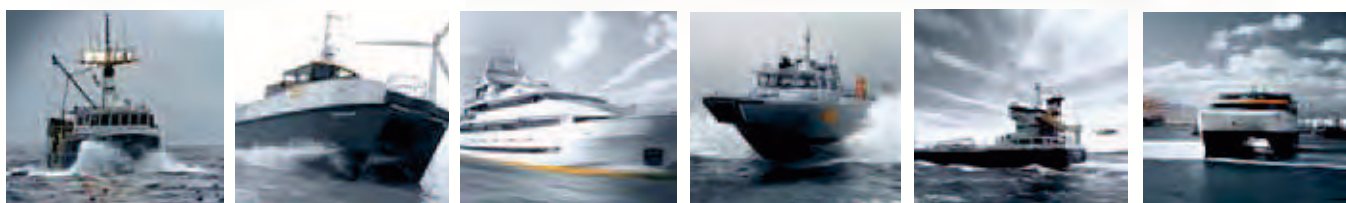# Simrad AP70 and AP80 ◎
Autopilot systems

DEPENDABLE: RELIABLE PRODUCTS MATCHED WITH A RELIABLE SERVICE ORGANISATION.

ADAPTABLE: SOLUTIONS THAT ARE EQUALLY AT HOME ON WORKBOATS IN THE SOUTH CHINA SEA AND SUPERYACHTS IN THE MEDITERRANEAN.

SMART: PROVEN TECHNOLOGY. MORE EFFICIENT OPERATIONS. LESS DOWNTIME.

OUR HERITAGE: OVER 60 YEARS.

60+ YEARS

With over 60 years at the forefront of product innovation Simrad Yachting is one of the world's most recognised brands in the field of marine electronics.

"OUR BOTTOM LINE:
MUCH BETTER."

PRO
SERIES

Professional Series

A Simrad product series by Navico

Professional
Service and Support

Global professional service for Simrad AP70 and AP80 systems are provided by a network of qualified Master Distributors and Certified Partners.

Dedicated support engineers are located in key ports in over 50 countries worldwide ready to provide spare parts and OnBoard service to ensure prompt and efficient service.

Additionally, Navico's own technical support team operates from three regional locations (EMEA, Americas and Asia Pacific) providing coordination and technical support for customers no matter where they are.

SIMRAD **Advantage** SERVICE

Go to **PRO.**SIMRAD-YACHTING.COM to find your nearest service agent.

Simrad Autosteering - 60 years in the making

OUR HERITAGE

The Simrad AP70 and AP80 represent over 60 years of experience and development in the autosteering business. Simrad's heritage extends back to the world's first autopilot for fishing vessels in 1951 (the AP1) and we now bring you the latest generation in professional heading control systems that are guaranteed to provide you with the highest standards of reliability and functionality.

SMART OPERATIONS

The AP70 and AP80 are cost effective, reliable and user-friendly heading control systems for all vessel types. Built with the latest electronics, software and networking capabilities, these pilots are easy to install and easy to operate ensuring your vessel operations are smarter and more competitive.

BUILD YOUR SYSTEM

Integrating your Simrad Autopilot with a wider range of steering systems is now possible. Select one of five autopilot computers and one of three special purpose interface boxes to integrate with solenoids, pumps, analogue and proportional steering systems. The AP70 and AP80 will steer water jets, rudders, pods, stern drives, azimuth thruster and tunnel thrusters providing flexibility across your fleet of vessels all with the same user interface, making it easy for crew to move between vessels.

DEPENDABLE SERVICE

Both the AP70 and AP80 systems come with a 2-year product warranty as standard and are backed up with a global network of certified support partners.

Control your costs and make your day-to-day operations more reliable with outstanding performance guaranteed.

Autopilot Solutions

MODULAR AND FLEXIBLE SOLUTIONS

With complete flexibility in mind, the Simrad AP70 and AP80 solutions are modular in design so that a system can be built to suit the individual vessel characteristics. Simple installation, flexible networking and effortless operation are core qualities providing an essential platform for your vessel's heading control system.

