

12.2 TRAFFIC ADVISORY SYSTEMS (TAS)

Introduction

All information in this section pertains to the display and control of the Garmin GNS 430/GTS 800 interface.



NOTE: This section assumes the user has experience operating the GNS 430 and the GTS 800.



NOTE: References to the GTS 800 throughout this document refer equally to the GTS 820 and GTS 850 unless otherwise noted.

System Description

The GNS 430 provides an optional display interface for the GTS 800 Traffic Advisory System (TAS). The GTS 800 monitors the airspace surrounding an aircraft, and advises the flight crew where to look for transponder-equipped aircraft that may pose a collision threat.

The GTS 800 is an active traffic advisory system that operates as an aircraft-to-aircraft interrogation device. When the GTS 800 receives replies to its interrogations, it computes the responding aircraft's range, bearing, relative altitude, and closure rate; it then plots the traffic location and predicts collision threats.

Traffic Symbology

Traffic information from the GTS 800 is displayed on the GNS 430 unit using TAS symbology (Table 12-4) on a dedicated Traffic page, and on the moving Map Page. The displayed traffic information generally includes the relative range, bearing, and altitude of intruder aircraft. The GTS 800 also generates aural announcements heard on the cockpit audio system.





Symbol	Traffic Type	Description
	Traffic Advisory (TA)	A TA (Traffic Advisory) is generated when the GTS 800 predicts that an intruder aircraft may pose a collision threat. A solid yellow circle represents an intruder aircraft that is on a course that projects to intercept (defined by a 0.5 nm horizontal radius and a relative altitude of ± 500 ft) the pilot's current course within 34 seconds. A TA consists of the traffic symbol and an aural alert (e.g., "traffic, 12 o'clock, high, 3 miles").
	Out-of-Range Traffic Advisory	This solid yellow half circle appears (on the outer range ring) under the same conditions and has the same urgency as a TA. Its appearance differs from the TA only to signify that the intruder is outside of the current range of the Traffic Page.
	Proximity Advisory (PA)	Proximity Advisories (PA) are displayed as solid white diamonds. PAs are defined as traffic within the 6.0-nm range, within ± 1200 ft. of altitude separation, and are not a traffic advisory (TA).
	Other Traffic Symbol	This symbol (hollow white diamond) represents traffic detected within the selected display range that does not meet the criteria for a TA or a PA and does not pose an immediate collision threat.

Table 12-4 TAS Symbology

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Altitude deviation (Figure 12-20) from own aircraft altitude is displayed (in hundreds of feet) for each target symbol. If traffic is above own aircraft altitude the deviation is shown above the target next to a '+' symbol. If traffic is below own aircraft altitude the deviation is shown below the target next to a '-' symbol.

Altitude trend (Figure 12-20) is displayed as an up arrow (> +500 fpm), down arrow (< -500 fpm), or no symbol if less than 500 fpm rate in either direction.

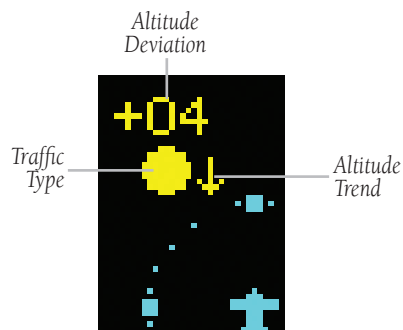


Figure 12-20 Traffic Symbol Components

Aural Alerts

A TA consists of a displayed traffic symbol (solid yellow circle) and an aural alert. The aural alert announces “traffic”, followed by the intruder aircraft’s position, altitude relative to own aircraft (“high”, “low”, or “same altitude”), and distance from own aircraft; e.g. “traffic, 12 o’clock, high, 3 miles”.

Power-up Self-Test

Check for the following test criteria on the Traffic Page during power-up:

- If the GTS 800 passes the power-up test; and the aircraft both has a squat switch and is on the ground, the Standby Screen is displayed (Figure 12-21).
- If the GTS 800 passes the power-up test and the aircraft both has a squat switch and is airborne, the Traffic Page is displayed on the 6-nm display range and in the normal altitude display mode.
- If the GTS 800 passes the power-up test and the aircraft does not have a squat switch, the Standby Screen is displayed (Figure 12-21).
- If the GTS 800 fails the power-up test (as indicated by a FAILED screen), the GTS 800 is inoperable, see the GTS 800 Installation Manual for detailed information on Failure Response.



Figure 12-21 Standby Mode



NOTE: When the system is in standby, the GTS 800 does not transmit, interrogate, or track intruder aircraft.

Tracking intruder aircraft

- 1) Press the small **right** knob to activate the cursor and highlight 'STBY'.
- 2) Turn the small **right** knob to select 'OPER'.
- 3) Press the **ENT** Key to confirm operating mode and begin tracking intruder aircraft.



