

TSO-C106 Based ADC (pending application) ADC Product Series 2400 Data Sheet

Air Data's Product Series 2400 of ADCs are designed to measure and compute navigation parameters in transport aircrafts, trainers, helicopters and unmanned vehicles (UAV). Parameters such as pressure altitude, baro-corrected altitude, altitude rate (vertical speed), computed and true airspeeds, Mach number and static air temperature are computed. A comprehensive built-in test (BIT) function that provides high-reliability fault detection and isolation capability is also one of their features. The unit packaging is robust and provides standard pitot and static tubing interface.

Characteristics

- Operating voltage 28 VDC (16 to 32 VDC per MIL-STD-704F and DO-160G), < 7 Watts
- Nominal weight < 2.2 lbs/1.0 kg
- Designed to meet TSO-C106/AS8002B, SW DO-178C Level B, HW DO-254 Level A (pending application)
- Environmental qualification DO-160G
- Operating temperature -45°C to +71°C
- Storage temperature -55°C to +85°C
- Altitude range -1,000 to 75,000 feet, very high accuracy (± 5 feet typical at sea level)
- Airspeed range up to 800 knots, ± 3 knots typical at 50 knots
- Mach up to 2.0
- AOA/AOS range -170° to +170°

Communication Protocols and Data

For navigation data words reception and transmission, the ADC has provision to interface with one or more of the following protocols:

- ARINC 429 bus
- MIL-STD-1553 RT bus
- RS-422 serial bus
- CAN Bus 2.0B

Navigation and other data words are transmitted via selected transmission protocols. Each data word is transmitted with its associated validity indicator.



Actual Views of ADC Product Series 2400

Discrete Outputs

The following Ground/Open type discrete outputs are available:

- Altitude low
- High speed
- Low speed
- ADC OK

Output characteristics:

- Ground condition: < 1.5 VDC at 100 mA maximum
- Open condition: > 1 M Ω

SSEC/PEC Capable

The ADC is capable of airspeed and static pressure error correction using predefined Position Error Correction (PEC) and Static Source Error Correction (SSEC) data. This function can be disabled by discrete input.

Electrical Connectors

J1 connector D38999/24FE35PN

- 55-position circular connector
- Contact size: 22D
- Current rating: 5A
- To mate with D38999/26FE35SN

J2 connector D38999/24FC4PN

- 4-position circular connector
- Contact size: 16
- Current rating: 13A
- To mate with D38999/26FC4SN

Pneumatic Input Ports

The ADC provides two pneumatic input ports to be connected to the Pitot and static lines on the aircraft. The Pitot interface is of the AS4395-4 (MS-33656-4) type. The static interface is of the AS4395-6 (MS-33656-6) type.

TAT Interface

The ADC provides electrical stimulation and interface with TAT probe of 50 Ω , 100 Ω or 500 Ω nominal resistance.

AOA/AOS Interface

The ADC provides electrical stimulation and interface with AOA/AOS probes of 1,500 Ω , 2,000 Ω or 5,000 Ω nominal resistance.

ADP/TAT Probe Heaters Control

The ADC provides the capability to interface with two (2) separate ADP/TAT Heaters with a power rating of 280 W max at 28 VDC (10A) continuous (all flight conditions).

Analog Outputs

The ADC provides two analog outputs for the static pressure and the differential (impact) pressure values with the following characteristics:

- Output voltage: [0 – 5 V] \pm 12.5 mV
- Load: greater than 10 k Ω
- Output impedance: less than 1 Ω
- Ranges:
 - Static pressure range: 0 up to 130 kPa
 - Differential pressure: 0 up to 150 kPa
- Ripple voltage: less than 5 mV
- Bandwidth: -3 dB at 13 Hz

Finish and Color

The ADC is protected with a chemical conversion coating per MIL-C-5541, Class 3 (Yellow) and painted lusterless black color #37038 as per FED-STD-595B with a polyurethane coating per MIL-PRF-85285, Type I, Class H over an epoxy primer coating per MIL-PRF-23377, Type I, Class C.

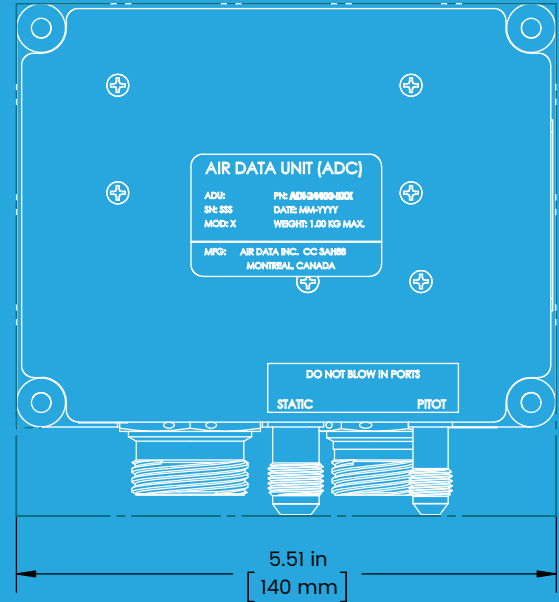
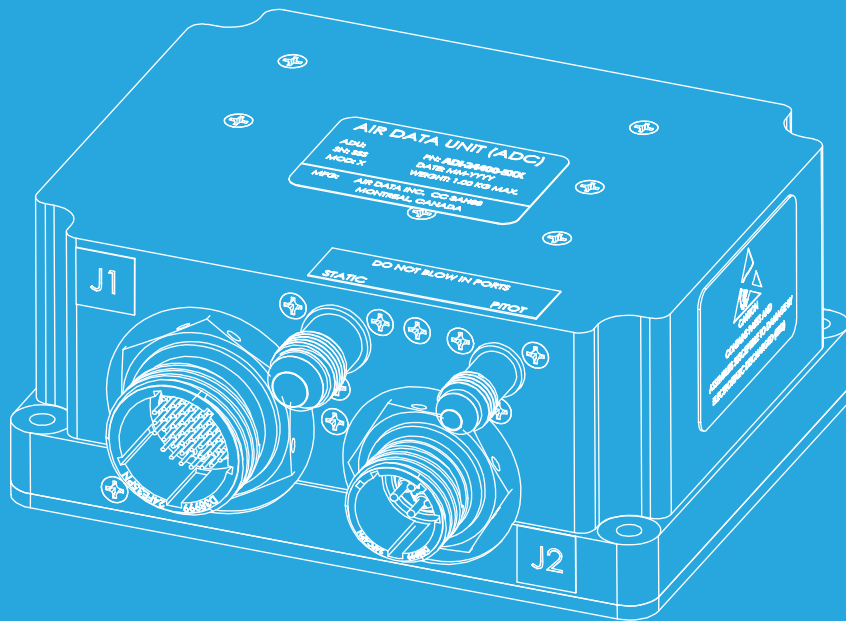
Power Consumption and Cooling

