FURUNO

Driving the Digitalization of Navigation

ENVISION

FURUNO ENVISION
A revolutionary solution
Designed for the future of navigation

AR Navigation System

The AR navigation system has been certified as an "Innovation Endorsement for Products & Solutions" by ClassNK (Nippon Kaiji Kyokai) for its innovative technology.

More details on
www.furuno.com

ENVISION

—Beyond Reality—

The FURUNO ENVISION series is our all-new advanced “AR Navigation System” (Augmented Reality Navigation System) that provides an advanced navigation support tool, using the power of AR to go beyond reality.

Thanks to a camera pointed forward of the vessel, an image of the front view projects on a display and all the necessary navigation information is superimposed over this live video imagery by our AR technology. Even in adverse weather or visibility conditions, you can clearly view other vessels' routes and critical information, as well as own ship data, allowing you stress-free maneuvering and navigation. This very intuitive way to display and share the information between the captain and the bridge team provides enhanced situational awareness, crew confidence, watchman support, and allows for better coordination of crew members.

The FURUNO ENVISION series aims to contribute to the safety and security of the voyage by offering visual support to maneuvering and navigation during any operation, a further technological step towards autonomous navigation.

※AR navigation is an auxiliary tool designed to improve the navigation comfort for safer navigation.
In no case should AR navigation replace Radar, ECDIS etc. and other required instruments for danger avoidance.

For additional information AR Navigation features, scan to visit our YouTube channel.

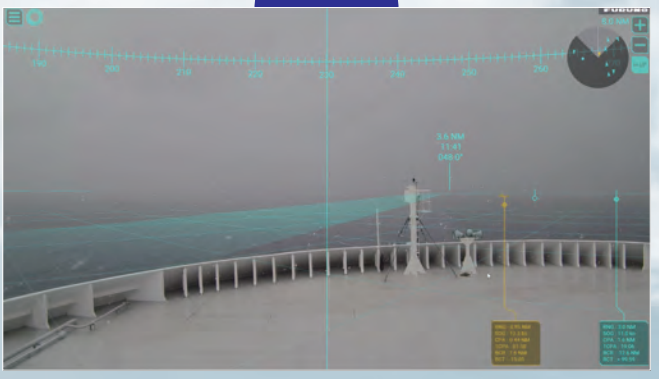
Go Beyond What The Eye Can See

AR information overlaying the screen is particularly useful in poor visibility conditions.

AR Navigation ON/OFF Comparison in bad weather conditions

OFF

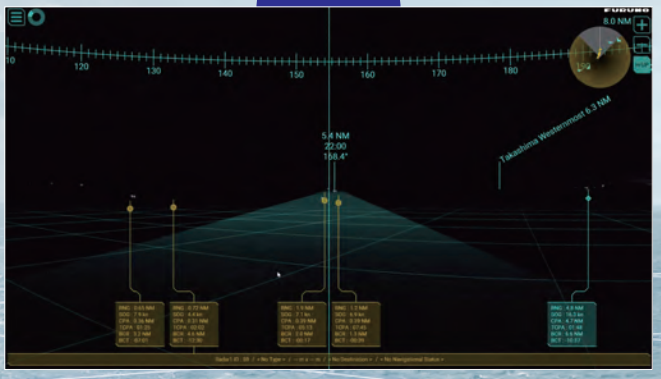
ON



AR Navigation ON/OFF Comparison during nighttime navigation

OFF

ON



* By using a surveillance video camera and overlaying AR information on the display, our AR Navigation system allows for quick and intuitive situational awareness.

