CHARTPILOT 9330
The ECDIS Solution

SAM Electronics
an L3 communications company
Safe Navigation

CHARTPILOT* assists the operator in all navigation and manoeuvring tasks. The system is an approved ECDIS, navigation and planning system which can be used in integrated navigation systems as well as stand-alone.

All CHARTPILOT functions are in compliance with the latest IMO ECDIS Performance Standards, and also considers rules such as DNV NAUT-AW and LR-IBS. The system fulfills all requirements with regard to route planning, track keeping and monitoring as well as anti-grounding.

Ship sensor data (ARPA/AIS-targets, course, speed, position etc.) and sea charts can be observed simultaneously. The navigator need longer to refer to a separate chart table saving time and enhancing concentration on actual watchkeeping tasks. This contributes substantially to greater safety in shipping and is therefore demanded for “Watch One” operations by leading classification societies (e.g. DNV, GL, LR).

The CHARTPILOT can operate with the following vector formats:
- "official" ENC (IHO-S57/Ed. 3.1)
- C-MAP CM-ENC
- C-MAP CM-93/2
- C-MAP CM-93/3 Professional

and the raster formats:
- ARCS of British Admiralty

The presentation of a vector chart, as familiar to the navigator, is complemented by many further advantages over a paper chart, for instance: free selection of display scale, adapted quantity of display information, seamless chart coverage, and simple information call for each object.

Owing to the comprehensive functions, simplicity of operation and flexibility with regard to system integration, the CHARTPILOT is a navigation system which is ideally suited for use on all new ships as well as retrofits irrespective of type, class or size.

The CHARTPILOT also supports the C-MAP Real time Updating Service (RTU). It allows the CM-93/3 chart database and the official CM-ENCs to be updated instantly in real time via e-mail or the Internet, thus saving the mariner a lot of time and effort.

* CHARTPILOT is used by courtesy of Cetrek Ltd., UK, the owner of the trademark registered in UK, USA and Japan.

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Variety of Configurations
NACOS XX-3 and NACOS XX-4

The CHARTPILOT is also an essential part of the Integrated Navigation System NACOS xx-3 and NACOS xx-4 (Navigation and Command System) as it supplies the RADARPILLOT, MULTIPILLOT, TRACKPILLOT and the SPEEDPILLOT with planning, track and map data.

Alternatively, the CHARTPILOT can be integrated as a stand-alone system in other bridge systems (e.g. as a retrofit), including the connection of any type of modern radar or as a Display and Control Unit of the AIS Transponder DEBEG 3400 manufactured by SAM Electronics.

The following versions are available:

- **Console versions**
  This version is normally integrated in the ship’s operation console and supports the navigator directly in ship handling tasks. All the functions associated with route monitoring, navigation and track keeping are performed here. The CHARTPILOT components can be delivered either in the design of the SCC - Ship Control Center or as individual components for integration into yard designed consoles.

- **Desktop versions**
  This version is typically accommodated in the chart table area for planning tasks. Interfacing with a digitizer allows the creation of “own” electronic charts or maps on the CHARTPILOT.

- **Dual workstation system**
  This configuration is used where full ECDIS back-up functionality is required, e.g. for IBS class-notation or for the replacement of official nautical paper charts.

- **Conning display**
  The Conning display provides the navigator with data of all relevant sensors as well as engine data and can be fitted either in the design of the SCC - Ship Control Center or as individual components for integration into yard designed consoles.

Typical dual ECDIS Back-up installation
The main purpose of the CHARTPILOT is to support the navigator in navigational tasks by combining nautical information, planned route data and geographical presentations against the background of the official Electronic Navigational Chart (ENC) or another digital chart.

The CHARTPILOT offers the following navigation and consulting functions:

**Data Management and Updating**
Chart database manager: graphic interactive selection and loading of the following electronic chart standards:
- ENC: official vector data acc. IHO standard (S57 Ed. 3.1)
- CM-ENC official vector data in C-MAP format
- CM-93: international vector database of C-MAP
- ARCS Raster Chart Data of British Admiralty*
- Support of C-MAP Real Time Updating service

**Route Planning**
The CHARTPILOT supports complete route planning with regard to waypoints, turn-radii and times, including a safety check of the planning data, with reference to the respective area hydrography.