PILOTS THAT WORK AS HARD AS YOU DO

The now famous Work mode on previous generations of Simrad Autopilots has been extended on AP70 and AP80 with multiple Work modes. Additionally multiple Nav and Auto modes are provided enabling simple performance selection depending on your current task at sea.

ANTI-PIRACY

Piracy is becoming a global maritime concern and tactics to prevent boarding are evolving. Constant course changes make boarding from a small vessel more difficult and our S-Turn pattern can now be configured as a manoeuver to hinder pirate attacks. With the S-Turn enabled, a constant course change is enabled while maintaining the ultimate route. The crew can then concentrate on other anti-boarding tactics or retreat to the vessel's citadel.

ECONOMY MODE

Keeping your fleet's costs under control is essential for today's business. Selecting economy mode provides good course keeping with minimal rudder corrections.

SUGGESTED SYSTEMS

Design a system that suits your vessel with a choice of control heads, remotes and below-deck components. Meet type approval requirements with IMO approved systems or select a package of non-approved components for a cost effective yet professional system. Add key navigation systems such as Simrad NSE, Simrad Broadband Radar, Simrad ARGUS or Simrad ECDIS to complete the package.

Review the selected systems on the following pages as examples for the following vessel types::

▶ **Short Sea**

▶ **Patrol / SAR / Military**

▶ **Super Yacht**

▶ **Work Boat / OSV**

▶ **Passenger / HSC**

▶ **Fishing vessel**

AP70 Product overview

MATCH YOUR REQUIREMENTS

The Simrad AP70 is ideal for both simple installations where IMO approval is not required but also can be configured (by matching with an approved computer) to meet the requirements for a Type Approved autopilot. Install as a stand-alone display or network as a second or third station for ultimate vessel control.

SMART CONSTRUCTION

The AP70's stunning waterproof design, daylight viewable display, colour user interface, intuitive on-screen graphics and option of flush or bracket mount, enable easy operation regardless of the installation requirements. Additionally, dedicated mode, command and turn keys and rotary knob provide quick and unmistakable selection of the required function when the situation calls for immediate response.

MEETING INDUSTRY TYPE APPROVALS

The AP70 and AP80 have been put through stringent test protocols and meet International Maritime Organisation (IMO) approval standards. The majority of the system building components also meets these approvals, so a full IMO certified autopilot system can be built.

FLEXIBLE INTEGRATION

Integration with other external on-board systems including interface to central alarm units is achieved by multiple IEC 61162-1, 2 and 3 channels.

SIMPLE NETWORKING

The AP70 and AP80 utilise our intelligent SimNet protocol, making installation, data sharing and system control easier and more flexible than ever.

Part Number	Description	Approvals
000-10182-001	AP70 Control Unit	
AP70 Packs		
000-10577-001	AP70 Pack (AP70, AC70, RF300, without heading sensor)	
000 10578 001	AP70 Thruster Pack (AP70, AC70, RF300, RC42, SD80)	
000-10579-001	AP70 IMO Pack Analog (AP70, AC80A, without heading sensor)	Wheelmark approved, HCS, HSC
000-10580-001	AP70 IMO Pack Solenoid (AP70, AC80S, RF45X, without heading sensor)	Wheelmark approved, HCS, HSC
To build your own AP70+ IMO Autopilot Pack. Get the following AP70+ IMO start kit ...		
000-10581-001	AP70+ IMO Start KIT (AP70, AC85)	Wheelmark approved, HCS, HSC
... And then choose one of the two following options...		
000-10582-001	Dual Analog pack (two AD80 PCB).	Wheelmark approved, HCS, HSC
000-10583-001	Dual Solenoid pack (two SD80 PCB, one RF45X).	Wheelmark approved, HCS, HSC
You can also add one of the following two options to build a redundant system for safety purposes		
000-10584-001	NAUT-AW back up pack (SI80, sw).	
000-10585-001	NAUT-AW safety option.	

AP80 Product overview

TOTAL CONTROL

The Simrad AP80 raises the bar yet again for autopilot systems. The IMO compliant, adaptive heading control system provides complete heading and course control for your entire fleet of vessels.

DESIGNED FOR PROFESSIONALS

With six individual Work profiles, Can Bus networking and triple support of independent rudders and multiple thrusters, the Simrad AP80 is a flexible and dependable solution that is the definition of added value to your operations.

