

Engineering Department

Engineering Change Order (ECO)

ECO #: 50244

Effective Date: March 22, 2017

Title: KCF Compass board new revision

Author: AEG
Engineering Approval: AEG
Operations Approval: AEG

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Summary:

Components on the KCF compass board went obsolete necessitating a redesign. The new board is a drop in replacement, however requires an upgrade of the PRO4 firmware to $\geq 2.7.0$.

Parts Affected:

Part Number	Notes	Removed	Added	Modified
50244	Changed vendor part and revision.	☐	☐	☒

Detail:

A complete redesign of the KCF module was performed.

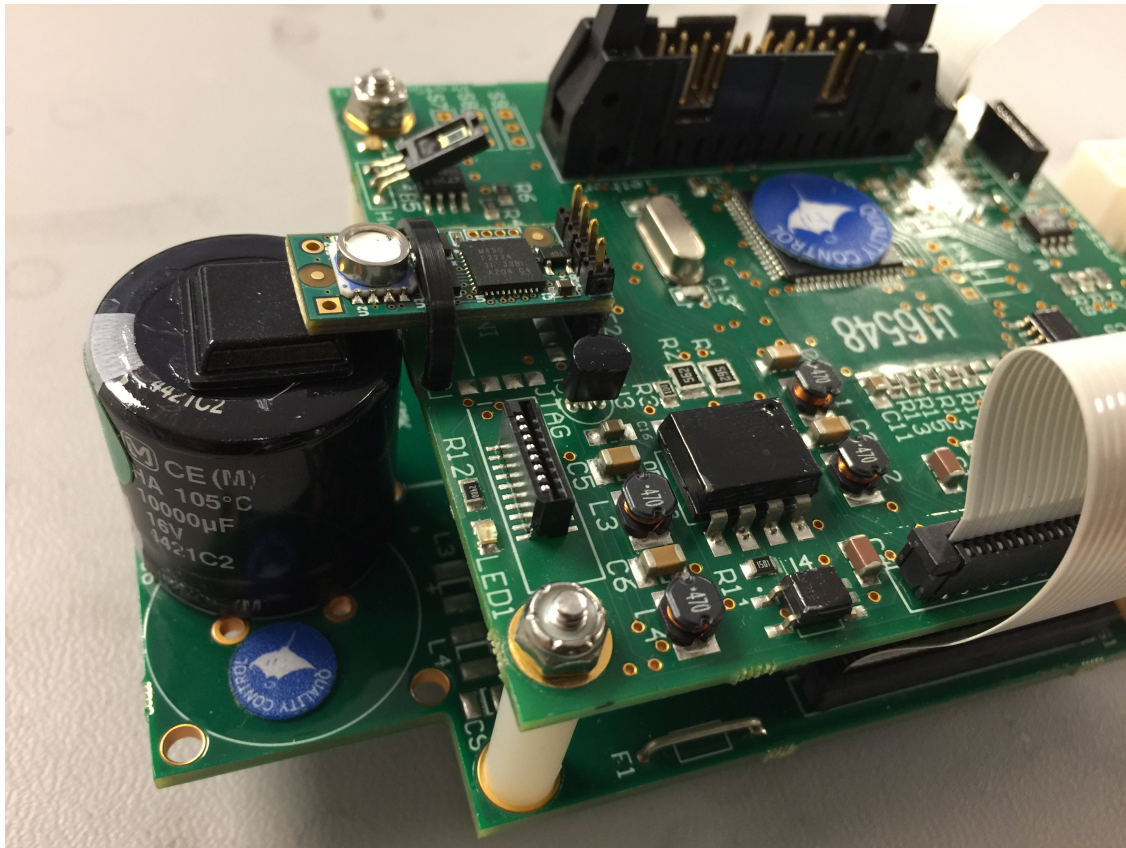
It is now smaller, has full 9 DOF, and completely new firmware.

There were several functional changes to the firmware.

- 1) The semantics of the calibration coefficients have changed from (min, range) to (offset, gain)
- 2) Additional commands were added
- 3) The behaviors of the LED are now better defined:
 - a. Each Node has a Green and Red LED. On Version 2.x of the firmware, the meanings of the LEDs are:
 - i. Green: Blinks every 0.5 seconds to show that data is being processed.
 - ii. Red: On during serial transmission. If a packet is received with a bad checksum, it will stay on until the next successful transmission.
 - b. At power-up, the Red LED is illuminated until the input power exceeds 3.0V.
 - c. If the calibration data in flash fails the CRC test, the Red LED will stay illuminated (with the Green LED blinking) until the first serial communication.
 - d.

Note that compass calibration in cockpit will not function, however as it was never apparently functional on KCF modules this feature will be removed in a future version of cockpit.

Mounting onto the PRO4 CPU boards remains nearly identical with just minor adjustments for relocating the rubber bumper closer to the compass so the compass can rest on it See figure 1.



(Figure 1. Mounting of new compass KCF compass module)

As of the writing of this ECO only bench testing and basic Q/C tests have been performed, however the new module seemed to be working as expected in all tests.

Action Item:

Action	Department	Acknowledgement Initials
Provide new firmware file (pro4_2_7_0.hex)	Engineering	aeg
Update vrburn firmware config file	Engineering	aeg
Add new firmware to cockpit installer build	Engineering	aeg
Update part in epicore	Inventory	SL
Continue Q/C testing and monitor initial field uses from problems	Engineering	aeg
Provide PPI with updated firmware and vrburnfirmware config	Engineering	aeg

Modified / Referenced Documents:

Document	Current Revision
Firmware file: pro4_2_7_0	2.7.0
videoray_device_descriptions.xml	N/A

-- END OF ORDER --