Go Beyond What The Eye Can See

AR OVERLAY

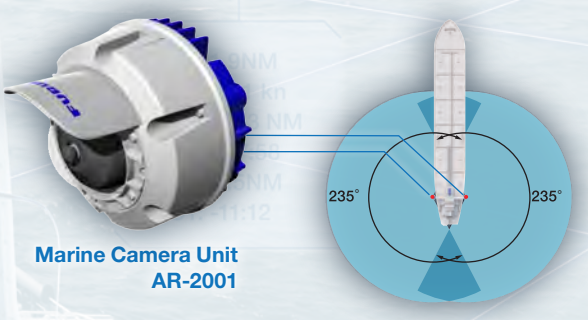
- Azimuth
- AIS
- Heading
- Radar Target Tracking (TT)
- Route
- Waypoint
- User chart & ENC symbols*
- UKHO® ADP current and tide display* (option)

* Connection with ECDIS is required.

360° view camera AR-2001 with durable weather resistance (option)

AR-2001 is the Marine Camera Unit (for outdoor use), which meets with the marine grade environment standard and can display wide view images of your ship. The camera features a "wide viewing angle" and "durable weather resistance", and by installing one in both starboard and port sides of your ship, you can instantly grasp the surrounding information necessary for the ship maneuverings.

When AR-2001 are installed on both sides.

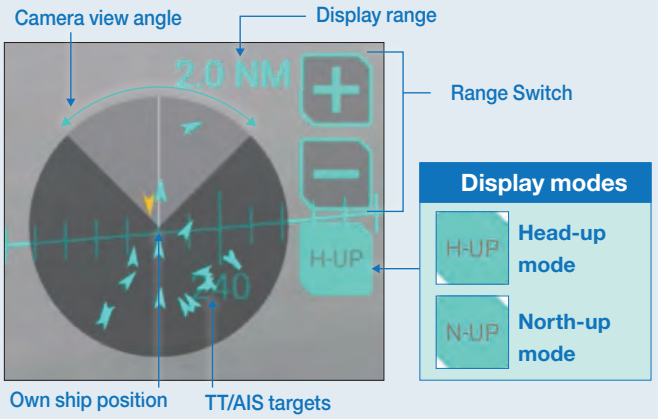


Marine Camera Unit AR-2001

The Viewing angle can be extended up to 160 degrees

TVI（Top View Indicator）

Displays other ships by either Target Tracking (TT) or AIS in 360 degrees with own ship as center.

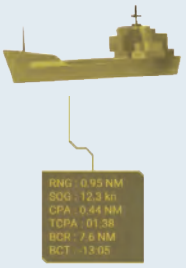


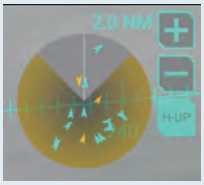
	HDG / COG off	HDG / COG on
AIS	●	(HDG > COG)
TT	●	(COG)

Intuitive color-coded display for targets*

Based on CPA/TCPA value, TT and AIS targets will be displayed in different colors according to their threat level. (TVI, selection marker, target information frame, target)

* Colors adjustable (Yellow, Orange and Red are available)





When a hazardous target is out of the camera view angle, the TVI will blink to alert the user.

Selection marker and Target information box

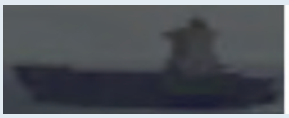
Other ship information are collected by either TT or AIS are indicated with specific marks. When a mark is clicked, a box containing the information will open.

AIS marker

TT marker

Target shape

By superimposing the graphical virtual shape over AIS targets (virtual buoy, buoy, boat, tanker), it becomes easy to visually grasp the location of dangerous targets and their directions.



Target Shape OFF

Target Shape ON

Safety Contour display

With ENC chart safety contours, objects can be displayed with Yellow/Orange/Red color contours.

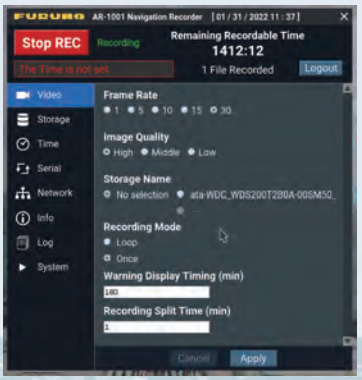
Satety Contour display

Navigation Recorder (option)

・Data recording

By recording data to an external USB device*, events during an accident at sea can be analyzed and used as training materials for the crew.

