G-PILOT 3100
AUTOPILOT

Operation Manual

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G-PILOT 3100

NAVMAN

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NavBus
FCC Statement
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a normal installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.
- A shielded cable must be used when connecting a peripheral to the serial ports.
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Important

It is the owner’s sole responsibility to install and use the instrument and transducer/s in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing safe boating practices.

The choice, location, and installation of all components in any autopilot system is critical. If installation is not correct, the unit can not perform at its designed potential. If in doubt, consult your Navman dealer. Ensure that any holes that cut are in a safe position and will not weaken the boat's structure. If in doubt, consult a qualified boat builder.

Using the G-PILOT 3100:

• The G-PILOT 3100 is intended as an aid to save a helmsman from having to steer for long periods of time, not as the main means of steering the boat.
• The G-PILOT 3100 is not intended for use in extreme weather, in adverse conditions or in water near other boats, dangerous waters or land.
• The G-PILOT 3100 can not control the boat better than a helmsman. In adverse conditions steer the boat manually.
• Never leave the helm unattended. Keep a watch at all times. The helmsman should always monitor the course of the boat and the G-PILOT 3100 and be ready to resume steering the boat manually.
• The performance of the G-PILOT 3100 can be affected by the failure of a part, environmental conditions, improper installation and use.

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As Navman is continuously improving this product we retain the right to make changes to the product at any time which may not be reflected in this version of manual. Please contact your nearest Navman office if you require any further assistance.

Governing Language: This statement, any instruction manuals, user guides and other information relating to the product (Documentation) may be translated to, or has been translated from, another language (Translation). In the event of any conflict between any Translation of the Documentation, the English language version of the Documentation will be the official version of the Documentation.

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1 Introduction

The G-PILOT 3100 autopilot has three steering modes:

- **Compass**: The boat sails at a set compass heading.
- **Wind**: The boat sails and tacks at a set angle to the wind (requires a wind instrument, such as Navman’s WIND 3100 series, to be connected).
- **GPS**: The boat sails to a destination along a preset route (requires a GPS instrument, such as a Navman TRACKER chartplotter to be connected).

The G-PILOT 3100 has three states:

- **STBY** (standby): The G-PILOT 3100 does not steer the boat. Steer the boat with the manual helm.
- **AUTO**: The G-PILOT 3100 steers the boat automatically.
- **HAND STEER**: The G-PILOT 3100 displays steering information for the helmsman to use to steer a course manually.

The unit is powered from the boat’s power supply.

The G-PILOT 3100 is part of the Navman family of instruments for boats, which includes instruments for speed, depth, wind and repeaters. These instruments can be connected together to form an integrated data system for a boat. The G-PILOT 3100’s performance is enhanced if it is connected to a boat speed instrument such as Navman’s SPEED 3100 or a GPS.

Using this manual

For maximum benefit, please read this manual carefully before using the G-PILOT 3100. This manual describes how to operate the G-PILOT 3100. Refer to the separate **G-PILOT 3100 Installation Manual** for information on how to install and setup the G-PILOT 3100 before use.

Cleaning and maintenance

Clean the parts of the G-PILOT 3100 with a damp cloth or mild detergent. Avoid abrasive cleaners, petrol or other solvents. Do not paint any part of the G-PILOT 3100 except for the cables.

1-1 A typical installation

![Diagram of a typical installation](image)

**Key**
- Parts supplied with G-PILOT
- Other parts required
- Optional parts

**Note**: Above shows typical installation only. Please refer to the information supplied with your drive for further information.
2 Basic operation

The display unit

Display and keys are backlit (see section 3-1)
Main display always shows boat heading (see section 3-2)
Boat heading TRUE or MAG
Battery symbol flashes if battery low (see section 3-5)
Alarm symbol flashes when alarm sounds (see section 3-5)
111 x 111 mm (4.4” x 4.4”)

2-1 Turning on and off

Turn the unit on and off with the auxiliary power switch on the boat. The unit does not have its own power switch. When you turn it off, any settings you have made are retained.

If the word SIMULATE flashes on the display, then the unit is in simulate mode (see section 3-6).

2-2 The keys

The unit has four keys, labelled AUTO (ESC) < > and MENU (ENT).
In this manual:
• Press means to push the key for less than one second.
• Hold means to hold the key down until the display changes.
• Press one key + another key means to push both keys together.

The display unit gives a high pitch beep after a valid key press and a low pitch beep after an invalid key press. For information on using the keys, see sections 3-7 and 3-8.

Keylock
When keylock is turned on, the G-PILOT will ignore key presses. To turn keylock on or off:
• Press AUTO + MENU.
• Press ENT.

2-3 Using the G-PILOT 3100

2-3-1 Starting the G-PILOT 3100
1 Turn the G-PILOT 3100 on (see section 2-1). If the G-PILOT 3100 is connected to speed, wind or GPS instruments, turn these on too.
2 If necessary, adjust the backlight so that the display can be read easily (see section 3-1).
3 If necessary, change the user data (see section 3-7).

2-3-2 Using the G-PILOT 3100
1 Manually steer the boat to open waters before using the G-PILOT to steer the boat.
2 If necessary, change the steering mode (see section 2-4).
3 Engage, use and disengage the G-PILOT:
   For Compass mode: see section 4.
   For GPS mode: see section 5.
   For Wind mode: see section 6.
It is possible to change the steering mode during a voyage, for example:

- Change from GPS to compass at the end of a route.
- On a sailing boat, change from wind to compass or GPS when changing from sail to motor (see section 3-4).

The G-PILOT can be adjusted to optimize its steering performance:

- If necessary, adjust the turn rate so that the boat turns at a reasonable rate; go to TURN RATE in the OPTIONS menu (see section 3-7).
- Select a profile suitable for the conditions (see section 7-2).
- If necessary, adjust the data in the profile to improve the steering performance (see section 7-3).
- If the G-PILOT steering performance is poor and the above adjustments do not correct the performance, consider performing a complete dockside setup and sea trial as described in the G-PILOT 3100 Installation manual.

Important:
- The G-PILOT cannot control the boat better than a helmsman. The G-PILOT is not intended for use in extreme weather, in adverse conditions or near other boats, dangerous waters or land. In these conditions, disengage the G-PILOT and steer manually.
- Never leave the helm unattended, keep a watch at all times and be ready to resume steering the boat manually.
- Do not try to turn the rudder by hand when the G-PILOT is engaged.
- Local variations in magnetic field can affect the accuracy of the compass heading. Such variations are the responsibility of the user.

