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SIL SG102-06-A Service Information Letter SG102 AHRS

Date: February 16, 2011
Regarding: SG102 AHRS Software Version 1.31 Release

Reason

This Service Letter announces the availability of improved SG102 software version 1.31. This software is not required or recommended for any existing, properly working installation, but might be called for either on-condition or to improve the performance of an existing installation. This software is installed using the Sandel SG102 Maintenance Adapter and:

> SG102 Maintenance Adapter: P/N 82132
> SG102 Software Loader (SDFlash Version 1.63.00) or latest version
> SG102 Calibration Software version 2.4.0 or later

Applicability

Applies to Sandel part number SG102-(xxx) with MOD 1

Compliance

Not required

Description

There has been a reported problem with a certain SG102 installation which has been traced to unintentional rotational misalignment of the MT102 during installation. The MT102 axis (represented by the arrow printed on the case and the case alignment marks) was not correctly lined up with the aircraft longitudinal axis as called for in the installation manual. The pilot's-eye view of this problem is that during straight and level flight headings are correct, but immediately after rollout from maneuvering the heading may be off. The amount of heading error is related to the number of degrees of the misalignment and the actual headings flown. The slaving system in the SG102 will subsequently correct the error at 3 deg's/minute until it is washed out.

This type of error is usually small, is within required system tolerances, and is hard to detect by the pilot with a single compass system unless you are looking for it. But with dual or dissimilar systems it is easier to see, appearing as a

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transient heading split. In the case of the reported problems, the misalignment of the MT102 was almost 10 degrees. This produced large enough errors to force the SG102 to revert to fast-slave, momentarily flagging the heading.

We have made the above technical analysis using the data recording capability of the SN3500. We have also given some thought to trying to simplify the MT102 installation requirements and reduce the potential for installation error. To this end, we have made a functional change to the SG102 AHRS software that can *automatically detect* this type of rotational misalignment and correct for it.

This software is backward compatible with existing installations.

This means:

a) Any rotational error that may exist in an existing installation can be removed without a compass rose recalibration (possibly resulting in an improvement in heading accuracy).

b) In new installations the MT102 rotational alignment has now been made a non-critical item - up to approximately 10 degrees. An accurate compass-rose alignment must, still be accomplished as part of the installation procedure.

c) It is still crucial that the SG102 and the MT102 are level with each other and the airframe. This is easily determined using a digital level. Always use the defined leveling references found in the aircraft Type Certificate Data Sheet (TCDS) or the aircraft Maintenance Manual (MM). However for many aircraft, for the lateral axis, take a reading across the left and right seat tracks and make sure it duplicates when the level is placed on the same axis of the SG102 and MT102. For the longitudinal axis, measure using the method described in the TCDS or MM, and make sure it duplicates on the SG102 and MT102 when the level is placed on the same axis. See the SG102 installation manual for details.

Note: If the SG102 is used with the SN3500 or SN4500 with reversionary attitude, the attitude display is a good method to accurately validate the SG102 alignment.

Current SG102 Calibration Software

Please use the SG102 Calibration Software version 2.4.0 or later.

The SB SG102-06 related files including the software update, software load utility and instructions can be accessed on the Sandel website at:

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www.sandel.com/SG102_sup_sb.php   [case-sensitive]

- or -

contact Sandel Product Support at (760)727-4900 selection "2"

Warranty Reimbursement

None

Manpower

1 hour

Approval

This modification does not affect the original approval.

Contact Sandel for details if needed.

Identification

No change

Testing

None required, recommend validate during next flight.

Related Documentation

82011-IM Rev. F   Installation Manual

82011-PGERR Rev D4   Pilots Guide Errata

END