

Avionics

SDX 2000

Transponder/Interrogator/DME Test Set



AEROFLEX
A passion for performance.

ATC, DME, Mode S, Data Link, IFF and TACAN capability in a single tester

Designed in cooperation with the world's leading DME Transponder and IFF manufacturers, the SDX 2000 is the first new technology, fully programmable RF tester that provides complete test capability for all commercial and military pulsed L-Band avionics: ATCRBS and Mode-S Transponder (including data link), DME, TACAN and IFF (Identification Friend or Foe).

Here are just a few of the user benefits:

- Intuitive screens and menus reduce user training
- Maximum test capability in a single tester
- Increased reliability
- Reduced calibration time and expense
- Updates for industry changes accomplished by software downloads

Technical Features

- Color LCD display with touch-screen interface
- Fully GPIB programmable for ATE applications
- Continuous digital display of pulse timing, power, frequency, % reply, squitter measurements
- Pulses programmable for width, position and amplitude
- External connections for modulation input and output
- Antenna input for radiated signals

ATCRBS Transponder Testing

- Modes A, B, C, D, 1, 2, T and A/C
- Up to 10 kHz PRF
- Programmable SLS and Interference Pulses

Mode-S and Data Link Transponder Testing

- Mode S, A and C interrogations
- Up to 32 unique interrogations
- Supports all Uplink/Downlink protocols
- Extended Squitter testing
- Two independent RF channels for diversity testing

DME Testing

- Ground Station Simulation
- Programmable range, velocity and acceleration
- Programmable Echo Pulse

IFF Testing

- Transponders and interrogators
- All SIF modes supported
- Mark X and Mark XII mode simulation
- Mode 4 testing with or without KIT, KIR or KIV
- Two independent RF channels for diversity and sum/difference testing

TACAN Testing

- Air-to-air, air-to-ground and inverse mode simulation
- Bearing simulation rate up to 390/s
- Modulation adjustable for 15 and 135 Hz

GENERAL SPECIFICATIONS

POWER REQUIREMENTS

115/230 Vac, 50 to 60 Hz

TRANSMITTER FREQUENCY

RANGE

Top Channel

952 to 1223 MHz, 0.01 MHz steps

Bottom Channel

Fixed @ 1030 MHz

Accuracy

0.001% (TCXO)

SPECTRAL PURITY

Harmonics

<-30 dBc

Spurious

<-60 dBc (350 to 1800 MHz)

Residual FM

<5 kHz p-p (0.3 to 3 kHz BW)

Phase Noise

<-90 dBc/Hz @ +800 kHz from carrier

OUTPUT AMPLITUDE

Range

0 to -110 dBm, 0.1 dB steps

ACCURACY

Transponder (1030 MHz)

+ 0.5 dB, 0 to -80 dBm

+ 0.75 dB, -81 to -100 dBm

+ 1.25 dB, -101 to -110 dBm

DME (952 to 1223 MHz)

+ 2.0 dB, 0 to -110 dBm

ON/OFF Ratio

> 80 dB

ATE Cable Loss (programmable)

0 to 2 dB in 0.1 dB steps

UIUT MEASUREMENT CHARACTERISTICS

FREQUENCY

Transponder

1085 to 1095 MHz, res 10 kHz, acc + 50 kHz

DME

1020 to 1155 MHz, res 10 kHz, acc + 20 kHz

TACAN

950 to 1225 MHz, res 10 kHz, acc + 20 kHz

Power

30 to 66 dBm, res 0.1 dB, acc + 0.5 dB

TRANSPONDER REPLY

% Reply

0 to 100%

Delay

res 12.5 ns, acc + 50 ns

Jitter

0 to 500 ns, res 12.5 ns, acc + 25 ns

Transponder Pulse Width

250 to 750 ns, res 12.5 ns, acc + 25 ns

PULSE SPACING

Transponder

+ 150 ns from nominal position, res 12.5 ns, acc + 25 ns

DME/TACAN

8.0 to 40 μ s, res 12.5 ns, acc + 50 ns + 10 ms + 0.0003% of spacing

Mode S Squitter Rate

res 10 ms, acc + 0.001 + 1 count

DME/Tacan Interrogation Rate

0 to 10,000 Hz, res 1 Hz, acc + 0.001 + 1 count

SCOPE SYNC OUTPUT (TTL)

