General Info on Operating

Many display fields on the monitor are used as operating elements (**buttons**) or as data input fields. They are operated by means of the **trackball** or **mouse**.

Trackball, Mouse

The following **key names** are used:

```
        INFO                    INFO                      DO
   DO         MORE         DO          MORE         INFO        MORE
```

➥ The middle key frequently consists of a wheel. It reacts only to pressure, not to turning.
For improved readability, only the trackball is mentioned below, although the same effect is achieved by moving the mouse.

Operating takes place by using the trackball to position the **cursor** on the desired field and then pressing one of the keys briefly. When performed with the DO key, this action is referred to as "**clicking on**" or simply "**clicking**".

➥ The duration for which a key must be pressed and the cursor speed can be adjusted as required; see Operating Instructions under *Making System Settings*.
Apart from the DO, INFO and MORE keys, all the keys mentioned here are located on the optional **alphanumeric keyboard**.

➥ With a certain amount of practice, many operating elements can be actuated more rapidly by using the alphanumeric keyboard, see Operating Instructions under *Operating Procedure using the Keyboard instead of the Trackball*.

Switching Over the Indicators and Operating Units

When slave indicators are used, only the CHARTPILOT station or one of the indicators can be used for operating purposes: an **inactive indicator or station** is activated by keeping the DO key pressed for three seconds.
If, however, a **radar unit and a CHARTPILOT are controlled by a common operating unit**, the corresponding trackball is activated for the CHARTPILOT by pressing the **CHART MODE** key of the operating unit for three seconds.

Operating Elements on the Screen

Red squares and diamonds in front of the button's name indicate that the corresponding function is switched on.
Operating the sliding controller: Position the cursor on the "handle" of the sliding controller. Press the DO key and move the trackball at the same time. **Fine adjustment:** With the arrow keys, after clicking on the sliding controller.
Lists: Mark the entry by clicking on it. **Marking several entries:** Position the cursor on an entry. Press the DO key and move the trackball at the same time. **Scroll bars:** Operating as usual with PCs.

Input fields can be recognized from the editing cursor.
Editing by means of the virtual keyboard: Click on the input field with MORE. Conclude the editing with the **OK** button. Clicking on the virtual keyboard with MORE closes the keyboard without input of the edited values.
Editing by means of the alphanumeric keyboard: Click on the input field. Continue as for commercial keyboards; for special features, see Operating Instructions under *Inputting Numerical Values and Editing Texts*.

Menus, Tree, Context Menus, Dialog Boxes

Most buttons are located in menus which can be superimposed in the right-hand side strip.
Switching the menu display on/off: Click on the **Menu** button Ⓔ, or press the function keys **Fn** and **F1** at the same time.
Buttons that have names ending with "**...**" **open a lower-order menu**. Above these menus, there are buttons showing the higher-order menus (**return to a higher-order menu** by clicking the corresponding button).
Buttons in the bottom line of the menu: Apply takes over the changes; **Reset** rejects the changes; **OK** and **Cancel** close the menu, whereby **OK** applies all the changes, but with **Cancel** only the changes taken over with **Apply** become valid.
➥ The same effect as for **Cancel** is achieved by opening another menu by means of the button in the menu header and in the tree.

Tree: Provides an overview of the top two menu levels.
Switching the tree on: Click on the **Tree** button Ⓕ or press **F10**. By clicking on the button located there, the corresponding menu is displayed.
Subroutines: Buttons which call up independent subroutines are framed by a white line in the tree. In their top menu, these subroutines have an **Exit** button with which they can be terminated.
➥ Subroutines which are active are indicated with a red inscription in the tree.

Context menus: If the MORE key is clicked in the chart area or in certain lists and fields, a context menu appears with functions which serve as faster alternatives to the above-mentioned menus. A number of context menus are shown in Part 2 on page 2.
➥ Context menus are always opened with the MORE key. This fact is not repeated below.
Closing the context menu without performing any function: Click outside the context menu.