*Customer arrangement

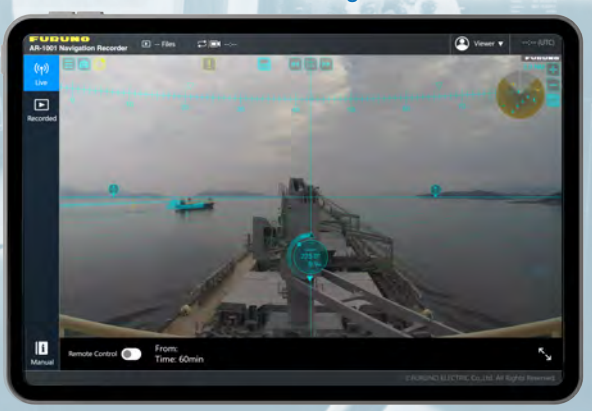


Navigation recorder menu display

・Web application

You can display live images and play back recorded video by connecting a recommended tablet*1 via wireless LAN*2, and remotely control the camera using a dedicated viewer.
The tablet device has wireless access to the navigation recorder connected to the navigation equipment.
Then, images from ECDIS, radar, AR navigation, etc. are displayed in real time on the tablet via a web application.
You can easily check the ship's surroundings and operation information from anywhere on board, contributing to the efficiency of onboard work.

*1 iPad: 9th generation (iPad OS 17.3) or later, recommended for Safari. Customer arrangement.
*2 Access point is Customer arrangement



Tablet solution display

Product name	AR Navigation System
Model name	AR-100M

Processor		
CPU	Intel®Celeron®N3350 2.4GHz	
Memory	4GB	
Display mode	Target Tracking (TT)、AIS, Azimuth, User chart, ENC chart symbol	
Interface	Ethernet	2 ports
	RS-232	1 port
	USB	USB2.0：4 ports、USB3.0：2 ports
	HDMI	1 port
Power Supply	100-240 VAC: 0.9-0.4 A, 1 phase, 50-60 Hz	
Data sentences (IEC61162-1/2)	Input	GGA、GNS、HDT、OSD、RMB、THS、TLB、TTD、TTM、VDM、VDO、VTG、ZDA

IP camera (Visible light camera for indoor use)	
Resolution	1920 x 1080
Frame rate	25 fps
Video Compressio	H.264 codec
Source	PoE Adapter

PoE Power Sourcing Equipment (For Marine Camera Unit/Customer arrangement)	
Type	IEEE802.3 at standard Class4 (300 W) or higher Alternative
Port config	Please arrange one that can supply power according to the number of the cameras.

Monitor (option)	
Resolution	1920 x 1080

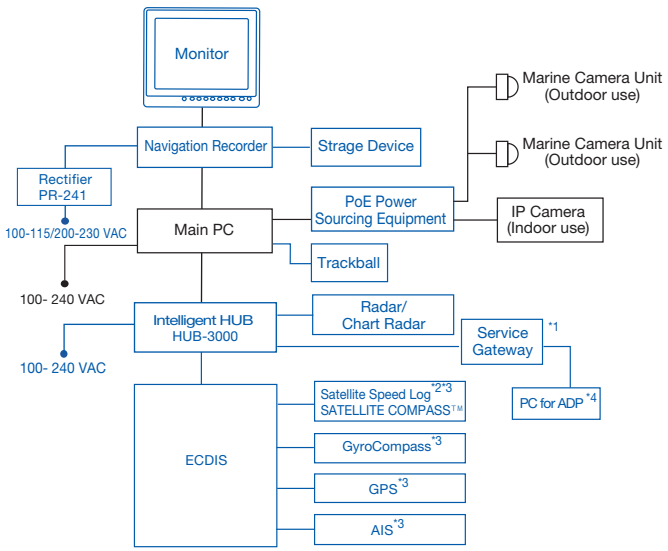
Navigation Recorder (option)		
Recording data format	mp4*/jpeg	*Audio data not available
Recording duration	Depending on the available size of the storage device, 2 TB can store up to 720 hours of data.	