- Graphic/numeric track/waypoint planning
- Track data for the adaptive autopilot/track controller TRACKPILOT by input of the waypoints with pilot data:
  - radius
  - sail control (rhumb line, great circle, radius)
  - track control mode
  - course/track limit
  - rudder economy
  - planned/profile speed
  - waypoint text info

* Functions based on vector data are not available or maybe different with raster data.
Generation of User Chart Objects

- Time-related track planning (graphic and alphanumeric)
  - definition ETD/ETA for start and end point of voyage including calculation of ETA and arrival speed for each waypoint (passage plan)
  - definition of profile speed for each track section (controls the SPEEDPILOT)

- Combination of various track/waypoint files
- Reverse waypoint order
- Safety checks such as safety contour/depth alarm to avoid incorrect planning*

- Transfer of Tracks and User Chart Objects to RADARPILOT 1000 and MULTIPILOT 1000
- Transfer of Vector Chart data to CHARTRADAR 1000

Route Monitoring

- Various display modes
  - Head Up RM
  - Course Up RM
  - North Up RM
  - Centered Display
  - True Motion (scalable)
  - Manual Center
- Track Navigation/Conning Display
- Waypoint/Track Display
- Waypoint Approach-Window
- Track Alarm
- ARPA Alarm (TCPA/CPA)
- Depth Alarm
- Chart Alarm*
- EVENT – display and storage of events and logbook notices
- Bearing Scale, Scale Bar
- Distance Rings (autom. scaled)
- VRM/EBL (ship-related or eccentric)
- Own ship symbol with scalable ahead vector and past/2nd past track
- Heading/Stern Line, Curved Headline and Path Prediction
- Display of ARPA / AIS targets with timescalable past track and ahead vector
- Display ranges 0.1 ... 800 nm*
- 6 different day/night displays*
- Interactive chart/position alignment
AIS Information Display

Up to 50 AIS targets can be graphically displayed on the ECDIS screen including:
- Ship’s identification
- Speed and course over ground
- Heading
- Rate of turn

Additional alphanumeric AIS data such as ship’s name, Call sign, MMSI and other dynamic and voyage related information can be made available on request.

If interfaced with UAIS DEBEG 3400 the CHARTPILOT 9330 is also approved as Minimum Keyboard Display for AIS.

Conning Display

Central display of all navigation and manoeuvring data as well as engine and rudder data, e.g.:
- heading, ROT
- course, drift angle
- off course, off track
- ETA, TTG
- power, pitch, shaft**
- rudder, thruster**
- trim, heel**
- depth, wind

Consulting and Service Functions

- text editor for notices, addresses, instructions ...
- internal ship motion simulator for test and training purposes
- nautical calculator
- pilot card definition and printout
- internal service program
- storage and printout of all parameters and fixed values set in the entire NACOS system

** If connected via the NACOS.
Technical and Installation Data

CHARTPILOT 9330 basic versions

<table>
<thead>
<tr>
<th>Characteristics</th>
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<th>C5 Desktop unit</th>
<th>C5 Desktop monitor</th>
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</tr>
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<td>Size</td>
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<td>516 690 436</td>
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Display Electronics Unit
- Bulkhead Installation
- Desk Top Installation

Control panels and pointer devices
- Trackball, Console mounting
- Trackball, Desk Top mounting
- Mouse
- ASCII Keyboard, Desk Top mounting
Technical and Installation Data

Equipment

Monitor
- High Resolution
- 256 colors
- 19” TFT for desk top or console installation
- 23” TFT for desk top or console installation

Processor Unit
- Intel CPU
- 40 GB Hard Disk Drive
- 3,5” Floppy Disk Drive
- CD/DVD Drive

Control Unit
- Single Trackball for console installation
- α/hum. Keyboard for desk top installation with extra trackball or mouse

Peripherals (optional)
- Printer
- A0 - A2 Digitizer
- UPS - Uninterruptible Power Supply

Consoles
- Consoles 700, 650 mm and 550 mm width
- Desk top units 516 and 630 mm width
- Delivery of individual components for installation into shipyard consoles

Interfacing (optional)
- 10 channel Navigation Interface for the connection of external sensors such as log, gyro, IDIGPS, LORAN C, radar, echosounder, wind, etc.
- Ethernet Interface for the connection of UAIS DEBEG 3400

(If the CHARTPILOT 9330 is already connected to an RADARPILOT 1000 no extra Interface will be required).

Power Supply
- 115/230 V, 47-63 Hz
- The CHARTPILOT processor electronics shall be supplied from an UPS source

Interfacing and Sensor Monitoring
- Interfacing including numeric and graphic display of the following sensors:
  - Position sensor
  - Gyro/compass
  - ROT indicator
  - Doppler/EM speed log
  - Echosounder
  - AIS
  - ARPA Radar
  - NACOS
  - Digitizer
  - Printer
  - Wind sensor
  - Air humidity/pressure/temperature
  - Monitoring of sensor data
  - Integrated Data Recording with Play-back facility