Dialog boxes: These are opened spontaneously by the program; sometimes this also occurs through operating actions instead of a submenu. Some dialog boxes can be shifted and/or changed in size (operating as usual for PCs).

Function Keys

The function keys of the optional alphanumeric keyboard perform the following functions:
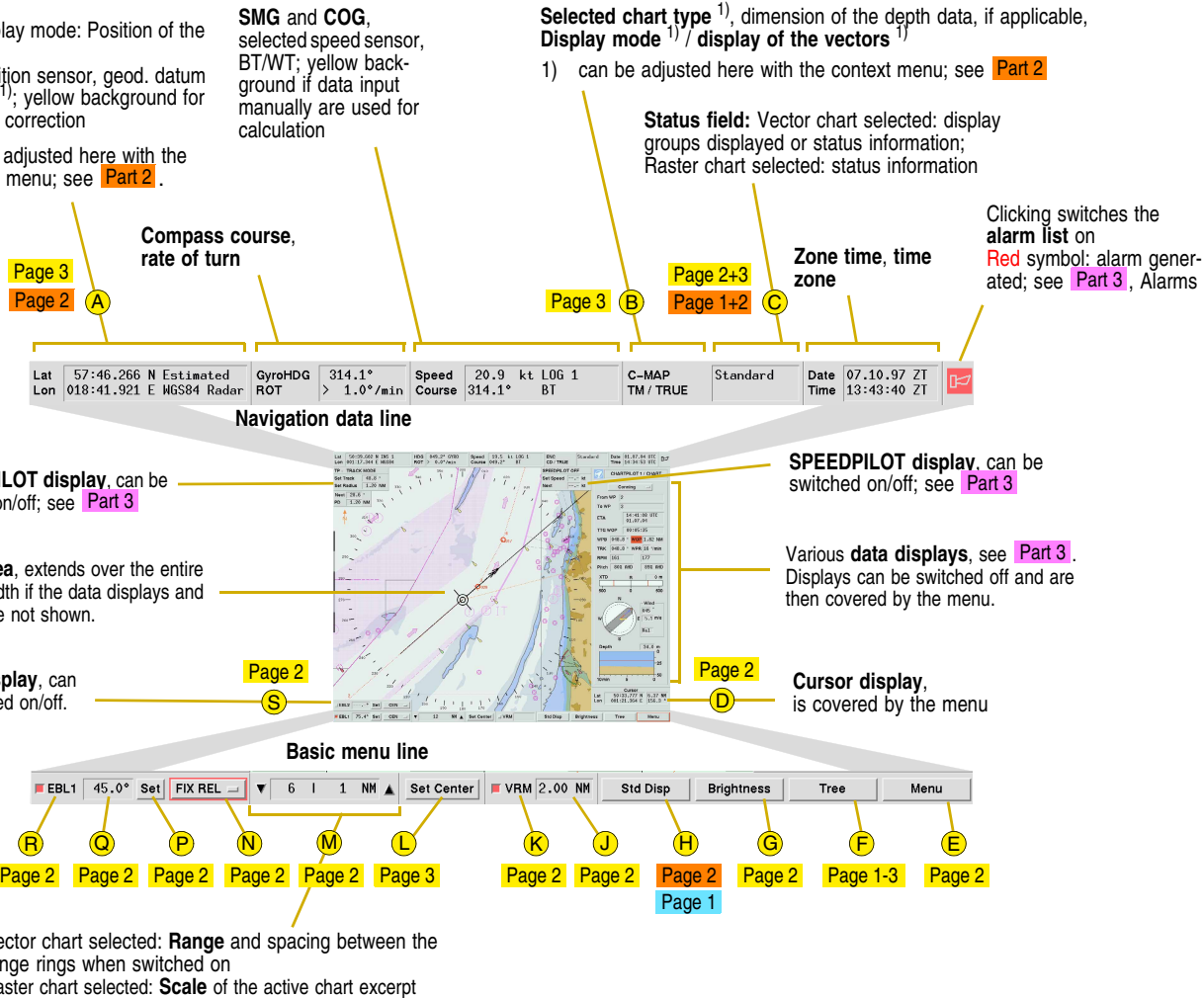
F1	Switches to the Chart mode
F2	Switches to the Conning mode
F5	Sets an event marker
F6	Opens the range list or the **Chart selection** menu
F7	Monitoring display mode: Sets the own ship symbol to the cursor position Planning display mode: Sets the centre of the chart area to the cursor position
F8	Switches to the standard setting of the Chart mode
F9	Opens the **Brightness** menu
F10	Calls up the tree
Fn+F1	Switches the menu display on/off

