

Compliant
with new
IMO 2008 regulations

MULTIPILOT 1100

The Universal Solution



Introduction

The MULTIPILOT 1100 represents a unique navigation system combining ARPA Radar, ECDIS, conning and automatic steering control as the most compact solution available in the marine market.

Depending on the navigational situation, the navigator can choose between different presentation modes like Radar, Chart, ECDIS or CONNING information.

Combining the radar capabilities with the electronic chart and automatic steering control in one unit offers significant benefits for a safe navigation.

- Designed to meet the latest IMO/IEC requirements for radar with chart facilities
- Type approved ECDIS in combination with CHARTPILOT 1100
- Full operation as Minimum Keyboard Display for AIS 3400/10
- Integrated CONNING mode
- High resolution colour graphics
- Display of NAVTEX messages
- Tracking of 80 ARPA/AIS targets
- Display of 400 AIS sleeping targets
- ARPA/AIS target association function
- ECDIS mode with ENC, C-MAP and ARCS presentation
- Choice of simplified or traditional paper chart symbol presentation
- Selectable visibility options
- Display of own chart user objects
- Display of pre-planned routes
- Six colour tables for day and night presentation including grey shaded mode
- Integrated Automatic Steering and Track Control for TRACKPILOT 1100 (in case of NACOS xx-5 only)
- Wide choice of X- and S-band transceivers (bulkhead or aloft)
- Integrated 2-way radar interswitch
- Full operation of Voyage Data Recorder DEGE 4300
- Optional remote access e.g. for wing operation to master each display from any of up to 4 slave stations



Innovative Solutions

The MULTIPILOT 1100

- Provides a correlated picture of the planned and the real situation and thereby enhances the officer's capability to fully access the nautical situation and development.
- Combines navigation and collision avoidance functions in one workstation. The correlation of radar- and AIS-based data assisting effectively in collision avoidance and participation in traffic management systems.
- Reduces the workload of the navigator by avoiding redundant data inputs and readouts at different equipment locations. This improves the safety in busy traffic areas where collision avoidance and the task of navigating according to the chart must be coordinated.
- Supports high resolution graphics for clear and distinct chart and radar presentation.
- If part of an NACOS system the MULTIPILOT also provides integrated Steering and Track Control by means of a joystick. A "Curved Headline" for any planned or commanded course change is shown on each MULTIPILOT display.
- Alarms and messages are consistently managed for all operator workstations.
- Up to four MULTIPILOT slave stations can be added to support docking manoeuvres of large ships. Each slave station is simultaneously controlled from one of the active station.
- In combination with the AIS 3400/10 the MULTIPILOT supports full AIS operation which saves the costs for an extra Minimum Keyboard Display.
- If connected to the VDR DEBEG 4300 the internal network of the MULTIPILOT allows direct recording of the radar image.
- The integrated 2-way interswitch allows switching of two transceivers and two displays.
- A wide range of nautical sensors can be connected to the MULTIPILOT interconnection unit. The internal network structure supports duplicated interfacing of basic navigation sensors and therefore guarantees the redundancy requirements for certain class operations.
- In combination with DEBEG 2902 NAVTEX messages will be directly reported to the MULTIPILOT and displayed on user demand



The mechanical housing concept of the MULTIPILOT 1100 is very flexible:

- Choice between desktop and console versions
- The monitor and control panel components can also be supplied as individual units for integration into a customer specific console

MULTIPILOT 1100

Selection of **chart data base** as:

- **S-57** official vector charts
- **ARCS** official raster charts
- **CM-93** CMAP vector charts

The **2nd chart window** allows simultaneous display of two independent charts

Radar overlay combined with chart information offers significant benefits for safe navigation.

