



*blue mountain avionics*

# Engineering Note

Product	EFIS/One	
Release	2.15	
Subject	UPS SL30 interface specification	
Revised	06/19/2003	Greg Richter

## Overview

The UPS SL30 Nav/Com radio has proven to be both popular and reliable in light aircraft. This document describes how to connect the SL30 to EFIS/One to provide navigation signals for EFIS/One and optionally frequency and OBS commands to the SL30. Please refer to the *Apollo SL30 Installation Manual* for detailed wiring information on the SL30, and for the diagrams referenced here.

***If you are not comfortable installing and connecting delicate electronic equipment, please get a qualified avionics technician to help you.***

Our recommended interface method, which is also the simplest, is to use the SL30's digital outputs. If you can't do this, the analog signals will provide you with ILS/VOR guidance, but OBS control will have to be done manually on the radio since the EFIS has no way to command the SL30 without the digital serial interface.

## SL-30 Digital Outputs

Connecting the SL30 to EFIS/One using a digital link is easy and enables EFIS/One to set the radio's frequencies and OBS providing a complete, integrated communication system. In addition, the LOC/GS information is also supported through this serial interface. The analog signals do not need to be connected if the serial interface is used. A digital interface is the preferred method as it uses only 3 wires and provides extended functionality. The following pins on the SL30 are used:

Connection	SL30 Pin# (37 pin D-sub)
Signal ground	3
RX Data	4
TX Data	5

## Digital Connection Diagram

These three wires connect your SL30 to Serial A on your EFIS/One. Serial A is usually available unless it's used to interface with a FADEC computer. These signals are very low current and wiring is best done with #22 stranded wires, Teflon insulation preferred.

Function	SL30	EFIS/One Serial A
Ground	3	5
RX Data - Commands from EFIS/One	4	3
TX Data - Replies to EFIS/One	5	2

## Digital Test Procedure

Make sure your SL30 is configured for a Serial Indicator Head as described in the SL30 manual and set the EFIS Nav Source to Ext VOR. If you do not have the SL30 manual, turn on the SL30 while holding the double arrow key and the sys key. The display will probably look like this.



Now press the SEL key to change the Indicator Head Type. Turn the knob on the radio to change the type to SERIAL and then press ENT to save the new setting.



In the EFIS/One SETUP screen (press Escape on the EFIS/One and select from the menu), select UPS SL30 from the Serial A choices. Press Esc to exit the Setup screen and select EFIS/One from the menu and allow the system to finish the initialization.

If the serial interface is working, you should be able to move the OBS knob on the EFIS/One and set the OBS on the SL30. You can also select a frequency from the FLT page on the EFIS/One and by pushing the inner knob, the EFIS/One will tune the radio the selected VOR or Com frequency.

## SL-30 Analog Outputs

As an alternative to the digital interface, the SL30 generates the ARINC standard Localizer and Glideslope signals and the standard LOC GOOD and GS GOOD flag signals. These signals are:

Connection	Function	SL30 Pin# (37 pin D-sub)
CDI +Left	+/- 150 mV DC, full scale	14
CDI +Right	+/- 150 mV DC, full scale	13
Localizer GOOD	300 mV when Localizer is good	10
Localizer GOOD Ground	Ground for Localizer valid flag	29
Glideslope +Up	+/- 150 mV DC, full scale	30
Glideslope +Down	+/- 150 mV DC, full scale	31
Glideslope GOOD	300 mV when GS is valid	28
Glideslope GOOD Ground	Ground for GS valid flag	32

## Analog Connection Diagram

EFIS/One will display a valid indication for ILS use, but will not command or receive OBS data from the radio with the above analog connection. The digital interface described above is a more general purpose solution and supports VOR and OBS tuning.

To connect the SL30 to the EFIS/One, use the table below to connect each signal to the EFIS/One's Analog 1 connector (37 pin) on the side panel. These signals are very low current and wiring is best done with #22 stranded wires, Teflon insulation preferred.

Connection	Function	SL30	EFIS/One Analog 1
CDI +Left	+/- 150 mV DC, full scale	14	5
CDI +Right	-/+ 150 mV DC, full scale	13	29
Localizer GOOD	300 mV when Localizer is good	10	23
Localizer GOOD Ground	Ground for Localizer valid flag	29	21
Glideslope +Up	+/- 150 mV DC, full scale	30	4
Glideslope +Down	-/+ 150 mV DC, full scale	31	3
Glideslope GOOD	300 mV when GS is valid	28	22
Glideslope GOOD Ground	Ground for GS valid flag	32	21

**NOTE:** The Localizer and Glideslope signals are about 2 volts. We are measuring the difference between the two leads. The flags are referenced to ground, and the grounds can be tied together to any EFIS/One ground like Pin 21 as noted, or Pin 24 or 30 which are also grounds.

## Analog Test Procedure

Before connecting to EFIS/One, verify that the connections are correct and use a digital voltmeter to verify that both Localizer and Glideslope signals swing through at range of -150 millivolts to +150 millivolts between the LEFT/RIGHT and UP/DOWN. Connect your meter between LEFT and RIGHT and verify with a NavCom test set. Check to see that the Localizer and Glideslope GOOD signals are putting out at least 300 millivolts into at 150 Ohm load when the signals are valid. Once satisfied that the radio is working correctly and that the wiring is correct, connect to EFIS/One and verify signal on the Calibration screen. Follow the standard EFIS/One calibration procedure for these sensors.