2-3-3 Action in an emergency
To regain control of the boat in an emergency situation:

- Either press AUTO to put the G-PILOT 3100 in STBY (standby)
- or turn the power switch(es) off.
Then manually steer the boat.

2-3-4 Turning the G-PILOT 3100 off
It is normal to turn the G-PILOT off upon reaching your destination.

2-4 Setting the steering mode
The G-PILOT 3100 has three ways to steer the boat: compass, GPS or wind. These are called the steering modes.

For a power boat
- For a boat without GPS, or for a boat with GPS when you do not want to navigate to a waypoint, choose compass mode. The G-PILOT 3100 steers the boat at a set compass heading.
- To use the G-PILOT 3100 with a GPS to navigate to a waypoint or along a route, choose GPS mode. The G-PILOT 3100 steers the boat using navigation data from the GPS.

For a sailing boat
- To sail, tack and gybe at a set angle to the wind, choose wind mode. Wind mode requires a wind instrument, such as Navman’s WIND 3100 to be connected via NavBus or NMEA.
- To steer to a set compass heading, choose compass mode.
- To use the G-PILOT 3100 with a GPS to navigate to a waypoint or along a route, choose GPS mode.

Note for sailing boats
- The G-PILOT is not recommended for use in light, changeable or gusty winds.
- Take care when running to avoid an accidental gybe.
- Wind mode requires the wind instrument to be accurately calibrated.
Setting the steering mode from the menu
Go to STER MODE in the MAIN menu (see section 3-7) and select COM (compass), GPS or WIND.

Setting the steering mode by shortcut key
Hold MENU to go directly to the steering mode menu.

Note
• To select GPS mode, the G-PILOT must be receiving data from a compatible GPS instrument, otherwise the G-PILOT will display NO DATA.
• To engage the G-PILOT in GPS mode, the GPS must be navigating to a waypoint or along a route, otherwise the G-PILOT will display NAV ERROR. If the boat is too far from the plotted course, the G-PILOT will display TRK ERROR (see section 5-2).
• To select Wind mode, the G-PILOT must be receiving data from a compatible wind instrument, otherwise the G-PILOT will display NO DATA.

Steering mode is shown on the display

2-5 STBY (standby), AUTO and HAND STEER
The G-PILOT 3100 can operate in STBY (standby), AUTO or HAND STEER:

Power on

Hold AUTO + MENU

Press AUTO

STBY (standby)
Autopilot does not steer the boat except during jog steer.
Autopilot displays heading but does not display steering data.
Steer the boat manually.

AUTO
Autopilot steers the boat.
Autopilot displays heading and navigation data.
Do not steer the boat manually.

HAND STEER
Autopilot does not steer the boat.
Autopilot displays heading and navigation data.
Steer manually using the displayed navigation data.
CTS (course to steer) can be displayed in the info display (see section 3-4).
Course error can be displayed in the bar data (see section 3-3).

For information on jog steer, see section 2-6.
For information on engaging and using the G-PILOT 3100 for AUTO and HAND STEER:

For Compass mode: see section 4.
For GPS mode: see section 5.
For Wind mode: see section 6.
When the G-PILOT 3100 is in STBY (standby, see section 2-5) the helmsman must steer the boat manually. However the G-Pilot 3100 can turn the rudder; this is called jog steering:

- hold down < to turn the rudder to port
- hold down > to turn the rudder to starboard
- press and release < and > together to turn the rudder to amidships (this function is disabled until the rudder feedback unit and the compass have been calibrated (see the G- PILOT 3100 Installation Manual)).

### For example:

**Rudder is amidships**

- Hold <, the rudder turns to port and the boat turns to port
- Release <, the rudder stays to port

**Rudder is to port**

- Hold >, the rudder turns to starboard
- Release >, the rudder stops, but is still to port

**Rudder is to port**

- Press and release < + > together the rudder turns to amidships.
- To stop the rudder turning to amidships press ESC, < or >

---

**Warning** Until the rudder feedback unit is calibrated, there is no rudder limit and the user must ensure that the rudder is not driven onto an endstop when using jog steering.

**Note** Normally during a jog the info data (see section 3-4) displays JOG. However, if CUR (drive current) is selected then this current is displayed during a jog as an aid for testing the steering drive.
3 Operation

3-1 Set backlight for screen and keys
To adjust the backlight, go to LAMP in the MAIN menu (see section 3-7). The options are OFF or 1 (least bright) to 4 (most bright).

3-2 Heading display
The main display always shows the boat heading:
To display MAG (magnetic) or TRUE headings, go to HDG TYPE in the OPTIONS menu (see section 3-7).

3-3 Bar data display
The bar data at the top of the display can display rudder angle or course error.
To select what is displayed, go to BAR DATA in the MAIN menu (see section 3-7). If the G-PILOT 3100 system has more than one display unit, then the bar data display can be selected differently in each display unit.

Rudder angle
Rudder angle is the angle that the rudder is turned from amidships. When the G-PILOT 3100 is driving the rudder, an arrowhead at the end of the bar data turns on, pointing in the direction the rudder is moving. For example:

If the rudder is turned 30° or more, the display shows 30° and the arrowhead is on:

Rudder angle can be displayed even if the boat is being steered manually.

Course error
The course error is the angle between the actual boat heading and the intended autopilot course, for example:

Actual heading 90°
CTS (course to steer) 110°
Course error is 20° to starboard

Actual heading 290°
CTS 250°
Course error is 40° to port, but 30° is the largest error that can be displayed, so the display shows 30° to port

In STBY (standby), course error displays as zero.

3-4 Info data display
The info data is at the bottom of the screen, and can display one item of steering or navigation data. To select what data is displayed, go to INFO DATA in the MAIN menu (see section 3-7). If the G-PILOT 3100 system has more than one display unit, then the info data display can be selected differently in each display unit.
The options are:
• CTS: The course the G-PILOT 3100 intends the boat to steer; in STBY (standby) there is no CTS and the display shows CTS — — —.
3-5 Alarms
When the G-PILOT 3100 detects an alarm condition, it displays a warning message, the alarm symbol on the display flashes, the internal beeper sounds and any external beepers or lights operate.
Press any key to mute the alarm, then press ESC to cancel the alarm message.
The G-PILOT 3100 has two kinds of alarm, internal alarms and user defined alarms:
- To turn user defined alarms on or off and set the alarm condition (see the ALARMS menu, section 3-7).
- For a list of the alarms and what they mean, see appendix B.

