

DESIGN INSTALL SPECIFICATION
Digital Bus Reader
Model IND-5000, P/N 50-5052-(XX)
Winds Bearing and Distance

Skylight Avionics
38629 6th St. East
Palmdale, CA. 93550
(805) 265-0497

INDEX

| Section | Title | Page |
|---------|---|-------|
| i. | Operation Instructions | 1 |
| ii. | Equipment Limitations | 1 |
| iii. | Installation Procedures | 2 |
| iv. | Installation Specifications: Physical | 3 |
| v. | Installation Specifications: Electrical | 4 & 5 |
| vi. | Specifications | 6 |
| vii. | Major Components | 7 |
| viii. | Environmental Qualification Form | 8 & 9 |

Illustrations

| Illustration | Title | Page |
|--------------|----------------------------------|------|
| iv-1 | Mechanical Drawing of IND-5000 | 3 |
| v-1 | IND-5000 P/N 50-5070-(XX) Pinout | 4 |
| vi-1 | Interconnect Block Diagram | 7 |

i. Operating Instructions

1. General

The IND-5000, P/N 50-5052-(XX) operation is independent of the Aircraft system to which it is interfaced, operating instructions for that system will need to be followed. The indicator should become operational upon application of aircraft avionics power and provides the following information on a two line display.

| Condition | Display |
|-------------------------|----------|
| Wind Angle Not Valid | WIND --- |
| Wind Velocity Not Valid | VEL --- |
| Wind Angle Valid | WIND XXX |
| Wind Velocity Not Valid | VEL --- |

2. Controls

The 50-5052-(XX) Indicator has two controls on the front panel. The "DIM" control located on the lower right adjusts the LED display brightness. The second control being a two position switch to enable the use of an external relay to change serial data bus inputs. (NOTE: The panel back lighting is controlled by the aircraft instrument panel dimming).

3. Flags and Warnings

The 50-5052-(XX) Indicator will detect the following failures from the serial data bus:

| Failure | Indication |
|--------------------------------|---------------|
| No data Bus | Display "---" |
| Bad or Missing Data Parameters | Display "---" |
| Power or unit failure | Display "---" |

ii. Equipment Limitations

The IND-5000 indicator is only a display of ARINC digital data received from other on-board flight or navigation system outputs. The update speed, accuracy, and data available for display is directly limited to the output of the system to which it is interfaced. In effect, it is a display component of that flight or navigation system and therefore subject to all inherent limitations of those systems.

The IND-5000 operates at 18 to 36VDC power.

iii. Installation Procedures

1. Introduction

This section contains information relative to the installation of the IND-5000 indicator to assure satisfactory performance of the unit. (See sections iv. and v. for detailed mechanical and wiring diagrams.)

2. Unpacking and Inspecting Equipment

After unpacking the IND-5000, make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim.

3. Pre-Installation Check

The IND-5000 should be bench checked for proper system operation prior to being installed in the aircraft.

4. Power Requirements

The IND-5000 has been designed to accept from 18 to 36 VDC power with no special modification or wiring considerations. The IND-5000 operates from a standard +28 VDC aircraft power source. Circuit protection should be provided with an in-line 0.5 Amp breaker. Panel dimming for the unit can be either +5 or +28 VDC, depending on aircraft requirements.

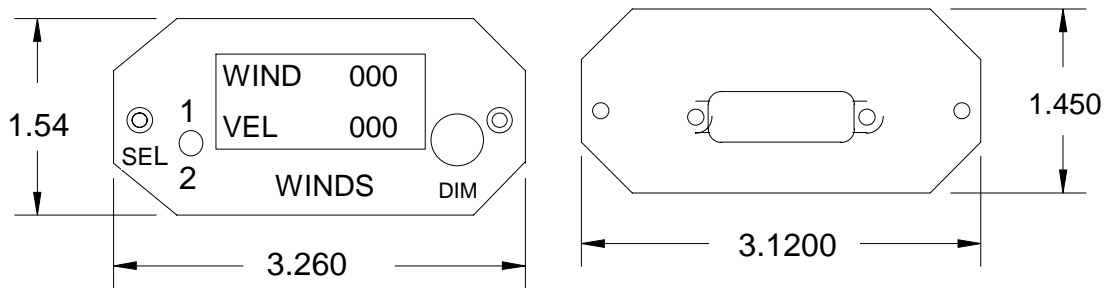
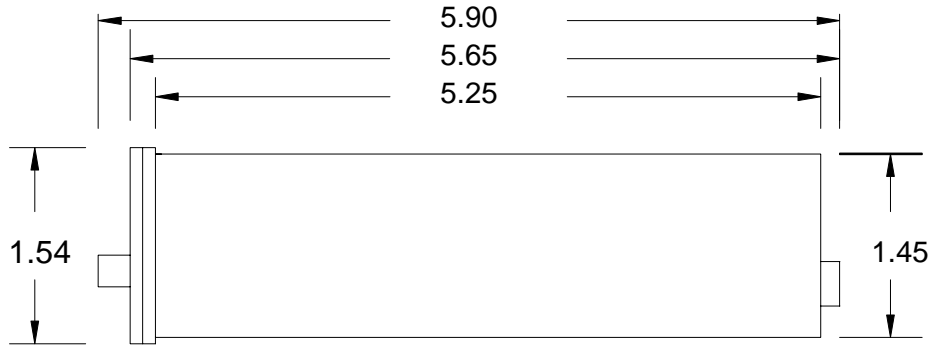
5. Post-installation Check

