

AP47CR Quick Start Guide



IMPORTANT: THE AUTOPILOT SHOULD NOT BE LEFT SOLELY IN CHARGE OF THE VESSEL AND AN ADEQUATE WATCH SHOULD BE MAINTAINED AT ALL TIMES. IT IS STRONGLY RECOMMENDED THAT THE AUTOPILOT SHOULD NOT BE USED WHILE NAVIGATING IN RESTRICTED WATERWAYS AS WATER CURRENTS, WIND CHANGES OR RADIO TRANSMITTER INTERFERENCE CAN ENDANGER YOUR OWN OR OTHER VESSELS.

INITIAL OPERATIONAL SETTINGS (AP47CR) – WITH RUDDER FEEDBACK

The set up can be done automatically or manually Automatic installation set up determines the output polarity for motor direction and rudder limit setting. Note: If the manual set procedure is used, motor direction and both rudder end limits must be set. Rudder End Limits – Automatic Set up (Rudder Feedback required)

To commence:

- Switch power on to AP47C
- Wait until Main Screen is displayed (Figure 1)
- Hold MODE button, Settings Page 1 will appear (Figure 2) release MODE button.
- Press MODE and AUTO buttons at the same time. Install Options 1 will appear (Figure 3)
- Press AUTO button to enter Steering Menu (Settings Page 2) Figure 5
- Ensure USE RFU is set to YES
- Scroll down to END LIMIT AUTO using the ► Button
- Press AUTO button to start set up (Figure 4)
- Process will take between 20 and 60 seconds to complete depending on the speed of the motor
- If process is successful display will show **CAL OK SAVING....**
- Press either MODE to cancel the installation process
- Display will show **ABORT CALIBRATION**
- If **CAL ERROR** is displayed an error has occurred
- Check the drive output is connected and rudder feedback is moving
- Check rudder feedback installation
- To Exit menu, press MODE button

Rudder End Limits – Manual Set up (Rudder Feedback required)

- Switch power on to AP47C
- Wait until Main Screen is displayed (Figure 1)
- Hold MODE button, Settings Page 1 will appear (Figure 2). Release MODE button.
- Press MODE and AUTO buttons at the same time. Install Options 1 will appear (Figure 3)
- Press AUTO button to enter Steering Menu (Settings Page 2) Figure 5
- Ensure USE RFU is set to YES
- Scroll down to END LIMIT PORT using the ► Button
- Press AUTO button to enter Port Adjustment (Figure 5)
- Press ◀ to move rudder to Port
- Press ► to move rudder to starboard
- If direction is incorrect, reverse the yellow wires, or change SWAP OUTPUT in previous menu.
- Move to Port Limit, press AUTO button (Figure 6)
- Press AUTO again to save, or MODE to abort.
- Scroll down to END LIMIT STBD using the ► Button
- Press AUTO button to enter Starboard Adjustment
- Move to Starboard Limit, press AUTO button
- Press AUTO again to save, or MODE to abort.
- To Exit menu, press MODE button



Figure 1: Example Main Screen

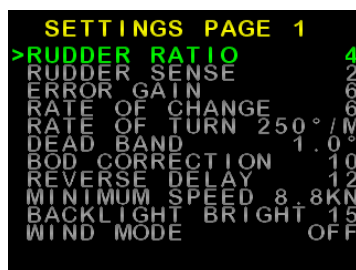


Figure 2: Example Settings Page 1

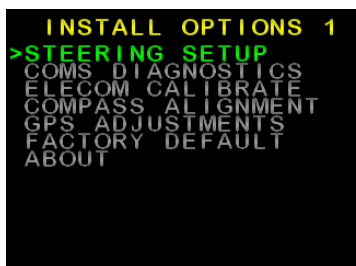


Figure 3: Example Install Options 1

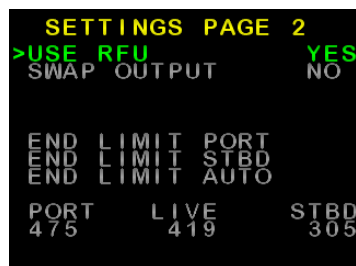


Figure 4: Example Settings Page 2

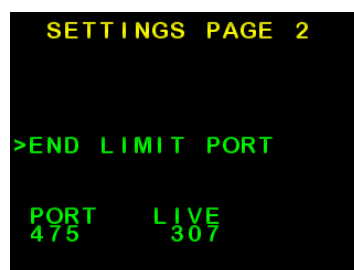


Figure 5: Port Limit Adjustment

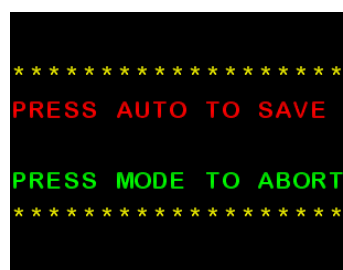


Figure 6: Save Limits Confirmation Screen

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To Adjust Settings:

