



**SERIAL TO ARINC 561/568  
2 SYNCHRO/HEADING REFERENCE OPTION  
CONVERTER**

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**PRODUCT P/N: 934000-14A**

**INSTALLATION MANUAL**

**REV B**

**Shadin Avionics  
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USA**

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**MANUAL P/N: IM4000-14A**

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**PAGE CONTROL CHART**

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| 4040-019           | Installation, P/N 934000-14A<br>Serial to ARINC 561/568, 2 Synchros Conv.                          | 3-6-2000    |
| 4036-097           | Installation Wiring DWG, Serial Data to ARINC 561<br>Distance and Synchro Course/Bearing Converter | 3-6-2000    |
| 4076-001           | Installation Drawing, P/N 937600<br>Synchro to RS-232 Conv.                                        | 3-16-1999   |
| N/A                | Parts List, Install Kit, P/N IK9340                                                                | 5-17-2005   |

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**REVISION LOG**

| REV. | DATE     | APP'D | CHANGE                                                                                                                                                  |
|------|----------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| –    | 3/09/00  | PG    | Baseline Release                                                                                                                                        |
| A    | 05/17/05 | ZK    | ECO 0504/027: Updated Shadin and product names and §2.4.2 pinout table, adding FreeFlight 2101. Updated sections 1.1 to 1.4 and Install Kit Parts List. |
| B    | 10/28/08 | BM    | ECO 0808/006 updated manual to Shadin Avionics logo                                                                                                     |
|      |          |       |                                                                                                                                                         |
|      |          |       |                                                                                                                                                         |
|      |          |       |                                                                                                                                                         |
|      |          |       |                                                                                                                                                         |

The information in this manual is subject to change without notification. To ensure complete and current updates, note the Revision Log above and call Technical Assistance for updated information.

# INSTALLATION MANUAL

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## 1. OVERVIEW

### 1.1 The Manual

This manual is intended to assist the installer in the proper installation and configuration of the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter. References to equipment provided by other manufacturers is provided for the installer's convenience and should be verified by the installer for accuracy and the latest information. Installation instructions should be read and followed.

### 1.2 Product Description

The Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter receives serial data from a GPS receiver and from an aircraft heading source through the Synchro to Serial Converter, Shadin P/N 937600 (See Fig. 1). The serial input data is converted to ARINC 561/568 data to drive the distance to go display on the HSI. Use SW 1 to select the normal labels or the alternate labels for the various navigational receivers installed (Table 3). The serial input data is also converted to Waypoint Bearing and Desired Track synchro output signals, (Table 4) for SW2 selection options. In summary, the three available settings for ARINC 561/568 output are as follows.

**Table 1**  
**ARINC 561 Normal Label List**

| <b>LABEL</b> | <b>Description</b>                        | <b>Tx Interval</b> |
|--------------|-------------------------------------------|--------------------|
| 001          | Distance to "TO" Way point                | 200 msec           |
| 002          | Time to go                                | 200 msec           |
| 003          | Crosstrack Distance                       | 200 msec           |
| 012          | Ground Speed                              | 200 msec           |
| 031          | Magnetic Variation                        | 200 msec           |
| 110          | Status Word                               | 200 msec           |
| 275          | LRN Status Word                           | 200 msec           |
| 115          | Bearing to Waypoint (True)                | 200 msec           |
| 155          | Display Deviation (DOTS: 1 dot = 3.75 nm) | 200 msec           |
| 156          | Distance to Nth Waypoint                  | 1 second           |
| 157          | Desired Course to Nth Waypoint (True)     | 1 second           |
| 160          | Way point Identifier Word 1               | 1 second           |
| 161          | Way point Identifier Word 2               | 1 second           |

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**ARINC 561 Alternate Label List**

| <b>LABEL</b> | <b>Description</b>         | <b>TX Interval</b> |
|--------------|----------------------------|--------------------|
| 001          | Distance to "TO" Way point | 200 msec           |
| 002          | Time to go                 | 200 msec           |
| 003          | Crosstrack Distance        | 200 msec           |
| 004          | Desired Track (True)       | 200 msec           |
| 010          | Present Position Latitude  | 200 msec           |
| 011          | Present Position Longitude | 200 msec           |
| 013          | Track Angle                | 200 msec           |
| 275          | LRN Status Word            | 200 msec           |
| 024          | Way point Leg              | 200 msec           |
| 040          | Latitude Waypoint 1        | 200 msec           |
| 041          | Longitude Waypoint 1       | 200 msec           |
| 042          | Latitude Waypoint 2        | 200 msec           |
| 043          | Longitude Waypoint 2       | 200 msec           |
| 044          | Latitude Waypoint 3        | 200 msec           |
| 045          | Longitude Waypoint 3       | 200 msec           |
| 046          | Latitude Waypoint 4        | 200 msec           |
| 047          | Longitude Waypoint 4       | 200 msec           |
| 050          | Latitude Waypoint 5        | 200 msec           |
| 051          | Longitude Waypoint 5       | 200 msec           |
| 052          | Latitude Waypoint 6        | 200 msec           |
| 053          | Longitude Waypoint 6       | 200 msec           |
| 054          | Latitude Waypoint 7        | 200 msec           |
| 055          | Longitude Waypoint 7       | 200 msec           |
| 056          | Latitude Waypoint 8        | 200 msec           |
| 057          | Longitude Waypoint 8       | 200 msec           |
| 060          | Latitude Waypoint 9        | 200 msec           |
| 061          | Longitude Waypoint 9       | 200 msec           |

