ADC-10 Air Data Computer

The *ADC-10* is a highly accurate air data computer that provides pitot-static pressure and temperature data over a digital RS-485 data interface. It uses silicon based pressure sensors individually calibrated over the full temperature range to provide extremely accurate data with an unmatched combination of lightweight and low-power consumption. The interaction of a reliable micro38999 connector, a high quality aluminium housing with conductive coating and lightning protection electronics provide excellent protection against EMI/EMC and indirect lightning strike.

Key Features

- Small, lightweight, low-power, robust
- Silicon pressure sensors with high accuracy and low drift
- RS-485 data interface half-duplex or full-duplex, suitable for use in high-noise environments on long cables
- Fully temperature compensated from -55°C .. +80°C (power up above -40°C)
- Lightning protection circuitry
- EMI/EMC optimized aluminum box
- Outputs fully calibrated air data at up to 100Hz with very low transport delay
- Compatible with Swiss Air Data line of Air Data Systems
- Easy configuration of output rate, digital filters, baud-rate via maintenance software

Typical Application

- Air Data,
- UAV, Drones,
- VTOL, Rotary Wing UAV
- Flight Testing,
- Wind-tunnel Measurement Equipment

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.:   +41 61 7030222
E-Mail: info@simtec.ch

1 of 7

Performance

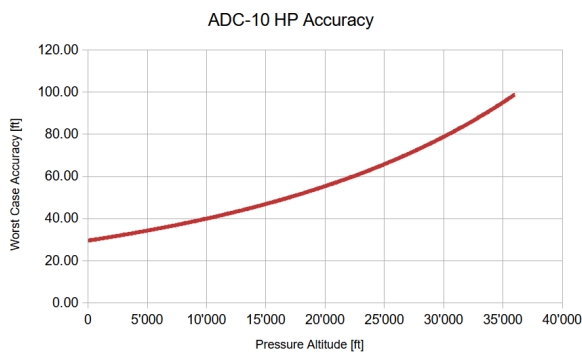| Property	Value	Details
Static Pressure Range	45 hPa … 1'080 hPa -1'800 ft … 69'000 ft	
Dynamic Pressure Range	±16 hPa dif ±30 hPa dif ±75 hPa dif ±105 hPa dif ±150 hPa dif ±300 hPa dif ±450 hPa dif Other ranges on request	~95 KCAS ~135 KCAS ~210 KCAS ~250 KCAS ~295 KCAS ~410 KCAS ~490 KCAS
Accuracy	larger of 0.1%FS and ±1 Pa [1]	FS: Full Scale
Temperature Range	-40°C..+80°C -55°C..+80°C -55°C..+80°C	Power Up Operating Storage
Output Rate	100, 50, 25, 20, 10, 5, 1Hz	Alternatively the output can be triggered by sending a command
Transport Delay	<14ms	Valid at 100Hz, 460'800bps, 2 labels activated For other values see *ICD*
Resolution	24 bit	At pressure level
Units Pressure	Pa, hPa, kPa, psi, inHg, mmHg	
Units Airspeed	m/s, km/h, kts, mph, ft/min	
Units Altitude	m, ft	
Units Rate	m/s, km/h, kts, mph, ft/min	
Basic Data Labels	Static Pressure (Ps) Dynamic Pressure (Qc) Total Air Temperature (TAT)	
Computed Air Data Labels	Pressure-Altitude (Hp) Barometric-Altitude (Hb) Calibrate airspeed (CAS) True airspeed (TAS) Mach-Number (M) Climb-Rate (CR) Static Air Temperature (SAT)	

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.: +41 61 7030222
E-Mail: info@simtec.ch

2 of 7

Property	Value	Details
Media Compatibility	Clean Air	Non-condensing and non-corrosive gases

Accuracy of Calibrated Airspeed (CAS)
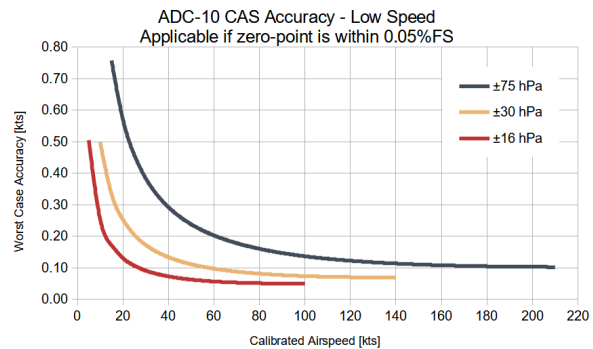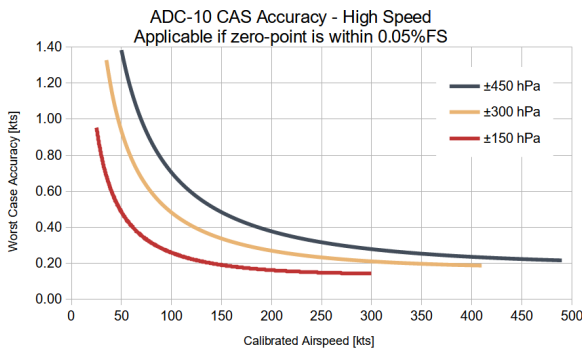
Accuracy of Pressure Altitude (Hp)

Mechanical

Property	Value	Details
Mass	0.130kg	
Dimensions (LxWxH)	66 mm x 70 mm x 32.5 mm	Excluding connector and pressure fitting
Pressure Fitting	Ø4 mm ID tube	

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.:   +41 61 7030222
E-Mail: info@simtec.ch

