AlphaMINDS Docking

Software suite

JRC Europe

- Path prediction based on speed, accelaration and turning speed
- Based on in-house developed automation and connecting platform Lynx
- Easily allows the user to quickly switch between predefined modes
- Comes with full Conning application to have important information at you fingertips.

Category

All vessel types

Yachting

Deepsea

Workboats

Fishing

jrc-world.com

Features

Our new Docking software is the second member of applications of our powerful all-in-one software suite AlphaMINDS (Multifunctional Information Navigation Display System). This Docking application can be used within the complete suite or as a standalone application. The Docking screen contains all information needed for safe navigation during the docking procedure of a vessel.

- Heading
- Rate-of-Turn
- Propulsion information
- Path prediction
- Vessel speed (transversal)
- Vessel position

Docking technology

The AlphaMINDS Docking application is capable to plot a scale model of the vessel itself at the exact position in a ENC chart with a calculated prediction of the path of the vessel including the distance from vessels' hull to the quay as reference into the current map. The officer on watch is now able to have a good overview of the vessel when it enters the harbour and starts docking procedures. When a vessel is equipped with this product, the captain or officer on watch has almost similar information as a local pilot and available in every situation.

Based on Lynx

The software of AlphaMINDS and thus the Docking, is based on our in-house developed automation and connecting platform Lynx, specific designed as maritime SCADA software for monitoring and controlling all kinds of equipment onboard a vessel. Integrated in Lynx is the OpenBridge design guideline that will give a better user experience with regards to design, styling and easy recognition of indicators, messages, alarms of the graphical user interface (GUI). Consistency across systems is an essential aspect for reducing human errors and this will contribute to an improvement of the quality of ship bridges, the work environment for seafarers and overall ship safety.

Path prediction

AlphaMINDS Docking is provided with a predictor of the vessels path. The predictor shows the predicted position ahead based on the current speed, acceleration and turning speed of the vessel and can plot ghost ships and curved lines into the chart. As soon as any of this data changes e.g., more thrust is applied during maneuvering, the prediction is immediately recalculated and modified on the chart in real time. The user will be able set this predictor in 10, 20, 30 and 60 seconds ahead.

Modes

AlphaMINDS Docking easily allows the user to quickly switch between predefined modes whereby the experience is further enhanced.

Auto mode

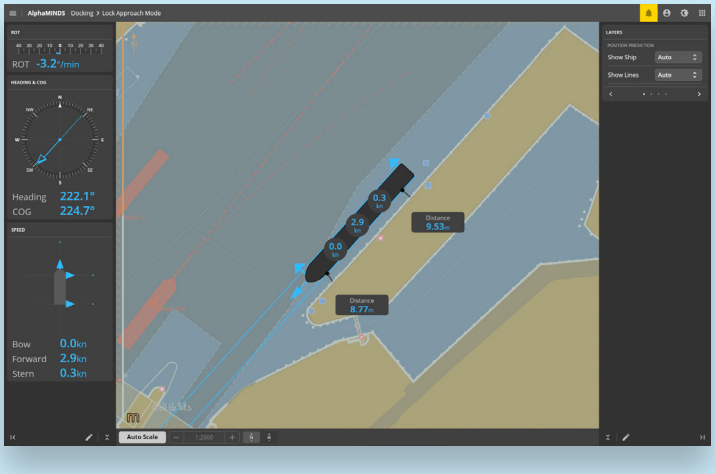
In auto mode the application automatically switches between different predefined modes depending on the vessel's parameters which are monitored and analyzed at any time within AlphaMINDS Docking.

Voyage mode

Provides information during normal navigation or sailing such as a zoomed-out chart for overview situations.