**ARINC 568 Label List**

| <b>LABEL</b> | <b>Description</b>        | <b>TX Interval</b> |
|--------------|---------------------------|--------------------|
| 201          | Distance to "TO" Waypoint | 200 msec           |

**Table 2**

The converter interfaces with the following navigational receivers as serial data source:

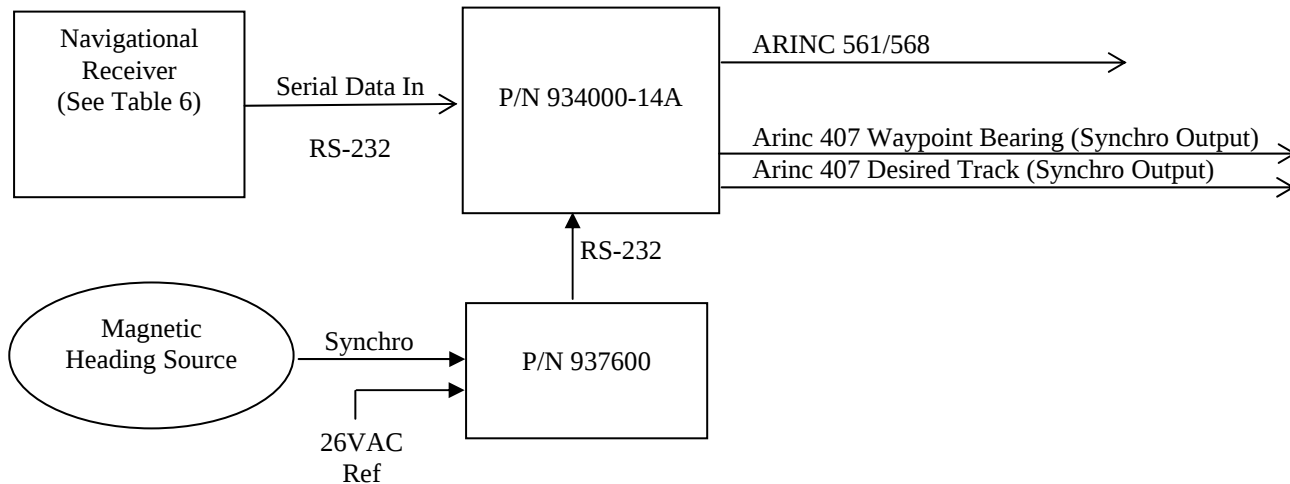
ARNAV  
 Bendix/King  
 GARMIN 155/165  
 IIMorrow NMS 2001, IIMorrow 800 or 820  
 Northstar (M1 or M2 Formats)  
 Trimble 2000/3000 Series, FreeFlight 2000/2101/3000 Series

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**FIGURE 1.**  
**ARINC 561 TO SYNCHRO CONV/HEADING REF BLOCK DIAGRAM**

- 1.3 Figure 1. is a functional block diagram of the Serial to ARINC 561/568, 2 Sync/Hdg Ref Opt Converter system. The Synchro to RS-232 Converter, P/N 937600, is **optional**. When the 937600 is installed the Bearing to Waypoint Synchro output is referenced to Magnetic Heading rather than True Heading. The unit looks for this data and when it is present it automatically changes the Waypoint to Bearing output to Magnetic Heading Reference. No operator action is required. The serial data coming from the navigational receiver and the Magnetic Heading converter connect to J2 of the Serial to Arinc 561/568, 2 Sync Converter. The output of the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter connects to the HSI or DME on P1 and P5.

