The PA6150 airborne transponder has been designed to satisfy the future needs of aircraft identification in both the civilian and military markets.

Extensive use has been made of custom designed integrated circuits and this has enabled a compact, easily maintained equipment to be developed.

PA6150 IFF/SSR TRANSPONDER

Modular techniques have been employed to provide maximum flexibility for ease of maintenance and logistic support.
The PA6150 transponder is packaged in an ARINC 600 4MCU case with a rear mounted MIL-C-83527 connector. The minimum standard transponder satisfies the basic IFF/SSR requirements for Modes 1,2, 3/A, C and Mode S Level 1 operation. Mode S Level 2 or 3 operation is available when either a MIL-STD-155\3B or ARINC 429 data bus is connected to the transponder to allow data exchange with the aircraft Mode S Air Data Link Processor.

- ***Solid state technology***
- ***Digital processing***
- ***Secure mode facility***
- ***Mode S Level 3 capability***
- ***Keypad/remote data entry***
- ***Comprehensive BIT***

PA6150

Electronic Systems Division

(A Division of GEC-Marconi Defence Systems)

For military identification a secure cryptographically encoded transponder reply option is available. A small applique cryptographic computer module is provided which is accessible from the front of the equipment. The cryptographic key may be electronically loaded using a pre-loaded fill gun.

Having a 500W solid state transmitter the transponder will satisfy all civil and military power output requirements.

A logarithmic receiver based upon the GEC-Plessey Semiconductors monolithic integrated log amplifier is incorporated.

The remaining circuitry utilises application-specific integrated circuit gate array technology which permits all the high speed signal processing to be achieved digitally. The transponder is fully microprocessor controlled to optimise the system.

The microprocessor controls the operation of the ASIC, BITE, system operation and control and data message processing.

This considerably reduces the initial setting up adjustments and offers significant improvements in maintainability and reliability over current designs.

System control is achieved by the use of:

(a) Cockpit Mounted Control Unit. Microprocessor based, this unit makes extensive use of information entry using a keypad.

(b) Common Control Unit which is interfaced to the transponder over a MIL-STD-1553B data bus. An interface to a MIL-STD-1553B or ARINC 429 data bus is required for operation at Mode S Level 2 and 3.

IFF/SSR modes and codes, including Mode S selection, are entered and selected using key switches with LED status indicators. Provision is made for automatic code changing. Code and GMT information will be given using seven segment sunlight readable, NVG compatible LED displays.

Product Specification (PA6150) Data Summary

TRANSPONDER UNIT

Transmitter

Frequency: 1090MHz +/- 0.5MHz
Power output: Nominally 27dBW (500W)
Diversity isolation: 20dB min

Receiver

Frequency: 1030MHz
Min triggering level: -75 +/- 3dBm for 90% replies
Dynamic range: 50dB

Processing:

Diversity reply decision delay: less than 0.375 usec
Reply rate limit: Dependent upon mode of operation
eg 1200 replies per second (14 pulses) for IFF/SSR

Power Requirements

Nominal 28V dc: 100W maximum

Dimensions and Weight

Height: 194mm
Width: 124mm
Depth: 318mm
(7.64 x 4.88 x 12.52")
Weight: 9.5kg max (20.9lb)

Temperature range: -40°C to +70°C
Storage: -55°C to +90°C

CONTROL UNIT

Functions include: Mode select
Code select
Mode 4 control
ACC control
SPI/Ident
EMERGENCY

Dimensions and Weight

Height: 95mm
Width: 146mm
Depth: 100mm
(3.75 x 5.75 x 3.94")
Weight: 2.2kg max (4.8lb)

Temperature Range

Operating: -35°C to +55°C
Storage: -55°C to +90°C

GEC-Marconi
Defence Systems

Electronic Systems Division

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