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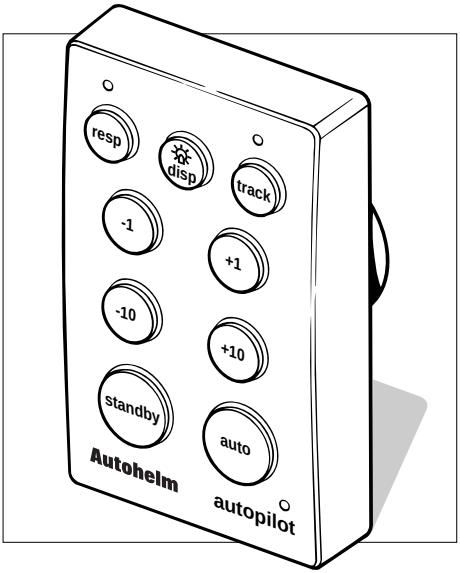
Autohelm

ST80 Autopilot Keypad

Operation Manual



Package Contents

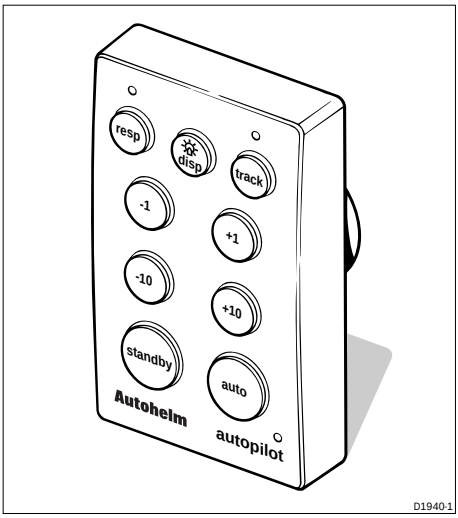
1. Autopilot keypad
2. Thumb nuts (2)
3. Threaded fixing studs (2)
4. White sun cover
5. SeaTalk cable
6. Installation template
7. Operation manual
8. Warranty card
9. Operation cue card
10. Keypad installation guide

Contents

Chapter 1: Introduction

1.1 Introduction

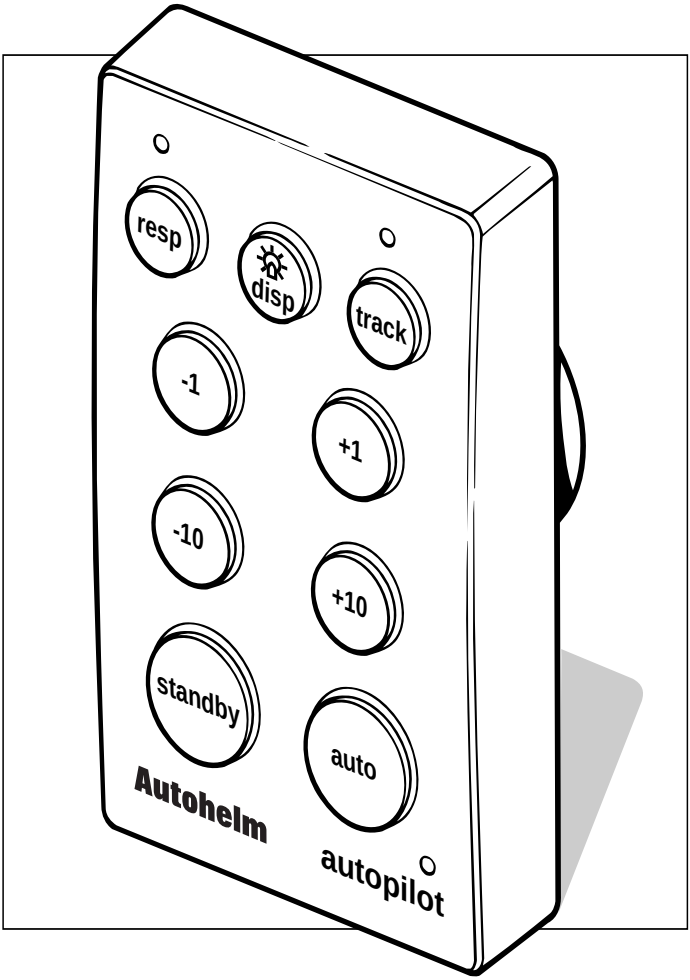
The Autopilot keypad provides autopilot control via a simple nine-key interface. There are buttons for engaging and disengaging the pilot (auto and standby), course adjustment (-1, +1, -10 and +10), track control, response and direct entry to the autopilot display's of a Masterview display head (disp).



Chapter 2: Operation

2.1 Keypad Layout and Features

The autopilot keypad has been designed as a control interface for Autohelm autopilot's. The keypad consists of nine push-button keys together with operation status LED's. The basic function of each of these keys is described in the following illustration.



- When the system is switched on the autopilot is always in STANDBY mode.
- The display and lamp key only cycles pilot pages when the pilot chapter is open.

2.2 Basic Operating Principles and Hints

Auto and Standby

Autopilot operation has been simplified to a set of push-button keys, all of which are confirmed by a beep or beeps.