- With Main Screen displayed (Figure 1)
- Hold MODE button, Settings Page 1 will appear (Figure 2). Release MODE button.
- Press ► to scroll down to desired setting (Setting will be highlighted green)
- Then press AUTO to enter setting adjustment
- Press ► to increase setting
- Press ◀ to decrease setting
- Press MODE to return to Settings Page 1

Rudder Ratio (Proportional Gain) Default = 3

A value of 1 signifies the minimum amount of applied rudder. When the rudder setting is too low, vessel track will be slow i.e.: understeer due to too little rudder applied. A value of 20 signifies the maximum amount of applied rudder. When the rudder setting is too high, vessel track will be rapid i.e.: oversteer due to too much rudder applied.

Rudder Sensitivity (Rudder Tolerance) Default = 4

Increasing the Rudder Sensitivity too high can cause vessel wandering

Error Gain (Integral Control Gain) Default = 5

Increase Error Gain to get on track faster. If set too high, the vessel will overshoot the target heading.

Rate of Change (Derivative Gain Multiplier) Default = 3

Increasing Rate of Change can help dampen Error Gain. If set too high, vessel may never make it to target heading.

Rate of Turn (Default = 500°M)

This limits the max turn speed of the vessel. Reduce this to reduce the angle of attack for getting to target heading.

Dead Band (Default = 1.0°)

Increase this to reduce rudder hunting.

BOD Correction (Applies to GPS Mode only)

Default = 15

This number increases or decreases the angle of attack from a GPS / PC supplied BOD (Bearing Origin to Destination) when in GPS mode.

Reverse Delay (Default = 15)

This delay helps reduce shock load on the rudder drive train, as it controls the time between direction changes (eg. Port to Starboard or Starboard to Port changes)

Minimum Speed (Only used with no rudder feedback) Default = 1.0kn

When the vessel is below this set speed and in Auto or GPS mode, the AP47C will revert back to Manual mode.

Backlight Bright (Default = 15 = MAX)

This setting is useful for adjusting screen brightness for day / night or low lit areas.

Wind Mode (Requires MWV NMEA data input) Default = OFF

When Wind Mode is ON, the AP47C will attempt to correct for wind effects on vessel steering.

Main Screen Explained

Manual Steer Mode

The live compass heading is displayed in the top center, as a bar-graph below it, and in large green numbers near the middle of the screen.

Below the large numbers is the current steering mode (MANUAL STEER), or an error in red.

Rudder Angle is indicated by a bar and number.

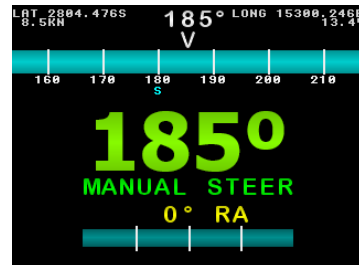


Figure 7: Example Manual Steer Mode Main Screen. Live Compass heading is 185°, Rudder is at center. Press ◀ or ► buttons to move the rudder. Hold MODE to enter Settings Page 1.

Press AUTO to enter Auto Steer Mode.

Hold MODE and press AUTO to enter GPS steer mode.

Auto Steer Mode:

The current target heading is in large yellow numbers near the middle of the screen.

If a yellow bar appears within the compass bar, it indicates current deviation from target heading.

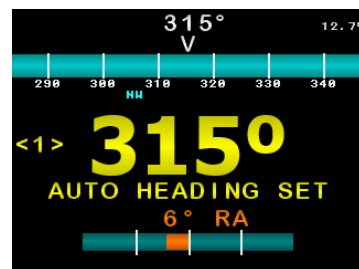


Figure 8: Example Auto Steer Mode Main Screen. Live Compass heading is 315°, Target Heading is 315°, Deviation is shown as a yellow bar within the compass bar.

Press ◀ or ► buttons to change the target heading.

Hold MODE to enter Settings Page 1.

Press AUTO to enter manual steer mode.

Briefly press MODE to toggle target heading step size between 1° and 10° (indicated in yellow brackets).

GPS Steer Mode:

GPS heading is presented in large blue numbers.

If a yellow bar appears within the compass bar, it indicates current deviation from target heading.

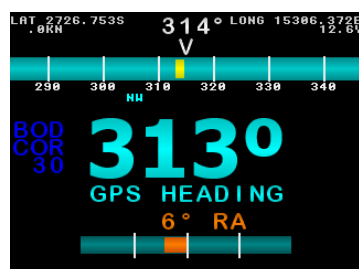


Figure 9: Example GPS Steer Mode Main Screen. Live Compass heading is 314°, Target Heading is 313°, Deviation is shown as a yellow bar within the compass bar. DOD correction is displayed in blue.

Hold MODE to enter Settings Page 1

Press AUTO to enter Manual Steer Mode.

Press ◀ or ► to adjust BOD correction.