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## 1.4 Specifications

## Physical Specifications including mounting tray

|             |                          |
|-------------|--------------------------|
| Dimensions: | 3.39H" x 6.28"L x 3.04"W |
| Weight:     | 1.5 lbs                  |
| Mounting:   | Rack                     |

## Electrical

|                       |                 |
|-----------------------|-----------------|
| Power Supply Voltage: | +14 to + 28 VDC |
| Supply Current:       | 200 mA          |
| Excitation Ref:       | 26Vac 400Hz     |

|            |                      |
|------------|----------------------|
| Protection | Not internally fused |
|------------|----------------------|

## Inputs

|                                      |                                                                    |
|--------------------------------------|--------------------------------------------------------------------|
| RS-232/422 Navigational Interface    | 1200/9600 baud, 8 bits,<br>no parity, 1 stop bit,<br>"ABCD" Format |
| Magnetic Heading (Synchro to Serial) |                                                                    |

## Outputs

|                         |                          |
|-------------------------|--------------------------|
| ARINC 561 / 568         |                          |
| 2 Synchro Data Outputs: |                          |
| Desired Track           | ARINC 407 3-wire Synchro |
| Bearing to Waypoint     | ARINC 407 3-wire Synchro |

## Environmental

|                        |                 |
|------------------------|-----------------|
| Operating Temperature: | -20° to +55° C  |
| Storage Temperature    | -55° to +85° C  |
| Operating Altitude     | Up to 50,000 ft |

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**2. INSTALLATION PROCEDURE****2.1 Unpacking and Inspecting Equipment****2.1.1 Physical Inspection**

Before unpacking the unit look for any obvious damages which may have occurred during shipping. If damage has occurred immediately notify the shipping company. Save the shipping container and packaging material should it become necessary for you to ship the unit or for extended storage.

**2.1.2 Electrical Inspection**

Inspect all of the input/output connectors to assure that none of the pins were damaged during shipment. No electrical testing is performed prior to installation.

**2.1.3 Packing List**

Verify you have received the items identified in the attached parts list in section 3.

**2.2 Mounting**

The converter may be mounted in horizontal position on a rigid surface. Avoid locations where the unit could be exposed to hot air, cold air or water. The converter has to be installed in a temperature-controlled environment. Fasten the mounting tray provided in the Install Kit to the aircraft using installation drawing No. 4040-019. Use screws, with locking type washers, and nuts to secure against vibration. Attach the unit on the tray by using the knurled knob after electrical connections are completed.

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**2.3 Configuration Setting**

There are two 16 position rotary switches (SW1 and SW2) for configuring the operation of the converter. SW1 provides the user with the ability to select the type of navigational interface and whether normal or alternate labels are to be transmitted. SW2 provides the user with the ability to select the synchro output requirements. See table 3 for the SW1 selections and table 4 for SW2 selections.

**Table 3.**  
**INPUT/OUTPUT OPTIONS CONTROL (SW1)**

| Switch Position | Input/Output *    |
|-----------------|-------------------|
| F               | NST/568           |
| E               | ANV/568           |
| D               | BEN/568           |
| C               | FFL/568           |
| B               | NST/561 Alternate |
| A               | ANV/561 Alternate |
| 9               | BEN/561 Alternate |
| 8               | FFL/561 Alternate |
| 7               | NMS/561 Alternate |
| 6               | NMS/561 Normal    |
| 5               | NMS/568           |
| 4               | Not Used          |
| 3               | NST/561 Normal    |
| 2               | ANV/561 Normal    |
| 1               | BEN/561 Normal    |
| 0               | FFL/561 Normal    |

\* NST — Northstar  
 ANV — ARNAV  
 BEN — Bendix  
 FFL — FreeFlight

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**Table 4.**  
**SYNCHRO OPTIONS CONTROLLED BY SW2**

| <b>Switch Position</b> | <b>Desired Track</b> | <b>Bearing to Waypoint</b> |
|------------------------|----------------------|----------------------------|
| F                      | SIN/COS, REV         | SIN/COS, REV               |
| E                      | X/Y, REV             | SIN/COS, REV               |
| D                      | SIN/COS, REV         | X/Y, REV                   |
| C                      | X/Y, REV             | X/Y, REV                   |
| B                      | SIN/COS, NORM        | SIN/COS, REV               |
| A                      | X/Y, NORM            | SIN/COS, REV               |
| 9                      | SIN/COS, NORM        | X/Y, REV                   |
| 8                      | X/Y, NORM            | X/Y, REV                   |
| 7                      | SIN/COS, REV         | SIN/COS, NORM              |
| 6                      | X/Y, REV             | SIN/COS, NORM              |
| 5                      | SIN/COS, REV         | X/Y, NORM                  |
| 4                      | X/Y, REV             | X/Y, NORM                  |
| 3                      | SIN/COS, NORM        | SIN/COS, NORM              |
| 2                      | X/Y, NORM            | SIN/COS, NORM              |
| 1                      | SIN/COS, NORM        | X/Y, NORM                  |
| 0                      | X/Y, NORM            | X/Y, NORM                  |

## 2.4 Electrical Connections

Use Installation Kit IK9340 to make a wiring harness. Refer to the installation drawings No. 4040-019 and No. 4036-076 for the harness wiring at the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter. Care must be exercised in the routing of the cables. Avoid sharp bends and routing of cables near aircraft controls. Avoid running of cables near high-powered wiring and when possible route cables at right angles to high power wiring to minimize interference between these equipment and the converter.