Position

Programmable

Width

1.0 μ s

SUPPRESSOR PULSE

Position/Width

Programmable

Amplitude

3 to 25 V (into 2k ohm load)

ATCRBS INSTRUMENT

Test Modes

1, 2, T, 3/A, B, C, D

Interrogation Rate

0 to 10,000 PRF (1 Hz resolution)

SLS Pulse (P2) Width

0.2 to 1.95 μ s, 25 ns steps, acc + 25 ns

Position (relative to P1)

+ 1.95 μ s, 25 ns steps, acc + 10 ns

Amplitude (relative to P1)

-15 to +5 dB, 0.1 dB steps, acc + 0.5 dB

Interference Pulses

One or two pulses available

Width (both pulses)

0.2 to 7.0 μ s, 25 ns steps, acc + 25 ns

Position (relative to P1)

-20 to +400 μ s, 25 ns steps, acc + 10 ns

Amplitude (relative to P1)

-15 to +5 dB, 0.1 dB steps, acc + 0.5 dB

Programmable Pulse Control

P1 and P3

Width

0.2 to 1.95 μ s, 25 ns steps, acc + 25 ns

Position (relative to P1)

+ 1.95 μ s, 25 ns steps, acc + 10 ns

Amplitude (relative to P1)

-15 to +5 dB, 0.1 dB steps, acc + 0.5 dB

DME INSTRUMENT

Range Delay

-1 to 400 nmi, 0.01 nmi steps, acc + 0.02 nmi + 0.0003% of simulated range

Velocity

0 to 10,000 KTS, 1 KT steps acc + 0.001%

Acceleration

0 to 400 ft/s/s, 1 ft/s/s steps, acc + 0.05 of setting

Modes

X and Y channels

Squitter

0 to 8,000 Hz

Reply Efficiency

0 to 100%, 1% steps

PULSE SPACING

X channels

12 + 0.1 μ s

Y channels

30 + 0.1 μ s

PROGRAMMABLE PULSE CONTROL

Width

3.5 μ s or 6.4 μ s, acc + 0.5 μ s

Spacing Offset

+ 7.9 μ s, 0.1 μ s steps, acc + 0.1 μ s

ECHO PULSE PAIR

Position

30 + 0.2 nmi following interrogation

Amplitude (relative to reply)

-15 to + 5 dB, 0.1 dB steps, acc + 0.5 dB

RNAV SPACING (P1 @ INTERR, P2 @ REPLY)

X channels

50 + 0.25 μ s @ 0 nmi

Y channels

56 + 0.25 μ s @ 0 nmi

568 Interface

Input/Output

MODE S INSTRUMENT

Test Modes

Normal, double, burst, interlace

Extended Squitter

Decode interval and data for all types

Interrogation Types

Mode S (UF00-24 expandable to UF31), A, C, any All Call Format

Interrogation Table

Supports up to 32 unique interrogations

Interrogation Rate

0 to 400 Hz (continuous mode) 0-2500 Hz (burst mode)

SLS Pulse

see ATCRBS Instrument

Interference Pulses

see ATCRBS Instrument

Programmable Pulse Control

P1, P2, P3, P4 and P6

(Timing & amplitude)

see ATCRBS Instrument

Diversity Timing

+ 0.95 μ s, 25 ns steps, acc + 10 ns

Reply Data

Displayed in Octal or Hex

DATALINK INSTRUMENT

BURST PROGRAMMING

Burst Modes

Continuous, single or burst on squitter

Burst Spacing

1 to 130 s

Messages Per Burst

1 to 16

Message Spacing

400 μ s to 100 s

UPLINK ELM PROGRAMMING

Segment Count

1 to 16

Initial Segment Delay

125 μ s to 63 ms

Segment Interval

60 μ s to 63 ms

Closeout Delay

125 μ s to 63 ms

DOWNLINK ELM PROGRAMMING

Authorization Delay

125 μ s to 63 ms

Closeout Delay

125 μ s to 63 ms

IFF TEST SET

Transponder Testing (Interrogation Simulator)

