

GTA 07-06-003
15 MARCH 2011

**AN/PSN-13
DEFENSE ADVANCED GPS RECEIVER
(DAGR)**

QUICK REFERENCE GUIDE



Maneuver Center of Excellence
US Army Infantry School
Fort Benning, GA

Reference: FM 3-25.26, *Map Reading and Land Navigation*,
30 August 2006

SAFETY

Note: See TO 31R4-2PSN13-8-1 for a complete list of warnings and cautions.

WARNING

If abused, lithium batteries can explode, causing severe injury. Be sure to store them in the original packaging until you are ready to use them.

POLARITY

- **INTERNAL POWER** - Always install batteries with the correct polarity (pointed the right way). Installing them backwards could damage both batteries and receiver.
- **EXTERNAL POWER** – Even though the DAGR is protected in case of a polarity error, ensure that you install the external DC power cable with the correct polarity. Reversing polarity could damage the DAGR even with the protection in place. Ensure that the positive (red) lead on the DC power cable connects to the positive lead on the external power source.

CONDITION

- Never mix battery types.
- Use only fresh, new batteries to ensure proper battery life and proper unit operation. Never mix old and new batteries.

CONTACT

- To prevent electrical shock, never open the external 110 VAC power cable adapter, and never touch the AC plug while operating the DAGR.

SAFETY

(continued)

CURRENT POSITION

- When position data fields blink between black and gray text, the DAGR is not tracking satellites or has not yet acquired present position. Field data may be inaccurate when the DAGR does not have a position fix. Be sure the DAGR has an open view of the sky to acquire the present position. If the position data fields continue to blink, perform the manual initialization procedure.
- The current position ensures accurately navigating waypoints and routes.

ERRORS

- A high level of position error may place a mission at risk. Verify that the **FOM/EHE** level is sufficient to accomplish the mission. Refer to **Present Position** or **NAV Displays** pages for the current FOM.

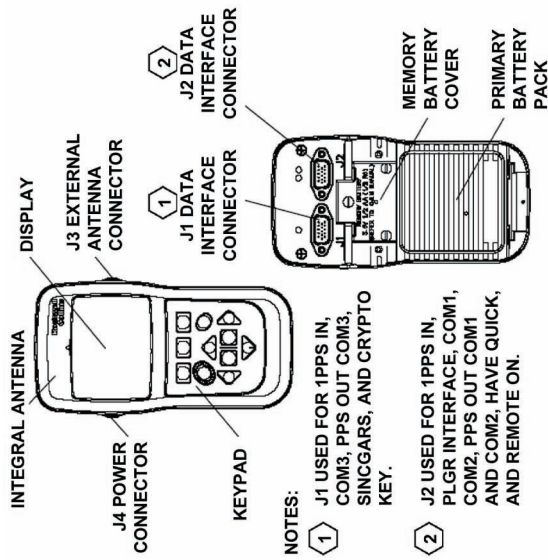
INTERFERENCE / JAMMING

- To avoid accidental jamming from sources of high power electronic emissions, move away from them and verify operation.

SPOOFING

- To enable DAGR operation during spoofing, the receiver must be loaded with current crypto keys.

PHYSICAL FEATURES



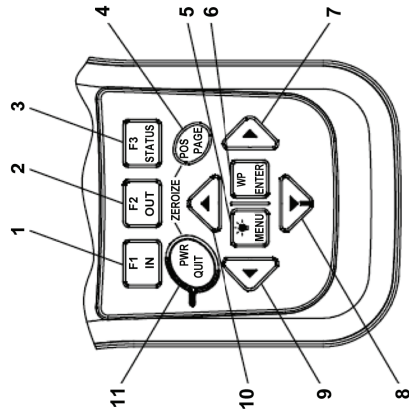
PHYSICAL FEATURES

(continued)

PRIMARY BATTERY INSTALLATION

1. Hold the unit firmly upside down with the battery pack facing up.
2. Depress the latch and pull out on the battery pack to release it.
3. If batteries are already installed in the battery pack, pull out on the battery removal strap to remove the batteries from the battery pack.
4. Before installing new batteries, position the battery removal strap into the channel of the battery pack.
5. Install new batteries so they orient like the polarity (plus/minus) graphic on the battery pack.
6. Before installing the battery pack, inspect its gasket for damage or dirt. Ensure battery removal strap does not protrude from the battery pack.
7. To install the battery pack, position the tab on the battery pack into the slot on the DAGR.
8. Close the battery pack against the DAGR until the battery pack engages.