2 Independent EBL and VRM adjustable individually or combined directly within the PPI or via rotary knobs of the optional keyboard

Interactive on-screen operation
All display fields and the radar PPI are directly accessible for operation control

A **key-pad window** will be inserted for entry of characters or numbers

The **Trackball** is the main operational element. The active field is marked by a frame. A quick info box shows the available operational functions for the trackball buttons. Optional control panels can be integrated for operating the **Radar** or **TRACKPILOT**

Control of the display mode
Head Up and **North Up** or **RM** and **TM**

Control of the **Radar PPI** e.g. display ranges may be selected from 0.25 to 96 NM or for **DOCKING** as 250 or 500m

Alarm symbol for calling-up of alarm messages

Heading
Speed

TRACKPILOT (Option NACOS) for Heading, Course- or Track Control

Selection of Consistent Common Reference Point (CCRP)

Data of on-screen **cursor position** or own **ship's position** and sensor in use

Radarscope window with display options:

- Radar-zoom fixed to a tracked target or to a certain position
- Graphic display of wind or depth profile
- Docking display
- AIS data display
- Radar map operation menu
- Alarm list

Data display for:

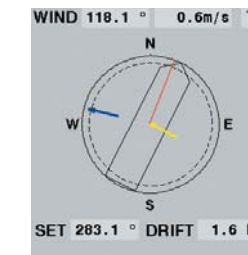
- Full tracked data for two marked targets
- Short readout of up to 8 targets
- Waypoint data
- Track data

Access to track and route planning functions

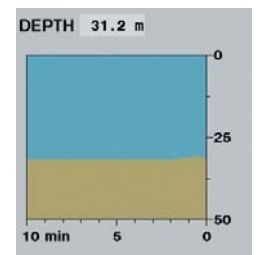
Individual brightness settings including choice of 6 colour tables

Access to chart functions

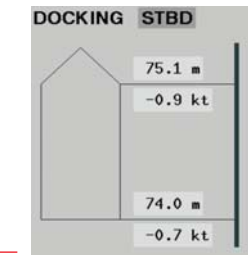
The Radarscope window may alternatively display **WIND** or **DEPTH** graphics, if the respective sensors are connected. In the **DOCKING** mode the 2nd EBL may be used to establish the initial distances from the bow and stern to a berth. After defining the reference positions of the ship's contour, the MULTIPILOT continuously displays the actual distance and speed values based on the input of the (D)GPS receiver.



WIND display



DEPTH display



DOCKING display

CM93/2 [m] BASE N UP RM(T) RANGE 12 NM

2nd CHART: ARCS [m] N-UP 1:37500 BAD SCALE ENC AVAIL
CENT: LAT 51:07.138 N
INFO LON 001:19.585 E

HDG 037.0 ° GYRO
SPD 20.1 kt BT DGPS

TRACKPILOT TRACK CHL
SET 36.6 ° 1.20 NM
NEXT 316.2 ° 1.20 NM PD

POS DGPS REF RADAR
LAT 50:56.747 N COG 37.1 °
LON 001:27.320 E SOG 20.2 kt
ADJUST - - - - -

FIX ABS

TARGET DATA

ID	AIS6	PAPA
BRG	336.8	54.8 °
RNG	11.8	2.80 NM
T CSE	233.2	52.3 °
T SPD	3.00	15.0 kt
TCPA	14:21	14:52 min
CPA	10.5	2.25 NM
BCT		min
BCR		NM

AIS EVENT CM93/2
PATH OFF
TRAILS 3 min T
VECTOR 6 min T
PAST POSN OFF T

CLOCK: 00:00:00
Aug 13 12:30:18 2004 UTC

MENU CHART TRACK BRILL

EBL 1 OFF T CENT OFF
2 OFF T CENT OFF

VRM

Display of **AIS** data and symbology

Display and storing of **EVENT** data.
PRINT screen function via **CHARTPILOT 1100**

PATH Prediction allows the operator to display a change of heading via constant radius turn

Trails are not lost despite of changing parameters

Quick info box for display of:
- ETA to cursor position
- operator instructions
- Date / Time
- Stop watch



TRACKBALL for left- or right-hand operation



TRACKPILOT control panel with joystick

The Trackball includes a large DO button for activating operator settings. Either one or the two smaller buttons may be used for additional functions.