Lock approach

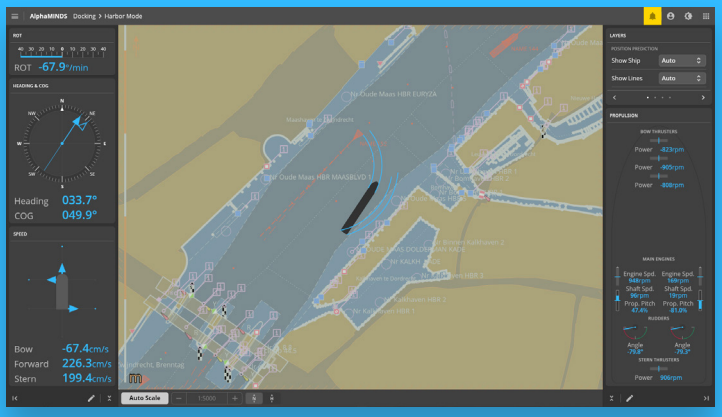
A prediction tool that will help a captain approach a lock. This option shows two lines extended straight ahead from the ship. This can be used, for example, when approaching a lock to see if the ship is directly in front of it. Of course, it also works well when approaching the quay to see if the ship is straight or next to the quay when mooring.



- Detailed and zoomed-in chart info.
- Bow, stern and forward and longitudinal speed displayed in cm/sec.
- Automatic distance lines to measure from vessel to shore or objects in the chart.
- Shows two lines extended straight ahead of the ship that can be used, for example, when approaching a lock or a narrow channel to see if the ship is directly in front of it and well aligned.

Harbor mode

This mode automatically zooms in on the map and displays various tools that offer the user many details.



- Detailed and zoomed-in chart info.
- Bow, stern and forward and longitudinal speed displayed in cm/sec.
- Vessel lines, lines indicating the predicted path from four predefined points on the vessel.

Docking mode

The Docking application is divided into screens with tabs available in day, dusk or night theme that give the user a complete overview of the most important information at the time it is most relevant. This information from ship-systems is presented in the different screen modes.

Involves zooming in on the map and displaying various tools that offer the user many details to maneuver.

- Detailed and zoomed-in map info
- Bow, stern and forward and longitudinal speed displayed in cm/sec
- Automatic distance lines to measure from vessel to shore or objects in the chart
- Prediction of vessels path with ghost ships

Featuring

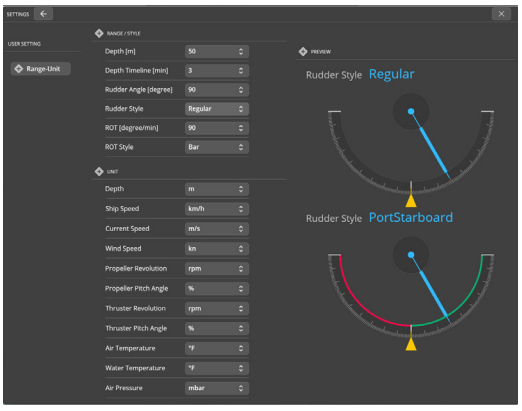
- Heading
- Rate of turn
- Speed
- Thrusters
- ENC chart

- True heading (HDG)
- Course over ground (COG)
- Clearly displayed Rate of turn (ROT) indicator
- Bow, stern and forward and longitudinal speed displayed in cm/sec
- Bow, stern thrusters- Direction & Load or RPM
- Engine/ Propeller - RPM (and pitch)
- Rudder - Angle
- Azimuth thrusters - Direction & Load or RPM
- North up en head up
- Scale

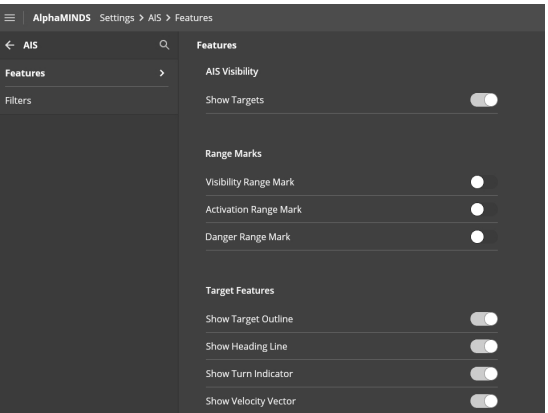
Customization

During the early design of our Lynx platform, a well-thought-out software architecture was developed. As a result, applications based on Lynx (such as Docking) can be built in a very flexible way.

Even with the standard out-of-the-box Conning software, the user will have possibilities to set and customize some preferences like units, but also the range scales of presented data.



Tailor-made GUI with widgets (add-ons) can be designed to your needs, delivered, and implemented in a reasonable amount of time with the possibility to expand later if necessary.



