REAL INNOVATION... REAL SOLUTIONS.



Core Values

STEWARDSHIP WE ARE RESPONSIBLE TO THE COMPANY, CUSTOMERS, AND EACH OTHER

EXCELLENCE

WE ARE THE BEST AT WHAT WE DO

CONTINUOUS IMPROVEMENT

WE REFINE WHAT WE DO AT EVERY OPPORTUNITY





Avionica Introduction

Avionica Proprietary

Continued Growth

Conference, Training, **Production Areas**



Modular Office Design

2005:



A Commitment to Quality

2008: ISO 9001:2000 AS9100 Certification



Q a global assurance

This is to certify that the Quality Management System of:

Avionica, Inc. 9941 West Jessamine Street Miami, FL 33157

applicable to:

Certificate of Registration

Product development and provision of aircraft data interface, collection, analysis products and services to diverse customers

has been assessed and approved by National Quality Assurance, U.S.A., against the provisions of:

ISO 9001: 2000 and AS9100 Revision B and in accordance with the requirements of AS9104A.



For and on behalf of NQA, USA, Acton, MA 01720



 Certificate Number:
 12748

 EAC Code:
 33

 First Issued:
 August 20, 2008

 Valid Until:
 August 20, 2011

This approval is subject to the company maintaining its system to the required standard, which will be monitored by NQA, USA, an accredited organization under the Aerospace Registrar Management Program.

2014: ISO 9001:2008 AS9100 Certification



This approval is subject to the company maintaining its system to the required standard, which will be monitored by NQA, USA, an accredited organization under the Aerospace Registrar Management Program.



Certifications

Avionica Proprietary

Current Certifications/Specifications:

ISO 9001:2008 and AS9100C FAA Title 14 CFR, Part 21 and Part 45 DO160 DO178 DAL D, Level E Warranty Repair adheres to AS9104/1:2012 requirements

Pending Certifications:

AS9115 DO254

FAA-Approved Avionica Staff:

DER (1) DMIR (2)



Avionica Equipment Worldwide





Avionica's miniQAR Evolution









avSYNC Product Overview

- avSYNC is a web based service that enables the automated downloading of aircraft flight data.
 - The service is enabled through installation of the avSYNC Core Server software and through aircraft installation of a miniQAR MKIII with Cellular Module (avCM). The miniQAR with Cellular Module will record and transmit flight data to the avSYNC[™] Administrator Servers over the internet via an encrypted VPN tunnel.
- The **avSYNC** Service will format the received data and transfer it, ready for processing to the Administrator's FOQA server.
 - The avSYNC Core Server software includes an administrative Web Page to manage avSYNC and to monitor data flow. Avionica also provides an optional "Cache and Forward" (CAF) in order to push data from Avionica servers to remote sites.



4. VPN

3.Internet

Avionica Proprietary

5. avSYNC

CAF

Optional

avSYNC Data Flow

2. Cellular

(((**•**))))

- Flight data is collected during flight.
- After landing, when data transmission parameters are met, the unit connects to the cellular service provider radio tower. When roaming is enabled, a roaming network will be selected if the home network is not available.

1. Aircraft

- Once connected to the selected operator, the unit connects to the Internet.
- Once Internet connection has been established, the unit connects to the VPN where the avSYNC server resides.
- Once a VPN connection has been established, the unit sends its flight data to the avSYNC Core Server.
- Although Avionica hosts the avSYNC Core Server Software data is encrypted and not accessible by Avionica unless otherwise specified by the end user.





