Avionics

SI-1404 MK12/Mode S IFF Accessory Unit

SI-1404 provides a comprehensive 3rd Line/Depot Level test solution for next generation MK12/Mode S IFF transponders

- Comprehensive Mode S (level 4) and Mode 4 interrogator simulation
- Accurate measurement of transponder reply pulse parameters
- Configuration memory stores 5 complete SI-1404 configurations
- Extended squitter DF17 capability
- Mode 4 crypto simulation plus external crypto interface
- Built-in self test
- LCD display with adjustable back-light
- IEEE-488.2 GPIB & RS-232 interface
- Two-year limited warranty

Aeroflex is a leader in the design, manufacture and marketing of Avionics test systems.

SI-1404

The SI-1404 is a Depot Level/3rd Line test accessory, used in conjunction with the ATC-1400A Transponder/ DME test set, for testing IFF transponders in a maintenance or production environment.

The SI-1404/ATC-1400A may also be utilized by OEMs to perform most of the MOP (Minimum Operational Performance) tests defined in RTCA/DO-181A, required in the Mode S transponder certification process.

The SI-1404 and ATC-1400A form a comprehensive SSR ground station simulator capable of parametric and protocol testing MK10A (Mode 1, 2, 3/A, C), MK12 (Mode 1, 2, 3/A, 4, C) and MK12/Mode S transponders.

OPERATION

Display

Operation of the SI-1404 is via a menu system displayed on a 40 column x 4 row alphanumeric LCD display. The display has an adjustable illumination backlight, which provides viewable screens under all ambient lighting conditions.

Keypad

Menu selection and data entry is provided via a 4 x 5 main key pad, four directional cursor keys and a slew knob. Dedicated keys are provided for commonly used functions.

SI-1404/ATC-1400A Interface

The SI-1404 is interfaced to the ATC-1400A via two rear panel bus cables and three RF coaxial cables.

The SI-1404 provides the ATC-1400A with Mode S DPSK modulation and monitors replies on Ant A (ATC-1400A).

The ATC-1400A provides UUT power and frequency measurement and has a fully synthesized RF generator for performing receiver bandwidth and selectivity tests.

ATC mode selection and SLS testing is provided via the ATC-1400A controls.

Remote Control

The SI-1404 may be controlled via the ATC-1400A IEEE-488 GPIB interface as an integrated system, or via a separate high speed GPIB interface available on the SI-1404 rear panel.

A RS-232 interface is provided for a screen dump to an external printer.

Test Menus and Screens

Testing under manual control is via a series of menus. Menu types are 'C' (Control), 'S' (Sequence) and 'T' (Test). C10 menus relate to control and monitoring of the 'A' antenna RF I/O port (ATC-1400A) and C20 menus relate to the control and monitoring of the 'B' antenna RF I/O port (SI-1404).

The C10 and C20 menus contain a number of 'f' or function screens. The function screens are structured for manual testing.

Control fields are provided for Ant A RF level vernier and Ant A to Ant B diversity time delay.

Measured parameters displayed are, percent reply for Ant A (ATC and Mode S), Ant B (all replies), reply delay and Mode S squitter period.

Main C Menu

Access to all menus and screens is provided via the main 'C' control menu.

ATC Screen

Displays Mode 1,2,3/A code or Mode C altitude and provides P_3 control field.

Mode S Sequence Screen

Provides selection of P_6 control, pulse width and deviation, P_2 control, SPR control and deviation. Mode S formats are configured in the sequence menu.

ACS (All-Call Short) Screen

Provides selection of P_4 control, pulse width and deviation. Displays DF11 all-call reply and transponders discrete address.

ACL (All-Call Long) Screen

Interlace Screen

Provides selection of ATC to Mode S interlace ratio.

Double Interrogation Screen

Provides selection for 1st and 2nd interrogation modes. Interrogation spacing control is provided by the ATC-1400A.

Burst Screen

Select desired burst format ATC, ASC, ACL or SEQ. Select burst number 1 to 9999. Press burst key to send burst.

