Raytheon Anschütz

NautoSteer®AS

Advanced Steering Gear Control System

NautoSteer®AS

Steering gear control systems engineered by Raytheon Anschütz are known for their performance and reliability. NautoSteer AS is our advanced steering gear control system for customers that require reliability, safety and an outstanding functional range.

The modular system architecture of NautoSteer AS allows for standardized and cost-effective solutions as well as individual and advanced system configurations. A common user-interface with take-over functions at any device supports intuitive and user-friendly operation. At shipyards, state-of-the-art technology and computer-based commissioning improve and simplify installation and wiring.

BENEFITS AT A GLANCE

- Cost-effective standard configurations
- Flexible system configurations in order to fulfill sophisticated requirements
- Best precision and safety thanks to proven Anschütz steering performance
- Built-in reliability with CAN bus technology
- Fail-safe principle with integrated steering failure and wire-break monitoring
- Clear operation in emergency situations helps the crew when time is crucial
- Comfortable operation with take-over function or give-over function of steering control positions
- Central alarm reset and central dimming
- Ease of installation with simplified wiring using standard cables and computer-based commissioning

SIMPLIFIED AND COST-SAVING INSTALLATION

With NautoSteer AS Raytheon Anschütz can offer cost-effective, standardized systems but also customized and extended steering gear control systems. In any case, installation and wiring of NautoSteer AS are fairly simple and offer benefits to shipyards, integrators and shipowners:

- State-of-the-art technology simplifies installation and wiring
- Use of standard cables
- Equipment is connected to CAN bus and power supply only
- Less error-prone and less expensive than conventional systems
- Computer-based commissioning (by a single person)
- Software allows transparent configurations and adjustments
- Easy modification or extension through CAN bus

MODULAR SYSTEM ARCHITECTURE

NautoSteer AS can be modified or extended by simply adding components to CAN bus.

- Single and double rudder systems
- Fore and aft workstations
- Steering gears with solenoid and proportional actuators
- Integration of third party components (such as joysticks or DP systems)

BUILT-IN RELIABILITY AND SAFETY

NautoSteer AS provides customers with maximum safety in manual and automatic steering gear control. It is designed according to fail-safe principles. No single failure in the system causes any unwanted rudder activity.

- All components are connected via reliable CAN bus technology
- Safety relevant components use a redundant CAN bus
- Integrated safety features such as wire break monitoring, steering failure monitoring, and data integrity monitoring
- "NFU Direct" mode as a fallback position in emergency situations