The Universal Solution

The superior feature of the MULTIPLOTT is the ability to superimpose radar and electronic vector chart information on operator's demand. Direct comparison of the radar with the chart information on one display increases the safety of navigation and facilitates the collision avoidance.

CHART MODE

The CHART MODE provides full radar control in combination with a vector chart presentation to the radar image. Chart information may be displayed either in S-57 Edition 3.1 (official vector charts), CM93 (C-MAP) vector format.

Depending on the navigational situation, the operator may select different visibility groups by adding or removing specific chart contents.

ECDIS MODE

The ECDIS MODE offers a wide range of additional ECDIS related tools, including AIS and real time radar video overlay in north, course or head-up presentation. Simultaneously a 2nd chart window allows displaying two independent charts. Size, orientation and data source may be individually configured.

CONNING MODE

In the CONNING MODE data from all relevant navigation sensors, engine and rudder data provide the navigator with the information essential for rapid decisions, safe navigation and economic ship operation, e.g.

- Heading, ROT
- Course, drift angle
- Off course, off track
- Power*, pitch*, shaft*
- Rudder*, thruster*
- Trim*, heel*
- Depth, wind

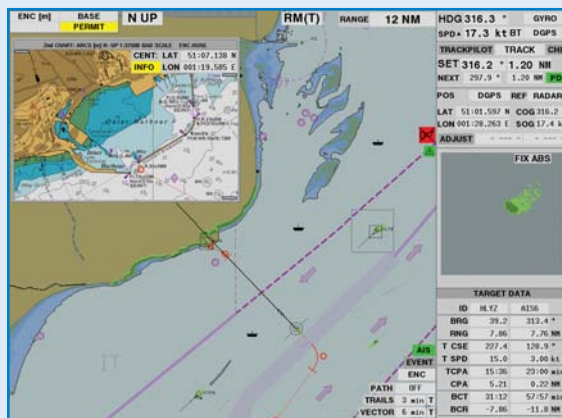
* only if part of a NACOS system



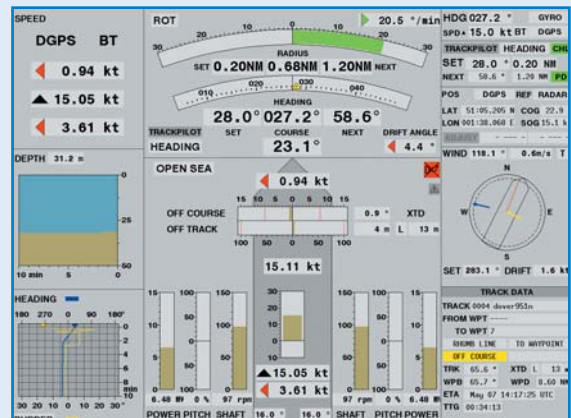
CHART MODE (night, areas unfilled)



CHART MODE (night, areas filled)