Low battery alarm
If the G-PILOT 3100 power supply voltage drops below the battery alarm value, the G-PILOT 3100 gives a BAT ERROR alarm and the low battery symbol on the G-PILOT 3100 display flashes. If the G-PILOT 3100 is in AUTO then the steering drive might not operate if the power supply voltage is too low. We recommend switching to HAND STEER (see section 2-5).

3-6 Simulate mode
Simulate mode allows you to become familiar with the unit off the water. The word SIMULATE flashes on the display.
To turn Simulate mode on or off:
1. Turn the unit off (see section 2-1).
2. Hold down AUTO while you turn the unit on (see section 2-1).

3-7 Using the menus
The menus contain data and functions to control the performance and operation of the G-PILOT 3100.

Viewing or changing menu data
1. From normal operation, press MENU.
2. To select data in the MAIN menu:
   - press < or > until the required data is displayed; press ENT
   To select data in other menus:
   i. press < or > until CONFIG > is displayed; press ENT
   ii. press < or > until the required menu is displayed; press ENT
Note An > after an name indicates that the item is a menu.
3. To change the data:
   - press < or > one or more times
   - hold < or > to change the data in steps of ten
   - to restore the data to its default value (see next page), press < + >.
4. Press ENT to store the changed data, or press ESC to ignore the change.
5. Press ESC one or more times to exit the menu or repeat steps 2 to 4 to view or change other data.
Shortcut After viewing or changing data, hold ESC to exit the menus.
The G-PILOT gives a long beep when you exit the menu. If you do not press a key for 30 seconds than the G-PILOT will automatically exit the menu.

MAIN menu
RESPONSE How far the course deviates before the G-PILOT 3100 corrects the course (1 to 10, A1 to A5; default depends on vessel type) (see section 7-1).
RATIO How much the G-PILOT 3100 turns the rudder to correct the course (1 to 10; default depends on vessel type) (see section 7-2).
LAMP The backlight brightness (1 to 4 or OFF; default = 1) (see section 7-3).
BAR DATA The data to display on the bar display (CE (course error ) or RUD (rudder angle); default = RUD) (see section 7-3).
INFO DATA The data to display on the info data display (CTS, XTE, BRG, COG, DTG, TTG, SOG, WND, BAT, CUR, OFF; default = CTS) (see section 7-3).
**List of menus and data**

**MAIN menu**
- Response
- Ratio
- Lamp
- Bar data
- Info data
- Steer mode
- Profile

**CONFIG > menu**
- ALARMS > menu
  - Course error alarm
  - XTE alarm
  - Waypoint acknowledge
  - Wind alarm
  - Battery alarm
  - Current alarm

**OPTIONS > menu**
- Counter rudder gain
- Trim gain
- GPS gain
- Wind gain
- Dodge angle
- Tack angle
- Gybe angle
- Tack delay
- Turn rate

**VESSEL > menu (STBY only)**
- Vessel type
- Drive type
- Wind type
- Heading type
- Magnetic variation

**DEVICES > menu (STBY only)**
- Calibrate rudder feedback unit
- Centre rudder feedback unit
- Calibrate compass
- Align heading
- Align GPS

**FACTORY > menu (STBY only)**
- Backlight group
- Key beeps
- NMEA 2 data
- Main control unit version number
- Display unit version number
- Reset NVM

**STER MODE** The steering mode (COM (compass), GPS, WND; default = COM) (see section 2-4).

**PROFILE** The current set of steering parameters to use (1 to 5; default = 1) (see section 7-3).

**CONFIG** > Access data in menus other than the main menu.

**ALARMS > menu**
- **CE ALARM** The maximum course error allowed before alarm sounds (1° to 90° or OFF; default = OFF).
- **XTE ALARM** The maximum XTE error (in nm) allowed before alarm sounds (0.01 to 2 nm or OFF; default = OFF).
- **WPT AKN** If the user is to acknowledge when the boat reaches waypoint (OFF or ON, default = OFF) (see section 5-2).
- **WND ALARM** (If vessel type = SAIL) The maximum deviation between apparent wind angle and SWA (set wind angle) before alarm sounds (1° to 90° or OFF; default = OFF).
- **BAT ALARM** The lowest battery voltage allowed before alarm sounds (7 to 14 V or OFF; default = OFF).
- **CUR ALARM** The maximum drive current before alarm sounds (5 to 20 A; default = 10 A).

**OPTIONS > menu**
- **C-RD GAIN** Counter rudder gain, used to optimize steering performance (1 to 10 or OFF; default depends on vessel type) (see section 7).
- **TRIM GAIN** Trim gain, used to optimize steering performance (1 to 10 or OFF; default depends on vessel type) (see section 7).
- **GPS GAIN** GPS gain, used to optimize steering performance (1 to 10; default = 3) (see section 7).
- **WIND GAIN** Wind gain, used to optimize steering performance (1 to 10; default = 1) (see section 7).
- **DODGE ANG** The angle the course will change by in a dodge (5° to 30°; default = 20°) (see sections 4-4, 5-3 or 6-4).
- **TACK ANG** The angle of course change in a tack (50° to 160° or AUTO, default = AUTO) (see sections 4-5, 6-5).
GYBE ANG The angle of course change in a gybe (40° to 140° or AUTO or OFF, default = AUTO) (see sections 4-5, 6.5).

TACK DELY The delay between pressing tack and the boat starting to tack (1 to 120 sec or OFF; default = 30 sec) (see sections 4-5, 6-5).

TURN RATE Set the maximum boat turn rate allowed, in degrees per sec (3 to 20, default = 10 degrees per sec).

VESSEL > menu
This menu can only be accessed in STBY.

VESL TYPE Vessel type (SAIL, PLNE (planing), DISP (displacement); default = SAIL).

DRVE TYPE Steering drive type (MOTR, SPL- or SPL+; default = MOTR) (see G-PILOT 3100 Installation Manual).

WIND TYPE The wind type to use (APP or TRUE; default = APP).

HDG TYPE The compass heading type (MAG or TRUE; default = MAG).

MAG VAR The magnetic variation where the boat is (90°W to +90°E; default = 19°E).

DEVICES > menu
The items in the DEVICES menu are functions used to calibrate the G-PILOT 3100. This menu can only be accessed in STBY.

RFU CAL Start the procedure to calibrate the rudder feedback unit (see G-PILOT 3100 Installation Manual).

RFU CENTR Set rudder to position where boat sails in a straight line (see G-PILOT 3100 Installation Manual).