Monitoring display mode: **Own position**
Planning display mode: Position of the chart centre
Selected position sensor, geod. datum [1], projection [1]; yellow background for position error correction

1) can be adjusted here with the context menu; see Part 2 .

SMG and **COG**, selected speed sensor, BT/WT; yellow background if data input manually are used for calculation

Compass course, rate of turn
Page 3 / Page 2 Ⓐ

Selected chart type [1], dimension of the depth data, if applicable, **Display mode** [1] / **display of the vectors** [1]
1) can be adjusted here with the context menu; see Part 2

Status field: Vector chart selected: display groups displayed or status information; Raster chart selected: status information

Zone time, time zone
Page 2+3 / Page 1+2 Ⓒ

Clicking switches the **alarm list** on Red symbol: alarm generated; see Part 3 , Alarms

Page 3 / Page 2 Ⓑ

| Lat | 57:46.266 N Estimated | GyroHDG | 314.1° | Speed | 20.9 kt LOG 1 | C-MAP | Standard | Date | 07.10.97 ZT | |
| Lon | 018:41.921 E WGS84 Radar | ROT | > 1.0°/min | Course | 314.1° | TM / TRUE | | Time | 13:43:40 ZT | |

Navigation data line

TRACKPILOT display, can be switched on/off; see Part 3

Chart area, extends over the entire screen width if the data displays and menus are not shown.

EBL2 display, can be switched on/off.
Page 2 Ⓢ

SPEEDPILOT display, can be switched on/off; see Part 3

Various **data displays**, see Part 3 . Displays can be switched off and are then covered by the menu.

Page 2 Ⓓ
Cursor display, is covered by the menu

Basic menu line

| ■ EBL1 | 45.0° | Set | FIX REL ◄ | ▼ | 6 | 1 | NM ▲ | Set Center | ■ VRM | 2.00 NM | Std Disp | Brightness | Tree | Menu |

Ⓡ Ⓠ Ⓟ Ⓝ Ⓜ Ⓛ Ⓚ Ⓙ Ⓗ Ⓖ Ⓕ Ⓔ
Page 2 Page 2 Page 2 Page 2 Page 2 Page 3 Page 2 Page 2 Page 2 Page 2 Page 1-3 Page 2
Page 1

Vector chart selected: **Range** and spacing between the range rings when switched on
Raster chart selected: **Scale** of the active chart excerpt

Operating and Displays

Setting the Brightness and Colour

Select the brightness/colour palette: Click on the **Brightness** button Ⓖ (or press the function key **F9**) and select the colour palettes (**Bright Day** to **Dark Night** when using a vector chart and in the Conning mode, **Daytime** to **Night-time** when using a raster chart). After each switch-over, use the brightness and contrast control knobs of the monitor to perform the fine adjustment, so that the square symbol shown in the Brightness menu consists of two concentric squares, with the inner square visible faintly but clearly.
Displaying areas of vector charts in shades of grey: Click on the **Brightness** button Ⓖ and switch on the **Grey Mode** function.
Closing the Brightness menu: Click on the arrow button of the menu.

➥ **Setting a very dark screen to be bright:** a) Position the cursor at the upper edge of the screen, then press the DO, INFO and MORE keys simultaneously or b) press the function key **F9**, and then the space bar.

