

# Service Bulletin

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| <b>MODEL(S)</b>       | MD302                                    |
| <b>PART NUMBER(S)</b> | 6420302-( )                              |
| <b>DESCRIPTION</b>    | SAM <sup>®</sup> Standby Attitude Module |
| <b>TOPIC</b>          | Software Update Version 1.0.1            |
| <b>PURPOSE</b>        | Product and Performance Enhancements     |
| <b>RELEASE DATE</b>   | May 3, 2013                              |

## APPLICABILITY

This Service Bulletin is applicable to the SAM<sup>®</sup>, model MD302 Standby Attitude Module, part number 6420302-( ) manufactured by Mid-Continent Instrument Co., Inc. (dba Mid-Continent Instruments and Avionics). These updates are to be performed **ONLY** by authorized personnel per the instructions as listed in this Service Bulletin. Units with this software upgrade are available for sale from the manufacturer.

## PURPOSE

The MD302 SAM Software Version 1.0.1 includes updates that improve flight performance with regards to a combination of extreme pitch and high or low ambient temperature, as well as improved performance in high altitude, high speed maneuvers during sustained high bank angles. Additional performance and customer requested enhancements are included in Software Version 1.0.1 as described herein.

## EFFECTIVITY: MANDATORY

All MD302 SAM units in the field shall be updated to Software Version 1.0.1. Compliance to this mandate is recommended as soon as reasonably practical and with all attempts to complete the update within 60 days of the release of this Service Bulletin.

Following the release of this Service Bulletin, all MD302 SAM units provided by Mid-Continent Instruments and Avionics shall be supplied with Software Version 1.0.1 or later.

## DESCRIPTION

The following list describes the added features, enhancements and resolutions incorporated in the Software Version 1.0.1 update.

**DESCRIPTION****(cont)**ADDED FEATURES

1. Added message to indicate that Configuration Mode was aborted due to sensing of flight condition (minimum airspeed detected).
2. Added feature that provides the option to move the attitude display to the right side when the unit is installed in the horizontal orientation.
3. Added feature to provide a BAR color to the Range Marking Configuration menu. This produces a 'barber pole' red-and-white striped airspeed range marking on the airspeed tape display. By default, selecting the BAR color will automatically create a range from the input value to the maximum value of the airspeed tape (appropriate for static Vne/Vmo display).
4. Added feature to provide a BAR radial to the Range Marking Configuration menu. This produces a 'barber pole' red-and-white striped radial mark at a single value on the airspeed tape display.
5. Added an INFO submenu to the Pilot Options menu. The new INFO submenu now contains the REVIEW CONFIG menu and a new BATTERY INFO menu, which displays read-only detailed battery status information.
6. Added feature in the POWERING DOWN dialog which is displayed when external power is removed. In addition to 60-second countdown prior to automatic shutoff, the dialog screen now has the option to manually turn the unit off (default) or remain on.
7. Added feature to exit the manual brightness setting, which is overlaid on the attitude display, by pressing the Control Knob.

ENHANCEMENTS

8. Updated calibration values to improve attitude accuracy during sustained high pitch maneuvers when the unit is exposed to extreme high or low temperature.
9. Updated attitude solution algorithm to include correction factor for airspeed component, which improves accuracy and performance during high altitude, high speed maneuvers.
10. Improved flight performance during vibration. System now meets the requirements of DO-160G Category U vibration (for helicopters).
11. Updated text and positions of various menu items for improved consistency.
12. Updated battery status symbol to display during a Red-X of the attitude instrument if aircraft power is not available.
13. Modified the configuration data structure to ensure a unit with Software Version 1.0.1 will properly inherit and update the data from a unit with previously installed Software Version 1.0.0. Units with Software Version 1.0.1, which are backward loaded with Software Version 1.0.0, will lose configuration data and must be reconfigured.

**DESCRIPTION***(cont)*RESOLUTIONS

14. Baro synchronization via ARINC 429 reliably responds to single-step changes from the source.
15. Attitude scale appears with properly anti-aliased lines at exactly 0° pitch and roll.
16. The unit will now automatically power off after 5 minutes if an error message occurs during startup and is not acknowledged.
17. The altitude display has been extended from 50,000 ft to 55,000 ft.
18. The unit will now robustly handle an uninitialized Configuration Module.
19. The REVIEW CONFIG menu will correctly display the configured range markings. This does not affect actual range markings on the airspeed display.