Units

- Ship speed - cm/s, kn, km/h
- Propeller revolution - rpm, min-1
- Propeller pitch angle - %, °
- Thruster revolution - rpm, min-1
- Thruster pitch angle - %, °

Range - Scale

- Rudder - angle
- Rate-of-Turn - scale
- Engine - scale
- Thruster - scale

GNSS receiver

When it comes to berthing a vessel, measurement of low speed, precise heading and Rate of Turn these results are of utmost importance to the officer on watch or pilot and for this reason a standard GNSS receiver might not suffice.

The new CT-104 GNSS-receiver is a modular system in terms of the number of units, thus antennas and integrates multi-band GNSS and real time kinematics (RTK) technology. Depending on the number of these units connected to the Ethernet network, the GNSS receivers will provide data on precise positioning, accurate heading and it will also bring redundancy to the vessel.

The GNSS receiver calculates the position by combining and using the signals from GPS, Glonass, BeiDou and Galileo.

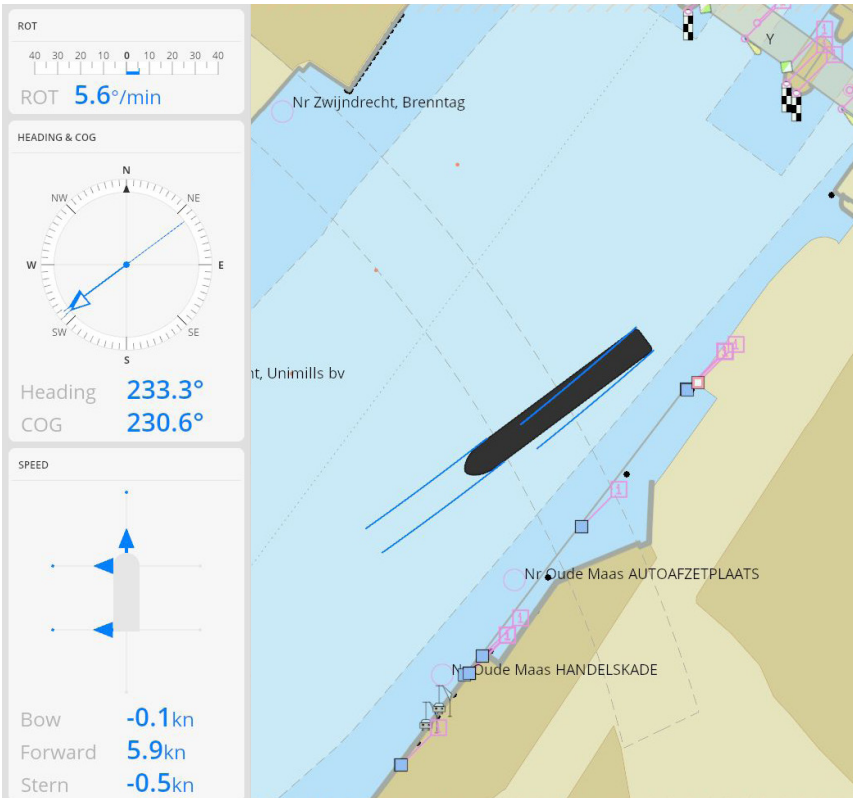
1 receiver

- Accurate positioning
- 8 Hz. NMEA and Light Weight Ethernet

2 receivers

- Accurate positioning
- Accurate heading
- 8 Hz. NMEA and Light Weight Ethernet

You can connect the High-Precision RTK GNSS Antenna to the CT-104 GNSS-receiver. This seven-frequency survey antenna integrates GPS (L1 & L2) and GLONASS (G1 & G2), Galileo (E1/E5b) and BeiDou (B1 & B2 & B3) can be widely used in geodetic surveys and thus are ideal for the docking application.