The ADC maximum power consumption is 7W @ 28VDC. The ADC is cooled by natural convection and radiation.

Navigation Parameters and Status Words List

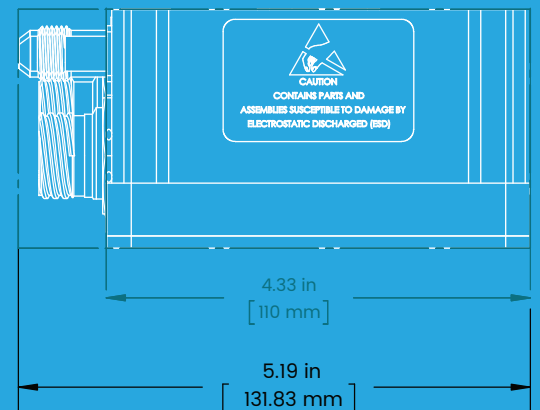
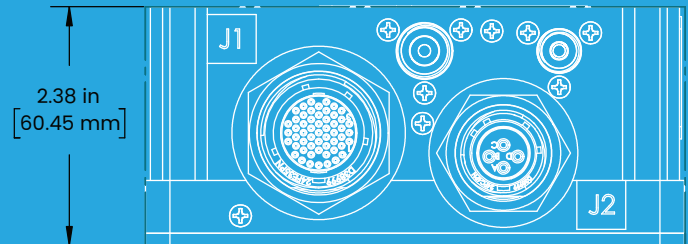
Data Word Description	Direction	MAX Update Rate
Baro Correction Settings	RX/TX	As received
Control Word	RX	As received
Pressure Altitude (H)	TX	60 Hz
Baro-Corrected Altitude (Hb)	TX	60 Hz
Altitude Rate (ROC)	TX	60 Hz
Indicated Airspeed (IAS)	TX	60 Hz
Calibrated Airspeed (CAS)	TX	60 Hz
Mach Number (MN)	TX	60 Hz
Total Air Temperature (TAT)	TX	60 Hz
Static Air Temperature (SAT)	TX	60 Hz
True Airspeed (TAS)	TX	60 Hz
Impact Pressure (Qc)	TX	60 Hz
Static Pressure (Indicated & Corrected)	TX	60 Hz
Total Pressure (Indicated & Corrected)	TX	60 Hz
Maximum Allowable Airspeed (VMO)	TX	60 Hz
Angle of Attack (Indicated & Corrected)	TX	60 Hz
Angle of Side-Slip (Indicated & Corrected)	TX	60 Hz
Air Density Ratio (ρ/ρ_0)	TX	60 Hz
Pressure Ratio (P_s/P_o)	TX	60 Hz
Air Data Probe Temperature	TX	60 Hz
Heartbeat	TX	60 Hz
Discrete Word	TX	60 Hz
Maintenance Words	TX	40 Hz

Outline Drawing



NOTES:

1. APPLICABLE STANDARDS/SPECIFICATIONS
 - A. DOD-STD-100
 - B. ASME Y14.5M 2004
2. CONNECTORS:
 - A. (J1) D38999-24FE35PN
 - B. (J2) D38999-24FC4PN
3. PHYSICAL CHARACTERISTICS OF HOUSING & COVER:
 - A. MATERIAL: ALUMINUM 6061-T6
 - B. COLOR: LUSTERLESS BLACK PAINT COLOR #37038 AS PER FED-STD-595B
 - C. FINISH: POLYURETHANE COATING PER MIL-PRF-85285, TYPE I, CLASS H OVER AN EPOXY PRIMER COATING PER MIL-PRF-23377, Type I, Class C
4. DIMENSIONS:
 - 4.1. DIMENSIONS SHOWN BETWEEN PARENTHESES ARE FOR REFERENCE ONLY
 - 4.2. DIMENSIONS NOT TO EXCEED:
 - LENGTH: 5.51 in [140 mm]
 - WIDTH: 4.33 in [110 mm] HOUSING ONLY; 5.19 in [131.83 mm] WITH CONNECTORS
 - HEIGHT: 2.38 in [60.45 mm]



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