SIMPLE CHANGE-OVER OF STEERING MODES

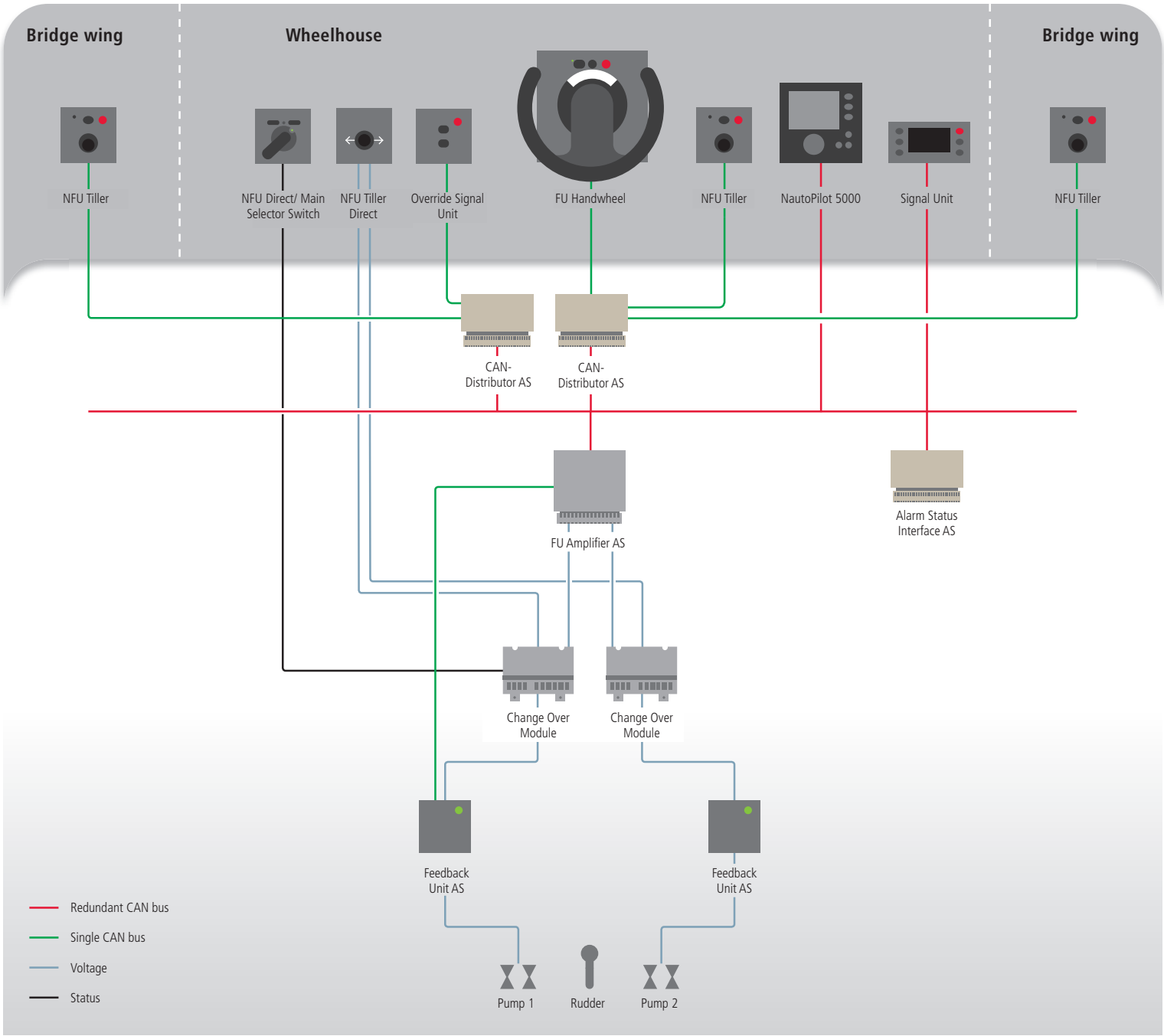
The Steering Mode Selector Switch is a central element of the NautoSteer AS system concept. It contains only two independent modes: "NFU Direct" and "Main". This supports transparent and intuitive operation – the crew benefits from fast and safe decision making when time is crucial.

In "NFU Direct" mode a dedicated non-follow-up tiller is used. This tiller controls the steering gear directly by switching a control voltage – no use of further electronics.

In "Main" mode the CAN bus based steering gear control system is activated. This mode allows steering of the vessel with steering controls such as follow-up tillers, non-follow-up tillers or autopilot steering. The steering control is activated directly at the steering position with a take-over function. Alternatively a dedicated steering control position can be activated by use of a steering mode operator unit (give-over function).

