HM-5818 specification

Standard	HM-5818
IEC 60945, IEC61174 (ECDIS) , IEC 60529 (IP20) , IEC 61162-1, IEC 61174, IEC 61162-2, IEC 62288,2014, IMO A.694 (17) , IMO MSC.232(82), IHO S-52, IHO S-57, IHO S-63, IHO S-64, CCS GD 22 Guide for the acceptance test of electrical and electronic products. CCS GDXXX Guide for inspection of electronic chart display and information system (ECDIS). International Maritime Organization navigation safety sub committee NO.266 circular. <electronic chart display and information system software maintenance>	
Operation System	Linux
Software Language	English, Chinese
Electronic Nautical Chart	IHO S-57 Ed 3.1 Vector Chart (Support IHO S-63 Data Protection Scheme). It support the official S-57 / S-63 electronic chart which is distributed by the UK hydrographic office (UKHO) , the China's maritime bureau and so on. And it also support the Yangtze river hydrographic electronic navigation chart database.
Chart Installation	Install Base/Update S-57/S-63 ENC packages from USB.
Manual Update	Add/Modify/Delete objects on the SENCs. Manual updates can be distinguished from automatic updates on the screen on demand.
Object Information	Select objects on the charts with cursor, and query informations associated(Texts, pictures, and symbol explanations).
ECIDS Chart 1	The system provides a demonstration chart for new users to learn and familiarize themselves with the S-57 electronic chart and corresponding symbols.
Planed Route	Rhumb line/Greate circle line, generates wheel-over-line according to configuration.
Route Detection	Detects the following objects which specific planned route crosses, Navigational hazards. Areas for which special conditions exist. Safety contours. Any object of above deteted will be highlighted to mariners.
Route Monitoring	Route monitoring detects the following conditions for own ship, Cross track error. Navigational hazards. Areas for which special conditions exist. Safety contours. Indication or warning will be given to mariners if any condition of above happens.
Color Palette	Day/Dusk/Night
Display Mode	3 display categories are predefined-Base/Standard/Other. Each category can be customized by mariners to show or suppress some informations of chart.
Text Display Setting	Provides switch options like import text, light description, Seabed nature, place name etc. Allows mariner to show or suppress some texts of chart.
User's Note	Information (i) or warning(!) label could be marked at specific position.
User's Object	Mariners' concerned point/line/area could be drawn on the chart.
MOB	When emergency(like MOB) happening, MOB button on the screen can be clicked to record the position of own ship.
Own Ship Positioning	Support primary/secondary position source. Last valid position or LOP can be used as start position for dead rocking.
Voyage Record	Voyage records for last 3 months (position, time, course, speed). Records for last 12 hours are detailed, includes informations of referenced ENCS.
Alarm	Alarm or warning for route monitoring, sensor failure, ENC, CPA etc. will be given according to configured priority. Mariners can view and confirm alarms which they received.
Measure Tool	EBL/EBRL/VRM
AIS Target	● AIS target query and monitoring.
	● Condition setting(CLASS A/B, range, CPA) for activated or sleeping AIS targets to filter unconcerned ones.
	● Past track for AIS target.
	● CPA/TCPA alarm.
Sensor	Support NMEA0813 input device like GPS, AIS, echo sounder, gyro, log and so on.

Display Unit

Display Unit	
Model	**HM-5818(19")**
Display Resolution	1280 x 1024 (SXGA)
Aspect Ratio	4:3
Screen Brightness	450cd/m^2
Screen Size	19 inch (376mm×301mm)
Viewing Angle	Horizontal, 150° Vertical, 140°
Contrast Ratio	800:1
Model	**HM-5818(24")**
Display Resolution	1920 ×1080 (WUXGA)
Aspect Ratio	16:9
Screen Brightness	1000cd/m^2
Screen Size	24 inch (531mm×299mm)
Viewing Angle	Horizontal, 170° Vertical, 160°
Contrast Ratio	1000:1

Processor	
CPU	Intel Haswell/Brodwell U series 15W
Memory	DDR3-1066 MT/S 4GB
SSD	SSD TLC 32GB
Audio	Audio ALC 662 HD Around a track+the microphone
I/O	6 PIN
Ethernet	1000Mbps
Power	AC 220V & AC 110V
Power Consumption	17W or less (220 VDC)
Compass Input Port	Support
Log Device Input Port	Support
GNSS Port	Support 2 ports,
ARPA Input Port from Radar	Support
AIS Input Port	Support
Video Output Port	VGA , HDMI
USB	4 ports, USB 2.0 type A
LAN Port	LAN1, LAN2
Wi-Fi	802.11b/g/n
4G Module	LTE/GSM, Internal antenna, and support to connect external antenna

Operation Unit	
Operation Unit	Size, 343mm x 105mm, IP65 Static waterproof dustproof explosion-proof, Stainless steel metal industrial keyboard, built-in industrial-grade IMG PCB, embedded instalation.