NOTE: The *FAILED* message is displayed when the system detects an error that prohibits further traffic display operation.

User-initiated Test

In addition to the power-up test, the GTS 800 performs self-tests during normal operation. A self-test is performed once per minute to verify that the antenna is connected. Also, a calibration is performed at varying intervals based on time and temperature. A user-initiated test of the GTS 800 interface can also be performed.



NOTE: A user-initiated test can only be performed when in standby or failed mode.

Performing a user-initiated test:

- 1) Turn the small **right** knob to select the Traffic Page.
- 2) From the Traffic Page, press the **MENU** Key to display the Page Menu.
- 3) Turn the small **right** knob to select 'Self Test?'.
- 4) Press the **ENT** Key.

Switching Between Standby and Operating Modes

The unit must be in operating mode for traffic to be displayed. The ability to switch out of standby into operating mode on the ground is especially useful for scanning the airspace around the airport before takeoff. Operating Mode is confirmed by the display of 'OPER' in the upper right-hand corner of the Traffic Page (Figure 12-22).

Switching to Operating Mode from Standby Mode:

- 1) Press the small **right** knob to activate the cursor and highlight 'STBY'.
- 2) Turn the small **right** knob to select 'OPER?'.
- 3) Press the **ENT** Key to confirm and place the GTS 800 in operating mode, the GTS 800 switches out of standby into the 6-nm display range.



NOTE: If the aircraft has a squat switch and the pilot does not manually switch out of standby, the GTS 800 will automatically switch out of standby 8 to 10 seconds after takeoff.

Switching to Standby Mode from the Traffic Page:

- 1) Press the small **right** knob to activate the cursor and highlight 'OPER'.
- 2) Turn the small **right** knob to select 'STBY?'.
- 3) Press the **ENT** Key to confirm and place the GTS 800 in standby mode.



NOTE: If the aircraft has a squat switch, STBY is not displayed while the aircraft is airborne but will go into standby 24 seconds after landing. This delay allows the GTS 800 to remain out of standby during a touch-and-go maneuver.

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Traffic Page

Traffic can be displayed both on the Map Page (only if heading is available) and on the Traffic Page (Figure 12-22). See the Garmin 400/500 Series Installation Manual available at authorized Garmin service centers for details.

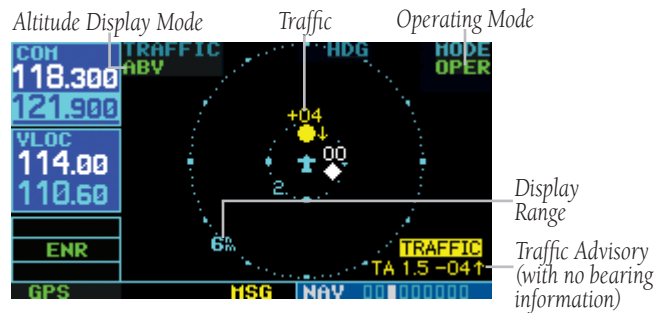


Figure 12-22 Traffic Page

Traffic Page Display Range

The display range on the Traffic Page can be changed at any time.

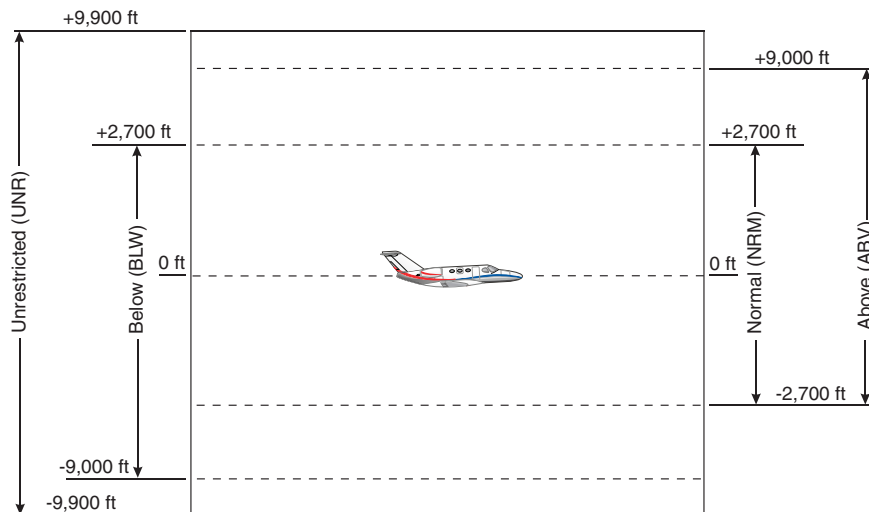
Changing the display range on the Traffic Page:

Press the **RNG** Key to step through the following range options:

- 2 nm
- 2 and 6 nm
- 6 and 12 nm
- 12 and 24 nm

Altitude Display Mode

The GTS 800 has four altitude display modes (Figure 12-23); Normal ($\pm 2,700$ ft), Above ($-2,700$ ft to $+9,000$ ft), Below ($-9,000$ ft to $+2,700$ ft), and Unrestricted ($\pm 9,900$ ft). The GTS 800 continues to track up to 30 intruder aircraft within its maximum surveillance range, regardless of the altitude display mode selected.