Test Modes

ATC, Mode 4 w/ Internal Encoding, Mode 4 w/ External Encoding

INTERROGATION TYPES

ATC Mode

1, 2, 3/A, B, C, D and T

Mode 4 w/ Internal Encoding

0, A, B and user defined

SLS Pulse

see ATCRBS Instrument

Interference Pulses

see ATCRBS Instrument

Programmable Pulse Control

P1 through P37

(Timing & amplitude)

see ATCRBS Instrument

Diversity Timing

+ 0.95 μ s, 25 ns steps, acc + 10 ns

INTERROGATOR TESTING (TRANSPONDER SIMULATOR)

Reply Format Options

1, 2, 3/A, 4, B, C, D and T

Reply Modes

Normal, Ident & Emergency

Range Delay

-1 to 200 nmi, 0.01 nmi steps, acc + 0.02 nmi + 0.0003% of simulated range

Sum/Difference Timing

+ 0.95 μ s, 25 ns steps, acc + 10 ns + 0.0003% of simulated range

TACAN TEST SET

MAIN REFERENCE BURST

G/A X Mode

12 pulse pairs

G/A Y Mode

13 single pulses

A/A X and Y Modes

10 single pulses

Adjustable Burst (all modes)

+1, +2, -1, or -2

Auxiliary Reference Burst

G/A X Mode

6 PULSE PAIRS

G/A Y Mode

13 single pulses

Adjustable Burst (all modes)

+1, +2, -1, or -2

First ARB following MRB may be disabled.

A/A Interrogation Rate

0 to 3999 Hz, 1 Hz steps

Reply Pulse Characteristics

see DME Instrument

Bearing

0 to 359.9°, 0.1° steps, acc + 0.05°

Bearing Rate

0 to 39°/s, 1°/s steps, acc + 0.1°/s

AUDIO MODULATION (15 AND 135 HZ)

Frequency Deviation

+ 3.9%, 0.1% steps, acc + 0.01%

% AM Modulation (each tone)

0 to 39%, 1% steps, acc + 1%

Phase Shift (each tone)

≤39°, 1° steps, acc 0.2° (+ 0.05 typ)

Harmonic Distortion (each tone)

<5% (<2% typ @ -10 to -110 dBm)

PHYSICAL CHARACTERISTICS

DIMENSIONS

Height

10.7", (27.2 cm)

Width

17.65", (44.8 cm)

19" rack mount, (48.3 cm)

Depth

20.5" with handles, (52 cm)

19.7" w/o handles (rack mount), (50 cm)

Weight

51 lbs., (23 kg)

VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering

Numbers

SDX2000-110

SDX2000-220

SDX2000-RC-110

SDX2000-RC-220

SDXOPT00

SDXOPT01

SDXOPT02

AC15527107

WSDX/203C

WSDX/205C

Versions

ATCRBS/DME RF Test Set, 110 V

ATCRBS/DME RF Test Set, 220 V

ATCRBS/DME RF Test Set, 110 V, Rear Connector

ATCRBS/DME RF Test Set, 220 V, Rear Connector

MODE S Option

IFF Option

TACAN Option

Optional Accessories

19" Rack Mount Kit

Extended Warranty

Extended standard warranty 36 months with scheduled calibration

Extended standard warranty 60 months with scheduled calibration

EXPORT CONTROL:

This product is controlled for export under the International Traffic in Arms Regulations (ITAR). A license from the U.S. Department of State is required prior to the export of this product from the United States.

EXPORT WARNING:

Aeroflex's military products are controlled for export under the International Traffic in Arms Regulations (ITAR) and may not be sold or proposed or offered for sale to certain countries including: Belarus, Burma, China, Cuba, Haiti, Iran, Liberia, Libya, North Korea, Somalia, Syria, Sudan, and Vietnam. See ITAR 126.1 for complete information.

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.