

MGL Avionics to Ray Allen Servo Position Output Interface

Connecting the Ray Allen Servo Position Output to an MGL IOEX

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1 Introduction

This document describes how to connect a servo from “The Ray Allen Company” (RA) to an MGL Avionics EFIS via the MGL Avionics IOEX. The user has the option to retain the RA LED position indicator (for example “RP3 LED Indicator”) in parallel with the MGL display, or to remove the LED Indicator.

2 Requirements

The user will need the following components:

- One or more RA Servos (a single MGL IOEX can monitor up to 7 servos)
- MGL IOEX compatible EFIS (for example Enigma / Odyssey / Voyager)
- MGL IOEX unit
- 12V supply (preferably regulated to ensure high accuracy)

No pull-up resistors are required.

3 Interfacing to the RA Servo (with LED Indicator mounted)

Figure 1 describes the standard installation of the RA LED Indicator and Servo (taken from the RA installation manual – see section 4 for more information on where to find this document).

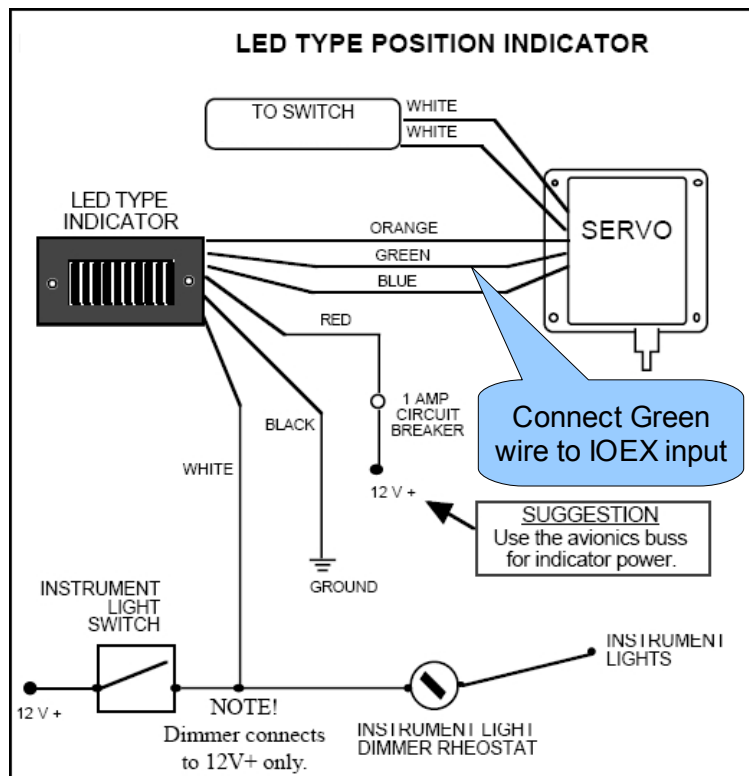


Figure 1: Standard RA Servo & LED Indicator installation (from RA installation manual)

The two solid white wires from the RA servo are used to power the motor that drives the output shaft of the servo. By reversing the polarity of the power applied to these two wires one can alternate the direction of travel. No power is required to retain the position of the output shaft. These two wires are not influenced in any way by the MGL-RA Servo interface wiring.

Connecting the “standard” system that includes both the RA servo and LED indicator to the MGL IOEX unit is trivial: wire the system as per the RA installation instructions and then add on wire. The Green (white wire with green line) is the output signal (from the servo) to be connected to one of the the IOEX analog inputs. No resistors or any other components are required. Just one wire between the RA servo and the IOEX. The voltage of the Green wire will vary between approximately 0.25V and 1.25V relative to the system (battery) ground. If one looks at the second page of the EFIS diagnostics page, the raw ADC output from the IOEX input should vary from approximately 14 to 88 for the full deflection range of the servo. (The second page of the Diagnostics page is accessed by pressing the “Enter” key while the first Diagnostics page is selected – displaying the IOEX raw output data.)

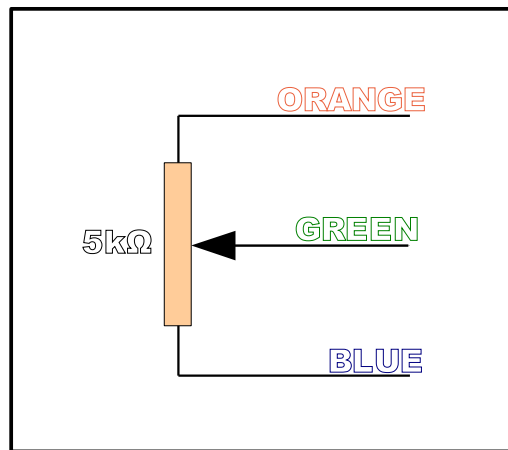


Figure 2: Wiring of Potentiometer inside RA Servo to measure position

Figure 2 provides an approximation of the position measurement electronics contained inside the RA Servo unit. The Orange wire is connected to the regulated supply provided by the LED Indicator (approximately 1.0V relative to the Blue wire).