CSU CAL Start the procedure calibrate the compass (see G-PILOT 3100 Installation Manual).

ALIGN HDG Align the compass with the boat (see G-PILOT 3100 Installation Manual)

ALIGN GPS Align the current boat heading with a GPS heading (COG) if available (see G-PILOT 3100 Installation Manual).

FACTORY > menu
This menu can only be accessed in STBY.

BKL GROUP NavBus group number (0, 1, 2, 3 or 4, default = 1) (see G-PILOT 3100 Installation Manual).

KEY BEEPS A beep when a key is pressed (ON or OFF, default = ON).

NMEA2 DAT NMEA 2 port function (IN, SLOW or FAST; default = IN):

IN: NMEA 2 is an input
SLOW: NMEA 2 outputs heading & rudder angle once per second
FAST: NMEA 2 outputs heading ten times per second.

MCU VX.X Displays the G-PILOT 3100 main unit’s software version number (e.g. MCU V1.3 is version 1.3).

HCU VX.X Displays the display unit’s software version number (e.g. HCU V2.5 is version 2.5).

NVM RESET This function resets all G-PILOT 3100 user data to the factory default values. Once NVM RESET is displayed:
1   Press > to turn the function on
2   Press ENT to reset the data
3   Hold ESC to exit the menus
4   Perform the dockside setup and sea trials to recalibrate the G-PILOT 3100 (see G-PILOT 3100 Installation Manual).
3-8 Key reference

Power on

Hold AUTO + MENU

STBY (standby)
Autopilot is not in control, steer manually

Hold AUTO

AUTO
Autopilot is in control of boat

Hand STEER
Autopilot is not in control, steer manually

Menu

Hold MENU

Enter MAIN menu
(see section 3-7)

Jog steer to port
(see section 2-6)

<

Jog steer to starboard
(see section 2-6)

>

Set rudder amidships
(see section 2-6)

< + >

These functions can only be used in compass or wind mode, not in GPS mode

Menu + <

Dodge to port (press ESC to return to course (or, in Compass mode, press ENT to keep new course))
(see section 4-4, 5-3 or 6-4)

Menu + >

Dodge to starboard (press ESC to return to course (or, in Compass mode press ENT to keep new course))
(see section 4-4, 5-3 or 6-4)

<

Change course 1° to port
(see section 4-3 or 6-3)

>

Change course 1° to starboard
(see section 4-3 or 6-3)

Hold <

Change course 10° to port every half second (see section 4-3 or 6-3)

Hold >

Change course 10° to starboard every half second (see section 4-3 or 6-3)

Auto + <

Countdown, then tack or gybe to port
(press ESC to cancel tack)
(see section 4-5 or 6-4)

Auto + >

Countdown, then tack or gybe to starboard (press ESC to cancel tack)
(see section 4-5 or 6-4)

Keylock

To turn keylock on or off:
• Hold down AUTO + MENU.
• Press ENT.
4 Compass steering mode

The G-PILOT 3100 has three ways of steering the boat, compass, GPS and wind. To select an appropriate mode, see section 2-4. In Compass mode, the G-PILOT steers the boat to a set course, called CTS (Course to steer).

4-1 Compass steering data

- **Boat heading, 45°**
- **Course error, 10° to starboard**
- **CTS (course to steer, the intended autopilot course) 55°**

4-2 Engaging and disengaging the G-PILOT 3100 in compass mode

Manually steer the boat to open waters. Sail straight on the intended course.

**For example:**

- **Heading = 45°**

To engage AUTO, hold AUTO

AUTO:

The G-PILOT steers the boat automatically.

The G-PILOT 3100 sets CTS (course to steer) to the current heading, in this example 45°, and starts steering on this course.

To engage HAND STEER, hold AUTO + MENU

HANDSTEER:

Steer the boat manually. Display CTS in the info data or course error in the bar data and use these to steer by.

- **Heading = 45°**
- **CTS = 45°**

To disengage the G-PILOT, press AUTO

The G-PILOT returns to STBY (standby). Steer the boat manually.
When the G-PILOT 3100 is engaged
Hold AUTO to attempt to switch to GPS mode (if vessel type is PLNE [planing] or DISP [displacement]) or to wind mode (if vessel type is SAIL).

Waves or wind can push the boat’s heading off course, The G-PILOT 3100 will steer the boat back on course, for example:

CTS = 45°
Wave pushes boat heading to 60°
G-PILOT 3100 steers boat back to a heading of 45°

CTS changes to 44°
Boat comes to 44° heading

Winds or currents can push the boat to one side of the course, for example:

CTS = 45°
Current
Heading is maintained at 45°

4-3 Changing course in compass mode
To change course in 1° steps:
• press < to change course by 1° to port
• press > to change course by 1° to starboard.

For example:

Heading = 45°
CTS = 45°
Press <
CTS changes to 44°
Boat comes to 44° heading

Heading = 45°
CTS = 45°
Press >
CTS changes to 46°
Boat comes to 46° heading

To change course in 10° steps:
• hold down < to change course by 10° to port every half second
• hold down > to change course by 10° to starboard every half second.

For example:

Heading = 45°
CTS = 45°
Hold < for half a second
CTS changes to 35°
Boat comes to 35° heading

Hold < until CTS is 15°
Boat comes to 15° heading
4-4 Dodging in compass mode
A dodge is a sharp change of course, usually to avoid an obstacle.

- press **MENU** + < to dodge to port by the dodge angle
- press **MENU** + > to dodge to starboard by the dodge angle.

For example:

Heading = 45°
CTS = 45°

Press **MENU** + <

CTS changes by the dodge angle.
Boat comes to new heading.
The G-PILOT beeps.

Press **ENT** to continue on the new heading

or

Press **ESC** to resume the earlier heading

**Note**
- To dodge further, press **MENU** + < or **MENU** + > more times.
- To view or change the dodge angle, go to DODGE ANG in the OPTIONS menu (see section 3-7).

4-5 Auto tacking in compass mode
Auto tacking is intended to tack a sailing boat. The course to steer changes by the tack angle.

- press **AUTO** + < to tack to port by the tack angle
- press **AUTO** + > to tack to starboard by the tack angle.

For example:

At the end of the tack delay, CTS changes by the tack angle (if the tack angle is set to AUTO, the G-PILOT will use the default tack angle of 100°). The boat turns.

The boat sails straight while the G-PILOT 3100 counts down the tack delay.
The unit gives a long beep at 60 and 30 seconds to go, a short beep every second from 10 seconds to 1 second to go and a long beep that finishes when the countdown ends.