3 of 7

Electrical

Property	Value	Details
Interface	RS-485 Half-Duplex or RS-485 Full-Duplex	USB via FTDI converter cable
Power Supply	7..33 VDC	
Power Consumption	50 mA @ 9V 20 mA @28 V	
Baud-Rate	57'600 bps 115'200 bps 230'400 bps 460'800 bps	
Connector	Amphenol 2M801-011-07M8-13PA	For pin-assignment see *ICD*

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.:   +41 61 7030222
E-Mail: info@simtec.ch

4 of 7

DO-160G

Name	Sec.	Cat.	Details
Ground Survival and Operating Low Temperature	4.5	E1	Ground Survival Low Temperature = -55°C, Operating Low Temperature= -55°C ⇒ A warm-up time up to 5 minutes is needed when power-on is performed at -55°C to achieve full accuracy.
Ground Survival and Operating High Temperature	4.5	E1	Ground Survival High Temperature = 85°C, Operating High Temperature= 70°C
Operational Shock	7.2.1	A	6g 11ms saw-tooth shape
Vibration	8.5.1	S	Test Curve T Figure 8-3, Sinus 10g 5Hz – 500Hz, 1h per axis
Waterproofness	10.3.2	W	Drip proof test (> 280 l/m2/h)
Magnetic Effect	15	Y	D = 0.0m
Power Input, Average Voltage Value	16.6.1.1	B	32.2V – 6.8V
Power Input, Momentary Power Interruptions	16.6.1.3	B	50 ms ⇒ Revision R5 or later
Power Input, Normal Surge Voltage	16.6.1.4	B	5ms @ 47V → 30ms @ 40V ⇒ Revision R5 or later
Power Input, Engine Starting Under Voltage	16.6.1.5	B	2V to 12.5V in 35s
Power Input, Average Voltage Value	16.6.2.1	B	32.2V – 6.8V
Power Input, Low Voltage Conditions	16.6.2.2	B	6.8V to 0V in 10min ⇒ Between 6.5V and 6.1V data sent by the ADC-10 may be corrupted
Power Input, Momentary Undervoltage	16.6.2.3	B	7s @5V
Power Input, Abnormal Surge Voltage	16.6.2.4	B	100ms @ 60V → 1s @ 40V ⇒ Revision R5 or later
Audio Frequency Conducted Susceptibility	18.3.1	B (28VDC)	1.6Vpp 200Hz – 1kHz 4Vpp 1kHz – 15 kHz
Radio Frequency Conducted Susceptibility	20.4	W	DO-160G Figure 20-6 Curve W

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.: +41 61 7030222
E-Mail: info@simtec.ch

5 of 7

Name	Sec.	Cat.	Details
Radio Frequency Radiated Susceptibility	20.5	Z®	20V/m 100kHz – 400MHz SW and CW; 80V/m 400MHz – 1GHz PM
Conducted Radio Frequency Emission	21.4	P	DO-160G Figure 21-3 Curve P
Radiated Radio Frequency Emission	21.5	Z(H)	DO-160G Figure 21-9 (Measured only up to 960GHz)
Lightning Induced Transient Susceptibility Pin Injection Waveform 3/3 1MHz	22.5.1	A2	250V / 10A
Lightning Induced Transient Susceptibility Pin Injection Waveform 4/1 6.4/69μs	22.5.1	A2	125V / 25A ⇒ Revision R5 or later
Lightning Induced Transient Susceptibility Single/Multiple Stroke Waveform 3/3 1MHz and 10MHz	22.5.2.1	J2	1st: 250VT / 50AL Sub : 125VT / 25AL
Lightning Induced Transient Susceptibility Single/Multiple Stroke Waveform 2/1 6.4/69μs	22.5.2.1	J2	1st: 125VL / 250AT Sub: 62.5VL /62.5AT ⇒ Some noisy data during exposition
Lightning Induced Transient Susceptibility Multiple Burst Waveform 3/3 1MHz and 10MHz	22.5.2.1	L2	150VT / 2.5AL
Electrostatic Discharge	25	A	15kV ESD

Reliability

Property	Value	Details
MTBF ADC-10	113'000 hrs	According to MIL-HDBK-217F, AIC, 40°C, actual values used if available from manufacturer
MTBF ADC-10X	95'000 hrs	

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.: +41 61 7030222
E-Mail: info@simtec.ch

6 of 7

Ordering Information

Part-Number	Full-Duplex	Details
SIM-F0D-504-rrrHPA-HD	no	Standard ADC-10
SIM-F0D-504-rrrHPA-FD	yes	Standard ADC-10
SIM-F0D-504-rrrHPA-HD-X	no	Extended ADC-10X with AoA/AoS processing for FTB-1
SIM-F0D-504-rrrHPA-FD-X	yes	Extended ADC-10X with AoA/AoS processing for FTB-1

Table 1. Ordering Code for Range of Dynamic Pressure

rrr	Range	Details
16	±16 hPa	~95 KCAS
30	±30 hPa	~135 KCAS
75	±75 hPa	~210 KCAS
105	±105 hPa	~250 KCAS
150	±150 hPa	~295 KCAS
300	±300 hPa	~410 KCAS
450	±450 hPa	~490 KCAS

Other ranges on request

Contact Information

Simtec AG
Gewerbestrasse 7/7a
CH 4147 Aesch BL
SWITZERLAND

Tel.: +41 61 703 0222
info@swiss-airdata.com
http://www.swiss-airdata.com

24.08.2023
Revision R6

[1] Accuracy is the sum of repeatability, hysteresis, thermal effects in the specified temperature range, the calibration is traceable to DAkkS.

swiss-airdata
www.swiss-airdata.com

Simtec AG
Gewerbestr. 7
4147 Aesch BL
Switzerland

Tel.: +41 61 7030222
E-Mail: info@simtec.ch

7 of 7