Environmental	
Operation Temperature	-15℃~+55℃
Storage Temperature	-20℃~+70℃
Language Switch	English, Chinese
Manual	English, Chinese
User Opteration	Menu operation/double click/zoom by roller
Workstation	Split device

ECDIS
Electronic Chart Display and Information System

HM-5818
19 inch LCD Display
24 inch LCD Display

Electronic **C**hart **D**isplay and **I**nformation **S**ystem

ECDIS Main Unit

◆ Pieces of industrial-grade computer

◆ Mixer Haswell Intel core CPU

◆ Memory: 4GB DDR3-1066 mt/S

◆ SSD: 32 GB

◆ Intel 1000M enthernet

◆ Signal input: optical coupling isolation

Product Descriptions

The implementation and appliance of ECDIS have a lot of advantages. According to the optimization of time, velocity and other parameters , simplify the route planning. Considering the draught of the ship, and combining it with the danger zone or special attention areas, the safety factorof route planning can be much impoved.

HM-5818(19"/24") Electronic Chart Display and Information System (ECDIS) consist of host and display, there are two size of display, 19 inch and 24 inch, users can select according to their actual need. The ECDIS includes functions of electronic chart display and management, multiple methods for route design, route detection, navigation monitoring, etc.

LCD Display

Processor

Operation Unit

System Configuration

LAN

Marine LCD Monitor   HM-5818(19")
                      HM-5818(24")

Waterproof Keyboard   Mouse

VDR or other displays

Radar

Wind direction and wind speed sensor

Log equipment

Bridge navigation alarm system

Echo sounder DF-6908

Power
AC110V / AC220V

Autopilot equipment

Class A AIS XA-198

GNSS compass SC-500

GNSS GN150(8")   GNSS chartplotter XF-520

1 User Interface
Simple, clear user interface, visually appealing and intuitive to use.

2 Convenient Signal Connection
Using NMEA0183 connection, simply connet with different navigation devices.

3 Chart Format
IHO S-57 Ed 3.0 vector chart. (IHO S-63 ENC data protection scheme)

4 Intuitive Route Planning and Navigation Monitoring
It offers a variety of ways route planning, route monitoring detection and navigation.

User Interface

Center ship position

Course-up/Head-Up /North-Up

Relative motion/True motion

Zoom out

Zoom in

Distance measurement

Electronic bearing line/Variable Range Marker

Display mode(daytime,dusk,night)

System setting

AIS Display Setting

Chart standard display

Alarm record

Signal detection

Software version

MOB

Power off

Measuring the distance and azimuth between two or more points.

VRM/EBL-ship centred

VRM/EBL-freely movable

Lock Route
Completely displayed in the chart center at the largest scale.

Menu bar

Shortcuts

Mariner's Feature

Alarm information display

Time Display

local time	2016-11-07
time zone +8	18:03:07

Data

HDG	212.9°	GYRO
STW	N/A	LOG
COG	212.9°	
SOG	66.30kn	GPS1
DPT	N/A	ESA

Data Sources

POSN GPS1	24°17.947'N
WGS 84	118°24.796'E

Cursor-related Information

Cursor	24°13.599'N 118°15.123'E
Direction	243.8°
Distance	9.85nm

Display Scale

Display scale	1:320000

Navigation Monitoring
Display basic information of route monitoring.

RouteMonitor	▼
Route name	Route003
Plan speed	2.06kn
Plan direction	128.6°
Save distance	0.10nm
Yaw distance	-0.02nm
Yaw angle	-20.9°
Crt monitory pnt	1
DTW	18.58nm
TTG	00d 09h 02m
Plan turn radius	0.10nm
Plan turn rate	0.33°/s
Next monitory p	2

Standard legend

Legend	▼
Depth Units	
Height Units	
Sounding Datum	Lowest as
Vertical Datum	Mean hig
Horizontal Datum	Mean lower lo
Edition Date	
Update Date	
Safety Contour	
Safety Depth	
Version Num	
Update Num	
Chart scale	
Quality of data	zone
Projection	
Presentation lib	
Var	34.9

