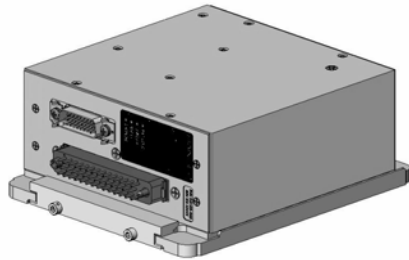


SANDEL®

SG102

Attitude Heading Reference System

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Pilot's Guide

Pilot information

Publication Date: 18 DEC 2007

This guide provides information on the use and operation of the SG102 Attitude Heading Reference System.

Information in this guide is current as of publication or revision date. Specifications and operational details are subject to change without notice at the discretion of Sandel Avionics, Inc.

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Revision notice

The “Effectivity, Errata, and Revision History” allow the use of this Pilot Guide with a specific software release. The “Effectivity, Errata, and Revision History” specifically lists the software to which this Pilot’s Guide applies and corrects any errors or omissions in this revision of the Pilot’s Guide. Document number 82011-PG-ERR, Effectivity, Errata, and Revision History” can be found on page VI of this Pilot’s Guide.

Operational and legal issues

The information provided by the SG102 is displayed by external equipment. It is the pilot’s responsibility to ensure the correct configuration and use of the external equipment. Always refer to your approved Aircraft Flight Manual Supplement for operation and limitations on the use of installed equipment.

Note: Because aircraft vary in their installed equipment, it is important to note that what is displayed by the information provided by the SG102 may vary depending on the presence or absence of equipment.

Approvals

The FAA has approved the SG102 under the following TSOs:

TSO-C4c	Bank and Pitch Instruments
TSO -C6d	Direction Instrument, Magnetic (Gyroscopically Stabilized)

The following RTCA Standards apply to this product:

DO-160E:	Environmental (Categories listed in Chapter 3)
DO-178B	Software Level C

Installation of the SG102 Attitude Heading Reference System in a type-certificated aircraft must be performed in accordance with the Sandel SG102/MT102 Installation Manual, document number 82011-IM (latest revision).

Conventions Used in This Manual

This manual uses terms, which should be familiar to aviation-minded readers, such as “magnetic heading” and “gyro”. Terms, which are specific to the SG102, will be placed in the glossary.

Table of Contents

Pilot information	iii
Copyright	iii
Revision notice	iii
Operational and legal issues	iii
Approvals	iv
Conventions Used in This Manual	iv
Table of Contents	v
Effectivity, Errata and Revision History	vi
CHAPTER 1 WELCOME TO THE SG102	1-1
What is the SG102?	1-1
CHAPTER 2 OPERATION	2-1
NORMAL OPERATION	2-1
ABNORMAL OPERATION	2-2
CHAPTER 3 TECHNICAL SPECIFICATIONS	3-1
CHAPTER 4 INSTALLATION INFORMATION	4-1
CHAPTER 5 GLOSSARY	5-1
CHAPTER 6 AVIONICS ACRONYMS	6-1

Effectivity, Errata and Revision History

Applies to: SG102 Software 1.00
MT102 Software 1.00
SG102 Pilot's Guide 82011-PG-A

With the exception of the superseding information contained in this section, operation of the SG102 is as described in the SG102 Pilot's Guide referenced above.

Revision	Date	Comments
A	12/18/07	Initial Release

No errata applicable to this release.

CHAPTER 1 WELCOME TO THE SG102

What is the SG102?

The Sandel model SG102 is a solid-state Attitude Heading Reference System (AHRS) that combines angular rate, linear acceleration and magnetic field measurements to provide primary heading information.

Roll and pitch information is provided for stabilization of other equipment such as weather RADAR or FLIR cameras etc.

Limitations

1. **The roll and pitch information provided by the SG102 may not be used to display aircraft attitude to the aircrew.**
2. **The SG102 is not approved for aerobatic flight.**

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CHAPTER 2 OPERATION

NORMAL OPERATION

Flying an aircraft equipped with an SG102 does not require any special piloting skills; however there are a few key points for the pilot:

Preflight:

- Refer to the Approved Flight Manual Supplement for the SG102.
- The initialization period is approximately 4-5 minutes at 15° C. To achieve this initialization time, the aircraft should not be moved. If the aircraft is taxied during the initialization period, the initialization period may be delayed by approximately 15-20 seconds. After aircraft movement stops the SG102 will then initialize normally. When the Flag is removed from the heading display, the SG102 initialization is complete.

In Flight:

- The SG102 supports two slaving modes: “Slaving ON” and “Slaving OFF”. The “Slaving OFF” mode requires the installation of Pilot-operated slaving switches.
- Under normal conditions the SG102 should be operated with “Slaving ON”, by moving the Slaving selector switch to the “ON” position.
- To operate in the “Slaving OFF” mode, move the Slaving selector switch to the “OFF” position. The heading display can now be adjusted with the CW or CCW manual slew switches as desired. All displays driven by the SG102 will track the adjusted heading.
- Move the Slaving On switch to the ON position to restore slaving operation. All indicators will immediately slew to the current magnetic heading.

ABNORMAL OPERATION

Outputs Flagged

If the SG102 is inoperative or detects an internal error, all outputs will be flagged. Reference to an alternate heading source must be made.

Power Interruptions

The SG102 can withstand power interruptions of up to 30 seconds in flight without losing its initialization. If longer power interruptions are experienced and the gyro flag appears, it will be necessary to use an alternate means of primary heading information for the remainder of the flight.

CHAPTER 3 TECHNICAL SPECIFICATIONS

TSO Compliance	
Technical Standard Order (TSO):	TSO-C4c “Bank and Pitch Instruments” TSO-C6d “Direction Instrument, Magnetic (Gyroscopically Stabilized)”
Software Certification:	RTCA/DO-178, Level C
Environmental Category:	RTCA DO-160E

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Physical Dimensions	
Width:	
SG102	5.1 in. (12.95 cm.)
MT102 (Diameter)	3.3 in. (8.38 cm.)
Height:	
SG102	2.0 in. (5.08 cm.)
MT102	.9 in. (2.28 cm.)
Length:	
SG102	5.38 in. (13.66 cm.)
Weight:	
SG102	2.1 lbs. (.95 kg.)
MT102	.4 lbs. (.18 kg.)

Operational Characteristics	
Temperature/Altitude:	-55° C to +70° C - up to 55,000 feet
Power Inputs:	11-33vdc @ nominal 15 watts Startup current approximately 5 amperes

CHAPTER 4 INSTALLATION INFORMATION

To be completed by installer.

Date of Installation: _____

Installer Company: _____

Installer Address:

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Installer Phone: _____

Work Order #: _____

Installer: _____

Notes:

CHAPTER 5 GLOSSARY

Magnetometer	A device that measures the earth's magnetic field
Failure	The inability of the equipment or any sub-part of that equipment to perform within specified limits.

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CHAPTER 6 AVIONICS ACRONYMS

AFM	Airplane Flight Manual
AFMS	Airplane Flight Manual Supplement
AHRS	Attitude Heading Reference System
FAA	Federal Aviation Administration
HDG	Magnetic Heading
POH	Pilot's Operating Handbook
RTCA	Radio Technical Commission on Aeronautics (rca.org)
TSO	Technical Standard Order