### 2.4.1 Connecting the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter

Connect the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter to aircraft power in accordance with Table 5. The unit is not fused, and protection must be provided by the installer.

**Table 5**

| <b>934000-14A (Connector J2)</b> | <b>Aircraft Power</b> |
|----------------------------------|-----------------------|
| J2-1                             | +28                   |
| J2-9                             | Ground                |

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**2.4.2 Connecting to the Navigational Receiver**

Connect to the navigational receiver in accordance with Table 6. Note that the pin out information provided for the navigational receivers is for the installer's convenience and should be verified by the installer for its authenticity.

**Table 6**

| 934000-14A<br>Connector J2 | Arnav | Bendix/King<br>KLN88, 90,<br>90A, 90B | Bendix/King<br>KLX-135 | Bendix/King<br>KLN-35 | Bendix/King<br>KLN-89/89B | Bendix/King<br>KLN-900 | Garmin<br>155/165 |
|----------------------------|-------|---------------------------------------|------------------------|-----------------------|---------------------------|------------------------|-------------------|
| J2-5 (RX-RS-232)           | 5     | 13                                    | 10                     | 12                    | 2                         | 6                      | 24                |
| J2-14 (signal GND)         | 4     | 36                                    | N/A                    | N/A                   | 1                         | 38                     | 17                |

**Table 6 (Continued)**

| 934000-14A<br>Connector J2 | Northstar<br>(M1 or M2<br>Format) | FreeFlight<br>(formerly Trimble) |                | II Morrow<br>NMS 2001 | II Morrow<br>800 or 820 | Reserved<br>for future<br>Expansion |
|----------------------------|-----------------------------------|----------------------------------|----------------|-----------------------|-------------------------|-------------------------------------|
|                            |                                   | 2000/3000                        | 2100/3100/2101 |                       |                         |                                     |
| J2-5 (RX-RS-232)           | 11                                | 5                                | 6              | 19/37                 | 6                       |                                     |
| J2-14 (signal GND)         | 6                                 | 8                                | 1              | 21/38                 | 7                       |                                     |
| J2-3 (RX+ RS-422)          | NC                                | 15                               | 37             | NC                    | NC                      |                                     |
| J2-4 (RS - RS-422)         | NC                                | 3                                | 5              | NC                    | NC                      |                                     |

**2.4.3 Connecting to the Synchro to RS-232 Converter**

Connect to the Synchro Heading to RS-232 Converter, P/N 937600, in accordance with Table 7.

**Table 7**

|            |        |
|------------|--------|
| 934000-14A | 937600 |
| J2-15      | Pin 14 |

**2.4.4 Connections to the HSI/DME**

Connections to the HSI/DME are shown for the converter only. The installer needs to obtain the latest information for connections to and configuring of the HSI/DME. The installer should also be aware that certain HSI/DME equipment require additional jumpering of the HSI/DME equipment to provide the correct synchro data. Consult the HSI/DME manuals for this information.

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**2.5 Installation Checkout****2.5.1 Continuity Checks**

Using installation drawing 4040-019 and Table 5, 6 and 7 verify continuity of cabling for power, interfacing the navigational receiver and the synchro to serial converter. Using installation drawing 4040-019 and the installer provided interface to the HSI/DME, verify the continuity of the cabling.

**2.5.1.1 Resistance Checks**

If any appreciable resistance is detected during the continuity verification, the installer must detect the source of the resistance and rectify it prior to applying power to the system.

**2.5.1.2 Shorts to Ground**

The installer should verify a minimum of 10 M $\Omega$  of resistance to ground and all wiring.

**2.5.1.3 Inter-wiring Shorts**

The installer should verify a minimum of 10 M $\Omega$  of resistance between wires.

**2.6 System Checkout**

Prior to applying power verify that the system configurations switches are configured correctly for the installed system. With the system powered up verify the LEDs located on the opposite side of the configuration switches are flashing. There are two yellow LEDs and one green LED. The center LED indicates the converter is operating. The green LED indicates serial data coming from the navigational receiver. If the system is operating correctly all three LEDs should be should be illuminated and the center and green LEDs should be flashing.

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**2.7 Trouble Shooting**

- Ensure that all circuit breakers are on.
- Ensure that all connectors are seated correctly.
- Using an oscilloscope verify that serial data is being transmitted to the Serial to ARINC-561/568, 2 Sync/Hdg Ref Opt Converter, P/N 934000-14A, from the navigational receiver and from the Synchro to RS-232 Converter, P/N 937600, if installed. The signals should conform to RS-232 specifications.
- Ensure that the converter is outputting 561 data in accordance with 561 specifications.
- Ensure that 400 Hz 26 volts is being provided to the converter at both P1 and P5 locations.
- Ensure that 400 Hz synchro signals are being output at P5 by the converter.
- Verify the HSI/DME is powered, jumpered and configured correctly.
- If your Selected Course or Waypoint Bearing outputs are showing 180° out of alignment, refer to Table 4 and select a REV position to the current setting.
- If the incorrect Selected Course/Waypoint Bearing/Distance information is being displayed, make sure the correct RS-232/422 serial format (GPS) has been selected (Table 3).