avSYNC Data Flow Diagram

Avionica Proprietary







//BBN



*Based on a download rate of 256 words per second





Data Transfer Administration

Control Center that Customers Can Adjust

	G	vio	nic	G	ľ											av	SYN	IC Con	tro <mark>l</mark> Center
AVSYNC	Contro	Users	Location	15	A/C Type		Stations mir	niQARs	C.	Il Modules	Parts	Deployments All Menus							
												miniQARs Q國國 I Auto-refresh							
NEW	LOG	GING CH	IECK-INS		20.		43.0												
	ID	CUSTOMER	LOCATION	5/N	CELL	PORT	INTERVAL (HRS)	ERAS	E MKN	KEEP RAW	NOROAM	STATUS	LAST CHECK-IN	LAST DOWNLOAD	LAST ATTEMPT	INACTIVE	LOGS	UPLOADS	× Show Images
	9582		bucor	20076	(1910)	9194	2	Yes	Yes	Config	Config	Downlanding	Internet on the	2013-04-03 15:50:55	2013-04-03 17:52:00	No	ų.	au	Options
	8573		00000	19635	SIDDER	9194	2	Yes	Yes	Config	Config	Downloading (Attempting to connect to miniQAR '10.1.0.157' for file 'C:\Program Files\AviontcalminiQAR\erase.sh')	pression-pri L'income	2013-04-03 13:10:40	2013-04-05 17:55:20	No	11		Options
	11232		GFLED	9760	20662	9194	2	Yes	Yes	Coefig	Config	Downisaded	2013-04-03 17146:33	2013-04-05 16:05:57	2018-04-03	No	No.	No	Options
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	8473		GJECH	19630	20160	9194	2	Yes	Yes	Config	Config	Downloaded	2013-04-03 17:21:06	2013-04-03 17:21:51	2010-04-03 17:21:51	Ro-)	No	Ne	Options
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	9206		GJEDT	20083	20663	9194	3	Yes	Yes	Config	Config	Downloaded	2013-04-03 17:13:57	2013-04-03 15:24:00	2013-04-03 15:24:00	No	No	No	Options
	10248		GECOF	20096	20666	9194		Yes	YES	Config	Config	Opymicaded	2013-04-03 17:12:08	2013-04-03 16:00:32	2013-04-03	No	No	H9	Options
	9996		GECOU	20075	20178	9194	•	3m	Yes	Contig	Config	Downloaded	2013-04-03 17:04:35	2013-04-03 15:02:35	2013:04-05 15:02:35	No	No	No	Options
	9581		GJECE:	19782	20182	9194	2	Xieli	Yes	Contig	Config	Dirwnlasded	2013-04-03 17:04:01	2013-04-03 12:04-54	2018-04-05 17:04:54	No.	N61	No	Options
	8990		GECOD	19640	19697	9194	2	Yes	Yes	Genfig	Config	Downloaded	2013-04-03 16:58:31	2013-04-03 16:37-50	2013-04-03 16:57:30	No	No.	Ho	Options

- avSYNC Control Center Web Interface, operators can adjust:
- Fleet Configurations
- Download Intervals and Content Upload Schedules
- Source/Target Server Data Routing by Internet address
- Encryption and Compression Options



miniQAR MkIII



miniQAR MkIII

Continues the Reliable Tradition of Over 8,000 miniQARs now flying

Backwards compatible with existing miniQARs

Installation and maintenance as simple as that of our miniQAR Mk II

Still under 6.5 oz (185 g)



miniQAR Mk III Design

Avionica Proprietary

SOC Design

- FPGA Embedded Soft Processor (100 MHz Altera NIOS II 32-bit) with:
 - 2 ARINC 573/717 Harvard Bi-Phase receivers
 - 1 ARINC 573/717 Bi-Polar Return to Zero (BPRZ) receiver
 - 3 ARINC 429 receivers
 - 3 UART receivers for EIA RS-422 and RS-232 inputs
 - 1 Multi Input ARINC 410 discrete input controller
 - 2 SD memory card controllers
 - 1 I²C serial transceiver
 - 1 USB 2.0 MAC transceiver controller
 - 2 Ethernet MAC transceiver controllers
 - 1 ARINC 429 transmitter (future release)
- 2 Gigabytes micro SD-RAM
 - User upgradeable as required
- 2 Gigabytes SD-RAM, formatted FAT32
 - User upgradeable as required



Mk III miniQAR on vibration test rig



State of the art Equipment

Avionica Proprietary

LRU: 4G avCM





miniQAR MK III & avCM 4G

Avionica Proprietary

MiniQAR MK III ELL STAT New 4G avCM Cellular Module

Summary

- Enabler of FDM and FOQA data programs
- Most cost-effective solution available
- 100,000 hrs MTBF reliability
- Multiple versions of the QAR address all data requirements
- Part of a modular, integrated data solution
- Ethernet linked for real time application support
- Wireless 4G solution
- Integrated ACMS option



FAA Supplemental Type Certification Avionica's miniQARs may be the most widely STC'd QAR in the world...