Not to Scale

Figure 12-23 Altitude Display Modes

The selected altitude display mode (Figure 12-24) is displayed in the upper left-hand corner of the Traffic Page. The GTS 800 continues to track up to 30 intruder aircraft within its maximum surveillance range, regardless of the altitude display mode selected.

Changing the Altitude Display Mode:

- 1) From the Traffic Page, press the small **right** knob to activate the cursor and highlight the current mode (Figure 12-24).
- 2) Turn the small **right** knob to cycle through the options. The screen changes to display the traffic detected within the selected altitude display range. Refer to Figure 12-23 for information regarding altitude display ranges.



NOTE: Confirmation is not required, the mode is changed immediately when using the small **right** knob.



Figure 12-24 "UNR" Selected

- 3) Press the small **right** knob to turn the cursor off after the selection is made.

Traffic Warning Window

When the unit is not on the traffic page and a traffic threat is imminent, the Traffic Warning Window (Figure 12-25) is displayed, which shows a small thumbnail map. When the Traffic Warning Window is displayed, press the **ENT** Key to display the Traffic Page, or press the **CLR** Key to return to the previous page.



NOTE: The Traffic Warning Window is disabled when the aircraft ground speed is less than 30 knots or when an approach is active.



Figure 12-25 Traffic Warning Window

Map Page Traffic Banner

When a Traffic Advisory is active, the 'Traffic' banner is displayed in the lower right corner of the Map Page (Figure 12-26)



Figure 12-26 Traffic Banner

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Configuring Traffic Data on the Map Page

Traffic is only displayed on the Map Page if aircraft heading data is available. When heading is not available, Traffic Advisories are displayed as non-bearing banners on the Map Page. See the Garmin 400/500 Series Installation Manual available at authorized Garmin service centers for details.

Traffic mode allows the operator to choose which traffic type is displayed (all traffic, traffic and proximity advisories, or traffic advisories only). The traffic symbol (Table 12-4) is used to depict the type of traffic.

Configuring traffic on the Map Page:

- 1) Turn the small **right** knob to select the Map Page.
- 2) Press the **MENU** Key to display the Page Menu.
- 3) Turn the small **right** knob to select 'Setup Map?'
- 4) Press the **ENT** Key. The flashing cursor highlights the GROUP field.
- 5) Turn the small **right** knob to select 'Traffic'.
- 6) Press the **ENT** Key (Figure 12-27).



Figure 12-27 Map Setup Menu

- 7) Turn the large **right** knob to select the desired Traffic Mode option.
- 8) Turn the small **right** knob to select the desired option

- 9) Press the **ENT** Key. Repeat steps 7-9 for Traffic Symbol and Traffic Label.
- 10) Return to the Map Page by pressing the **CLR** Key.

Thumbnail Traffic on Map Page

Traffic in a thumbnail format can be displayed in any of the three data fields on the right side of the Map Page (Figure 12-28).

Displaying Thumbnail Traffic on the Map Page

- 1) Turn the small **right** knob to select the Map Page.
- 2) Press the **MENU** Key to display the Page Menu.
- 3) Turn the small **right** knob to select 'Change Fields?'
- 4) Press the **ENT** Key.
- 5) Turn the large **right** knob to select one of the three fields.
- 6) Turn the small **right** knob to select 'TRFC' from the Select Field Type List.
- 7) Press the **ENT** Key. (Figure 12-28)



Figure 12-28 Thumbnail Traffic on Map Page



NOTE: The thumbnail range defaults to 6 nm and cannot be changed.

Highlighting Traffic Data Using Map Panning

Another map page function is panning, which allows changing the map beyond its current limits without adjusting the map scale. Select the panning function by pressing the small **right** knob, a target pointer flashes on the map display (Figure 12-29). Also a window appears at the top of the map display showing the latitude/longitude position of the pointer, and the bearing and distance to the pointer from the present position.

Selecting the panning function and panning the map display:

- 1) Press the small **right** knob to activate the panning target pointer (Figure 12-29).



Figure 12-29 Panning the Map Display

- 2) Turn the small **right** knob clockwise to move up, or counterclockwise to move down.
- 3) Turn the large **right** knob clockwise to move right, or counterclockwise to move left.
- 4) To cancel the panning function and return to the present position, press the small **right** knob.

When the target pointer is placed on traffic, the traffic range and altitude deviation are displayed (Figure 12-29).

The traffic is identified as:

- TA: Traffic Advisory
- PA: Proximity Advisory
- TRFC: Other Traffic