**WARNING:** In **Compass** mode auto tack, the course to steer changes by the tack angle. The G-PILOT does not use data from any wind instrument. It is possible for the boat to gybe or to end in irons.

**Note**
- To tack to a fixed wind angle, use the G-PILOT 3100 in **Wind** mode (see section 6).
- To view or change the tack angle or the tack delay, go to TACK ANG or TACK DELY in the OPTIONS menu (see section 3-7). Gybe angle is not used in **Compass** mode.
- The gybe angle is not used in **Compass** mode.
5 GPS steering mode

The G-PILOT 3100 has three ways of steering the boat, compass, GPS and wind. To select an appropriate mode, see section 2-4. In GPS mode, the G-PILOT uses data from a GPS to steer the boat along a route or to a waypoint.

5-1 GPS navigation data

Example of navigating to a waypoint:

![Diagram of GPS navigation data]

The boat is sailing from the start to the destination and has moved off the GPS plotted course from the start to the destination:

- **BRG**  **Bearing to destination**  The bearing to the destination from the boat.
  - **Course error**  The difference between CTS and the boat heading.
  - **CTS**  **Course to steer**  Optimum course to steer to return to the plotted course.
  - **DTG**  **Distance to go**  Distance from the boat to the destination.
  - **SOG**  **Speed over ground**  The current boat speed over the ground. This is not necessarily the same as the boat speed through the water nor the speed at which the boat is approaching the destination.
  - **TTG**  **Time to go**  The estimated time to reach the destination.
  - **XTE**  **Cross track error**  The distance from the boat to the nearest point of the plotted course. XTE may have a letter: R means steer to the right to return to the plotted course, L means steer to the left.
5-2 Engaging and disengaging the G-PILOT 3100 in GPS mode

Manually steer the boat to open waters. Start the GPS navigating to a waypoint, either a waypoint on a route or a single waypoint.

When the G-PILOT is engaged, if the XTE is more than 0.05 nm or the boat heading is not within 30° of BRG then the G-PILOT displays TRK ERROR. Press ESC to return to Compass mode or press ENT to have the G-PILOT steer the boat to the course.

When the G-PILOT is engaged, it uses data from the GPS to steer the boat along the plotted course to the waypoint.

To disengage the G-PILOT, press AUTO

The G-PILOT returns to STBY (standby). Steer the boat manually.
When the G-PILOT 3100 is engaged

Hold AUTO to change to **Compass** mode.

Wind or currents can push the boat off the GPS course. The G-PILOT 3100 will steer the boat back on course:

---

If the GPS is following a route and the boat reaches an intermediate waypoint:
- If WPT AKN is off, the G-PILOT automatically starts steering to the next waypoint in the route.
- Otherwise, the G-PILOT displays NEXT WPT?, sounds an alarm and continues on the current heading. Press any key to mute the alarm. Then press **ENT** to start steering to the next waypoint or press **ESC** to return to STBY.

---

When the boat reaches the final waypoint, the G-PILOT displays ROUTE END and stays on the current course:
- Press **ESC** to change to STBY; steer manually
- Press **ENT** to change to **Compass** mode and continue sailing at the current heading.

**Note** To return to the last waypoint if the boat has passed the waypoint, restart the GPS navigating to the waypoint.

---

5-3 Dodging in GPS mode

A dodge is a sharp change of course, usually to avoid an obstacle.

- press **MENU** + < to dodge to port by the dodge angle
- press **MENU** + > to dodge to starboard by the dodge angle.

For example:

---

Press **MENU** + <

CTS changes by the dodge angle.
Boat comes to new heading.
The G-PILOT beeps.

Press **ESC** to resume the earlier heading

---

**WARNING**: The G-PILOT will steer back to the GPS plotted course. Make sure there are no obstacles or dangerous waters in the way.

**Note**
- To dodge further, press **MENU** + < or **MENU** + > more times.
- To view or change the dodge angle, go to DODGE ANG in the OPTIONS menu (see section 3-7).
6 Wind steering mode

The G-PILOT 3100 has three ways of steering the boat, compass, GPS and wind. To select an appropriate mode, see section 2-4. In wind mode, the G-PILOT steers the boat to a set angle to the wind, called SWA (set wind angle).

6-1 Wind steering data

<table>
<thead>
<tr>
<th>APP</th>
<th>Apparent wind angle</th>
<th>The apparent wind angle at the boat. P in front of the angle means the wind is from port, S means that the wind is from starboard.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS</td>
<td>Course to steer</td>
<td>The course to steer to maintain the SWA (set wind angle).</td>
</tr>
<tr>
<td></td>
<td>Course error</td>
<td>The difference between APP (wind angle) and SWA (set wind angle).</td>
</tr>
<tr>
<td>SWA</td>
<td>Set wind angle</td>
<td>The desired wind angle.</td>
</tr>
<tr>
<td>TRUE</td>
<td>True wind angle</td>
<td>The true wind angle at the boat. P in front of the angle means the wind is from port, S means that the wind is from starboard.</td>
</tr>
</tbody>
</table>
**True and apparent wind speed and direction**

Apparent wind speed and direction are the values measured on the boat. True wind speed and direction are the values after allowing for boat speed through the air.

If the boat is moving, then the apparent wind speed is different to the true wind speed and the apparent wind direction is different to the true wind direction, as shown below.

**Boat at rest**

- True wind speed is the same as apparent wind speed and true wind direction is the same as apparent wind direction

**Boat moving upwind** Apparent wind speed is greater than true wind speed and apparent wind direction is closer to dead ahead than true wind direction

- True wind speed 20 kts
- True wind direction 45º
- Apparent wind speed 28 kts
- Apparent wind direction 30º

**Boat moving downwind** Apparent wind speed is less than true wind speed and apparent wind direction is closer to dead ahead than true wind direction

- True wind speed 20 kts
- True wind direction 135º
- Apparent wind speed 15 kts
- Apparent wind direction 107º
6-2 Engaging the G-PILOT 3100 in wind mode

Manually steer the boat to open waters. Sail straight at the intended wind angle. The G-PILOT info data can display TRUE (true wind angle) or APP (apparent wind angle) (see section 3-4).

For example:

Wind
APP = P40°

Heading = 45°

To engage AUTO, hold AUTO

To engage HAND STEER, hold AUTO + MENU

AUTO:

The G-PILOT steers the boat automatically.

HANDSTEER:

Steer the boat manually. Display CTS in the info data or course error in the bar data and use these to steer by.

