Data Sheet

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Data Concentrator Unit (DCU)

Family of DAL A FPGA-Based Configurable Data Concentrators

- Lightweight and compact design
- Configurable Analog and Discrete interfaces
- Digital data buses
- Cross-channel data link for synchronization and cross validation
- Common basic functions provided by platform, aircraft-specific functions implemented depending on application
- Process assurance to DO-254 DAL A

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Data Concentrator Unit (DCU)

Family of DAL A FPGA-Based Configurable Data Concentrators

The TechSAT DCU Platform Family contains different data concentrators, suitable for a variety of applications. Dissimilar implementations are provided to mitigate common cause.

Application Example

A typical application is to use three dissimilar DCUs to readback Analog Pilot Inceptors and forward the Stick/Pedal Positions to Flight Control Computers using avionics communication buses. Another example is acquisition of surface sensors of sensors on a wing and forwarding the value via a digital data bus to further processing in the flight control system.

DCU Platform Functions

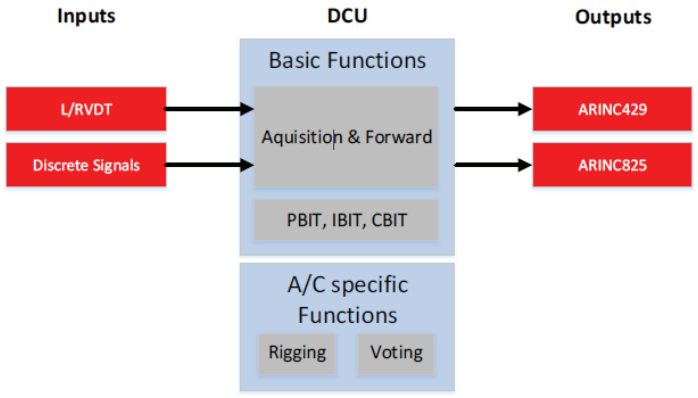
Each DCU platform performs the following basic functions:

- BIT (Built-in Test)
- Excitation and readback of VDT sensors
- Readback of discrete inputs
- Sensor validation, error detection
- Transmission of received data over ARINC 429 or ARINC 825
- Conversion of ARINC 429 into ARINC 825 data or vice versa
- Setting of discrete outputs from any received Boolean data

Customized Functions

Depending on the specific aircraft application, various higher-level functions can be implemented on the FPGA, such as:

- Rigging functions for Stick & Pedals
- Logic/voting on input signals
- Specific mapping of sensor data to avionics buses



Enclosure & Environmental Qualification

The DCU is enclosed in an aluminum enclosure with flange mounts. Environmental qualification is performed depending on specific aircraft requirements.

Technical Data

Interfaces

- 4 x RVDT/LVDT/Resolver/Hall
  - Excitation: 1-5 kHz
  - Voltage: 3-7.5 VRMS
- 8 x Discrete Inputs
- Configurable for Open/Gnd or Open/28VDC
- 4 x Discrete Outputs
- Configurable as Open/Gnd or Open/28VDC
- 2 x ARINC 825/CAN 2.0B
- 4 x ARINC 429 RX
- 1 x ARINC 429 TX
- 2 x RS422/RS485

Power Input and Consumption

- Single Power Supply (options for dual power supply available)
- Power consumption: < 10 W

Weight & Physical Dimensions

- 250 g
- 128 mm x 80 mm x 23 mm

External Connectors

- High Density D-Sub
- 1 x 26 pin, 1 x 44 pin

Availability

- 156.000 FH

Customization

DCU variants can be provided with:

- Higher/lower number of I/O interfaces within certain limits
- Other type of I/O interfaces
- Other connector types and orientation

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