ARNAV Systems, Incorporated 16923 Meridian East P.O Box 73730 Puyallup, Washington 98373

DR-100 Data Link RECEIVER Installation Guide

Part Number 570-0160B

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	Release	12-16-98	LAJ
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В	Change in operation temperature	02-08-01	GCH

REVISIONS

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1. INTRODUCTION

The ARNAV DR-100 Data Link Receiver is capable of receiving weather message services through a radio frequency data link network. The network is called the ARNAV Systems ABDS network (Adaptive Broadcast Datalink System) or the GeoLink Network. The weather message service is called WxLink. The receiver will receive weather data from the data link network and use RS232C communication to a host display system for display of the data.

The drawings in Appendix A are for installation of the DR-100 radio receiver with an ARNAV Systems, Inc. MFD 5200. The DR-100 can also connect up to three other RS232 devices that would normally connect to the MFD 5200 directly. The RS232 data pass through allows more than one device to connect to the MFD while also receiving weather data through the receiver.

1.1. Software Versions

The DR-100 Radio Receiver will incorporate the following software version:

Software Version V160CE or Later

1.2. Installation

This guide contains the installation information for the ARNAV DR-100 Radio Receiver. Close adherence to these instructions is necessary for proper system operation.

Included in this guide are:

- Physical equipment specifications
- Installation requirements and precautions
- Equipment mounting information
- Electrical and wiring information
- Installation test plan

The DR-100 Receiver should be installed in accordance with the instructions, and limitations provided by ARNAV Systems, Inc. Read these instructions thoroughly before installing.

2. PHYSICAL EQUIPMENT SPECIFICATIONS

2.1. DR-100 Radio Receiver Specifications

Weight	1.5 lb.
Size:	2" high x 5.5" wide x 7.5". deep
Input Voltage:	10 - 35 VDC
Input Power:	7 Watts, maximum
Operating Temperature:	-45 to 70 degrees C.
Storage Temperature:	-50 to 85 degrees C.
Radio Modem: Frequency: Channels: RF connector: Data Rate: Data Format: Frequency stability:	149.895 Mhz 1 BNC 50 ohms 9600 BPS DGMSK 8 data bits, 1 stop bit. +/-1 ppm

2.2. VHF Receiver Antenna

The antennas specified for the DR-100 units are listed below.

Straight Rod (Standard) - ARNAV Part Number 870-0165

Comant
CI-177
50 watts
Unity
50
BNC Male
14.5" maximum
Omni-directional
Vertical
450 Knots

Bent Whip (Optional) - ARNAV Part Number 870-0292 (Usually for bottom mount low aircraft)

Manufacturer:	Comant
Model:	CI-292-3
Maximum Power in:	50 watts
Gain	Unity
Nominal Impedance - Ohms	50
Connector:	BNC Male
Element Height:	9.5" maximum
Radiation Pattern:	Omni-directional
Polarization:	Vertical
Speed	250 Knots

2.3. Input/Output Specifications

2.3.1. RS-232 Input/Output

The DR-100 Receiver has four RS232 input/output ports. The first port, port C, is the connection to the Host Display system (MFD 5200). Port C provides weather data information and "Pass Through" serial communication data to the Host Display System.

Ports A, B, and D are used to connect other optional serial devices such as altitude serializers, WX 500, and Engine Monitoring. Any serial device that would normally connect to the MFD 5200 can connect through Ports A, B, or D. This serial port multiplexing allows feature additions to the MFD without needing additional ports on the MFD itself.

3. EQUIPMENT MOUNTING INFORMATION

3.1. Unpack and Inspect Equipment

Perform the following steps when unpacking the shipping kit for the DR-100 Receiver.

- 1 Check package contents against the packing list, 3.1.1. Inspect the units for shipping damage. If the units are damaged, contact the carrier and ARNAV Systems, Inc.
- 2 Complete the warranty application and return to ARNAV Systems within 30 days of installation to take advantage of the warranty. Retain copies of the warranty card, packing slip, and equipment inspection information.
- 3 Keep all packaging materials for future use to facilitate returning the units for service.

3.1.1. Packing List

A packing list is included with each DR-100 shipping kit. This list includes the part number, part description, and quantity of all parts included in the shipping kit. A complete list of ARNAV supplied parts is listed below:

CHECK	QTY	DESCRIPTION	ARNAV PART #
	2	Connector BNC RG58	150-2106
	1	Connector, DB-25 Female	150-3153
	1	Shroud, DB-25	151-6234
	16	Crimp contract, DSUB #20-26	151-6671
	1	Installation Manual (this manual)	570-0160
	1	Antenna, 1/4 wave - VHF	870-0165 or 870-0292
	1	DR-100 Receiver	453-0160-00
	1	WxLink Subscription Key (DB9)	452-0219

3.2. Receiver Antenna Location

Proper location and installation of the DR-100 Antenna is critical to the overall system performance.

 Select the location to mount the antenna. For aircraft you may mount the antenna on top or bottom of the aircraft. Choose a location with minimum line of site blockage and as far as practical from other transmitting antennas. You will also have to add mounting holes for the Comant CI-177 or CI-292-3 antenna. See mounting template drawing 591-3447 (CI-177) and 591-4501 (CI-292-3) in appendix A.