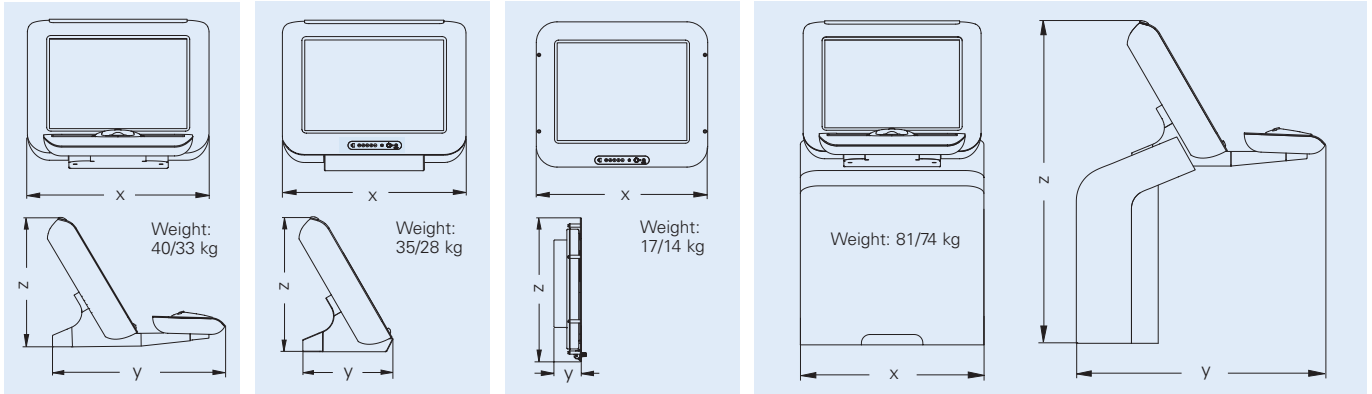


ECDIS MODE (day, 2nd chart)



CONNING MODE (day, open sea)

Technical and Installation Data



C5 Desktop unit with integrated control panel

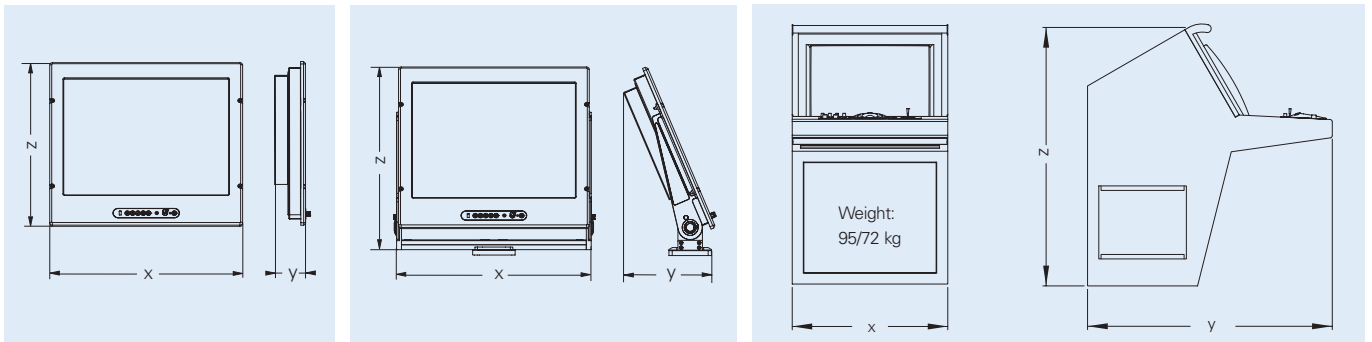
C5 Desktop monitor without control panel

C5 Console monitor

C5 Console unit with integrated display electronics

MULTIPILOT 1100 basic versions

Characteristics		Dimensions [mm]											
		C5 Console unit			C5 Desktop unit			C5 Desktop monitor			C5 Console monitor		
Category	Size	x	y	z	x	y	z	x	y	z	x	y	z
CAT 2	19" TFT	650	887	85	516	690	432	516	344	436	515	88	441
CAT 1	23" TFT	650	887	68	630	690	516	630	344	519	630	102	534



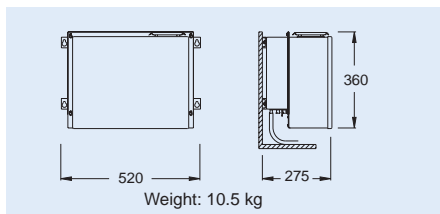
C4 Console monitor

C4 Desktop monitor

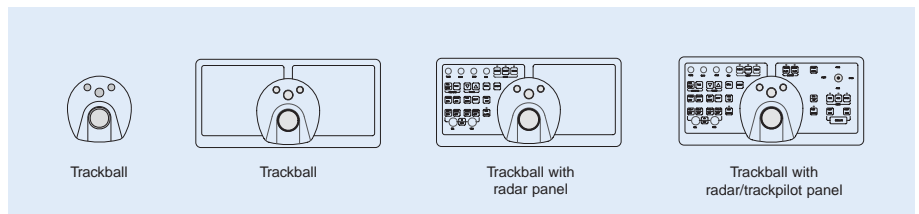
C4 Console unit with integrated control panel and display electronics

