

Preliminary Installation Manual for Icarus Voice Alert System (VAS)



Icarus Instruments, Inc.

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Introduction

The Icarus Voice Alert System is a small electronics module that is connected in-line with a crew member's headset using the standard 6 pin Lemo plug. A captive cable with a male Lemo connector provides aircraft audio and power to the VAS module. A female Lemo connector on VAS is used to connect the crew member's headset.

To ensure a reliable connection to the aircraft for the headset, VAS is in a passive pass-through mode in normal operation. This connects the headphones and mic directly to the aircraft audio panel. Only when there is an alert generated by VAS does a relay trip and route the alert audio messages to the left and right channels of the headset. During an alert message, aircraft audio is mixed in to avoid any possible loss of audio from ATC.

The main purpose of VAS is to alert the crew to a depressurization of the aircraft cabin. A highly accurate internal solid state pressure sensor is used to measure the cabin altitude. The pilot can set a threshold altitude of 7,000 to 15,000 feet, at which a "Don Oxygen Mask" verbal alert will occur. Pressing a button on VAS will annunciate the current cabin altitude as a way to verify proper operation by comparing this altitude with the one displayed on the aircraft's cabin pressure indicator.

VAS has two discrete digital inputs that are used to monitor the state of the Master Warning and Master Caution lights. If these lights are connected to VAS and illuminate, the pilot will hear either "Check Master Warning" or Check Master Caution". This document describes the installation procedure for connecting these signals to the VAS module.

VAS Cable Installation Kit Option

Normally VAS has one captive cable that supplies audio and power via 6 pin Lemo plug. If the optional installation kit has been purchased, the following parts are supplied:

Two foot long cable with 4 pin in-line Molex connector attached

Four pin panel mounted Switchcraft miniature connector with crimp female pins

Four pin cable mounted Switchcraft miniature connector with crimp male pins

Small Ty-Rap to secure the cable

Overview of the Installation

Step 1 Open the VAS case and plug the Molex 4 pin connector into J5 with the black wire mating with pin 1. J5 is next to the Lemo connector. Feed the cable through the grommet in the end cap. Use the Ty-Rap to secure the cable on the inside of the end cap next to the rubber grommet, just like the audio cable.

Step 2 Drill a 0.43" diameter hole in the instrument panel for the four pin Switchcraft connector. This connector is installed from behind the panel and secured with the supplied nut. Wire pin 1 to the Master Warning light and pin 2 to the Master Caution light. The signal from the lights can be normally at ground or at 8 to 30 volts. The sense of the lights is automatically determined by VAS during a configuration step.

Step 3 Cut the option cable to an appropriate length. Install the cable mounted connector such that pin one is the black wire and pin 2 is the brown wire. Be sure to include the strain relief, barrel, and the plastic ring for securing it to the mating connector. You may connect the red wire to pin 3 and the orange wire to pin for future expansion. If not used, cut these wires close to the outside jacket.

The VAS module feeds the signal from the lights through a 200K ohm resistor, preventing any possible loading of the lamp voltage source. The ground return is provided via the Lemo connector.

Testing the Installation

Refer to the VAS Quick Start guide and follow the instructions for setting the cabin altitude threshold altitude. For this test, the actual altitude is not relevant. Be sure that both Master Warning and Caution are not illuminated prior to this process. At the end of the setting process, the signals from Master Warning and Caution are sampled to determine their normal state. Plug a headset into VAS and use the normal test switch to trigger Master Warning and Caution to illuminate. You should hear the appropriate "Check Master Warning" and "Check Master Caution" messages.

Minor Alteration

It is the responsibility of the installing facility to determine that the connection of the Master Warning and Master Caution signals to a panel mounted connector meets the FAA definition of a Minor Alteration requiring only a log book entry. Care has been taken in the design of VAS to ensure that the connection of these signals to VAS cannot cause them to malfunction by failing to illuminate or to display false warning indications. A Field Approval is an alternate method to use for the installation.