DUAL NFU DIRECT AND FOLLOW-UP

CAN bus steering gear control system for a vessel with single rudder

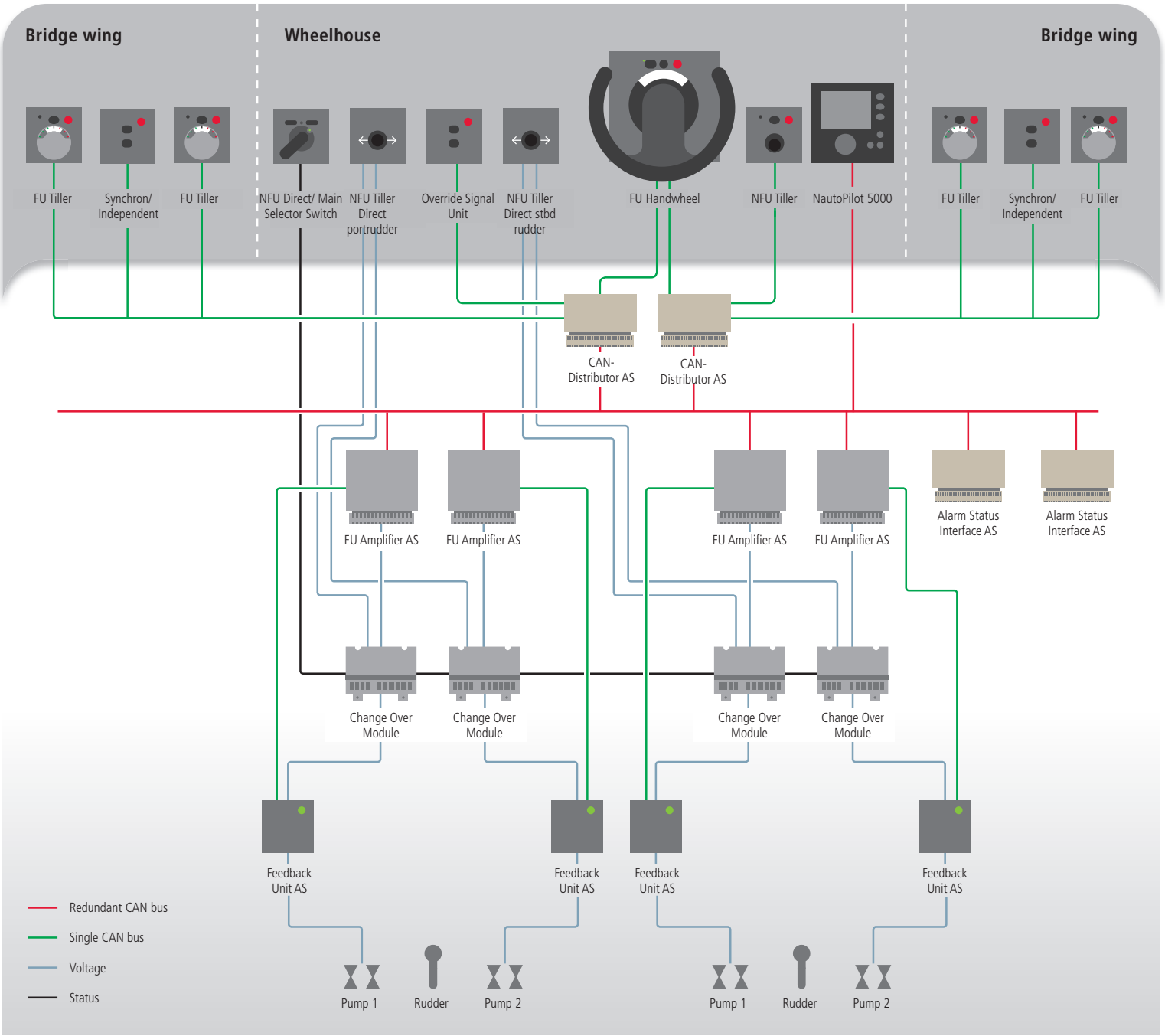


In "NFU Direct" mode the NFU Tiller direct operates the valves/ pumps of the steering gear directly. The override signal unit is used for override of autopilot or other controls.

In "Main" mode the FU Handwheel and therefore the CAN bus based steering gear control system is activated. Other controls can simply be activated at the steering control position with a take-over function. The valves/pumps are operated with one FU Amplifier.
Thus this system provides two completely independent steering gear control systems.

DUAL NFU DIRECT AND DUAL FU

CAN bus steering gear control system for a vessel with dual rudders



In "NFU Direct" mode two NFU Tiller direct operate the valves/ pumps of the steering gear directly. Both rudders are controlled independently from each other. The override signal unit is used for override of autopilot or other controls.

In "Main" mode the FU Handwheel and therefore the CAN bus based steering gear control system is activated. Other controls can simply be activated at the steering control position with a take-over function. The user can decide if the rudders are controlled synchronously or independently by use of the Rudder mode operator unit. Both valves/pumps of a rudder are operated with separate "FU Amplifiers".

Thus this system provides two completely independent steering gear control systems plus additional redundancy in the "Main" mode.

NAUTOSTEER AS SYSTEM COMPONENTS

NautoSteer AS components have a modular mechanical design that allow for simple installation in consoles, frames and steering stands. Additionally NautoSteer AS is characterized by a modular functional design: Components can be combined to achieve functions according to customer requirements. Furthermore NautoSteer AS provides consistent haptic and operation, illumination, dimming and alerting.