MULTIPILOT 1100 basic versions

Characteristics		Dimensions [mm]								
		C4 Console unit			C4 Console monitor			C4 Desktop monitor		
Category	Size	x	y	z	x	y	z	x	y	z
CAT 2	19" TFT	550	1090	1150	483	82	404	489	130	493
CAT 1	23" TFT	700	1090	1150	584	97	495	615	130	576

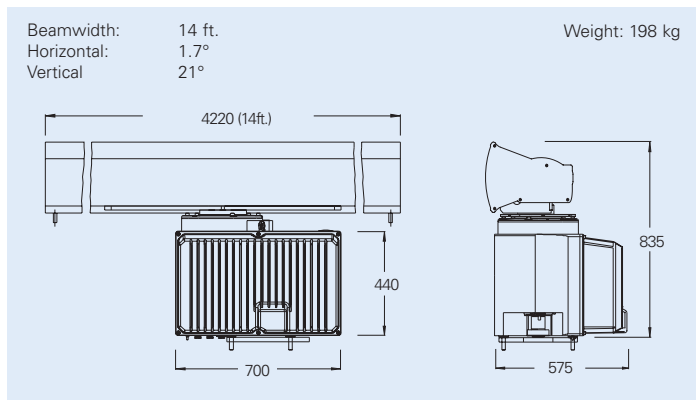


Display electronics

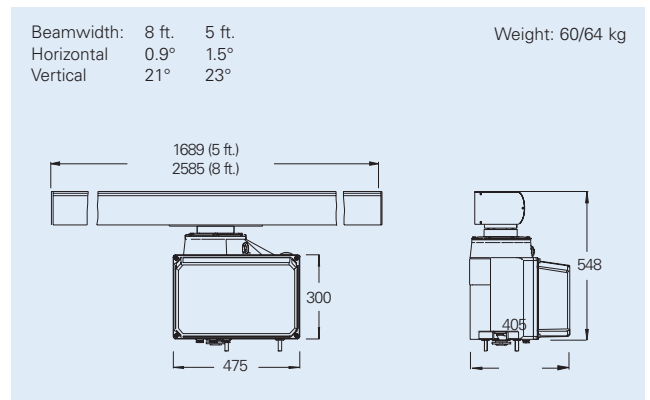


Control panels

Technical and Installation Data

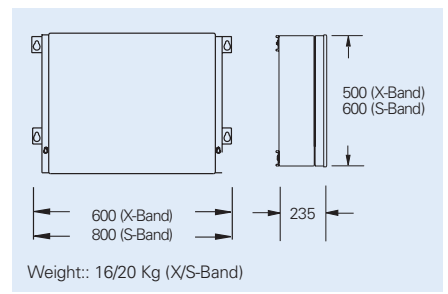


S-Band antenna unit, type GR3041, with integrated performance monitor and 30 kW* S-Band transceiver, optional 30kW* bulkhead transceiver, type NG3041



X-Band antenna unit, type GR3040, with integrated performance monitor and 12.5 or 25 kW* X-Band transceiver, optional 25 kW* bulkhead transceiver, type NG3040

	1x	1x	3x	3x	3x	Power Cons. [VA]	HSC Mode
AC Voltage**	115 V	230 V	230 V	400 V	450 V		
Frequency	60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	60 Hz		
X-Band antenna unit, type GR 3040		•	•	•	•	250/460***	•
S-Band antenna unit, type GR 3041		•	•	•	•	1300/1700***	•
X/S-Band transceiver, type NG3040/41	•	•				150	



Bulkhead transceiver, type NG3040 (X-Band) and NG3041 (S-Band)

* Magnetron peak power (nominal)
 ** tolerances according to IEC 60945
 *** the higher consumption only applies to high speed antenna units

Operational conditions and protection (according to IEC 60945, extract): below deck units: max. -15°C to +55°C (for reasons of lifetime, a constant ambient temperature of approx. 20°C, ±5°C should be maintained) above deck units: max. -25°C to +55°C (+70°C for storage)