ATC Monitor Screen

Displays the same parameters as the f01 ATC screen plus F_1/F_2 framing pulse spacing and pulse width, reply jitter and emergency replies.

Mode 4 Screen

Displays TDV jitter (from external crypto), triplet reply delay and jitter. Provides selection of Mode 4 P_2, P_3, P_4 control and P_4 deviation.

Mode 4 Monitor Screen

Displays P_4 to enable trigger spacing, trigger width, Triplet T_1 to T_2 spacing, T_1 to T_3 spacing and T_1, T_2, T_3 widths.

S Menu

Allows the input of Uplink Formats in a programmable sequence of up to 1000 items. Downlink Formats are read-only.

Uplink Format

The following Mode S 'D' formats are provided with predefined data fields: UF00, UF04, UF05, UF11, UF16, UF20, UF21 and UF24.

Formats 'S' & 'L' allow the user to define 56-bit and 112-bit words consisting of 5 bits octal/hex formatted data, 27 bits (S) and 83 bits (L) of octal/hex formatted data and 24 bits of octal/hex address data.

Downlink Format

The following Mode S 'D' formats are provided with predefined data fields: DF00, DF04, DF05, DF11, DF16, DF20, DF21 and DF24.

Formats 'S' & 'L' are three fields of generic data consisting of 5 bits octal/hex formatted data, 27 bits (S) and 83 bits (L) of octal/hex formatted data and 24 bits of octal/hex address data.

Percent Reply Screen

Displays Ant A and Ant B, statistical percent replies for ATC, Mode S Mode 4 groups, plus Bad or No Replies.

Reply Delay Screen

Displays Min and Max reply delays for ATC, Mode S and Mode 4 replies.

Set up Mode 4 Menu

Provides selection of Mode 4 disparity pulse control, sync source, delay, deviation, and pulse width. Also provides selection of Mode 4 reply type, sync source, delay, deviation, and triplet pulse width.

Set up PPMG Menu

Provides Peak Power Measurement Gate pulse selection for ATC, Mode S, DELM and Mode 4 replies.

Squitter Screen 1

Displays squitter address in hex/octal, tail number and country (if algorithm available), squitter type DF11 (all-call), DF17 (extended squitter).

Squitter Screen 2

Displays DF11 and selected DF17 (A, I, O, P, S, or T), content, Ant and squitter period.

Set up Screen

Provides selection of S menu data type in octal or hex. A factory set of default formats may also be selected plus the discrete address utilized in the S menus can be selected as User defined or Xpdr (obtained from DF11/DF17 squitters).

MISC - MTL Screen

Displays pre-programmed MTL test

GENERAL

Calibration Interval

1 year

AC Supply

100 to 120 VAC, 220 to 240 VAC, 50 Hz to 60 Hz, ≤+10% of the nominal voltage

48 W maximum (180 W maximum with ATC-1400A)

AC Output

Line output, fused at 3 amps and switched

ENVIRONMENTAL

Temperature

5° to 40°C

Relative Humidity

≤ 80% for temperature up to 31°C decreasing linearty to 50% at 40°C (Non-condensing)

Altitude

≤ 4000 m (13,124 ft.)

Electromagnetic Compatibility

Complies with the limits in the following standards:

EN55011 Class B

EN50082-1

Safety

Complies with EN61010-1:1993 for class 1 portable equipment and is for use in a pollution degree 2 environment. The instrument is designed to operate from an installation category 1 or 2 supply.

Dimensions

425 mm wide x 89 mm high x 467 mm deep

16.8 in. wide x 3.5 in. high x 18.4 in. deep

Weight

6.75 kg (15 lbs.)

VERSIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering Numbers	Versions
1404-110	SI-1404 Modes S & 4 Transponder with MLD, 110 VAC Certificate of Calibration
1404-220	SI-1404, 220 VAC Operation

All Aeroflex Avionics products delivered with Factory Certificate Of 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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AEROFLEX
A passion for performance.

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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.

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