The G-PILOT 3100 sets CTS (course to steer) to the current heading, in this example 45°, sets SWA (set wind angle) to the current wind angle and starts steering at this wind angle.

To disengage the G-PILOT, press AUTO

The G-PILOT returns to STBY (standby). Steer the boat manually.

The G-PILOT 3100 can also be engaged on the starboard tack, for example:

Wind

APP = S40°
SWA = 40°

or when running, for example:

Wind

APP = S120°
SWA = 120°
When the G-PILOT 3100 is engaged

Hold **AUTO** to change to **Compass** mode.

Wind or waves can push the boat so that the wind angle is different to SWA: The G-PILOT will steer the boat back to the SWA

Wind or currents can push the boat to one side of a straight course: The G-PILOT will steer the boat at the set SWA

If the wind direction changes, the boat’s heading will change to keep the set wind angle the same.

The wind alarm can be set to sound if the wind direction changes too far, go to **WND ALARM** in the **ALARMS** menu (see section 3-7).

6-3 Changing SWA (set wind angle) in wind mode

To change SWA in 1° steps:

- press < to change SWA by 1° to port
- press > to change SWA by 1° to starboard.

For example, on a port tack:

Wind

Wave

**Press <**

SWA = 40°  SWA changes to 39°. Boat comes to new wind angle of 39°

or, on a starboard tack:

Wind

Current

**Press <**

SWA = 40°  SWA changes to 41°. Boat comes to new wind angle of 41°

To change SWA in 10° steps:

- hold down < to change SWA by 10° to port every half second
- hold down > to change SWA by 10° to starboard every half second

for example:

Wind

**Hold < for half a second**

SWA = 40°  SWA changes to 50°. Boat comes to new wind angle of 50°

**Hold < until SWA is 120°**

Boat comes to new wind angle of 120°
6-4 Dodging in wind mode
A dodge is a sharp change of course, usually to avoid an obstacle.
• press MENU + < to dodge to port by the dodge angle
• press MENU + > to dodge to starboard by the dodge angle.
For example:

Note
• To dodge further, press MENU + < or MENU + > more times.
• To view or change the dodge angle, go to DODGE ANG in the OPTIONS menu (see section 3-7).

6-5 Auto tacking or gybing in wind mode
If SWA (set wind angle) is 90° or less, the boat tacks, if SWA is more than 90° the boat gybes. After the tack or gybe, SWA is the same as the SWA before the tack or gybe, but from the other side.
• press AUTO + < to tack or gybe to port
• press AUTO + > to tack or gybe to starboard
Example: SWA is 40°, so the boat will tack, not gybe. If the tack angle is not set to AUTO, the boat changes direction twice, first by the tack angle and then so that SWA is the same as before the tack or gybe, but from the other side:
There are four possibilities for auto tacking or gybing:

**Tack (SWA is 90° or less)**

- Press **AUTO + <** to tack to port
- Press **AUTO + >** to tack to starboard

**Gybe (SWA is more than 90°)**

- Press **AUTO + <** to gybe to port
- Press **AUTO + >** to gybe to starboard

TAK ERROR is displayed if you attempt other tacks or if the tack will end with the boat in irons.

**Note**

- *To view or change the tack angle, gybe angle or tack delay, go to TACK ANG, GYBE ANG or TACK DELY in the OPTIONS menu (see section 3-7).*
7 Optimizing steering performance

7-1 The steering parameters
The G-PILOT 3100 has six steering parameters which can be adjusted to optimize steering performance:

**Response**
How far the boat can move off course before the G-PILOT 3100 turns the rudder to correct the course. A lower response setting means the boat can move further off course before the G-PILOT 3100 corrects. To change, go to RESPONSE in the MAIN menu (see section 3-7). The range is 1 to 10, A1 to A5. A1 to A5 is an adaptive setting where the autopilot attempts to minimise the number of rudder corrections while maintaining a desired course heading. The adaptive setting eliminates the need to set the response according to varying weather conditions. The range is A1 (slower adaption) to A5 (faster adaption).

**Ratio**
The rudder movement required to make a given course change. To change, go to RATIO in the MAIN menu (see section 3-7). The range is 1 (smaller corrections) to 10 (larger corrections).

**Counter rudder gain**
Determines how the rudder moves after making a large course change. To change, go to C-RD GAIN in the OPTIONS menu (see section 3-7). The range is 1 (low) to 10 (high) and OFF (no counter rudder gain).

**Trim gain**
If the boat encounters a sideways current or wind, then the boat will move off course sideways. The G-PILOT 3100 will automatically bring the boat back to the correct heading by applying a few degrees of rudder, called trim. Trim gain sets how quickly the trim is applied. To change, go to TRIM GAIN in the OPTIONS menu (see section 3-7). The range is 1 (low) to 10 (high) and OFF (no counter trim gain).

**GPS gain**
In GPS mode, this determines how much correction is applied to remove cross track error. To change, go to GPS GAIN in the OPTIONS menu (see section 3-7). The range is 1 to 10.

**Wind gain**
In wind mode, this determines how much correction is applied to reduce any difference between the set wind angle and the actual wind angle. To change, go to WIND GAIN in the OPTIONS menu (see section 3-7). The range is 1 to 10.

**Optimum steering**
Ideally, in AUTO or HANDSTEER the G-PILOT 3100 should steer the boat to the course without the rudder moving too often.

Tip When checking the steering performance of the boat, display course error on the bar data display (see section 3-3) and check how this changes with time.

7-2 Profiles
The values of the steering parameters required for optimum steering may vary with boat speed, sea conditions or wind conditions. Generally:

- for higher boat speeds, decrease ratio; for lower speeds increase ratio.
- for calm seas, increase response; for rough seas decrease response.
- for higher and/or more stable winds, increase wind gain; for lower and/or unstable winds, decrease wind gain.
To simplify changing the parameters when conditions change, the G-PILOT stores five sets of the steering parameters. Each set is called a profile and the profiles are numbered 1 to 5. To select a profile to use, go to PROFILE in the MAIN menu (see section 3-7).

1. When the G-PILOT is installed, the steering parameters in all the profiles are set to their default values.
2. Select profile 1 and adjust the steering parameters for optimum steering in typical conditions (see section 7-3).
3. If the conditions change and the steering is no longer optimum, select another profile and adjust the steering parameters again. Repeat this step as required to adjust the parameters in each profile.
4. When using the G-PILOT to steer, select a profile suitable for the current conditions. For example different profiles can be configured for rough conditions and calm conditions.

