water-proof casing of the R&S FK3150 is shock- and UV-resistant and thus ideal for mobile applications.

The ATU is fully arc-protected against direct lightning strokes. The R&S FK3150 is tested to withstand arcs of 10 kV/10 kA. It is also protected against overtemperature and static charges on antennas.

Fault detection and reporting to the R&S MR3000 transceiver is provided by an automatic BIT (built-in test). The microprocessor-controlled tuning allows the self-learning of more than 1500 tuning settings (including ALE, APP, ITU and 100 silent channels) which are retained in a non-volatile memory.

The stored channels can be called up quickly, which allows frequency-agile operation (ALE, slow frequency hopping). The channel information can be easily loaded from the transceiver to the ATU's internal flash PROM, changed and updated (no disassembling of ATU and no change of EPROMS necessary). The ATU can be mounted with or without an optional shockmount. The R&S FK3150 is intended for use with an HF power amplifier which also ensures the supply of the ATU, which means that the R&S FK3150 does not require a power supply of its own. The tuner is controlled via two coaxial lines (R&S M3TR external control bus).



Specifications

Frequency range	1.5 MHz to 30 MHz
Maximum input power	150 W PEP +0.5 dB 100 W CW +0.5 dB
Input impedance	50 Ω
Input SWR after tuning	<1.5 (1.3 typ.)
Matched antennas	≥ 3 m whip antenna (1.5 MHz to 2 MHz, duty cycle 1:1) 5 m to 7 m whip antenna 7 m to 12 m rod antenna long-wire and broadband antennas up to 15 m
Tuning time	
First-time tuning	3 s typ., max. 6 s
Repeated tuning	<0.2 s typ.
Silent tuning	<10 ms
Storage channels	100 user-selectable silent channels 1500 self-learnt tuning frequencies 120 ALE channels
Power supply	via inner conductor, 19 V to 33 V DC (from transceiver), max. 1.5 A
Control data	RCB (radio control bus), 12.5 Mbps Manchester coded
HF tuning power	30 W ± 1 dB, VSWR <3
Lightning protection	VG 96 903
Connections	
HF input	built-in socket, N type
Antenna connection	insulator (ceramics)
Control bus	2 \times built-in socket, BNC type with bayonet lock
Allowable distances	
ATU to transceiver	≤ 0.3 m
Antenna feeder to ATU	≤ 50 m
Temperature range	acc. to MIL-STD-810E, meth. 501.3 and 502.3
Operating temperature range	–30 °C to +55 °C
Storage temperature range	–40 °C to +85 °C
Vibration with shockmount	acc. to MIL-STD-810E method 514.4, cat. 8, ground mobile, 5 Hz to 500 Hz (20 Hz to 350 Hz, 0.02 g ² /Hz, 20 Hz to 5 Hz, –6 dB/octave, 350 Hz to 500 Hz, –6 dB/octave)
Shock with shockmount	acc. to MIL-STD-810E method 516.4, proc. I, functional shock for ground equipment, crossover frequency 45 Hz, 40 g, 6 ms to 9 ms

Bench handling	acc. to MIL-STD-810E method 516.4, proc. VI
Leakage (immersion)	1 m during 2 h, acc. to MIL-STD-810E method 512.3, proc. I
Humidity	acc. to MIL-STD-810E method 507.3, proc. III
Salt fog	acc. to MIL-STD-810E method 509.3, proc. I
Sand and dust	acc. to MIL-STD-810E method 510.3, proc. I
Low pressure (altitude)	acc. to MIL-STD-810E method 500.3, proc. I + II 5000 m above sea level at <+35 °C
Solar radiation	acc. to MIL-STD-810E method 505.3, proc. II
Icing/freezing rain	acc. to MIL-STD-810E method 521.1, proc. I
Fungus	acc. to MIL-STD-810E method 508.4
Safety	built-in lightning and overvoltage protection, protection against overtemperature and static charges on antenna
EMI	acc. to MIL-STD-461E, class A3 (harmonics, spurious and transmission frequency excluded) CE102, CE106, CS101, CS114, RE102, RS103
Mounting position	all positions allowed
MTBF	14600 h
MTTR	>0.5 h
Colour	RAL6014 (green)
Dimensions (W \times H \times D)	
With shockmount	324 mm \times 435 mm \times 119 mm 324 mm \times 435 mm \times 177 mm
Weight	
Without shockmount	9.8 kg
With shockmount	14 kg

Ordering information

Order designation	Type	Order No.
HF Antenna Tuning Unit	R&S® FK3150	6095.5855.02
Recommended extras		
Shockmount	R&S® KS3150F	6099.6004.02



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