Engaging the autopilot could not be easier. Simply steer your vessel onto the required heading, press the **AUTO** button and release the wheel/ tiller. When you want to return to manual steering simply press **STANDBY** and regain control.

Caution: **Hand steering is not possible when your vessel is under autopilot control. The pilot MUST be disengaged by pressing STANDBY. It is the skippers responsibility to ensure that all crew members are aware of this procedure.**

Course Changes

Course changes under autopilot control are made using the **–1**, **+1**, **–10** and **+10** keys. These keys allow you to make changes in 1° or 10° increments to port (–) and starboard (+).

Track

Track mode tells the autopilot to steer under the supervision of a radio or satellite navigation system. Therefore, the following basic guidelines should be observed before track is engaged:

- Always steer your vessel to within 0.1nm of the track.
- Make sure that there are no navigational hazards either side of the intended track.
- Maintain an accurate log.
- Make regular plots to verify the computed position provided by your position transducer.
- Maintain a proper lookout at all times.

Track Advance/Acceptance

If your navigation receiver is transmitting waypoint number and bearing to waypoint, a waypoint alarm will sound whenever a new target waypoint is selected. The autopilot maintains the current heading and automatic track control is suspended. Check the new bearing to waypoint, make sure that it is safe to turn, and then return to automatic track control by simply pressing the **track** key. The new target waypoint is accepted and the autopilot steers your vessel onto the new heading.

You may find that the tidal offset is very different on the new bearing. Therefore, it is advisable to check the cross track error (XTE) after a couple of minutes. If the cross track error increases, make a course adjustment (e.g., 10°) in the direction of the arrow. This helps to speed up track control correction for the new tidal vector.

Response

There are three response levels.

Level 1 is the default and suitable for most situations. This setting provides the best compromise between course-keeping accuracy and power consumption.

Level 2 ensures tighter course-keeping at the expense of increased power consumption and wear and tear due to increased pilot activity. It is advisable to use the minimum response necessary to achieve the desired course keeping accuracy.

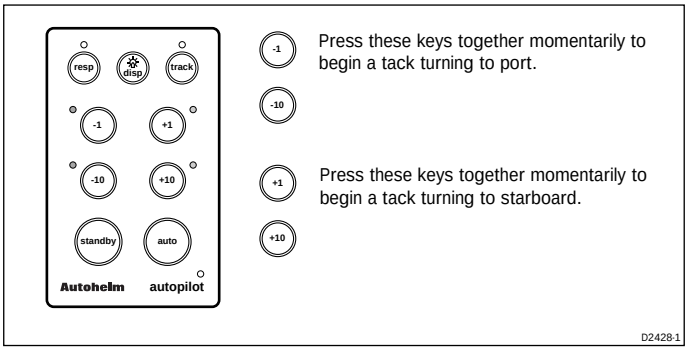
On larger vessels, **level 3** can improve slow speed steering where natural yaw damping of the vessel is reduced.

Note: Level 3 is not recommended for use at planing speeds, or in rough seas if a rate gyro transducer is not fitted.

2.3 Additional Autopilot Features for Sailing Vessels

Autotack

When the autopilot is in compass or windvane mode, the following key command selects autotack mode.

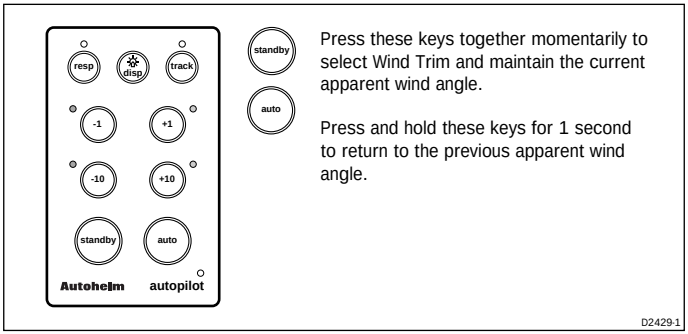


This mode starts a tack routine so that you can tend to the sheets.

Note: **Your vessels rudder reference transducer must be accurately aligned as the autotack feature mirrors standing helm. Any offset will change the initial tack angle.**

Wind Trim

This feature ensures that the autopilot ignores short term changes in wind direction, yet tracks real windshifts.



Using Wind Trim

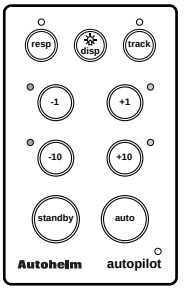
It is important to remember that Wind Trim prevents overreaction to gusts or sudden wind shifts, and that it takes at least 1 minute to change the heading in response to a permanent change to the apparent wind angle.

In gusty conditions, always sail a few degrees off of the wind and pay frequent attention to sail trim and helm balance, using the rudder angle display on a Masterview display head.

Generally speaking, performance will be improved by reefing the headsail and mainsail a little early rather than too late.

2.4 Keypad Illumination

The keypad illumination can be adjusted as follows:



Press for 1 second to enter illumination adjustment mode.