7-3 Adjusting the steering parameters

Problem: rudder turns too frequently

This causes wear on the steering linkage and uses power.
Decrease response.
Reduce ratio.
Reduce counter rudder gain.

Problem: drifts off course to one side

Increase ratio.
Increase trim gain.
Increase response.

or

Problem: boat moves too far off course closely before the rudder turns to correct the course

Decrease ratio.
Decrease counter rudder gain.
Decrease trim gain.

Problem: oscillations from side to side build up

Decrease ratio.

Problem: after a large course change, boat overshoots and oscillates before settling to new course

Increase counter rudder gain
Problem: after a sideways current or wind, the correction is applied too quickly or too slowly

If the boat encounters a sideways force, then it will move off course sideways. The G-PILOT will automatically bring the boat back to the correct heading by applying a few degrees of rudder, called trim. Trim gain sets how quickly the trim is applied. Trim gain should be adjusted to trim the boat in about one minute. Getting the Trim gain setting right can be difficult for your specific boat and it is easy to alter the Trim gain too much. Change the settings slowly and conservatively at first, until the right settings are known.

a  Boat takes much more than one minute to trim

\[ \text{Sideways force starts} \]
\[ \downarrow \downarrow \downarrow \]
\[ \text{1 minute} \]

b  Boat takes much less than one minute to trim

\[ \text{Sideways force starts} \]
\[ \downarrow \downarrow \downarrow \]
\[ \text{1 minute} \]

Problem: after a large course change, boat takes too long to settle to new course

Decrease counter rudder gain

Problem: drifts off GPS course

or

Increase GPS gain.

Problem: boat oscillated around GPS course

or

Decrease GPS gain.
### Appendix A - Specifications

#### Electrical
- Heavy duty power supply 10.5 to 16.5 V DC, 20 A maximum
- Light duty power supply 10.5 to 16.5 V DC:
  - Main unit: 80 mA.
  - Each display unit, 30 mA without backlighting, 110 mA with full backlighting.
  - Other optional instruments: refer to the instrument's operation manual.

#### Interfaces
- NavBus connection to other Navman instruments.
- NMEA 0183 outputs: HDG, HDT, RSA; inputs APA, APB, BOD, BWC, MWD, MWV, RMA, RMB, RMC, VHW, VTG, XTE
- NMEA 0183 ports:
  - NMEA 1: Input
  - NMEA 2: Can be programmed to be an input or output

#### Standards compliance
- EMC compliance
  - USA (FCC): Part 15 Class B.
  - Europe (CE): EN50081-1, EN50082-1
  - New Zealand and Australia (C Tick): AS-NZS 3548.
- Environment:
  - Compass, gyro, rudder feedback unit: completely waterproof.
  - Display unit: IP66 from front when correctly mounted.
  - Main unit: requires a cool, dry, clean environment.

### Main unit terminal block connections:

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heavy duty power positive, 10.5 to 16.5 V DC, 20 A maximum</td>
</tr>
<tr>
<td>2</td>
<td>Heavy duty power negative</td>
</tr>
<tr>
<td>3</td>
<td>Steering drive negative output</td>
</tr>
<tr>
<td>4</td>
<td>Steering drive positive output</td>
</tr>
</tbody>
</table>

### Main unit connector connections:

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Light duty power positive, 10.5 to 16.5 V DC, 80 mA maximum</td>
</tr>
<tr>
<td>2</td>
<td>Light duty power supply common</td>
</tr>
<tr>
<td>3</td>
<td>NavBus +</td>
</tr>
<tr>
<td>4</td>
<td>NavBus -</td>
</tr>
<tr>
<td>5</td>
<td>NMEA common</td>
</tr>
<tr>
<td>6</td>
<td>NMEA in 1</td>
</tr>
<tr>
<td>7</td>
<td>NMEA in 2</td>
</tr>
<tr>
<td>8</td>
<td>Steering clutch relay drive output, switched ground to turn relay on, 30 V DC, 300 mA maximum</td>
</tr>
</tbody>
</table>

### Display unit power/data cable wires:

<table>
<thead>
<tr>
<th>Wire</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Power positive, 10.5 to 16.5 V DC, 30 mA without backlighting, 110 mA with full backlighting</td>
</tr>
<tr>
<td>Black</td>
<td>Power negative</td>
</tr>
<tr>
<td>Orange</td>
<td>NavBus +</td>
</tr>
<tr>
<td>Blue</td>
<td>NavBus -</td>
</tr>
<tr>
<td>Yellow</td>
<td>Factory use (isolate, do not cut)</td>
</tr>
<tr>
<td>White</td>
<td>Factory use (isolate, do not cut)</td>
</tr>
<tr>
<td>Green</td>
<td>External alarm, switched to ground, 30 V DC and 250 mA max.</td>
</tr>
</tbody>
</table>