ADAPTABLE

The AP80 is one of the smartest autopilot solutions on the market today. Its adaptive software will adjust to wind and wave conditions to help lower operating costs and reduce risk as sea and working conditions change.

SAVE YOUR SETTINGS

The AP80 is built from ruggedized aluminium and, in addition to the dedicated mode, command and turn keys and rotary knob, a USB port is provided to enable storing and uploading of the autopilot settings. Individual master preferences or fleet settings can be easily saved and restored providing a smart way to ensure consistent operation.

Part Number	Description	Approvals
000-10181-001	AP80 Control Unit	

AP70 AND AP80 COMPARISON TABLE

	Work Profiles	Drive support	Turn Patterns	Adaptive	Pendulum Ferry Function	Thruster Control	Approvals*	Network	Cabling	Dimensions	USB port	Dedicated Alarm Reset	LCD Display	Installation
AP70	6	2+1	yes	yes	yes	yes	HSC, MED, CCS, USCG	CANBUS / SimNet	Micro C	144 x 230 mm	no	no	bonded colour 5"	Bracket or Flush
AP80	6	3+3	yes	yes	yes	yes	HSC, MED, CCS, USCG	CANBUS / SimNet	Micro C	144 x 252 mm	yes	yes	bonded colour 5"	Bracket or Flush

*Approvals Pending

Intuitive colour User Interface for simple operation

Follow-up mode with rudder setting, course and other nav data clearly displayed.

Non Follow-up mode.

Steering parameters are clearly viewed and easily adjusted.

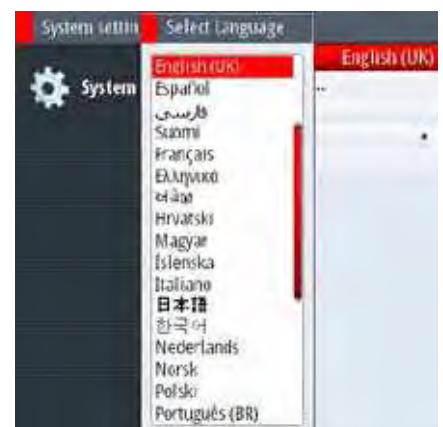AP80 in Nav mode.

AP80 when starting Nav mode.

A selection of turn patterns (including S-turn, C-turn, U-turn) are offered.

Work mode profile set-up.

Save up to six Work Profiles.

Choose from an expanded list of European and Asian languages.

Remote Controls

Enhance your heading control system with a choice of three full function remote controls. Each has a bonded 35mm x 25mm (1") display, are type approved, and can be desktop or panel (flush) mounted. Fully waterproof (IPx6 & IPx7), these remotes can be installed in the best location for efficient operations. All remotes are easily networked so installation is quick and simple with multiple remotes possible on one installation.

▶ FU80

FU80

FOLLOW-UP REMOTE UNIT - The FU80 is a Follow Up remote which means that the rudder, when hand steering, moves to the commanded angle set by turning the lever to port or starboard.

NF80

NON FOLLOW-UP REMOTE UNIT- The NF80 is a Non Follow Up remote which means that the rudder, when hand steering, moves as long as the steering lever is kept at maximum port/starboard position. It can also be used for course change when autosteering. The lever has spring return to mid-position.

▶ NF80

QS80

QUICKSTICK™ REMOTE UNIT - The QS80 (Quick Stick controller) operates the same way as NF80 when the joystick is kept to port or starboard. When the joystick is moved forward and released, the autopilot goes into automatic mode. When the joystick is moved backwards when automatic steering is active, the autopilot goes to standby. If the joystick is moved backwards when in standby, the rudder moves to mid-position. The joystick has spring return to center position.

▶ QS80

Note: FU80, NF80 and QS80 are also compatible with the Simrad AP24 and AP28 and can compliment a Simrad NSS, NSE or NSO system with autopilot integration.

Thruster is not supported when used with other systems than AP70 and AP80.