150 Models Worldwide

Manufacturer	Model	Manufacturer	Model	Manufacturer	Model
Airbus	A300	Bombardier	DHC-7	Embraer	EMB-120
	A310		DHC-8 Q100		ERJ-135
	A319		DHC-8 Q200		ERJ145
	A320		DHC-8 Q300		ERJ-170
	A321		DHC-8 Q400		ERJ-190
	A330	Cessna	500	Falcon	50
	A340		550/ S550/ 552		90
ATR	42		552		900
	72		T-47A		2000
Boeing	717		560/560 XL	Fokker	50
	727		650		70
	737		Citation I		100
	747		Citation II	General Dynamics	F-111
	757		Citation III	Gulfstream	G-1159
	767		Citation IV		G-III
	777		Citation V		G-IV
	F/ A-18 Hornet		Citation VI		G-V
British Aerospace	146		Citation VII		G-Vsp
Bombardier	BD-100 / BD-700		Citation Bravo	Learjet	35
	CL-300		Citation Exel		40
	CL-600	Douglas	DC-9		45
	CRJ200		DC-10		60
	CRJ700		MD-11	SAAB	340A
	CRJ900		MD-88		340B
			MD-90		2000



Uses of Avionica miniQAR Data





The five Ws of FDM/FOQA Data Analysis





Tell me again; Why?

USA - Voluntary 14 CFR:

Part 13.401 Flight Operational Quality Assurance Programs

Part 119 Certification: Air Carriers and Commercial Operators

Part 193 Protection of voluntarily submitted information

AC 120-82 "Flight Operational Quality Assurance"

Internationally -Mandated:

EASA

Regulation (EU) 965/2012 AMC1 ORO.AOC.130 Appendix 1 to AMC1 ORO.AOC.130 GM1 ORO.AOC.130

UK CAA CAP 739

EUROCAE ICAO Annex 19 "Safety Management"



















ERGOSS' SARA INTERFACE

- Displays with Strong Operational Intuitivity
- Dashboard : all your activity, trends and deviations at a glance
- Increased compatibility (tablets, smartphones)
- Share-a-Flight : exchange with flight crews and maximize return on experience

SARA - Flight Data Monitorin	ig 🛛 beta 🖊								Welcome dev! [Log Off] Change partword		
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SARA:ANALYSIS, STATISTICS, REPORTING

- Fully **dynamic** reporting system, modify a filter and see *What-If* ... immediately
- Use of industry-proven **Six-Sigma**, reduced data dispersion, variance examination
- Automatic highlight of areas of interest, enhanced analysis for better decision-making
- All of the above are **built-in features** of SARA's core engine for **reporting modules**





Summary

Avionica Proprietary

Avionica/ERGOSS: Flight Operations Efficiency

Ultimate use of flight data and combined expertises

Validate aircraft operational performances with regard to operator's network Fine tune flight planning system and maintenance follow-up Anticipate from statistical analysis (taxi time, extra fuel, EGT margin, etc.)

Enhance SOPs and monitor results of new policies

Measure associated savings

Optimized Fuel consumption Greater payload (belly freight) Reduced maintenance costs







Avionica: Uniquely Positioned to Ensure Your Success

•Nearly 8,000 Installed Airborne Avionics Worldwide

Over 500 Customers Worldwide

• FAA STC's familiarized with EASA, CAAC, ANAC, and Transport Canada.

Avionica's avSYNC Solution:

- Leads to reduction in maintenance costs
- •Convenient phone or I-Pad app: no need to carry paperwork
- •Immediate transfer of data resulting in dispatch reliability
- •Crew has immediate access to flight analysis for review

REAL INNOVATION... REAL SOLUTIONS.