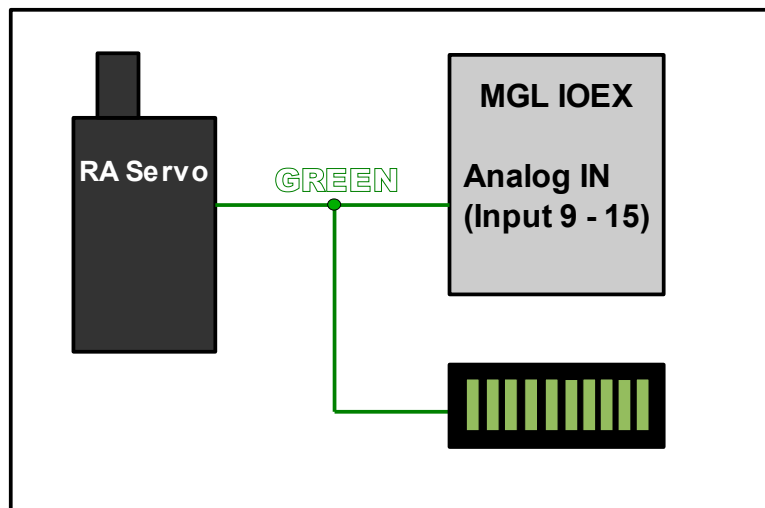


Figure 3: Green wire wiring between the RA Servo and the MGL IOEX!

Figure 3 describes how to wire the RA Servo to the MGL IOEX if an RA LED Indicator is present.

4 Interfacing to the RA Servo (without LED Indicator mounted)

If no RA LED Indicator is installed, the wiring deviates a bit from the standard wiring described in the RA installation instructions.

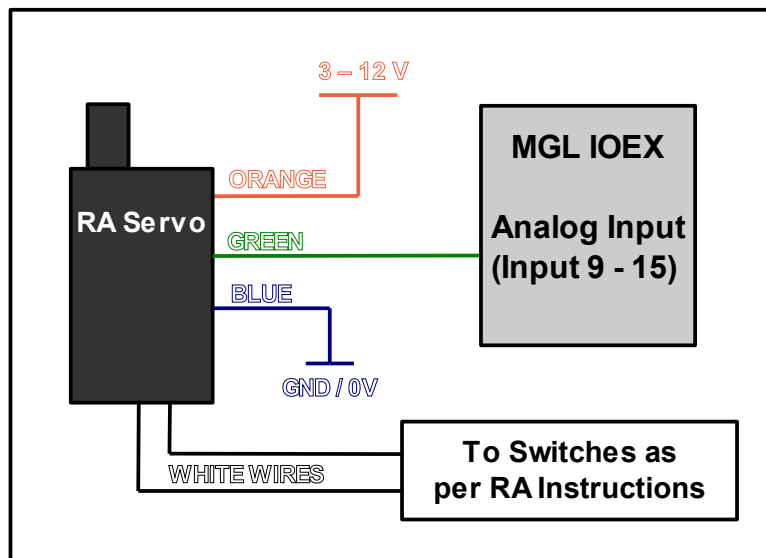


Figure 3: Green wire wiring between the RA Servo and the MGL IOEX!

Figure 3 describes the wiring if no RA LED Indicator is present. Instead of connecting the Orange wire from the servo to the RA LED Indicator, the Orange wire is connected to 3V to 12V. The higher the voltage, the higher the resolution will be (but even at the lowest range it should be more than sufficient resolution for most applications). It is preferable to use a regulated DC supply. Since it is feeding a potentiometer, the output will fluctuate if the supply voltage fluctuates.

The Blue wire is connected to ground, and the Green wire to one of the MGL IOEX analog inputs (labeled “In 9” to “In 15” on the IOEX unit).

5 For more Information

For more information on the Ray Allen products, visit the respective websites listed below.

Ray Allen: www.rayallencompany.com

Installation Instructions: <http://www.rayallencompany.com/RACinfo/downloadpg.html>

For more information on the MGL Avionics products, visit the respective websites listed below.

MGL Avionics: <http://www.mglavionics.co.za/>

IOEX: <http://www.mglavionics.co.za/EFISACC.htm>

Enigma: <http://www.mglavionics.co.za/Enigmapage.html>

Voyager: <http://www.mglavionics.co.za/Voyager.htm>

Odyssey: <http://www.mglavionics.co.za/Odyssey.html>