Upon application of the aircraft 28 VDC power verify the IND-5000 alphanumeric LED displays. (i.e. FLAG) . System Check: After the system to which the IND-5000 has been interfaced has been verified and is operating properly, verify that each data format function is operational. Verify numerical data to other system displays where applicable (i.e. HUD, EFIS, etc.).

iv. Installation Specifications: Physical

1. Mechanical

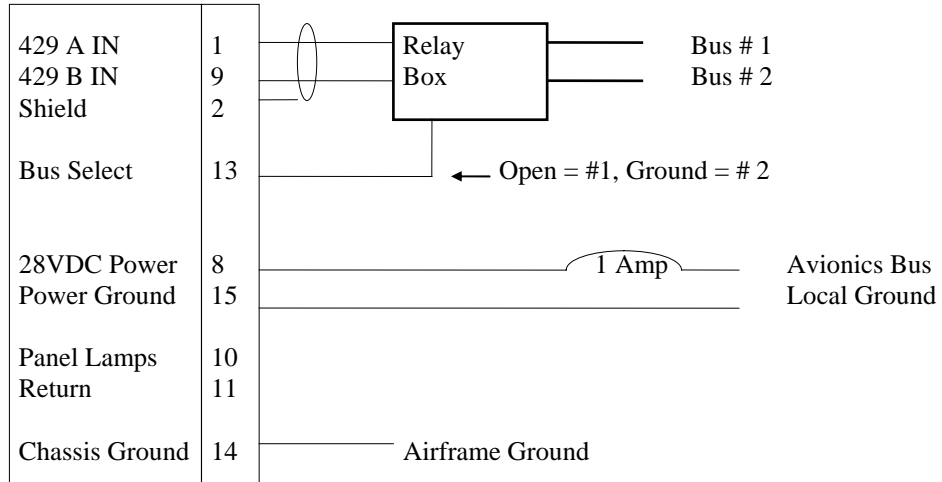
The IND-5000 is designed for rigid mounting in a aircraft instrument panel with a standard 1/2 3ATI cutout and mounting clamp.



IND-5000, P/N 50-5052-(XX) Mechanical Drawing
 (Illustration iv-1)

v. Installation Specifications: Electrical

1. Pinout Diagram



Connector: DA 15P (AMP P/N 745093-1)
 Mate: DA 15S (Standard 15 pin with male screw retainer)

IND-5000 P/N 50-5052-(XX) Pin out
 (illustration v-1)

v. Installation Specifications: Electrical (Continued)

2. Data Format

Input Labels being used must conform to the ARINC /GAMMA -429 formatted standards. data format labels required for the proper operation of the IND-5000, P/N 50-5052-(XX) are as follows:

Wind Velocity Label 315

| | | | | | |
|-----|-----|-----------|----------|--------------|----------|
| Bit | 3 | 332 | 22222222 | 211111111110 | 00000000 |
| | 2 | 109 | 87654321 | 098765432109 | 87654321 |
| P | SSM | Binary NM | Pad 000 | | 00100001 |

256 NM Range, Resolution 1 NM

SSM Valid = Bit 31 HI, all else In Valid

Wind Angle Label 316

| | | | | | |
|-----|-----|--------------|--------------|----------|----------|
| Bit | 3 | 332 | 222222222111 | 11111110 | 00000000 |
| | 2 | 109 | 876543210987 | 65432109 | 87654321 |
| P | SSM | Binary Angle | 00000000 | | 00100001 |

+/- 180° Range, Resolution 0.05°

SSM Valid = Bit 31 HI, all else In Valid.