If the illumination is OFF, the illumination will now be set to level 3.

When illumination adjustment is active, press this key momentarily to cycle the available levels: 1, 2, 3, OFF.

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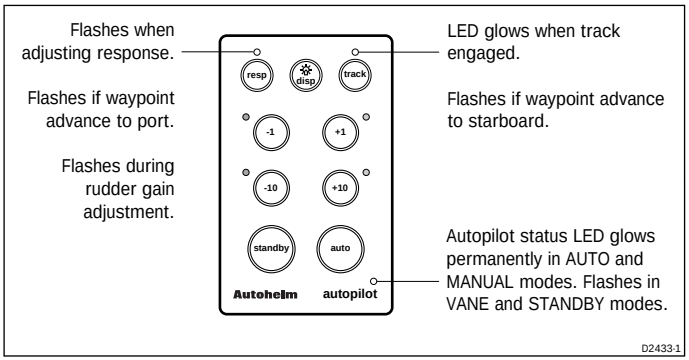
The keypad returns to normal operation after 8 seconds of keypad inactivity.

2.5 LED Status

The actions described in this chapter are confirmed on the display of a Masterview display head. However, if the Autopilot keypad is installed away from a display head, the functions can be identified by the permanent illumination or flashing LED's as shown in the following illustration.



2.6 Important Safety Information

The following rules should ALWAYS be observed when passage making under autopilot control:

Maintain a permanent watch and regularly check all around for other vessels and obstacles – no matter how clear the sea may appear to be, dangerous situations can develop in minutes.

Maintain an accurate log of your vessels position by visual bearings or radio/satellite position fixes.

Maintain a continuous plot of your position on a current chart. Make sure that the autopilot heading will steer you clear of obstacles. Always allow for tidal set – the autopilot cannot!

Even when your autopilot is locked onto a given track using a radio/satellite navigation receiver, always maintain a log and regular position plot – navigational signals can produce significant errors in certain circumstances, errors which the autopilot cannot detect.

Ensure that your crew is familiar with the procedures for engaging and disengaging the autopilot.

When there is restricted sea room, make sure that a crew member is stationed close to the autopilot keypad.

On power vessels, always maintain a permanent watch at the steering station when the autopilot is engaged.

2.7 Alarms

The keypad sounds audible alarms in response to the following alarm conditions:

Alarm	Response
Waypoint advance	Two beeps for port one for starboard
Low battery	Continuous beep, beep
Large XTE	Continuous beep, beep
Wind change	Continuous beep, beep
No NMEA data	Continuous beep, beep
NMEA data error	Continuous beep, beep
Watch	Continuous beep, beep
Off course	Continuous beep, beep

Note: These alarms are normally displayed on a Masterview display head. Please refer to the Masterview handbook for details.

Chapter 3: EMC and Servicing Guidelines

3.1 Important information

All Autohelm equipment and accessories are designed to the best industry standards for use in the leisure marine environment.

Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but good installation is required to ensure that performance is not compromised. Although every effort has been taken to ensure that they will perform under all conditions, it is important to understand what factors could affect the operation of the product.

3.2 Installation

To avoid the risk of operating problems, all Autohelm equipment and cables connected to it should be:

- At least 1m (3 feet) from any equipment transmitting or cables carrying radio signals, e.g., VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 2m (7ft).
- More than 2m (6ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The equipment should be supplied from a different battery than the one used for engine start. Voltage drops below 10V in the power supply to our products can cause the equipment to reset. This will not damage the equipment, but will cause the loss of some information and can change the operating mode.
- Genuine Autohelm cables should be used at all times. Cutting and rejoining these cables can compromise EMC performance and so should be avoided unless doing so is detailed in the installation manual.
- If a suppression ferrite is attached to a cable, this ferrite should not be removed. If the ferrite has to be removed during installation it must be reassembled in the same position.

3.3 Check Before Going to Sea

- Always check the installation before going to sea to make sure that it is not affected by radio transmissions, engine starting etc..
- In some installations, it may not be possible to prevent the equipment from being affected by external influences. In general this will not damage the equipment but can lead to it resetting, or momentarily may result in faulty operation.

3.4 Servicing and Safety

- Autohelm equipment should be serviced only by authorised Autohelm service engineers. They will ensure that service procedures and replacement parts used will not affect performance. There are no user serviceable parts in any Autohelm product.
- Some products generate high voltages, and so never handle the cables/connectors when power is being supplied to the equipment.
- Always report any EMC related problem to your nearest Autohelm dealer. We will use any such information to improve our quality standards.

Chapter 4: Specification

Dimensions:	110 x 68 x 17mm (4.33 x 2.67 x 0.66in)
Power supply:	10 to 16V DC
Current consumption:	Less than 240mA with illumination fully on, and less than 90mA at the courtesy level.
Operating temperature:	-10 to 70°C (14 to 158°F)
Buzzer:	Single tone beep
Illumination:	3 levels
Audible alarms:	Drive stopped Off course Waypoint advance Low battery Large cross track error (XTE) Wind change No NMEA data NMEA data error Watch

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