KEYPAD



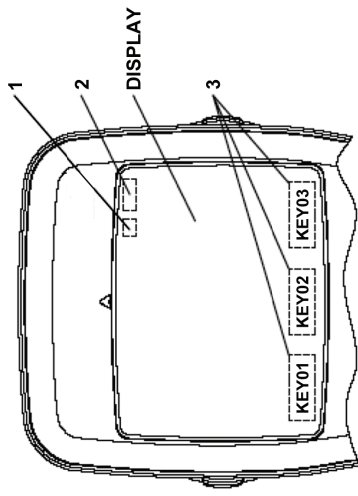
1. F1/IN FUNCTION KEY
2. F2/OUT FUNCTION KEY
3. F3/STATUS FUNCTION KEY
4. POS/PAGE KEY
5. BRIGHTNESS/MENU KEY
6. WP/ENTER KEY
7. RIGHT CURSOR CONTROL KEY
8. DOWN CURSOR CONTROL KEY
9. LEFT CURSOR CONTROL KEY
10. UP CURSOR CONTROL KEY
11. PWR/QUIT KEY

KEYPAD

(continued)

- All keys on the DAGR keypad are dual function (primary/secondary) except for the cursor (arrow) keys.
- Each dual function key is labeled with two sets of letters.
 - The large letters represent primary functions.
 - The smaller letters represent secondary functions.
- Push and release a key to activate its primary function.
- Push a key and hold it for 2 seconds to activate its secondary function.
- Use cursor keys to navigate around the page.
- Press and release the **QUIT/PWR** and **POS/PAGE** keys together to advance from one page to another.

OPERATION



1. DISPLAY LIGHTING STATUS INDICATOR
2. PRIMARY BATTERY STATUS INDICATOR
3. FUNCTION KEY LABELS (F1, F2, AND F3)

POWER ON

If the DAGR has an open view of the sky, it obtains the current position as soon as it powers on.

1. To turn on the DAGR, push and release **PWR/QUIT**.

OPERATION

(continued)

2. The **POWER ON STATUS** message displays for 2 seconds. If a **CV** key, **GUIV** key, **SV** code, or internal compass condition exists, acknowledge messages accordingly. If the following are true, then the **SV Sky View** page displays.
 - (1) Self-test passed.
 - (2) DAGR needs no initialization.
3. From the **SV Sky View** page, the DAGR automatically displays the **Present Position** page after acquiring the current position.

POWER OFF

1. Push and hold **PWR/QUIT** key for 2 seconds. DAGR displays **WARNING**.
2. Acknowledge as needed.

DISPLAY LIGHTING

1. If keypad/display lighting is required, turn the display light on/off by pushing and holding the **BRIGHTNESS/MENU** key.
2. Verify the **Display Lighting** on/off status by observing the **Display Lighting Status Indicator**.

SETUP

SET DAGR TO DESIRED OPERATING MODE

1. From any display, except from a pop-up message, push and hold the **POS/PAGE** key until the **Present Position** page displays.
2. To display the **List Editor**, push and release the **MENU** key.
3. Scroll to and highlight **Op Mode**, and with it highlighted, push and release the **WP/ENTER** key.
4. Scroll to and highlight the desired operating mode, and with it highlighted, push and release the **WP/ENTER** key.

SELECT COORDINATE/GRID SYSTEM

1. From any display, except for a pop-up message, push and hold the **POS/PAGE** key until the **Present Position** page displays.
2. To display the **List Editor**, push and release the **MENU** key.
3. Scroll to and highlight **Select Coord/Grid**. With it highlighted, push and release the **WP/ENTER** key.
4. Scroll to and highlight the desired coordinate/grid system. With it highlighted, push and release the **WP/ENTER** key.

SELECT GRID RESOLUTION

1. From any display, except from a pop-up message, push and hold the **POS/PAGE** key until the **Present Position** page displays.

SETUP

(continued)

2. Push and release the **MENU** key to display the **List Editor**.
3. Scroll to and highlight **Select Grid Res.** With it highlighted, push and release the **WP/ENTER** key.
4. Scroll to and highlight the desired grid resolution. With it highlighted, push and release the **WP/ENTER** key.