Bearing Scale, Grid, Range Rings, Scale Bar

Grid, range rings and scale bar Ⓚ only if a vector chart is selected. Bearing scale Ⓙ only in Monitoring display mode:
Switching the display on/off: Grid, range rings and bearing scale in the **Presentation** menu, scale bar in the menu Presentation > **Display Settings**.

If the range rings function is switched on, the spacing of the range rings is shown in the Range/Scale field Ⓜ on the right.
Length / subdivisions of the scale bar: Up to 3 NM range: 1 NM / 0.1 NM; longer range settings: 10 NM / 2 NM

Cursor Data

If the cursor is located in the chart area, the **Cursor** display Ⓓ , Ⓖ contains the geogr. position of the cursor, and the distance and bearing of the cursor relative to the own ship.

Range (Range Setting for Vector Charts)

Display of the selected range: In the Range/Scale field Ⓜ; the value corresponds to half the height of the chart area.
Switching over in steps: Click on the arrow button of the Range/Scale field.
Direct switch-over: Click in the Range/Scale field between the arrow buttons or press the function key **F6** and then click the desired value in the range list.
Closing the range list: Click on the arrow button of the list.

Availability of the chart data
Range values for which a chart cell is available (in Monitoring display mode at the own position, in the Planning display mode at the centre of the chart area) with a suitable navigational purpose (= scale) are marked in the range list with ◆ . The message **Overscaled** is shown in the Status field Ⓒ if a cell with too small a scale is used for the above-mentioned position.
If the scale of the cell is considerably smaller than the display scale, the areas concerned are marked by a **vertical grey pattern of lines**. Areas for which no data are available are displayed **empty and grey**.
➥ For "cells" see Part 4 , page 1.

Scale (Range Setting for Raster Charts)

Displaying the selected scale: In the Range/Scale field Ⓜ; this is the scale of the **corresponding paper chart.**
Switching over in steps: Click on the arrow button of the Range/Scale field.
Direct switch-over: Click in the Range/Scale field between the arrow buttons or press the function key **F6** and then click the desired value in the **Chart Selection** menu.
Displaying the chart in enlarged form: In the **Chart Selection** menu with **Zoom in**.

Chart Selection menu
The **Chart Selection** menu lists all the charts which exist at the own position (in Monitoring display mode) or at the centre of the chart area (in Planning display mode).
Switching the display of the chart names on/off: With the square symbol at the top of the **Chart Selection** menu.
Display of availability:
◆ : chart is available.
— : licence exists, but chart is missing from the database
No display: no licence available.

VRM, EBLs, Measurement Line

Switching the VRM on/off: Click on the button Ⓚ in the VRM field.
Setting the radius of the VRM: Click on the display of the VRM radius Ⓙ, set the radius in the chart area and fix it by clicking.
Switching EBL1 on/off: Click on the button Ⓡ in the EBL field.
Adjusting the EBL bearing: Click on the display of the EBL bearing Ⓠ, adjust the bearing in the chart area and fix it by clicking. The true bearing is shown.
Fixing the EBL origin: With the EBL Mode button Ⓝ:
Select **CEN**: origin in own ship;
select **FIX ABS**, click on **Set** Ⓟ and then on the position in the chart area: the origin is fixed at the clicked position;
ditto with **FIX REL**: the origin moves with the own ship at the clicked distance.
Activate / deactivate second EBL: In the menu Presentation > **Display Settings** with the button EBL2 **Display**; EBL2 field Ⓢ, Ⓗ appears above the EBL1 field; operating as described above.
Determining the distance to the origin with the EBL: In the EBL modes FIX ABS and FIX REL, a range marker is shown on the EBL if the VRM is switched on; its distance to the origin corresponds to the VRM value.

