External Magnetometer EDC-D10 Installation and Calibration

Dynon Avionics
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Installation

The Dynon Avionics external magnetometer EDC-D10 must be mounted according to the following instructions for it to function correctly. All mounting hardware needs to be non-ferrous material such as aluminum, plastic, or brass. Many stainless steel screws are alloys with some ferrous material in them. If the item is attracted to a magnet, it should not be used in the installation. The EDC-D10 needs to be mounted in a location as free from magnetic interference as possible. This means away from any ferrous nuts, bolts, and screws, aircraft tubing, and wires carrying any appreciable current such as strobe light wiring.

The EDC-D10 must be mounted such that its orientation is as closely aligned with the EFIS-D10 as possible. It should be mounted with the long axes parallel to the wings, the electrical connector facing forward (towards the nose of the airplane), and the mounting tabs on the bottom. The bracket used to hold the EDC-D10 must account for all differences in angles between the EFIS-D10 and the EDC-D10. This includes pitch, roll, and yaw. We recommend you use an electronic level that reads to $1/10^{th}$ of a degree to make sure the EDC-D10 is aligned with the EFIS-D10 in pitch and roll to better than $2/10^{th}$ of a degree. Wiring instructions are included in the EFIS-D10 Installation Guide on page 10.

Wiring Verification

Correct wiring installation can be easily verified once completed. Power on the EFIS-D10 with the EDC-D10 connected to it. Observe the displayed heading and then hold one of the earpieces of a headset near the front of the EFIS-D10. If the EDC-D10 is correctly wired, you should see no change in the displayed heading (more than 5 degrees) when the headset earpiece is near the EFIS-D10. If you see a substantial change in heading, there is a communication problem between the EFIS-D10 and the EDC-D10.

Calibration

The procedure for in-plane calibration of the EDC-D10 is different than described in the EFIS-D10 Installation Guide. It involves pointing the aircraft in four directions, taking data at each location using a laptop connected to the EFIS-D10, and having the laptop calculate the calibration constants and upload them to the EFIS-D10.

To perform the calibration, you will need the following:

1) EFIS-D10 and EDC-D10 installed in aircraft with PC connection to the EFIS-D10 available.
2) Laptop with the latest version of the EFIS Support Program installed (to input the magnetic dip angle into the EFIS.)
3) Magnetic Dip angle known. Refer to the EFIS-D10 Installation Guide or the EFIS Support Program help files for information about determining the magnetic dip angle and loading it into the EFIS-D10.

4) The EDC Calibration Program downloaded from our web site and loaded on the laptop.
5) An accurate method of aligning the airplane with North, East, South, and West. We have used a compass rose at the airport for this.
6) Appropriate cables to connect the laptop to the EFIS.

Once you have the installation completed and verified, a laptop connected to the EFIS-D10 with the EDC Calibration program, and a place to perform the calibration, perform the following steps:

1) Turn on the EFIS-D10 and allow it to warm up for at least 15 minutes before performing the calibration.
2) Start the EDC Calibration Program on the laptop and verify data is being displayed in the window of the program. If no data is being displayed, check if the data is available on one of the other available COMM ports using the pull down window in the EDC Calibration Program window. If no data is available on any of the COMM ports, check your cabling to make sure it is correct.
3) Align the airplane pointing North as closely as possible.
4) On the EFIS-D10, navigate the menus to SETUP->MAGCAL. When you press the MAGCAL button, you should see the data length change in the window and the message "Collecting data for NORTH" will appear. A counter will indicate the data is being stored and after about 15 seconds, a second message "Finished taking data this position" will appear.
5) Align the airplane pointing East as closely as possible.
6) On the EFIS-D10 press the left most button labeled GNDNRT. The EDC Calibration Program window will display "Collecting data for EAST." After about 15 seconds, the message "Finished taking data this position" will appear.
7) Align the airplane pointing South as closely as possible.
8) On the EFIS-D10 press the 2nd from the left button labeled AIRRGT. The EDC Calibration Program window will display "Collecting data for SOUTH." After about 15 seconds, the message "Finished taking data this position" will appear.
9) Align the airplane pointing West as closely as possible.
10) On the EFIS-D10 press the 3rd from the left button labeled AIRLFT. The EDC Calibration Program window will display "Collecting data for WEST." After about 15 seconds, the message "Finished taking data this position" will appear.
11) Press the EFIS-D10 button labeled END. This will cause the EDC Calibration Program on the laptop to calculate the calibration constants and upload them into the EFIS-D10. The program will also display the average error. This value can be rounded to the nearest integer and used to adjust the magnetic heading in the EFIS. To do this, navigate the EFIS-D10 menu structure to SETUP->MAGADJ. Use the up/down arrows to enter in the suggested magnetic adjustment value.

This completes the EDC-D10 calibration process. The process can be repeated as often as desired. The overall accuracy of the compass depends on the installation location (away from any ferrous materials or current carrying wires), the installation alignment (aligned with the EFIS-D10 in pitch, roll, and yaw), and the calibration procedure (accurately aligning the aircraft with North, East, West, and South and having the correct magnetic dip angle loaded into the EFIS-D10.) If the compass performance is not adequate for your usage, we suggest that you investigate each of these factors and try to optimize your installation for each factor.