**ESTIMATED MANPOWER**

Approximately 30-60 minutes

**APPROVALS**

None required

**WEIGHT AND BALANCE**

No change

**ELECTRICAL LOAD DATA**

No change

**CERTIFICATION**

This Service Bulletin represents a minor change to the previously approved Technical Standard Order Authorization as well as any Supplemental Type Certification or Type Certifications. Any changes to software and/or complex hardware have been completed in accordance with approved developmental and quality processes per the guidelines of RTCA document DO-178B and DO-254, respectively.

**OTHER PUBLICATIONS AFFECTED**

Mid-Continent Instruments and Avionics Installation Manual and Operating Instructions, part number 9017782, Revision D or later, includes information associated with this Service Bulletin.

Mid-Continent Instruments and Avionics Pilot's Guide, part number 9017846, Revision B or later, includes information associated with this Service Bulletin.

## **ACCOMPLISHMENT INSTRUCTIONS**

The action required by this Service Bulletin can be accomplished by returning the unit to Mid-Continent Instruments and Avionics or by performing the instructions as listed in this section.

### **If returning the MD302 SAM<sup>®</sup> unit to Mid-Continent Instruments and Avionics:**

Call the Mid-Continent Instruments and Avionics sales department for a Return Material Authorization (RMA) at 316-630-0101

Return address: Mid-Continent Instruments and Avionics  
9400 E. 34<sup>th</sup> Street N.  
Wichita, KS 67226

### **If performing this update in the field:**

Follow the instructions listed below:

#### **PREPARATION**

1. Prepare software update file.
  - A. Obtain a USB flash drive from Mid-Continent Instruments and Avionics with Software Version 1.0.1 file loaded.
  - OR
  - B. Download Software Version 1.0.1 to the root directory of a standard FAT-formatted USB flash drive from **[www.flySAM.com/software-updates](http://www.flySAM.com/software-updates)**.
2. Ensure that the unit is powered off.
3. Remove the unit from the instrument panel.
  - A. Remove the four mounting screws attaching the bezel of the unit to the panel.
  - B. Pull the unit forward until the end plate is visible.

**NOTE:** This can be done without removing the electrical connector or pneumatic connections if the proper service lengths were applied during installation.
4. Loosen the screw of the USB access cover on the rear of the unit until the USB port is accessible.

#### **PERFORM SERVICE ACTION**

5. Insert the USB flash drive with Software Version 1.0.1 into the USB port.
6. Turn on the unit by pressing and continuing to hold the Control Knob on the faceplate.
7. Continue holding as prompted (up to 10 seconds) until the Pre-Flight Screen appears. Once CONFIGURE MENU is displayed, the unit is in Configuration Mode.
8. Apply external power to the unit. Software updates cannot be performed on battery power.

9. Turn the Control Knob to highlight the UPDATE SOFTWARE option. This option will not be available if external power is not applied.
10. Press the Control Knob to initiate the software load.
11. When the software load is complete, the unit will display SUCCESSFUL UPDATE.
12. Press the Control Knob to reset the unit.

*If the software update is unsuccessful, an ERROR message will be displayed. Should this occur, remove the USB flash drive, power down the unit and return to Step 5 of the Service Action above. If the error message persists, contact Mid-Continent Instruments and Avionics.*

13. The update process will continue as the screen will read "UPDATE STATUS".
  - A. There are two items displayed at this time:
    - The SERIAL number of the unit
    - a six-letter RESPONSE code
  - B. **Record these two pieces of information. Both the Serial Number and Response Code are REQUIRED during the verification process of this Service Bulletin.**
14. Once the Update Status process is complete the unit will display SUCCESSFUL UPDATE.
15. Verify that the Serial Number and Response Code have been recorded and press OK to reset the unit.

### **VERIFICATION**

16. Upon startup, verify the Pre-Flight Screen displays **S/W Version 1.0.1**.
17. Complete the Return Mailer provided with this Service Bulletin. Include both the Serial Number and Response Code or provide the requested information online at **[www.flySAM.com/software-updates](http://www.flySAM.com/software-updates)**.

### **RETURN TO SERVICE**

18. Remove the USB flash drive.
19. Close the USB Access Cover and tighten the screw in place.
20. Re-install the unit into the instrument panel in reverse order as described in Step 3 (above).