SELECT DATUM ID

1. From any display, except for a pop-up message, push and hold the **POS/PAGE** key until the **Present Position** page displays.
2. To display the **List Editor**, push and release the **MENU** key.
3. Scroll to and highlight **Select Datum.** With it highlighted, push and release the **WP/ENTER** key.
4. Scroll to and highlight the desired **Datum ID.** With it highlighted, push and release the **WP/ENTER** key.

EDIT OTHER FIELDS IN PRESENT POSITION PAGE

1. From any display, except for a pop-up message, push and hold the **POS/PAGE** key until the **Present Position** page displays.
2. To highlight a field, push and release the **WP/ENTER** key.
3. Scroll to and highlight the field to edit. With the desired field highlighted, push and release the **MENU** key to display the **Field List Editor**.
4. Edit as previously described.

OPERATING MODES

NOTE: When position data fields blink between black and gray text, the DAGR has either not yet acquired the present position or it is not tracking acquired satellites. If the DAGR cannot obtain a position fix, it may display inaccurate field data. If the power on **Self-Test** fails, *DO NOT USE THE DAGR.*

CONTINUOUS

Tracks satellites to produce a continuous position velocity time (**PVT**) solution, and uses the most power.

FIX

Tracks satellites to produce a single current **PVT** solution, then automatically transitions to **Standby** mode after a position fix is obtained.

STANDBY

Operates at reduced power and does not acquire and track satellites, but performs all functions that do not require satellites.

OTHER

Other modes include **Average**, **Time Only**, **Rehearsal**, **Test**, and **Off**.

POS/PAGE SET

The POS page set contains commonly used pages (described below). However, for this GTA, use only the **Present Position** and **NAV Pointer** pages.

PRESENT POSITION PAGE

Displays present position coordinates, coordinate and grid system, datum identifier, current operating mode, estimated horizontal error, figure of merit, elevation, elevation reference, ground speed, track, estimated time error, time figure of merit, time and date, MAGVAR, magnetic model year, and operator ID. Scroll the page vertically to view all field data.

SITUATIONAL AWARENESS PAGE

See **TO 31R4-2PSN13-8-1**.

NAV POINTER PAGE

Displays a pointer directing the operator towards the displayed waypoint. Also displays current navigation method, destination waypoint number and name, azimuth, and range to waypoint information.

IMAGE VIEWER PAGE

See **TO 31R4-2PSN13-8-1**.

SV SKY VIEW PAGE

See **TO 31R4-2PSN13-8-1**.

WAYPOINTS

MARK PRESENT POSITION AS A WAYPOINT

1. From any display, push and hold the **WP/ENTER** key to display the **WP Functions List Editor**.
2. Scroll to **Mark a WP**; with **Mark a WP** highlighted, push and release the **WP/ENTER** key. **MARK PRESENT POSITION** window opens.
3. To store waypoint, push and release **WP/ENTER** key. DAGR displays **Waypoint Stored Note** for 2 seconds, then display returns to previously viewed display.

CREATE A NEW WAYPOINT

1. From any display, push and hold the **WP/ENTER** key to display the **WP Functions List Editor**.
2. Scroll to and highlight **Create New WP**. With it highlighted, push and release the **WP/ENTER** key. DAGR displays waypoint information with waypoint **NUMBER/NAME** field highlighted.
3. To edit additional fields, repeat editing procedure described in **EDIT A MARKED WAYPOINT**.

WAYPOINTS

(continued)

EDIT A MARKED WAYPOINT

1. From any display, push and hold the WP/ENTER key to display the **WP Functions List Editor**.
2. Scroll to and highlight **List All WPs**, and with it highlighted, push and release the WP/ENTER key. DAGR displays stored waypoints.
3. Scroll to the waypoint to be edited; with waypoint highlighted, push and release the MENU key. **WAYPOINTS List Editor** displays.
4. Scroll to and highlight **Edit Waypoint (WP)**. With it highlighted, push and release WP/ENTER key.
5. DAGR displays waypoint information with the waypoint **NUMBER/NAME** field highlighted.
6. Push and release WP/ENTER key to access the **Text Editor**.
7. Edit field as required.
8. To save changes, push and release the MENU key to display the **List Editor**.
9. Scroll to and highlight **Save & Exit**. Push and release the WP/ENTER key. **Waypoint Editor** page displays again.
10. Scroll to next field to be edited and repeat editing procedure as previously described.

NAVIGATION

WARNINGS

1. If the DAGR is not tracking satellites or has no position fix, the displayed position data blinks between gray and black to notify the operator. Field data may be inaccurate and/or unavailable when the DAGR has no position fix.
2. DAGR Op Mode must be set to Continuous before using DAGR to navigate (see Receiver Setup procedures).