3.3. DR-100 Receiver

The DR-100 Receiver Installation consists of the DR-100, VHF Antenna, Antenna Coax Routing, and Connector wiring.

Drawing ED-1026 maybe used as a template to drill the holes for mounting the DR-100.

The DR-100 Receiver may be installed anywhere inside the aircraft.

- 1. Use the template drawing ED-1026 to place the hole locations for mounting.
- 2. Drill and de-burr 0.171" diameter holes at each of the four marked mounting hole positions on the chassis.
- 3. Clean and de-grease both external enclosure and mounting surfaces.
- 4. Secure the chassis with #8-32 mounting screws, and self-locking nuts.

4. Electrical Wiring Information

ARNAV drawing number **ENG-4860 (Appendix A)** shows how to electrically wire the DR-100 when it has no other serial devices attached. ARNAV drawing number **ENG-4861 (Appendix A)** shows how to electrically wire the DR-100 with an altitude serializer and a WX 500 as additional serial devices.

DB25 Pin Number	Pin Function
1	Aircraft Power - 10 to 35 Volts DC
2	Port A Transmit Data (TxA)
3	Port A Receive Data (RxA)
4	Port B Transmit Data (TxB)
5	Port B Receive Data (RxB)
6	Port C Transmit Data (TxC)
7	Port C Receive Data (RxC)
8	Port D Transmit Data (TxD)
9	NC
10	Port D Receive Data (RxD)
11	NC
12	NC
13	Ground (Power Return)

The Pin functions of the DR-100 25 pin connector are defined below.

14	Aircraft Power - 10 to 35 Volts DC
15	Ground
16	Ground
17	Ground
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	NC
24	Ground
25	Ground (Power Return)

5. Installation Test Plan

After the unit is secure in the mechanical and electrical installation, the unit should be powered up. If the Power LED (labeled 'Pwr") does not come on, the unit is either not powered or the fuse has blown. The Rx LED should normally be off. If a GeoLink transmission occurs in the vicinity of the unit, the Rx LED should momentarily come on. If the Rx LED stays on all of the time, or most all of the time, there are three possible problems: 1.) Someone is transmitting on the GeoLink frequency band (Default freq. = 149.895Mhz), 2.) Close proximity to Radio Frequency interference from a high energy source (i.e. repeater and translator stations for TV, microwave links, Cellular Nodes, etc.), 3.) Incorrect adjustment of carrier threshold setting at the factory.

If the unit is connected to a MFD-5200, the DR-100 unit should be "Software Configured". This process needs to be done only once for a particular configuration of the peripheral devices. After the "Software Configuration" is complete, the parameters are stored in the permanent memory of the DR-100 unit itself. The configuration needs to be done only once after first time installation or when there are changes made to the peripheral devices connected to the unit (installation changes).

The MFD must be configured to know that the DR100 is attached. Power up the MFD unit. The screen will display:

MAPPING

MFD 5000 SERIES

DIAGNOSTICS

SETUP / USER GRAPHICS

- Press SETUP /USER GRAPHICS (3rd button on the left.)
 Press SYSTEM CONFIGURATION (4th button on the left)
- 3. Press ACK (5th button on left) to the DATALINK field.
- 4. Press NEXT (4th button on right) until the field displays 3 for DR100/MESG/WX.
- 5. Press ACK. Continue to press ACK until the screen displays DR100 PORT CONFIGURATION.
- 6. Set PORT A and PORT B to the desired settings.
- 7. Save the settings.
- Bave the settings.
 Press END (5th button on right) to return to the MFD 5000 SERIES menu.
 Press DIAGNOSTICS (2nd button on left.)
 Press DR100 TEST (1st button on right.)

- 11. Press RESET CONNECTION (3rd button on left) to establish connection with the new settings.
- 12. After the connection is completed, the screen returns to the DR100 COMMUNICATIONS MENU. Press EXIT (5th button on right.)

The connection should now be made and the current configuration is in both units. If the physical configuration is to change, steps 1 - 12 must be followed again for both units to be configured correctly.

When an ARNAV EMM35 is one of the auxiliary serial devices connected to ports A and B the EMM35 must be configured for 4 cycles per second. From the MFD Diagnostics Menu press EMM35 TEST/CONFIGURATION (4th button on left)

Press CONFIGURE EMM35 (2nd button on left) Press SET EMM35 INTERVAL (3rd button on left) Press 4/SECOND (3rd button on left) Press EXIT (5th button on right) Press EXIT (5th button on right) Press END (5th button on right)

APPENDIX A

DRAWINGS

Template, CI-177-1 Antenna	591-3447
Template, CI-292-3 Antenna	591-4501
DR-100 Installation Dimensions	ED-1025
DR-100 Mounting Template	ED-1026
DR-100 / MFD 5200 Install	ENG-4860
DR-100 / MFD 5200 Install with	ENG-4861
WX 500 and Altitude Serializer	





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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMAL ANGULAR
.XX ± .010 ± .5°
.XXX±.005
.XXXX±.0010
MATERIAL
FINISH
DO NOT SCALE DRAWING
DO NOT COME DIVINING

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