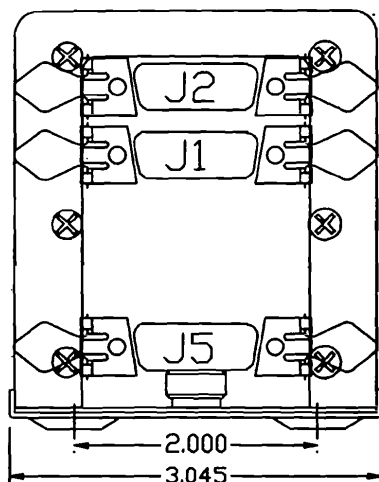
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**SECTION 3.0**

**INSTALLATION DRAWINGS AND**  
**INSTALL KIT PARTS LISTS**

The following drawings are arranged in the sequence specified on page i of the Page Control Chart.



J2

POWER IN & COMM.

1. +28V DC POWER IN
9. POWER GND
3. RX+ RS-422
4. RX- RS-422
11. TX+ RS-422 (NOT USED)
12. TX- RS-422 (NOT USED)
5. RX RS-232
6. TX RS-232 (NOT USED)
15. RX RS-232 (2) <sup>④</sup>
13. TX RS-232 (2) (NOT USED)
14. SIGNAL GND
2. N.C.
7. N.C.
8. N.C.
10. N.C.

①

②

HEAD  
CONV  
INPUT

J1

ARINC 561 SYNCHRO DRIVER

4. 26V 400 HZ REF. INPUT
11. 26V 400 HZ REF. RETURN
1. DATA SIG. ARINC561 OUTPUT
2. CLOCK SIG. ARINC561 OUTPUT
3. SYNC SIG. ARINC561 OUTPUT
9. SIG. GND
12. GND
14. GND
5. N.C.
6. N.C.
7. N.C.
8. N.C.
13. N.C.
15. N.C.
10. VALID DATA FLAG SIG. OUTPUT  
+28V = ARINC 561 VALID  
0-8V = ARINC 561 NOT VALID

J5

POWER SYNCHRO DRIVER

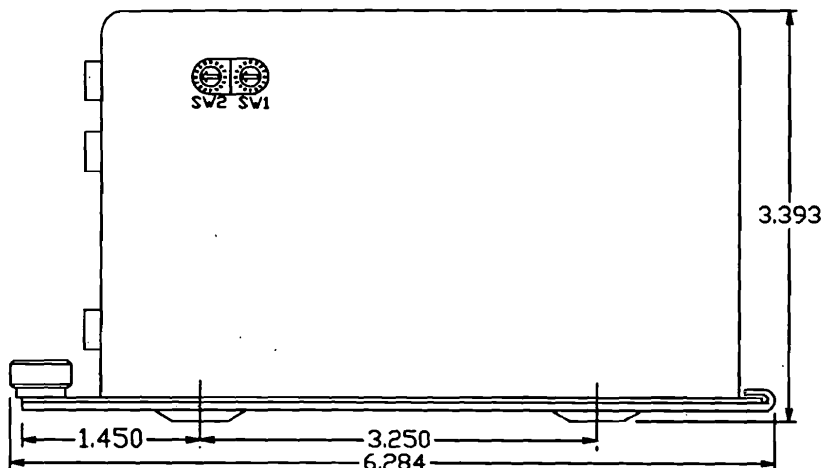
1. 26V 400HZ, POWER INPUT
9. 26V 400HZ, POWER RETURN
4. X DESIRED TRACK, POWER SYNCHRO OUTPUT/SIN <sup>③</sup>
5. Y DESIRED TRACK, POWER SYNCHRO OUTPUT/COS <sup>③</sup>
11. Z DESIRED TRACK, POWER SYNCHRO OUTPUT
12. DESIRED TRACK, GND
7. X BEARING TO WAYPOINT, POWER SYNCHRO OUTPUT/SIN <sup>③</sup>
8. Y BEARING TO WAYPOINT, POWER SYNCHRO OUTPUT/COS <sup>③</sup>
14. Z BEARING TO WAYPOINT, POWER SYNCHRO OUTPUT
15. BEARING TO WAYPOINT, GND
2. N.C.
3. N.C.
6. N.C.
10. N.C.
13. N.C.

MATING CONNECTORS AND ASSOCIATED PARTS  
ARE PROVIDED IN INSTALL KIT P/N IK9340

WEIGHT: 2 LBS.

IMPORTANT!