CALIBRATE THE INTERNAL COMPASS

Note: Calibrate internal compass when replacing batteries; at 50% and 25% of battery life and before navigation.

1. From any display, except for a pop-up message, push and hold the POS/PAGE key until the **Present Position** page displays.
2. Push and release the POS/PAGE key twice to display the **NAV Pointer** page.
3. With the **NAV Pointer** page displayed, push and release the MENU key to display the **NAV Pointer List Editor**.
4. Scroll to **Calibrate Compass**; with **Calibrate Compass** highlighted, push and release the WP/ENTER key. The **Internal Compass Calibration** message displays.
5. Hold **DAGR** horizontally, rotate it clockwise, and follow directions on the display until the **DAGR** displays the **Internal Compass Calibration** message (Complete or Failed).
6. If you receive a **Failed** message, repeat process.

NAVIGATION

(Continued)

GOTO WAYPOINT NAVIGATION

1. From any display except a message pop-up, push and hold the WP/ENTER key to display the **WP Functions List Editor**.
2. Scroll to **GOTO WP**; with **GOTO WP** highlighted push and release the WP/ENTER key. DAGR displays all stored waypoints.
3. Scroll to waypoint to be navigated to, with the waypoint highlighted; push and release the WP/ENTER key. The DAGR automatically displays the **NAV Pointer** page.
4. The **NAV Pointer** arrow points to destination waypoint. Move in the direction the arrow is pointing to navigate to the destination **NAV Pointer** fields: **Direct To**, **Azimuth**, and **Range** to aid in navigation.

CRYPTO VARIABLE LOAD PROCEDURES

NOTE: Before connecting the DAGR to a power source, ensure the power switch is set to OFF.

LOAD CV WITH KYK-13

1. Connect the Fill Device to the J1 connector (on the DAGR) using the Crypto Fill Cable.
2. From any display, push and release the F3/STATUS key to display the **Receiver Status** window.
3. Push and release the MENU key to display the **Receiver Status List Editor**.
4. Scroll to and highlight **Crypto Fill**, then push and release the WP/ENTER key. **Crypto Fill** page displays.
5. To highlight a field, push and release the WP/ENTER key.
6. Scroll to the **CV Loading Interface** field. To display the **Field Editor**, push and release the WP/ENTER key.
7. Select DS 102.
8. Set the KYK-13 SELECTOR SWITCH to the crypto key position.
9. Set the KYK-13 mode switch to ON, then OFF.
10. Acknowledge DAGR messages, and observe the CV Status on the **Crypto Fill** page.

CRYPTO VARIABLE LOAD PROCEDURES

(Continued)

LOAD CV WITH AN/CYZ-10, RED KEYS ONLY

Complete Steps 1-6, Load CV with KYK-13, described above.

1. Select DS 101.
2. If the AN/CYZ-10 is not already on, power it on. Display should read **SOI RADIO SUPERVISOR**.
3. Select RADIO. Display should read **SETUP COMSEC TIME**.
4. Select COMSEC. Display should read **VG LD RV AK MK VU**.
5. Select LD. Display should read **TEK KEK**.
6. Select TEK.
7. Push the PgDN or PgUP keys as required to view the desired key, then push ENTER on the AN/CYZ-10. Display should read **QUIT (key name/number) XMIT**.

NOTE: Disregard Instructions relating to a radiotelephone.

8. Select QUIT. Display should read **CONNECT ANCD TO RT (WAIT) (↓)**.
9. Push the down arrow. Display should read **PRESS (LOAD) ON RT**. The crypto key loads automatically.
10. Acknowledge any DAGR messages.
11. Observe the **CV Status** field on the **Crypto Fill** page.

DEFAULT SETTINGS

For detailed instructions on changing default settings to user settings, see TM 11-5820-1172-13. The DAGR default settings include several power-saving features:

AUTO-OFF

The DAGR automatically turns off after 5 minutes with no key presses.

AUTO STANDBY

The DAGR transitions into **STANDBY MODE** if it cannot obtain its current position fix within 15 minutes.

POWER ON

This operating mode is set to **DEFAULT**, which causes the DAGR to acquire a current position fix. It automatically transitions to **STANDBY MODE** when the DAGR is using the primary battery pack as a power source.

BASIC OPERATING MODE

The DAGR comes defaulted to the **BASIC OPERATING MODE**.

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