NFU Tiller Direct

Tiller Follow-up AS

Steering Mode Operator Unit AS

Tiller Non Follow-up AS

Override Signal Unit AS

Alarm Signal Unit AS

General Override Signal Unit AS

Rudder Mode Operator Unit AS

Take Over Operator Unit AS

Steering Mode Selector Switch AS

CAN-Bus Distributor AS

Gateway Dual LAN AS

Rudder Feedback Unit AS

Follow-up Amplifier AS

Alarm Status Interface AS

External Steering Interface AS

Follow-up Amplifier Proportional AS

Handwheel Follow-up AS

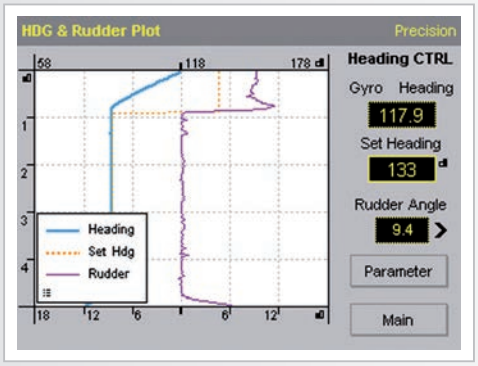
NAUTOPILOT 5000 SERIES

The NautoSteer AS advanced steering gear control system seamlessly integrates highly precise and efficient autopilot systems. The autopilots are based on the proven Anschütz steering algorithms that have been well known by seafarers for outstanding steering performance and reliability for decades.

The NautoPilot 5000 series 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, with its touch screen functionality and a large graphical color display, the NP 5000 allows intuitive operation and provides perfect feedback about the steering performance.

BENEFITS AT A GLANCE

- Precise steering – thanks to unique Anschütz steering algorithms
- Ease of use and intuitive handling
- Fuel-saving thanks to weather adaptivity
- Simple adjustment of autopilot 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



Rudder activity and heading changes are displayed. Autopilot settings can directly be changed.

STEERING STAND COMPILOT 20

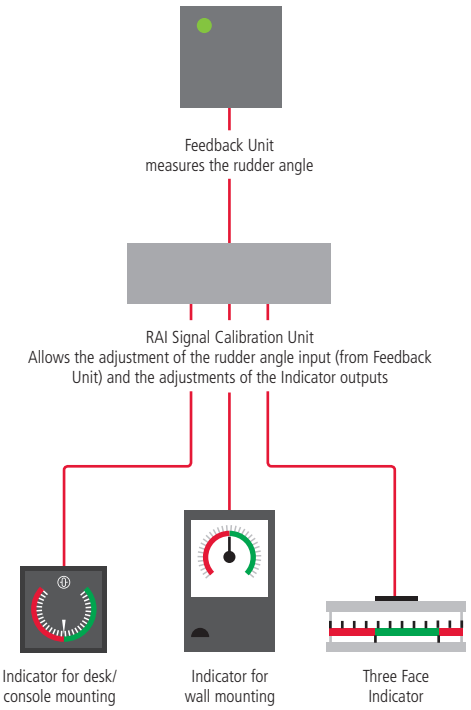
ComPilot 20 is the turn-key solution for an individual steering gear control system, allowing integration of various devices into the steering stand as needed. The modular hardware design of NautoSteer AS permits functional and economical adaptation to any applicable specification.

BENEFITS AT A GLANCE

- Completely wired, configured and tested according to customer specification
- Fast, simple, secure and cost-efficient installation on board
- Modular design suits free-standing arrangements as well as space-saving integration
- Well suited also for fast and cost-efficient retrofit projects

RUDDER ANGLE INDICATOR SYSTEM

Raytheon Anschütz rudder angle indicator systems are characterized by a diversity of different indicators to fulfill individual customer needs and regulations: Instruments in different sizes, scales, type of installations and protection grades. In addition we offer three-face rudder angle indicators with a 270° panoramic indication.



CUSTOMIZED STEERING FRAME

In addition to the ComPilot 20 steering stand, we also offer customized steering frames in different sizes and configurations. These frames are wired, configured and fully tested at the Raytheon Anschütz factory. By using these, installation costs and commissioning time are considerably reduced.

Steering frames: Wired, configured and tested for fast installation on board

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