- ① -SYSTEM CAN USE RS-232 OR RS-422, BUT NOT BOTH
- ② -TIE J5 PINS 9, 11, AND 14 TOGETHER
- ③ -FUNCTION VARIES BASED ON SWITCH 2 POSITION
- ④ -RS-232 INPUT FROM 937600 IS OPTIONAL, AND IF IT IS PRESENT  
IT WILL CAUSE THE BEARING TO WAYPOINT SYNCHRO OUTPUT  
TO BE REFERENCED TO MAGNETIC HEADING  
RATHER THAN TO TRUE NORTH.



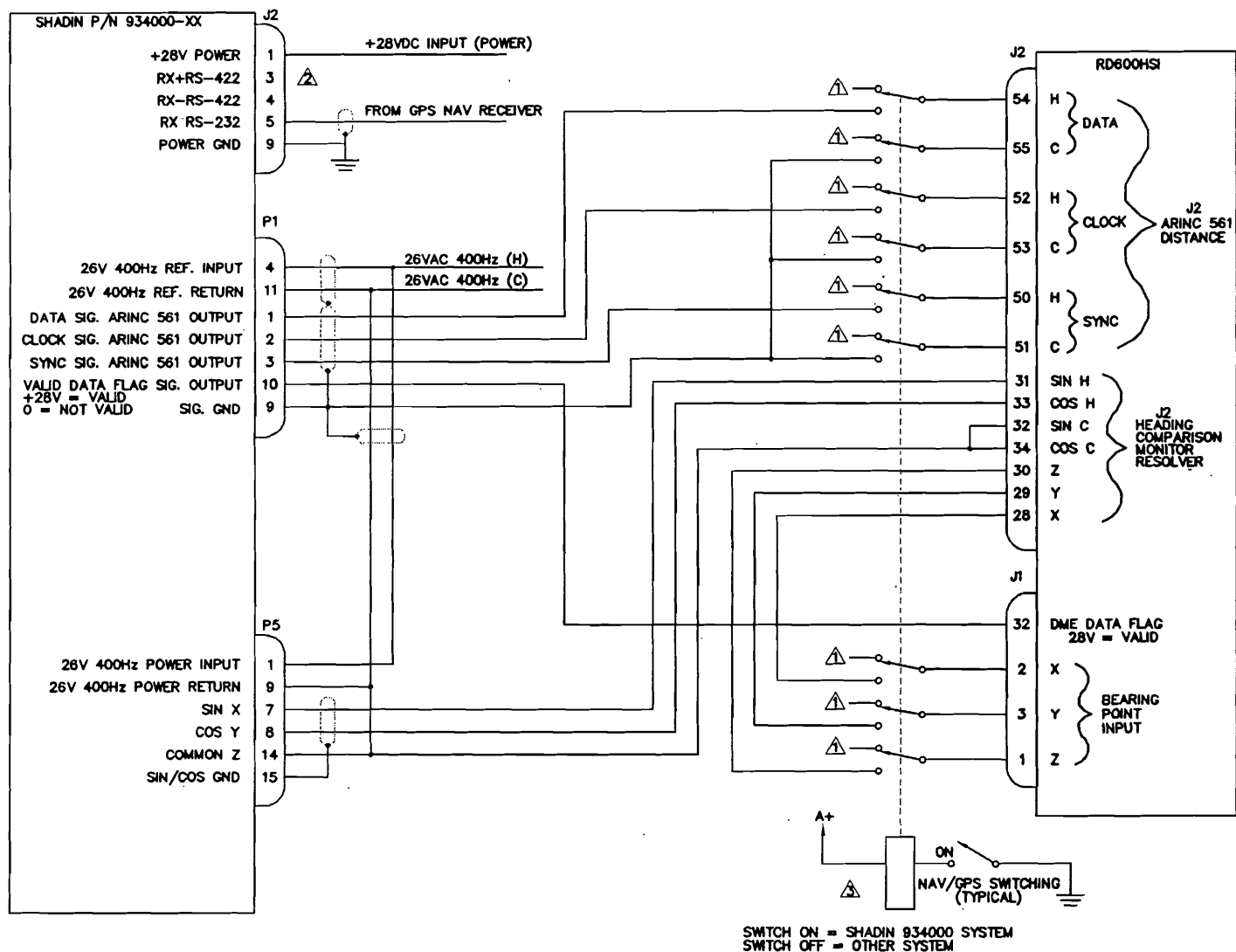
| ECO #    | REV. | DATE     | BY  | APP'D | DESCRIPTION                                                |
|----------|------|----------|-----|-------|------------------------------------------------------------|
| 9801/031 | C    | 3/6/2000 | DMD | PG    | ADDED NOTE ④, NOTATIONS FOR J2, ADDED REFERENCE TO IK9340, |
| 9602/064 | B    | 2-29-96  | VMP | SES   | ADDED SV1 & 2 MARKINGS                                     |
| 9510/015 | A    | 10-26-93 | DLR | SES   | ADD NOTE 3                                                 |
| 9508/026 | -    | 8-15-93  | VMP | SES   | ADD SLOT                                                   |
|          |      |          |     |       | BASELINE RELEASE                                           |