Measuring the bearing and range between two objects by means of the measurement line: In the context menu of the chart area, click on **Set Line** Ⓟ. Click on object 1. The bearing and range to object 1 is shown at the cursor. End this display with MORE.
Drawing the measurement line: As before, but instead of terminating with DO, click in the chart area.
Deleting the measurement line: In the context menu of the chart area with **Clear Line** Ⓟ.
➥ Measurements using the cursor: See *Cursor Data*.

Brief Operating Instructions
CHARTPILOT 1100

SAM Electronics
an (l3 communications company

Part 1

WARNING: Observe safety precautions - see Operating Instructions.

Scope:
This document describes the **functions of the CHARTPILOT 1100** alone and in conjunction with **units of the RADAR 1100 series**, the track control system **TRACKPILOT 1100**, including the speed controller **SPEEDPILOT**, the **AIS system UAIS DEBEG 3400**, also together with a **MULTIPILOT 1100** or a second CHARTPILOT **as approved ECDIS**.

➡ Even if the specific types of connected units are not mentioned below, only the above-mentioned types are meant.
Some of the functions described here are only available in certain system configurations.
In contrast to the usual Brief Operating Instructions, this document describes, with few exceptions, the entire operating structure of the CHARTPILOT. For exceptions, see the text and Part 4 , page 3, lower section.

List of Contents for Part 1 to 4

System Overview

The CHARTPILOT is used for **displaying the electronic chart**, both for **planning purposes** (e.g. as desktop version at the chart table) and also for the **monitoring and control of the ship** (as a console version at the control stand). For the latter purpose, the tracked targets of a connected radar unit and the most important data of the TRACKPILOT are shown, amongst other data. Furthermore, the display and operating functions of the connected AIS system are completely integrated into the CHARTPILOT. All functions required for an **ECDIS** are provided by the CHARTPILOT, with the necessary redundant functions being supplied by a second CHARTPILOT or by a MULTI-PILOT.
For use within a system, the CHARTPILOT performs **a number of coordination tasks in the background**, and many of the **data displayed on other indicators of the system are supplied by the hard disk drive of the CHARTPILOT**.
A system can contain three different device combinations: One **CHARTPILOT station** is always available, consisting of a monitor, operating unit, electronics unit with CD and diskette drives, one **CHARTPILOT terminal** (monitor, operating unit, electronics unit without drives; operating independent to that of the CHARTPILOT station), several **CHARTPILOT slave indicators** (slave monitor with operating unit; display identical and operating as an alternative to that of the station).

Switching the CHARTPILOT Unit On/Off

Switching on: At the CHARTPILOT station, set the **POWER** or **ON/OFF** switch of the monitor to **On**. If a log-on display appears, enter the letters **pcs** into the input field **Login:** and press the **Enter** key twice. Repeat this procedure at the CHARTPILOT terminal.
Switching off: Switch the CHARTPILOT off only if the system will not be needed for a long period (lay time in port): Click on the **Tree** button Ⓕ (for "button" and "clicking", see *General Info on Operating*), click on the button **POWER DOWN** and, when the question **Are you sure you want to shut down the system?** appears, click on the **OK** button. When, at the CHARTPILOT station, **System halted** is shown, set the **POWER** or **ON/OFF** switch of the CHARTPILOT monitor there to **Off**. Then switch off the other components.

> CAUTION: The system must only be switched off in the manner described above; for the possible consequences of any deviations from the required sequence, see the Operating Instructions.

If the CHARTPILOT is operated with an uninterruptible power supply (**UPS**) which is recommended by SAM Electronics, the CHARTPILOT program is automatically powered down correctly before the capacity of the UPS is exhausted in the event of a prolonged mains failure.

Navigation Data

These settings affect the entire system. The settings are not possible if the TRACKPILOT is in the active state or if the CHARTPILOT is configured accordingly.

Synchronizing the course transfer: Only possible for compass with synchro/stepper transfer: In the menu Sensor Settings > **Set Gyro**, enter into the **Set** field the heading value read off at the compass. When the **Actual** value is equal to the **Set** value, click **OK**.