### Appendix B - Alarm and warning messages

<table>
<thead>
<tr>
<th>Alarm display</th>
<th>Reason for message</th>
<th>Recommended action by user</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT ALARM</td>
<td>Battery voltage is less than the minimum value set by the user</td>
<td>Check batteries</td>
<td>a</td>
</tr>
<tr>
<td>CAL ERROR</td>
<td>The G-PILOT rudder feedback unit or compass unit is not calibrated</td>
<td>Calibrate both the units (see sections 5-2 and 6-1)</td>
<td>a</td>
</tr>
<tr>
<td>CCH ERROR</td>
<td>The clutch current is too high</td>
<td>Check clutch connection</td>
<td>a s</td>
</tr>
<tr>
<td>CE ALARM</td>
<td>Course error has exceeded the maximum value set by the user</td>
<td>Manually steer boat towards course</td>
<td>a</td>
</tr>
<tr>
<td>CSU ERROR</td>
<td>Compass not sending data to main unit</td>
<td>Check compass is connected to main unit; Service compass</td>
<td>a s</td>
</tr>
<tr>
<td>CUR ALARM</td>
<td>The motor current exceeded the maximum value set by the user</td>
<td>Check steering drive is not jammed</td>
<td>a s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase the alarm value</td>
<td></td>
</tr>
<tr>
<td>Alarm display</td>
<td>Reason for message</td>
<td>Recommended action by user</td>
<td>Notes</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------</td>
<td>----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>DRV ERROR</td>
<td>Rudder angle does not change when steering drive operates</td>
<td>Check drive power is turned on&lt;br&gt;Check RFU is connected to rudder&lt;br&gt;Check fuses inside end of main control unit&lt;br&gt;Check steering drive operation</td>
<td>a s</td>
</tr>
<tr>
<td>GPS ERROR</td>
<td>GPS has stopped sending data to main unit</td>
<td>Check GPS operation&lt;br&gt;Check GPS connection</td>
<td>a c s</td>
</tr>
<tr>
<td>GSU ERROR</td>
<td>Gyro not sending data to main unit</td>
<td>Check gyro is connected to main unit; Service gyro</td>
<td>a s</td>
</tr>
<tr>
<td>MCU ERROR</td>
<td>Main unit not sending data to display unit</td>
<td>Check display unit is connected to main unit&lt;br&gt;Service main unit or display unit</td>
<td>a s</td>
</tr>
<tr>
<td>NAV ERROR</td>
<td>GPS is not navigating to a waypoint when trying to engage G-PILOT</td>
<td>Start GPS navigating to a waypoint or along a route</td>
<td>a c s</td>
</tr>
<tr>
<td>NEXT WPT?</td>
<td>Boat has reached a waypoint (in GPS mode and WPT AKN is on)</td>
<td>Press any key to proceed to cancel alarm&lt;br&gt;Then press <strong>ENT</strong> to start steering to the next waypoint or press <strong>ESC</strong> to return to STBY</td>
<td></td>
</tr>
<tr>
<td>STBY NO DATA</td>
<td>G-PILOT not receiving GPS data when setting mode to GPS</td>
<td>Check GPS operation&lt;br&gt;Check GPS connection</td>
<td>m</td>
</tr>
<tr>
<td></td>
<td>G-PILOT not receiving wind instrument data when setting mode to wind</td>
<td>Check wind instrument operation&lt;br&gt;Check wind instrument connection</td>
<td>m</td>
</tr>
<tr>
<td>NVM ERROR</td>
<td>Main unit memory has been corrupted</td>
<td>Service main unit</td>
<td>a s</td>
</tr>
<tr>
<td>PHA ERROR</td>
<td>Rudder turns wrong way to rudder feedback unit</td>
<td>Check the rudder feedback unit&lt;br&gt;Perform a rudder calibration</td>
<td>a s</td>
</tr>
<tr>
<td>RFU ERROR</td>
<td>Rudder feedback unit has stopped sending data to main unit</td>
<td>Check rudder feedback unit is connected to main unit&lt;br&gt;Service rudder feedback unit</td>
<td>a s</td>
</tr>
<tr>
<td>ROUTE END</td>
<td>Boat has reached the end of a GPS route</td>
<td>Press <strong>ESC</strong> to change to STBY or press <strong>ENT</strong> to change to compass mode, sailing at current heading</td>
<td></td>
</tr>
<tr>
<td>TRK ERROR</td>
<td>G-PILOT has changed to GPS mode but boat is too far off course</td>
<td>Press <strong>ESC</strong> to return to STBY or press <strong>ENT</strong> to have the G-PILOT steer the boat to the correct course.&lt;br&gt;Change angle to wind</td>
<td>m</td>
</tr>
<tr>
<td>TAK ERROR</td>
<td>In <strong>Wind</strong> mode, attempt to tack in the wrong way or boat will be in irons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WND ALARM</td>
<td>The wind angle has changed by more than the alarm value</td>
<td>Change SWA&lt;br&gt;Change to Compass mode</td>
<td>a</td>
</tr>
<tr>
<td>WND ERROR</td>
<td>Wind instrument has stopped sending data to main unit</td>
<td>Check wind instrument operation&lt;br&gt;Check wind instrument connection</td>
<td>a c s</td>
</tr>
<tr>
<td>XTE ALARM</td>
<td>XTE has exceeded the maximum value set by the user</td>
<td>Manually steer boat towards course</td>
<td>a</td>
</tr>
</tbody>
</table>

**Notes**
- a: Alarm sounds the internal and external (optional) beepers; press any key to mute alarm, then press **ESC** to cancel the alarm message
- c: The G-PILOT 3100 changes to Compass mode
- m: The G-PILOT 3100 mode does not change
- s: The G-PILOT 3100 changes to STBY
Appendix C - Troubleshooting

This troubleshooting guide assumes that you have read and understood this manual. It is possible in many cases to solve difficulties without having to send the unit back to the manufacturer for repair. Please follow this troubleshooting section before contacting the nearest Navman dealer.

There are no user serviceable parts. Specialized methods and testing equipment are required to ensure that the unit is reassembled correctly. Repairs to the unit must only be carried out by a service centre approved by Navman NZ Limited. Users who service the unit themselves will void the warranty. More information can be found on our Website: www.navman.com.

1 Unit will not turn on:
   a Fuse blown or circuit breaker tripped.
   b Battery voltage is outside the range 10.5 to 16.5 V DC.
   c Power/data cable damaged.

2 G-PILOT 3100 makes too frequent course corrections:
   • The value of response is too low (see G-PILOT 3100 Operation Manual).

3 When sailing a straight course, the boat drifts from side to side of the course:
   a The boat should drift from side to side of the course when the G-PILOT 3100 steering is optimized.
   b Change to a profile suitable for boat speed and sea conditions (see G-PILOT 3100 Operation Manual).
   c If the boat drifts too far from the course, adjust response, ratio, counter rudder gain, GPS gain (if G-PILOT is in GPS mode) or wind gain (if G-PILOT is in wind mode) (see G-PILOT 3100 Operation Manual).

4 When sailing a straight course, the boat drifts off course:
   a Change to a profile suitable for boat speed and sea conditions (see G-PILOT 3100 Operation Manual).
   b Adjust response, ratio, counter rudder gain, GPS gain (if G-PILOT is in GPS mode) or wind gain (if G-PILOT is in wind mode) (see G-PILOT 3100 Operation Manual).

5 When making a large course change, boat does not follow the expected course:
   a Change to a profile suitable for boat speed and sea conditions (see G-PILOT 3100 Operation Manual).
   b Adjust counter rudder gain (see G-PILOT 3100 Operation Manual).

6 Boat turns too sharply:
   • Reduce turn rate (go to TURN RATE in the OPTIONS menu, see G-PILOT 3100 Operation Manual).

7 The word SIMULATE flashes on the display, values displayed are unexpected:
   • Unit is in simulate mode (See G-PILOT 3100 Operation Manual).

8 The display fogs:
   a Moist air has entered the breathing tube at the rear of the unit. Air the boat or run unit with backlight fully on.
   b Water has entered the breathing tube. Return unit for service.
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