2 Message
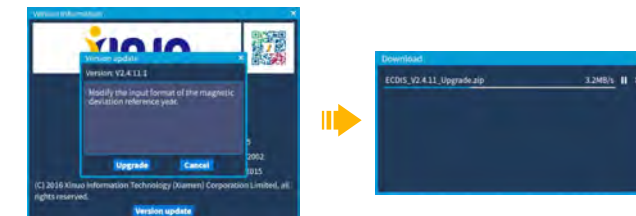[1] ECDIS1 08/04 18:32:59
Indication: Singal lost

GPS1 signal lost

Acknowledged ☐ Silent

Update Software Online

Build in 1000Mbps Ethernet, 4G and WIFI module to support update software online.

Electronic Chart Installation

As a manager of S-63 data protection solution, International Hydrographic Organization (IHO) provides self-signed SA certificate (in X509 format) for verifying if S-63 data packets of electronic charts come from data service providers of electronic charts authorized by IHO.

Xinuo ECDIS is compatible with multiple electronic charts by different data services providers. Unit licensing and product catalog are classified according to the data service providers.

S-63 ➤ 01 Installation of SA Certificate | 02 Cell permit | 03 Install Exchange Set

S-57 ➤ 01 Install Map

If the SA certificate valid, detailed information of the certificate will be show in its dialog box: " The SA certificate (public key) has been installed, the certificate will expire on March 3, 2033, or due to security reasons IHO redistribute the failure."

Route Planning

● Create New Route
User can add new route. On "route planning" menu, user can check or edit all parameters of way points on the route, include total numbers, name, coordinate, distance of off-route, etc. Also, user can check whether danger or special area is on the route after planning a route by "detection" tab on the menu.

● Monitoring Route
To monitor plan route, alarm will prompt when the ship sails on the voyage of the hazards and off course, the safety water depth etc. All of the sailing information can be check on the right side window, including course name, speed, heading, yaw Angle, distance to the next turning point steering radius, Angle, estimated sailing time and other information.

● Route Plan
For the voyage number of one navigation route,Input the departure time and arrival time, the systerm will count the speed and arrival time of every waypoint.

Trace Record

ECDIS can record the complete navigation track, save the record in every minutes for previous 12 hours. And record every 4 hours for previous 3 months most.

Highlight Checking Route

After route planning , user can evaluates the safety by checking all objects in chart accoding to the preset distance to the route.
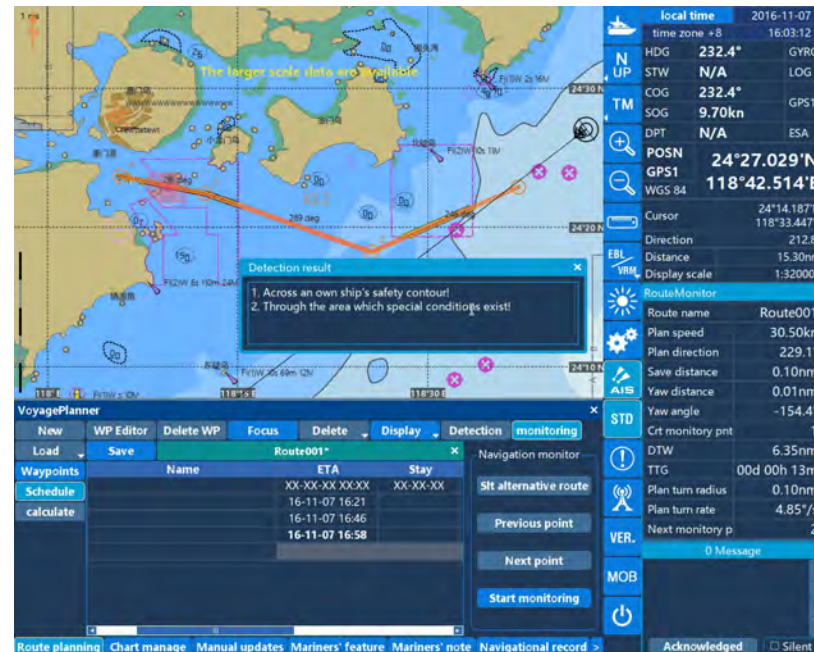
Close to the dangerouse object,such as fixed or floating ship assistant or independent dangerous object.

Close to restricted navigation are a or other specail area.

Accross to the safety isobath.

If the ship route match above cases, software will highlight the relvelent object in red or yellow according to the dangerous degree to remind the user to revised the route to make sure the navigation safety.

