TR-220

Multi-Function Test Set

Datasheet

Description

The TR-220 provides test capability for Traffic and Collision Avoidance Systems (TCAS), Distance Measuring Equipment (DME), and Transponders (Modes A, C, and S). The TR-220 features state-of-the art design technology. Microprocessor control results in easy-to-use operation that requires minimum amounts of training. Setup menu allows storage of various test parameters to facilitate quick recall of test conditions.

- Tests TCAS, DME, and Transponder
- Transmits and receives ADS-B (1090 MHz squitter)
- Transmits Traffic Information System (TIS) intruder flight data
- Performs test requirements per FAR Part 43 Appendix F
- Meets European test requirements for Mode S Elementary and Enhanced Surveillance
- Compliant with European CE requirements
- 2 year limited warranty; Extended warranty available
- P/N 90 000 088

- Test Set automatically determines capability of transponder being tested (ATCRBS or Mode S) and selects appropriate tests
- Testing can be done over-the-air, using directional antenna, or directly connected to transponder
- Test Set can be configured for automatic sequencing or manual control of individual transponder tests

- Test set allows storage of 10 intruder scenarios, to simplify TCAS testing
- Allows simulation of ATCRBS or Mode S intruder
- User selection of velocity, starting distance, starting altitude, and vertical speed
- Measures UUT power and frequency

DME

- Allows testing on all channels (108.00 to 117.95 MHz)
- Measures DME power, frequency, and PRF
- Transmits DME Morse-Code I.D.
- User selection of DME distance and velocity

Transponder Test Specifications *

The TR-220 performs the following tests based on the capabilities of the transponder:

- Mode A - 4096 code, IDENT, percent reply, pulse spacing, pulse width
- Mode C - Altitude (feet and grey code), percent reply, pulse spacing, pulse width
- Side-lobe suppression (SLS)
- Mode A/S and C/S All Call - Mode S address, percent reply
- Mode A Only and Mode C Only
- Mode S Surveillance I.D. (DF5) – Mode S address, percent reply, flight status (Air, Ground, Alert, SPI), Mode S/Mode A 4096 code compare (automatic mode)
- Mode S Surveillance Altitude (DF4) – Mode S altitude, percent reply, Mode S/Mode C altitude compare (automatic mode)
- Mode S Surveillance Short (DF0) – Mode S address, vertical status (Air, ground), percent reply, decoded country code, decoded tail number (if applicable)
- Mode S Comm. I.D. (UF5/DF21) – Mode S ID code, percent reply
- Mode S Comm. Altitude (UF4DF20) – Mode S altitude, percent reply
- Undesired replies (UF11) – Checks for reply to incorrect Mode S interrogation
- Acquisition squitter – Pass/Fail indication of squitter duration, decoded Mode S address, interrogator code
- Extended squitter – Pass/Fail indication of squitter duration, decoded Mode S address
- Max Airspeed – Decodes and displays maximum airspeed
- Diversity – Displays Pass/Fail indication and measured value of RF leakage through Mode S transponder antenna ports
- Sensitivity (MTL) – Measures and displays MTL for Modes A, C, and S
- Measures and displays transponder power (dBm or watts), frequency, and receiver sensitivity (dBm)
- Decodes and displays Flight I.D.
- Decodes and displays Mode S address in Octal and Hex
- Mode S Enhanced Surveillance parameters, including Selected Altitude (BDS4); Roll Angle, True Track Angle, Ground Speed, Track Angle Rate, and True Airspeed (BDS5); Magnetic Heading, Indicated Airspeed, Mach #, Barometric Altitude Rate, and Inertial Vertical Velocity (BDS6)
- Receives and decodes 1090 MHz ADS-B data, including squitter type (airborne position, surface position, aircraft identification/category, and airborne velocity), latitude/longitude, N/S velocity, E/W velocity, Flight I.D., Mode S address, altitude (GNSS or barometric), and airspeed
- Transmits 1090 MHz ADS-B data for four intruder aircraft (airborne or surface position)
- Transmits TIS data for four intruder aircraft

Transmitter	Frequency	1030 MHz ± 100 KHz
	Power	≥ 4 dBm
	Modes	A, C, S

Receiver	Frequency	Range	1086.5 to 1093.5 MHz
		Accuracy	± 200 KHz
	Power	Range	47 to 64 dBm
		Accuracy	± 2 dB (direct connect)
			± 3 dB (radiated)
	Sensitivity	Range	-50 to -87 dBm
		Accuracy	± 2 dB (direct connect)
			± 3 dB (radiated)
	Reply Percent	Range	0 to 100%
		Accuracy	± 1%

TCAS Test Specifications *

The TR-220 allows testing of TCAS I, TCAS II, and Traffic Advisory Systems by simulating either ATCRBS or Mode S intruders. The Setup menu allows operator to configure and store 10 TCAS scenarios, including Distance (1 to 50 NMI), Altitude (-1000 to +99,900 ft.), Vertical Speed (-7,500 to +7,500 fpm) and Velocity (100 to 1200 KTS.). The TR-220 provides a relative measurement of TCAS power and frequency.

Transmitter	Frequency	1090 MHz ± 100 KHz
	Power	≥ 4 dBm
	Modes	C, S

Receiver	Frequency	1026.5 to 1033.5 MHz
	Power	47 to 64 dBm

DME Test Specifications *

The TR-220 provides test capability for DME by allowing operator to select test parameters, including Channel (108.00 to 117.95 MHz) and Velocity (120 to 1200 KTS.).

The TR-220 measures and displays DME PRF (scan rate), power, and frequency. Also, the TR-220 transmits a Morse Code I.D.

Transmitter	Frequency	962 to 1213 MHz ± 100 KHz
	Power	≥ 4 dBm
Receiver	Freq. Range	Channel Freq. ± 3.5 MHz
	Freq. Accuracy	± 200 KHz
	Sensitivity Range	≤ -35 dBm

Accessories

Directional antenna (hand-held or mounted on side of case)
AC Power Cord
Direct Connect Cable
Directional Antenna Cable
Operators Manual
TAP-200 Anti-Radiation Coupler (Optional)

Physical

Packaging - MIL-PRF-28800, Style C
Size: 14.5x9.4x6.5 in. (36.8x23.9x16.5 cm.)
Weight: 20 lbs. (9.1 kg.)
Operating Temperature: -28 to +55 C
Battery Operation; 8 hours at 20% Duty Cycle
AC Operation/Charging: 100-240 VAC, 50-400 Hz

* Standard condition values

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