|                                                                          |                          |
|--------------------------------------------------------------------------|--------------------------|
| UNLESS OTHERWISE NOTED, DRAWING DATE<br>DIMENSIONS ARE IN INCHES 6-22-93 | DRAWN BY<br>JAP          |
| TOLERANCES:<br>+/- 0.015                                                 | APPROVED<br>SES          |
| FINISH:<br>N/A                                                           | FILE NAME<br>93414AC.DWG |
| MATERIAL:<br>N/A                                                         | DIRECTORY<br>934000-14A  |
|                                                                          | SHEET 1 OF 1             |

SHADIN MINNEAPOLIS, MN 55426

INSTALLATION, SERIAL TO ARINC  
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DRAWING NO. 4040-019 SIZE A P/N934000-14A REV. C

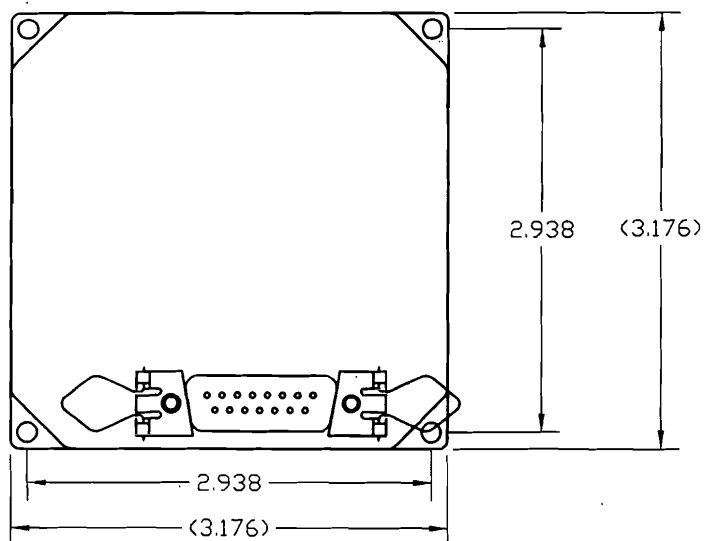


| ECO #    | REV. | DATE     | BY  | APP'D | DESCRIPTION             |
|----------|------|----------|-----|-------|-------------------------|
| 9801/031 | A    | 3/8/2000 | PAB | PG    | CORRECTED P/N REFERENCE |
| N/A      | -    | 3/21/94  | DAP | RR    | BASELINE RELEASE        |

|                                                 |                                                                                                        |          |          |  |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------|----------|--|
| DRAWING DATE<br>3/21/94                         | SHADIN MINNEAPOLIS, MN 55426                                                                           |          |          |  |
| DRAWN<br>DAP                                    | SERIAL DATA TO ARINC 561 DISTANCE AND<br>SYNCHRO COURSE/BEARING CONVERTER<br>SPERRY RD600 INTERCONNECT |          |          |  |
| APPROVED<br>RR                                  |                                                                                                        |          |          |  |
| FILE NAME<br>4036-097ALDWG<br>DIRECTORY<br>4036 |                                                                                                        |          |          |  |
| DRAWING NO.<br>4036-097                         | SIZE<br>A                                                                                              | P/N<br>— | REV<br>A |  |

DO NOT SCALE

SHEET 1 OF 1

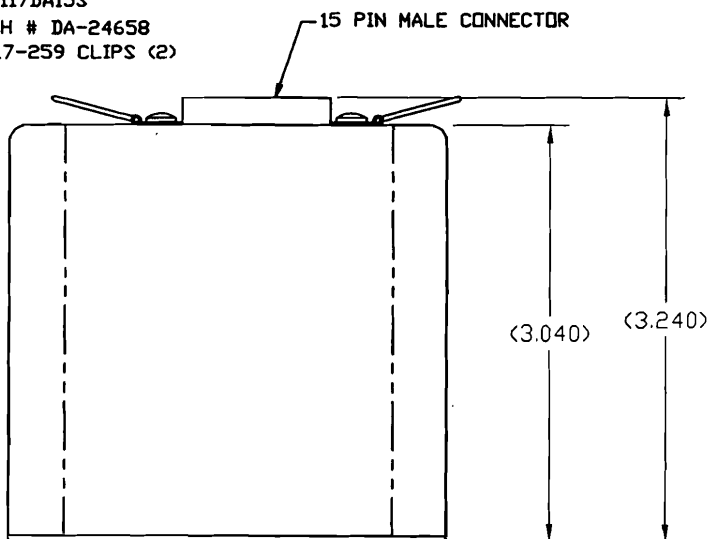


#### MATING CONNECTOR:

AMPHENOL 117DA15S

HOOD: CINCH # DA-24658

AMPHENOL 17-259 CLIPS (2)



- \* THE CONVERTER CAN BE MOUNTED IN ANY ORIENTATION
- \* 4" SPACING IS REQUIRED ABOVE CONNECTOR
- \* NO COOLING IS REQUIRED
- \* THE CONVERTER CAN BE INSTALLED IN A PRESSURIZED OR NON-PRESSURIZED AREA, PROVIDING TEMPERATURE DOES NOT DROP BELOW -20°C
- \* 1 AMP CIRCUIT BREAKER IS REQUIRED
- \* NO SHOCK MOUNT REQUIRED

WEIGHT: 16 oz.