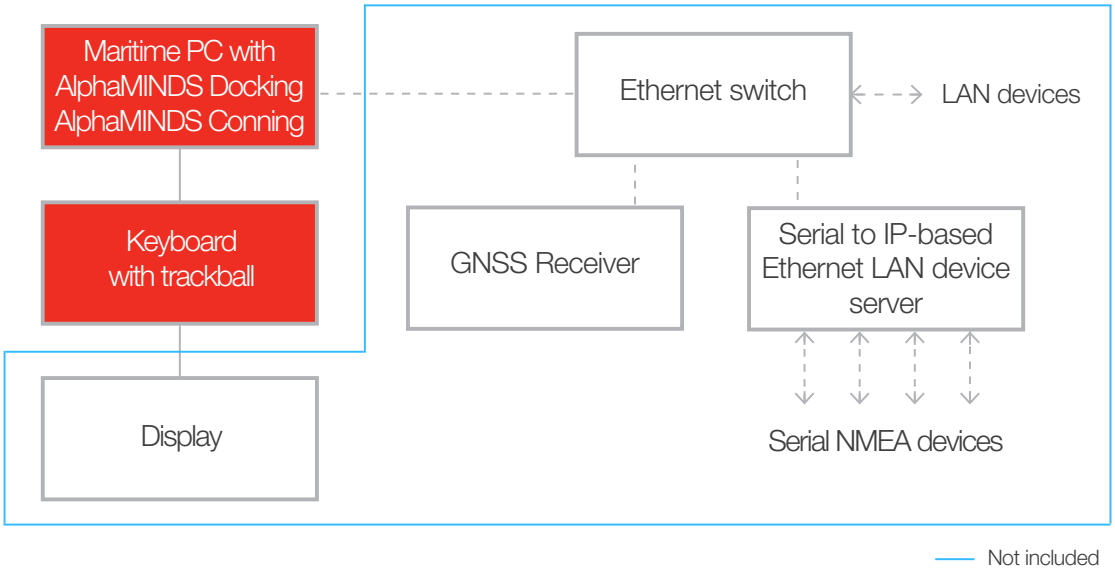


System overview

We offer AlphaMINDS Docking as a combined hardware and software bundle, a complete solution that provides what you need. This bundle consists of an IEC90645 certified marine computer with pre-installed AlphaMINDS Docking and Conning software and a licence with a secure dongle for running the applications.

Our new GNNS receiver (sold separately) will generate data on accurate positioning and heading. Furthermore, all other necessary data will have to be delivered to the computer via a LAN interface (consult our sales or support team for advice on the necessary peripherals if this is not available). Once the computer and the GNNS receiver is connected to the ship's network, the docking software will present the ship's data.

Diagram for AlphaMINDS Docking hardware bundle



If you wish to add the Docking software to an existing AlphaMINDS installation, we can also supply separate Docking software. However, you should always have a version of AlphaMINDS Conning installed or yet to be installed on the same computer with which you get the Lynx license and secure dongle.

In the box

- AlphaMINDS Docking bundle G-009374

Consist of:

- AlphaMINDS Docking Software G-021332
- AlphaMINDS Conning Software with Lynx Software license and secured dongle G-007680
- Computer 4U IntelQ370 Intel i5-10500TE 8 GBRAM, 240GBSSD, WIN10 G-021717
- Keyboard with backlit & 25mm trackerball G-008141

Optional

- AlphaMINDS - Docking software* G-021332
  High accuracy GNSS receiver
- GNSS High-Precision G-009636
- Multi-band RTK antenna G-021655

* AlphaMINDS Conning Software with Lynx Software license and secured dongle (G-007680) must be installed to use AlphaMINDS Docking software

Specifications

AlphaMINDS Docking bundle

This bundle consists of an IEC90645 certified marine computer with pre-installed AlphaMINDS Docking and Conning software and a secured dongle for running the application.

AlphaMINDS Docking bundle	
Software	AlphaMINDS Docking
	AlphaMINDS Conning
	Lynx Software license - Secured USB dongle
Hardware	
Computer	Marine grade and fanless computer with multi power: 100-240VAC 50/60Hz + 24VDC
Operating System	Pre-installed Windows 10 - 64Bit IoT version with latest updates or better
Processor (CPU)	Intel® Core™ i7-9700E, 8-Core or with a similar or better performance
Memory	8 GB
Storage	240 GB SSD
Graphics card	Compatible with DirectX 12 or later with WDDM 2.0 driver, OpenGL 3.5 or better
Certification	IEC 60945 4th (EN 60945:2002), IACS E10 EN61162, EU RO MR - Mutual Recognition, DNV GL - Det Norske Veritas, ABS - American Bureau of Shipping, CCS - China Classification Society, BV - Bureau Veritas,ClassNK - Nippon Kaiji Kyokai

AlphaMINDS Docking software

Docking software to be used as part of an existing AlphaMINDS installation.