Selecting a speed sensor: In the menu Sensor Settings > **Speed Sensor**, mark the sensor in the list. Check the data of the preselected sensor (shown below the list) for validity/plausibility, and correct or add data as required. For single-axis logs, the displayed **Set** and **Drift** values which were computed by the system can be changed. If the sensor can deliver **WT** (water track) and **BT** (bottom track) data at same time, specify the priority under **Log Priority**. Confirm the sensor selection with **OK**.

Selecting a position sensor: In the menu Sensor Settings > **Position Sensor**, mark the sensor in the list. Check the data of the preselected sensor (shown below the list) for validity/plausibility (status, range and bearing of the sensor position with regard to the position currently used by the system).
Specifying the use of GPS mode under "Use of GPS": If the function DGPS ONLY is switched on, GPS data of a DGPS receiver are not evaluated if the Differential mode is not available. Confirm the sensor selection with **OK**.
Checking the accuracy of the position data: For example, define fixed targets as ARPA targets at the selected radar indicator, and then check the distance of the corresponding chart symbols.
**Position error correction:** (Only to be performed if all fixed (radar) targets are shifted in the same direction with regard to the chart symbols and if no better position sensor is available): In context menu of the chart area, click on **Adjust Position** Ⓠ. Click on the chart symbol, then on the target symbol. The correction value appears in the Cursor display behind **ADJ:**, the position data field Ⓐ **is yellow. Cancelling the position error correction:** In the context menu of the chart with **Clear Pos. Adjust** Ⓠ.
Determining the position by dead reckoning: In the menu Sensor Settings > **Position Sensor** under **Select**, mark the entry **Estimated**, enter the starting position in the lower frame, and click on **OK**.

Selecting the position sensor for the 2nd past plot: In the menu Sensor Settings > **2nd Position Sensor**.

Entering the time zone: In the menu Sensor Settings > **Date / Time** under **Time Zone**, enter the time difference relative to UTC, and confirm with **OK**.
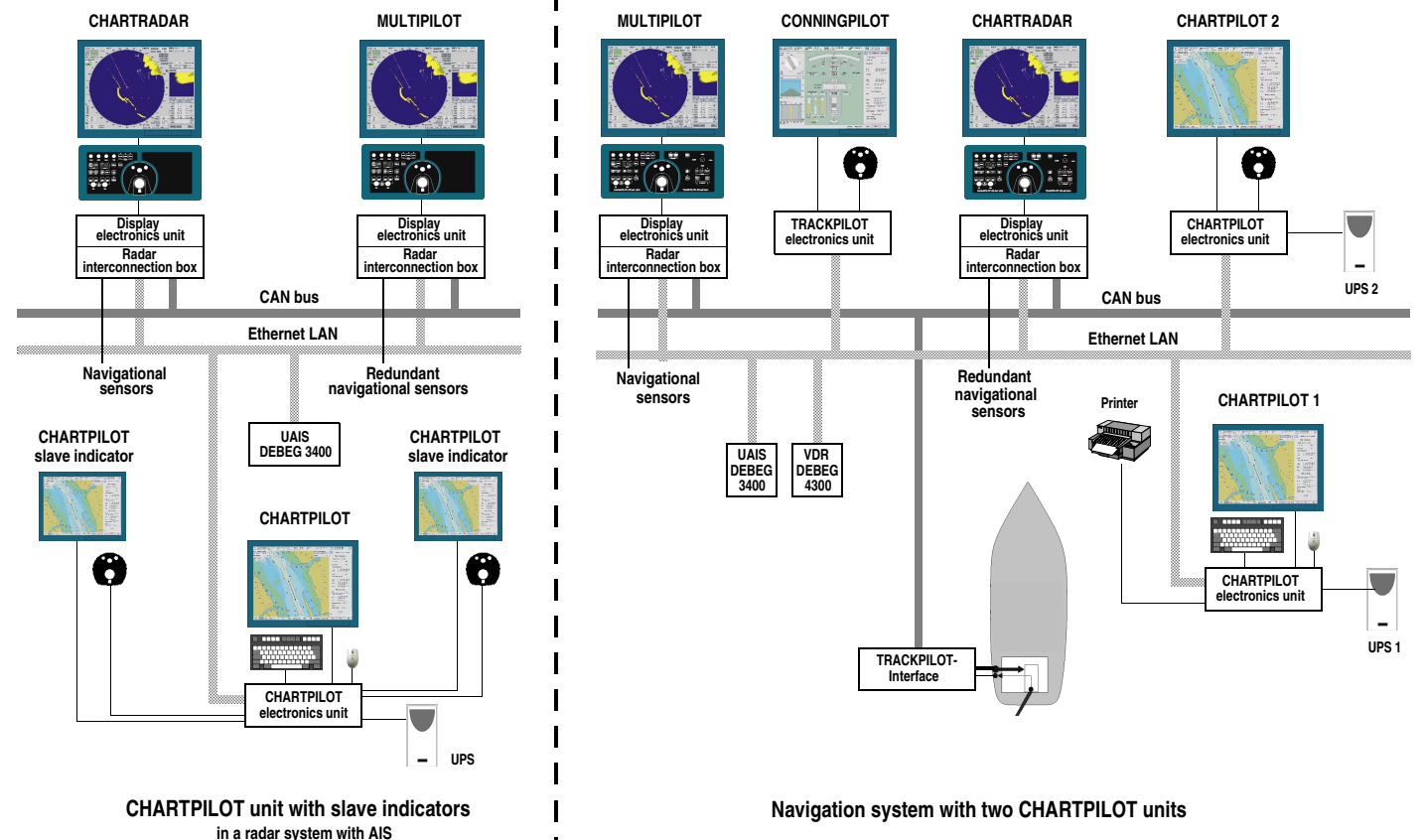
Switching Over Chart Mode / Conning Mode