Marine Camera Unit (option)	
Resolution	2000 x 1944
Frame rate	15 fps
Video compression	H.264
Power Supply	Powerd by PoE Power Sourcing Equipment

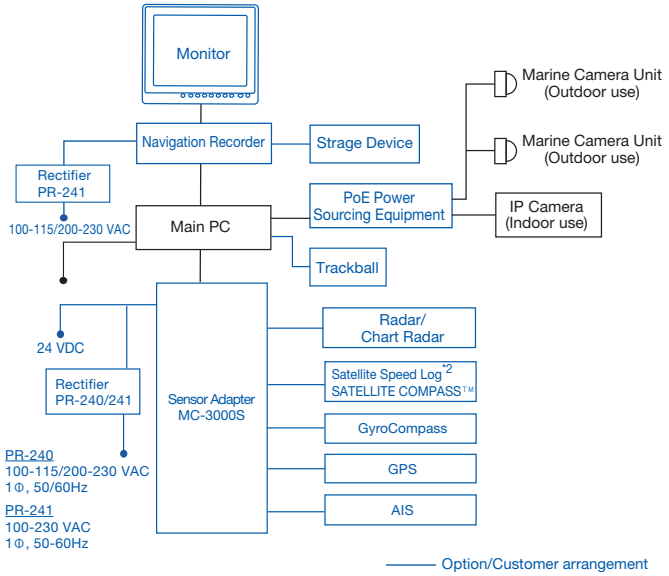
Standard Equipment list

1.Processor 2. IP camera（Visible light camera） 3. PoE Adapter 4. Trackball mouse 5. ENC dongle* 6. Installation materials（HDMI cable 5 m, LAN cable 10 m x2 /2 m, USB cable 5 m x2, Processor mount kit, IP camera bracket, Screws for bracket・Washer, Aseismic mat for installing POE Adapter） * ENC dongle provided separately from the box, only if ECDIS is included in the system configuration.

(1) ECDIS is included



(2) ECDIS is not included



*1 Needed for displaying UKHO® ADP chart
*2 The level of pitch, roll and yaw compensation may vary depending on the performance and data conversion rate of the connected equipment.
*3 When 3 or more instruments are connected to the FMD-3100, the sensor adapter MC-3000S is required.
*4 Windows 10®, Microsoft NET Framework® v4.0, LAN pot, FURUNO CAST ADP software, UKHO® ADP software installation and a valid license are needed.

Compatible equipment

ECDIS	FMD-3100*1,FMD-3200/3300*1,FMD-3005*1,FAR-3x00*3
Radar	FAR-14x7 Series*2,FAR-15x8 Series,FAR-2xx7 Series,FAR-2xx8 Series,FAR-20x8 MARK-2 Series
Chart Radar	FAR-3000 Series, FAR-3005 Series
Satellite Compass™	SC-30,SC-33,SC-50,SC-70,SC-110,SC-130,SCX-21
Satellite Speed Log	GS-100
AIS	FA-30,FA-40,FA-50,FA-60,FA-70,FA-150,FA-170
GPS	GP-39,GP-150,GP-170,GP-3500/3500F,GP-3700/3700F

*1 Route Sharing, ENC Chart Sharing and User Chart Sharing are available.
*2 The connection diagram (1) is not available for this series.
*3 Supported only when backup ECDIS is ON.

Beware of similar products

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

FURUNO ELECTRIC CO., LTD.
www.furuno.com

Find your local contact point

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