Recommended Requirements Computer[1]	
Operating System	Windows 10 - 64Bit versions with latest updates or better
Processor (CPU)	64-bit architecture, 8-Core or more
System Memory	8 GB or higher
Storage	16 GB free disc space
Graphics card	Compatible with OpenGL 3.5 or better
Certification	IEC 60945

Minimum Requirements Display	
Display aspect ratio	1920 × 1080 pixels 1920 × 1200 pixels (for standard conning, other aspect ratio's possible on request)

[1] Specifications are based on the minimum requirements of the application

Specifications

GNSS receiver

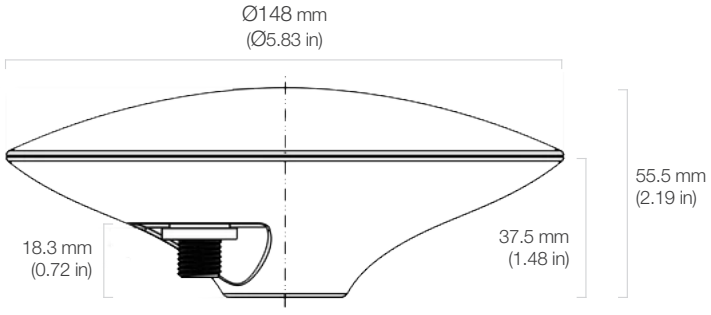
High accuracy GNSS receiver to be used as part of AlphaMINDS Docking system or as a stand-alone unit.

GNSS receiver	
System configuration	Easy web-based configuration
Receiver type	184-channel: GPS L1C/A L2C, GLO L1OF L2OF, GAL E1B/C E5b, BDS B1I B2I, QZSS L1C/A L1S L2C, SBAS L1C/A
Nav. update rate	RTK 8Hz (up to 20 Hz[1])
Position accuracy[2]	RTK 0,05 m + 1 ppm CEP
Convergence time[2]	RTK < 10 sec
Anti-jamming	Active CW detection and removal onboard band pass filter
Anti-spoofing	Advanced anti-spoofing algorithms
Supported antennas	Active
Nominal Impedance	50Ω
Serial data	IEC 61162 (NMEA)
LAN	IEC 61162-450 (LWE)
Dimensions (WxHxD)	45x118x137 mm
Weight	160g
Connectors	TNC female – active antenna connection RJ-45 – LAN connection (10/100 Mbit) USB port (Mini; only for firmware updates) Phoenix Contact MSTB series– Serial connection
Mounting	DIN rail
Operating Temperature	-5° C to +55° C
Storage Temperature	-25° C to +70° C
Humidity	Up to 95% (at 40° C)
IP-rating	IP22

1 The highest navigation rate can limit the number of supported constellations
2 Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry

GNSS antenna

High accuracy GNSS receiver to be used as part of AlphaMINDS Docking system or as a stand-alone unit.



GNSS antenna	
Signal received	GPS L1/L2, GLONASS L1/L2, Galileo E1/E5b, BeiDou B1/B2/B3, QZSS L1, SBAS L1
Nominal Impedance	50Ω
Dimensions	Ø148*55mm
Weight	360g
Connector	TNC female
Mounting	BSW5/8"-11 screw, 12-14mm
Operating Temperature	-40 ~+70
Storage Temperature	-55 ~+70
Humidity	95% non-condensing
IP-rating	IP67

www.jrc-world.com

Centers of Excellence

JRC (Japan Radio Co.,Ltd)
1-7-32 Tatsumi, Koto-ku
Tokyo 135-0053
Japan
+81 3 5534 7800

JRC Shanghai Co.,Ltd.
Floor 9-A Building C2
Shanghai International Trade Center
1599 New Jinqiao Road
Pudong, Shanghai, China 201206
+86 21 2024 0607

JRC/ProNav AS
Hovlandsveien 52
4374 Egersund
Norway
+47 5146 4300

JRC/Alphatron Marine B.V.
Schaardijk 23
3063 NH Rotterdam
The Netherlands
+31 10 453 4000

JRC South East Asia
59 S, Tuas South Avenue
Ho Lee Industrial Development
637418 Singapore
Singapore
+65 6863 0335

JRC Americas
1205 Butler Road
TX 77573 Houston
United States of America
+1 281 271 4600