Radar Processing Unit

PRODUCT DESCRIPTION

The Radar Processing Unit is used for airborne radar signal processing and radar timing generation.

The Radar Processing Unit consists of Digital IF (DIF) receiver boards, Radar Timing and IO generator (RTIO) boards along with signal processing boards. It is built on a custom VPX mult-slot backplane which accommodates the various boards. The entire setup is enclosed in a forced air conduction cooled (FACC) ATR chassis. Designed for strength and maximum cooling in a conduction cooled environment, the chassis incorporates brazed folded fin material thermally bonded between the conducting side walls and the outer side panels. The chassis is EMI/EMC compliant to MIL-STD-461E.

The external world IF signals interface with the DIF board on blind-mate RF connectors (BMA-type). All other boards are VPX VITA-46 compliant, which ensures that individual cards are easily replaceable and hence the system maintainability is improved.

The system is used in Active Electronically Scanned Array (AESA) radar. The system receives 8 separate IF channels from external world, which is brought to baseband and then processed by DIF board. This data is then processed by signal processor boards and finally the SBC will generate the video output for display. RTIO receives commands from external world, over Ethernet for generating timing signals. RTIO generates various timing signals to control and configure radar sub modules for various radar modes.

KEY FEATURES

- 7-slot Air Transport Rack (ATR) chassis
- Dip brazed fins for efficient heat transfer
- 8-channel IF receiver inputs
- System generates and accepts various differential (RS422 and LVDS) and single ended (LVTTL) I/Os

SPECIFICATIONS

Hardware Architecture

The Radar Processing Unit chassis consists of the following boards

- Digital IF receiver board
- Radar Timing and IO generation board
- Single Board Computers
- Signal Processing boards

Interfaces

- Front panel MIL-DTL-38999 Series III connectors
- Power, Digital I/O, MIL-STD-1553B
- Eight sFPDP interfaces (fiber optic) for high speed communication
- Thirteen GigE ports
- SRIO for inter-board communication
Additional Information

- Designed to integrate with ARINC tray having custom rear plenum
- 2 High altitude fans (60k ft) 28V DC, 133 cfm each mounted on the ARINC tray

MECHANICAL

- Full ATR chassis (Tall and Long)
- Forced air conduction cooled (FACC) chassis
- Conduction cooled cards for efficient heat transfer
- 7-slot hybrid VPX backplane accommodates 6U boards
- The system weighs 28 kg

POWER CONSUMPTION

- The chassis consumes 575W
- Input voltage is 28V DC

ENVIRONMENTAL

- Qualification: MIL-STD-810D
  EMI/EMC MIL-STD-461E
  ESS: MIL-STD-2164 (EC)
- Temperature range: -40°C and +85°C (Storage)
  -40°C and +55°C (Operational)

PART NUMBER(S)

| CN1040 | Radar Processing Unit |