NautoPilot® 5000 Series

Adaptive Heading Control System
Autopilot systems developed and manufactured by Raytheon Anschütz are based on proven steering algorithms that have been well known by seafarers for outstanding steering performance and reliability for decades.

NautoPilot 5000 is our latest autopilot series which has been specially designed for all ships of 100 m length and above. NP 5000 provides heading control, and course control and is part of a track control system. It combines best steering performance with lowest rudder activity for less fuel consumption. In addition it allows an intuitive operation and provides a perfect feedback about the steering performance.

**NautoPilot® 5000 Series**

- Precise steering – thanks to unique Anschütz steering algorithms
- Ease of use and intuitive handling
- Fuel-saving thanks to weather adaptivity
- Simple adjustment of autopilots parameters by use of heading and rudder plotter
- Cross acceleration monitor for identification of dangerous situations
- Course control mode for automatic drift compensation
- Approved as part of a track control system in combination with several ECDIS
- Approved for high speed crafts

**BENEFITS AT A GLANCE**
THE HANDLING OF AN AUTOPILOT HAS NEVER BEEN EASIER!

- You will feel familiar with NP 5000 after a few minutes due to its intuitive operating philosophy.
- All main functions are operated via hard keys. To change the course you just turn and push the knob.
- All secondary functions are operated via soft keys on the touch screen. The large 5.7" graphical touch display ensures a clearly arranged presentation of information. The menu structure is clear and transparent. All pages are available in day and night mode.

AUTOPILOTS OF THE NP 5000 SERIES

Track control
The NP 5000 series includes four different autopilots which are distinguished by functional range:

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NP 5500 track control is intended for use in areas where highest precision is required (such as archipelagos).
The Acceleration Monitor (available from NP 5400 up) monitors the cross acceleration of a ship and provides a warning if a user defined threshold is exceeded. Dangerous situations are avoided due to this unique feature of NP 5400/5500, resulting in increased safety for life, ship and cargo.
In Economy mode the intelligent adaptivity of NP 5000 analyses the yawing movements of the vessel. Periodical movement will be identified and the controller reduces its sensitivity to such movements. Subsequently less rudder action is required, which leads to lower levels of speed reduction and thus less fuel consumption – automatically and continuously.

In addition NP 5000 is equipped with an integrated heading and rudder plotter, which provides a graphical indication of heading changes and rudder activity. This indication instantaneously indicates the steering performance of the autopilot due to the effects of changes to parameter settings such as rudder, counter rudder and yawing. The operator benefits from simple adjustments of the autopilot’s settings to gain optimized steering performance, which results in minimal rudder action and thus again reduced fuel consumption.

DO YOU CARE ABOUT FUEL CONSUMPTION?
If yes, NP 5000 should be your autopilot of choice.

The actual effect of NP 5000 on rudder steering can be seen when comparing the heading and rudder plot of two voyages of an oil tanker between Skagen and New York. Similar weather conditions were observed during both voyages.

The left print-out shows the results of the vessel’s last voyage before retrofitting the old autopilot system with NP 5000. The right print-out shows results of the following voyage with NP 5000.

It becomes obvious that rudder movement is more economic and gentle with NP 5000. Less rudder movements means less fuel consumption and more efficient ship operation.
CHOOSE FROM THREE OPERATION MODES

NP 5000 can be operated in classic heading control mode, but also offers course control and track control modes.

**Course control**
Often heading control and course control are used synonymously. But in fact it is a significant difference for navigation. In heading control it is necessary to compensate for drift manually. To overcome this disadvantage Raytheon Anschütz introduces the course control mode. No manual drift corrections are required as the NP 5000 steers the vessel on a course over ground line. This leads to a more precise steering as NP 5000 compensates for any drift deviations automatically.

**Track control**
NP 5000 is also approved as a track control system (in the best category C) in combination with Raytheon Anschütz ECDIS as well as several other ECDIS of different manufacturers. A route (consisting of one or more tracks) is planned in the ECDIS and NP 5000 steers the vessel automatically and accurately on that route.
EASY INTEGRATION INTO STEERING GEAR CONTROL SYSTEMS

NP 5000 can be used in different system environments

In combination with NautoSteer AS, NP 5000 is connected directly to the redundant CAN bus of NautoSteer AS. The automatic control is simply activated by pushing the heading control button.

If required, more than one NP 5000 can be connected directly to the CAN bus. If it needs multiple operation units, Raytheon Anschütz can offer two solutions:
Several NP 5000 are connected to the redundant CAN bus. The number of NP 5000 is actually only limited by the total number of CAN bus addresses. These autopilots are independent of each other: each one uses its own controller but also parameters like rudder, counter rudder, yawing, limits, parameter sets, etc. The autopilots are activated via take-over by pushing the heading control button. Track control can be done with more than one NP 5000 by switching the communication with ECDIS.

One operator unit (master NP 5000) is connected to the redundant CAN bus. Up to seven NP 5000 operator units can be used in this configuration. The other operator units allow remote operation of the master NP 5000 but all use the same parameters such as rudder, counter rudder, yawing, limits, parameter sets, etc. The master NP 5000 determines the variant (e.g. NP 5400). The autopilots are activated via take-over by pushing the heading control button. Track control can only be done with the master NP 5000.

### STAND-ALONE INSTALLATION AND RETROFIT

In combination with other steering gear control systems than NautoSteer AS or for retrofitting old autopilots: In this case an interface unit is added to NP 5000. This interface unit provides the interfaces to the steering gear control system or directly to the steering gear. NP 5000 is activated via a steering mode selector switch. Due to its multitude of interfaces NP 5000 is the best choice for retrofitting old autopilots.
TECHNICAL DATA

Supply voltage & power consumption
– 24 V DC (18-36 V DC)
– Approx. 25 W

Signal inputs
Gyro compass, satellite compass
– Course Bus or NMEA telegrams HEHDT, HETHS, GPHDT, GPHTH
Magnetic compass / fluxgate
– Course Bus or NMEA telegrams HCHDT, HCHDM, HCHDG, HCHTH
– With magnetic compass sonde 108-010
Speed log
– Course Bus or NMEA telegrams VTHG, VTHW, VTHV
(with talker identifier VD, VM, VW, GP)
– 200 pulses/hm
Position receiver
– NMEA telegrams GPGLL, GPGGA
ECDIS
– according to IEC 62065 (track control system)
– NMEA telegram APB (waypoint steering for NP 5100 and NP 5300)

Signal outputs to steering gear
– 2 switching outputs (24V DC – 110V DC, max. 48 W)
– 2 analog outputs (+/- 10 V DC, max. 5 mA, or 4 – 20 mA)

Status/alarm outputs
– Off-heading
– Heading monitor
– Steering failure
– System failure
– Bi-directional central alarm reset
– Autopilot on

Temperature range
– Operation: -25°C to + 55°C (autopilot operator unit)
– Storage: -15°C to + 55°C (autopilot interface)
– -40°C to + 70°C

NP 5000 Operator Unit 1.5 kg

Autopilot Interface AS 3 kg

Feedback Unit 4 kg

Type of enclosure acc. to IEC/EN 60529
– Autopilot operator unit: IP23 / IP56 (front side)
– Autopilot interface: IP 12

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