vi. Specifications

| Specification | Characteristics |
|----------------------|---|
| Compliance | TSO C-113 |
| Display | 2 Lines of 8, Dot Matrix LED Characters |
| Characters | English Font Alphanumeric |
| Character Size | 0.20" X 0.112" |
| Contrast | Minimum 5 in 10K fc Direct Sunlight |
| Luminous Intensity | Minimum 2400 fc / Typical 3400 fc |
| Viewing Angle | Lateral 130o / Vertical 90o |
| Viewing Distance | 10" to 100" (29" Nominal) |
| Physical Dimensions: | |
| Height | 1.54" |
| Length | 5.90" |
| Width | 3.26" |
| Weight | 18ozs. |
| Temperature Range | Operational: -20 to +70C |
| Altitude | Controlled environment equivalent to 15000 ft. non pressurized. |
| Power Requirements | 28VDC at 0.5 Amps Peak, 0.275 Amps nominal. |
| Digital Input | ARINC 429, : LABELS 315 AND 316 |
| Displayed Parameters | Wind Angle 0 TO 359 DEGREES |
| | Wind Velocity 0 TO 255 KNOTS |
| Range & Accuracy | Wind Angle (True) +/-180° @ +/-0.5° |
| | Wind Velocity Kts. 0 to 255, +/- 1 Knot |

vii. Major Components

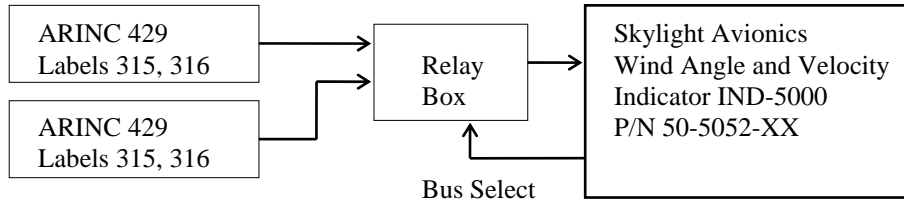
1. Equipment Supplied:

| | | |
|----------------------------------|-----------------|------------|
| Model IND-5000, P/N 50-5052-(XX) | | |
| Panel Lamp voltage | Faceplate color | P/N |
| 5V | Black | 50-5052-01 |
| 5V | Gray | 50-5052-11 |
| 28V | Black | 50-5052-02 |
| 28V | Gray | 50-5052-12 |

2. Equipment Required but not supplied:

- Standard 1/2 3ATI panel mounting clamp
- Connector kit: Standard DA 15S connector with screw lock retainers

3. Interconnection



Interconnect Block Diagram
 (Illustration vi-1)

(a) Connect to any GAMMA-429 general purpose bus which outputs correct labels. Interconnect varies by manufacturer. (See Section v.)

viii. Environmental Qualification Form

- 1. Nomenclature: IND-5000 Multi-function Digital Bus Reader
- 2. Part Number: 50-5052-(XX)
- 3. TSO Number: C113
- 4. Manufacture's Specification: None
- 5. Manufacturer: Skylight Avionics Company
 38629 6th Street East
 Palmdale, CA. 93550, USA

| 6. TEST: | Section/ Paragraph | Test Conducted |
|------------------------|-----------------------|---|
| Conditions | | |
| Temperature & Altitude | 4.0 | Equipment tested |
| Low Temperature | 4.5.1 | to Category: A1 |
| High Temperature | 4.5.2/3 | |
| Altitude Tests | 4.6.1 | |
| Decompression Tests | 4.6.2 | |
| Over pressure Tests | 4.6.3 | |
| Temperature Variation | 5.0 | Category B |
| Humidity | 6.0 | Category A |
| Shock | 7.0 | Equipment tested |
| Operational | 7.2 | per DO-160B |
| Crash Safety | 7.3 | Paragraph 7.1.1 |
| Vibration | 8.0 | Equipment tested without shock mounts to Categories K,P and S (DO-160B, Table 8-1) |
| Explosion | 9.0 | "X" No tests required |
| Water proof test | 10.0 | "X" No tests required |
| Fluids Susceptibility | 11.0 | "X" No tests required |
| Sand & Dust | 12.0 | "X" No tests required |

viii. Environmental Qualification Form (continued)

| Conditions | Section/ Paragraph | Test Conducted |
|---|-----------------------|-----------------------|
| Fungus | 13.0 | "X" No tests required |
| Salt Spray | 14.0 | "X" No tests required |
| Magnetic Effect | 15.0 | Tested as Class "A" |
| Power Input | 16.0 | Category A |
| Voltage Spike | 17.0 | Category A |
| Audio Frequency Conducted Susceptibility | 18.0 | Category A |
| Induced Signal Susceptibility | 19.0 | Category A |
| Radio Frequency | 20.0 | Category A |
| Radio Frequency Emission | 21.0 | Category A |

Remarks:

Tests 4.0, 5.0, 6.0, 7.0 and 8.0 were conducted at:
 A-BEC Environmental Testing Laboratories.

Tests 15.0, 16.0, 17.0, 18.0, 19.0, 20.0 and 21.0 were conducted at:
 McPete Systems Company, EMC Science Center.

Compliance to FAR part 25 demonstrated by component parts and material analysis.