Part Number	Description	Approvals
000-10183-001	FU80 Follow Up Remote Unit with 6m cable	Wheelmark approved for systems including AC80A, AC80S or AC85
000-10184-001	QS80 Quickstick Remote Unit with 6m cable	Wheelmark approved for systems including AC80A, AC80S or AC85
000-10185-001	NF80 Non Follow Up Remote Unit with 6m cable	Wheelmark approved for systems including AC80A, AC80S or AC85
22022446	R3000X Hand-held Remote Control with 7m cable	Wheelmark approved for systems including AC80A, AC80S or AC85
23601800	S9 Steering Lever (NFU)	Wheelmark approved for systems including AC80A, AC80S or AC85
23241227	S35 Non Follow Up Steering Lever	Wheelmark approved for systems including AC80A, AC80S or AC85
22088165	JS10 Steering lever (NFU)	Wheelmark approved for systems including AC80A, AC80S or AC85
20106699	CD100A	Course detector with 5m cable

SIMRAD Professional Series

Autopilot, Gyro Compass and Heading Sensor Solutions

Computers and Interface Units

AUTOPILOT COMPUTERS AND INTERFACE UNITS

A comprehensive range of computers and interface units are offered with the Simrad AP70 and AP80 autopilots providing a complete solution for every steering system.

As well as our typical computer and interface units that will suit most standard installations, we offer the customizable AC85 computer that can be configured with up to four PCB's depending on the installation requirements.

COMPUTERS

AC70

Drive computer for rudder using reversible motor or non-isolated solenoids and frequency rudder angle feedback. Connection for NFU remote control and one channel IEC 61162-1 (NMEA 0183) RX/TX or IEC 61162-1,2 and 3 compatible.

▶ **AC70**

AC80A

Drive computer for analog or proportional control of rudder or thruster using analog voltage or low level current with possibility for frequency, voltage or current angle feedback, digital drive handshake and external mode input. Built in CAN-bus supply and 4 channel IEC 61162-1 (NMEA 0183) RX/TX.

▶ **AC80A**

AC80S

Drive computer for on/off or proportional control of rudder or thruster using galvanic isolated solenoids or high level current with possibility for frequency, voltage or current angle feedback, digital drive handshake and external mode input. Built in CAN-bus supply and 4 channel IEC 61162-1 (NMEA 0183) RX/TX.

▶ **AC80S**

AC85

Drive computer cabinet with CAN-bus supply and 4 channel IEC 61162-1 (NMEA 0183) RX/ TX (not mounted). Prepared for additional mounting of up to three drive boards with same functionality as SD80, AD80 or AC70.
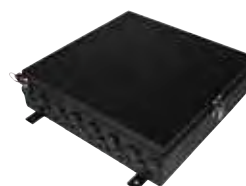
▶ **AC85**

INTERFACE UNITS

SD80

Drive interface for on/off or proportional control of rudder or thruster using galvanic isolated solenoids or high level current with possibility for frequency, voltage or current angle feedback, digital drive handshake and external mode input.

▶ **SD80**

AD80

Drive interface for analog or proportional control of rudder or thruster using analog voltage or low level current with possibility for frequency, voltage or current angle feedback, digital drive handshake and external mode input.

▶ **AD80**

SI80

The SI80 is a 24V/12V signal interface module that provides up to four IEC 61162-1 (NMEA 0183) input and output channels and SimNet power supply.

▶ **SI80**

CDI80

Course Detection Interface for magnetic compass including 6m drop cable and mounting accessories. To interface with CD100A.

▶ **CDI80**

Part Number	Description	Approvals
000-10186-001	AC70 Autopilot Computer	
000-10187-001	AC80A Autopilot Computer with analog drive	Wheelmark approved
000-10188-001	AC80S Autopilot Computer with solenoid drive	Wheelmark approved
000-10189-001	AC85 Autopilot Computer	Wheelmark approved
000-10191-001	AD80 Analog Drive Interface	Wheelmark approved for systems including AC80A, AC80S or AC85
000-10192-001	SD80 Solenoid Drive Interface	Wheelmark approved for systems including AC80A, AC80S or AC85
000-10425-001	SI80 Signal Interface	Wheelmark approved for systems including AC80A, AC80S or AC85
000-10193-001	CDI80 Course Detector Interface	
000-10595-001	AC70 PCB assembly; option for Voith Schneider propeller	
000-10586-001	AD80 PCB assembly	
000-10587-001	SD80 PCB assembly	
000-10588-001	SI80 PCB assembly	
20106688	CD100A Course Detector with 5m cable	

Rudder Feedback Units

The rudder feedback unit transmits a signal proportional to the rudder angle. It is mounted close to the rudder stock and is mechanically connected to the rudder by a transmission link in a 1:1 ratio.