Click on the **Tree** button Ⓕ and then, in the top line, click the button **CONNING** or **CHART**.

Planning / Monitoring Display Mode Orientation, True/Relative Motion

There are five Monitoring display modes and one Planning display mode. **Switching over between the modes:** In the menu Presentation > **Display Mode** or in the context menu **Display Mode** Ⓣ (click on the display Ⓑ or field Ⓒ with MORE).

Planning display mode: For planning work; the chart excerpt displayed is independent of the own position, and the orientation is always North-Up. **Display** Ⓑ: **PLAN/...**
Specifying the centre of the chart excerpt: 3 alternatives:
- a) Click on **Set Center** Ⓛ and then on the desired position, or b) place the cursor at the desired position and press the function key **F7**.
- Worldwide, alphanumeric: In the menu Presentation > **Display Mode** under **Planning**, enter the position and click on **Apply**.
- Worldwide, graphical: In the tree, click on the button **Chart Maintenance**, there select the chart type, zoom the world chart if necessary, click on **Set Planning Mode** Ⓗ, answer the message with **OK** and click on the centre of the desired chart excerpt (for zooming the **world chart** etc., see Part 4 , page 1).
- With raster charts, additionally: See Part 2 , page 1, *Overview Display of the Raster Chart*.

Monitoring display modes: For monitoring and controlling the ship. The usual modes for radar units are available (the display in Ⓑ is given in brackets): True Motion (**TM**) and the Relative Motion modes Centered Display (**CD**), North-Up RM (**N-Up**), Course-Up RM (**C-Up**) and Head-Up RM (**H-Up**).
Setting the TM Reset area: In the menu Presentation > **Display Mode** with the sliding controller **True Motion Reset**.
Off-Centering the own ship symbol: a) Click on **Set Center** Ⓛ and then on the desired position, or b) place the cursor on the desired position and press the function key **F7**.
➡ If the position is outside the TM Reset area, a TM Reset is performed additionally.

Block Diagrams of the System (Examples)

CHARTPILOT unit with slave indicators
in a radar system with AIS

Navigation system with two CHARTPILOT units