POWER CONSUMPTION: 210 ma. @ 28v DC

#### CONNECTOR KEY

| PIN | FUNCTION             | PIN | FUNCTION          |
|-----|----------------------|-----|-------------------|
| 1   | N.C.                 | 9   | N.C.              |
| 2   | Y SYNCHRO            | 10  | H 26v 400 Hz REF. |
| 3   | X SYNCHRO            | 11  | N.C.              |
| 4   | Z SYNCHRO            | 12  | N.C.              |
| 5   | C REF. COMMON        | 13  | N.C.              |
| 6   | N.C.                 | 14  | TX RS-232         |
| 7   | N.C.                 | 15  | POWER GND         |
| 8   | 18 - 28v DC POWER IN |     |                   |

| ECO #    | REV. | DATE     | BY  | APP'D | DESCRIPTION                                |
|----------|------|----------|-----|-------|--------------------------------------------|
| 9903/009 | A    | 3/16/99  | DMD | KCL   | CORRECTED TITLE BLOCK, SHOW REF DIMENSIONS |
| 9412/008 | -    | 12/28/94 | DAP | SES   | BASELINE RELEASE                           |

|                                                                                                             |             |               |             |
|-------------------------------------------------------------------------------------------------------------|-------------|---------------|-------------|
| UNLESS OTHERWISE NOTED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES: XX = ±0.1<br>XXX = ±0.01<br>XXXX = ±0.005 | FINISH: N/A | MATERIAL: N/A | SCALE: NONE |
|-------------------------------------------------------------------------------------------------------------|-------------|---------------|-------------|

|                          |                          |
|--------------------------|--------------------------|
| DRAWING DATE<br>12/28/94 | FILE NAME<br>937600A.DWG |
| DRAFTER<br>DAP           | DIRECTORY<br>937600      |
| APPROVED<br>SES          | SHEET 1 OF 1             |

|                                              |           |            |          |
|----------------------------------------------|-----------|------------|----------|
| <b>SHADIN</b> MINNEAPOLIS, MN 55426          |           |            |          |
| INSTALLATION DWG,<br>SYNCHRO TO RS-232 CONV. |           |            |          |
| DRAWING NO.<br>4076-001                      | SIZE<br>A | P/N 937600 | REV<br>A |

Report: 4040  
ECO Date: April 19, 2005  
Rev: B  
Sec.: IX  
Page 1 of 1

File Name: IK9340BP.doc  
DIRECTORY: IKXXXX

ECO # 0504/027  
Release date: 5-17-05  
Approved: ZK

# PARTS LIST

Part #: IK9340

Drawing #: n/a

Description: INSTALL KIT, SERIAL TO ARINC, 2 SYNCHRO CONV

| <u>FN</u> | <u>P/N</u> | <u>QTY.</u> | <u>DESCRIPTION</u>                  | <u>MFG.</u> | <u>MFG.#</u>   | <u>DESIGNATION</u> | <u>COMMENTS</u> |
|-----------|------------|-------------|-------------------------------------|-------------|----------------|--------------------|-----------------|
| 5         | 230019H-1  | 6           | SPRING LATCH CLIP                   | SHA         | 4028-074       |                    |                 |
| 10        | 230036     | 3           | CONN, 15 Pin D-Sub Socket           | APH         | 17D-A15S       |                    |                 |
| 15        | 230038     | 3           | CONN, Hood 15 Pin D Sub             | CIN         | DA-24658       |                    |                 |
| 20        | 511002     | 4           | SCREW, 4-40 x 1/4"L, Phil Pan HD SS | MCM         | 91772A106      |                    |                 |
| 25        | 512007     | 4           | NUT, 4-40 3/16 x 1/16 SS            | AFT         | HNSP188 04C000 |                    |                 |
| 30        | 512014-1   | 1           | NUT, Knurled                        | SHA         | 4028-132       |                    |                 |
| 35        | 541001     | 4           | WASHER, #4 Split Lock SS            | MCM         | 92147A005      |                    |                 |
| 40        | 542801A    | 1           | MOUNTING TRAY                       | SHA         | 4028-B05       |                    |                 |
| 45        | PK1009     | 1           | BAG, 6 x 12, 4 MIL                  |             |                |                    |                 |

27 items