RF14XU RUDDER FEEDBACK UNIT

The RF14XU Rudder Feedback Unit consists of a glass reinforced non-flammable polyester housing with a mounting plate of sea-water resistant aluminium. It contains a potentiometer, limit switches and an electronic drive module.

Output is either a voltage varying ±9 volts around half the supply voltage, or a frequency signal with 3400 Hz for use with a Simrad autopilot. The shaft of the Feedback Unit is free to travel 360 degrees, but only ±90 degrees from midposition are used for signal control. RF14XU is equipped with two sets of micro switches, which can be used as electrical limit switches for the steering gear.

▶ **RF14XU**

RF45X RUDDER FEEDBACK UNIT

The RF45X is a medium duty rudder feedback unit. It is a repairable rather than a potted "throw away" item.

RF300 RUDDER FEEDBACK

The RF300 is a medium duty rudder feedback unit which connects directly to the Autopilot Pilot Computer using 2 wire frequency interface.

▶ **RF45X**

RF25 RUDDER FEEDBACK

The RF25 is a medium duty rudder feedback unit with a SimNet interface. The RF25 will attach directly to SimNet systems for straight forward installation.

▶ **RF300 Rudder Feedback**

Part Number	Description
22506950	RF14XU Heavy Duty Feedback Unit: Long life feedback unit with transmission linkage. Separate output for rudder angle indicators. Double set of limit switches. Requires 24VDC supply voltage.
22011415	RF45X Rugged Rudder Feedback Unit: with transmission link and 2m Cable.
20193744	RF300 Rudder Feedback Unit: with transmission link and 10m Cable.
22014286	RF25 Rudder Feedback Unit: with 5m SimNet Cable.

Drive Units

RPU80, RPU160 AND RPU300 REVERSIBLE PUMP

Hydraulic steering systems are now being used in every category of vessel. In many respects hydraulic steering is preferable to mechanical steering. Hydraulic systems normally comprise of two main components, a steering wheel pump and steering cylinder(s). The steering wheel pump may be either a gear pump or a plunger pump. Which ever type is installed, steering is achieved by turning the steering wheel in either direction causing oil from the wheel pump to be supplied to the appropriate side of the cylinder. Oil is returned via the opposite side of the cylinder back to the pump.

The linear motion of the cylinder rod is transformed to a rotary motion by the tiller, which turns the rudder shaft and rudder. Check valves (non-return valves) are usually incorporated to prevent the rudder driving the steering wheel pump. If an autopilot is to be included in such a hydraulic steering system, then the oil flow providing the rudder movement must be controlled by electrical signals from the autopilot. The maximum flow rate of RPU80, RPU160 and RPU300 is 0,8 l/min., 1,6 l/min. and 3,0 l/min. respectively, measured at a pressure of 10 bar with nominal voltage (12 VDC) on the motor terminals.

▶ RPU80

▶ RPU160

▶ RPU300

Part Number	Description
21116165	RPU80: Reversible Pump. For cylinder displacement of 80-250 cm3
21116181	RPU80 US: Reversible Pump. For cylinder displacement of 4.9 to 12 cui. (US)
21118203	RPU160: Reversible Pump. For cylinder displacement of 160-550 cm3
21118237	RPU160 US: Reversible Pump. For cylinder displacement of 9.8 to 24 cui.
21118211	RPU300-12 V: Reversible Pump. For cylinder displacement of 290 - 960 cm3 (requires J300X-40)
21118245	RPU300 US-12 V: Reversible Pump. For cylinder displacement of 23 to 36 cui.(requires J300X-40)
21118476	RPU300-24 V DC: Reversible Pump. For cylinder displacement of 290 – 960 cm3
21118468	RPU300 US-24 V DC: Reversible Pump. For cylinder displacement of 23 to 36