ECDIS Chart 1

ECDIS Chart 1 is used for users recognize and be familiar with the Chart object. The user can get details of chart object by click the object.
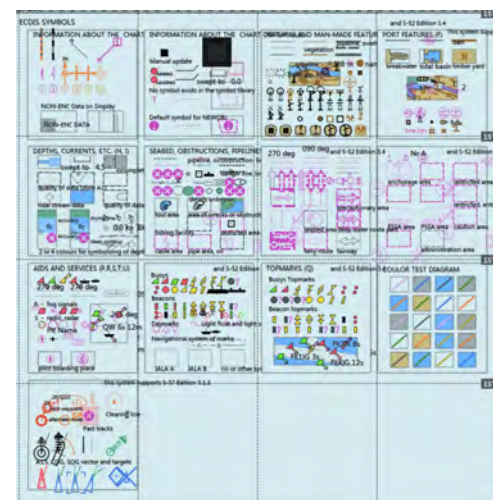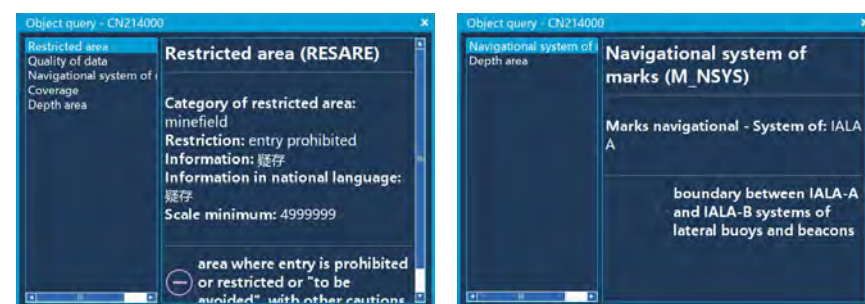
Chart Display Mode

● Basic display mode
Only basic chart information is displayed basing on the basic display of ECDIS, but User can customize the display
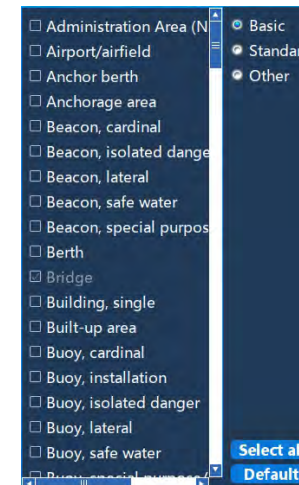
● Standard display
Based on the basic display and add the display of some important targets. User can customize the display category.
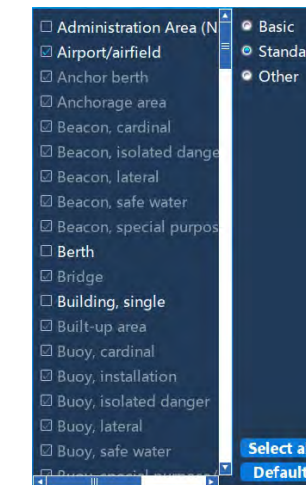
● Other display
Based on the standard display and the basic display, the unit include other display modes. User can customize the display category.
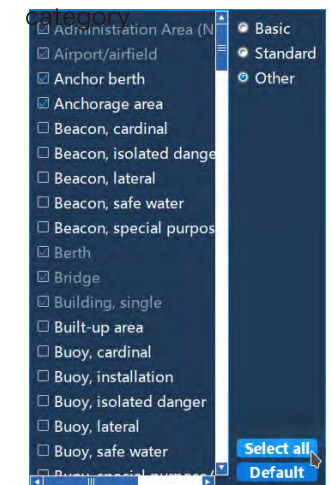
AIS target

AIS list include all AIS ships in the vicinity is summarized. User can visually see the AIS ship MMSI, ship name, distance, speed, location, approach time, approach distance and other information. And can get the location of each AIS ship and other information on the chart directly.

● AIS CPA
The approach alarm will be given in case that the distance for the other ship to approach the own-ship within the set time to approach is lower than the set distance to approach.
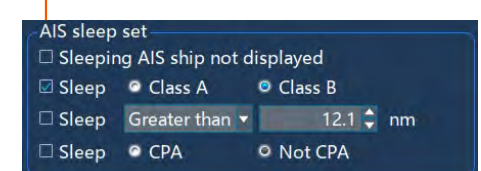
● Filter the sleeping AIS target
The target sleep condition can be set to filter out AIS targets that are not of interest.
The following three filter condition are available:
1. CLASS A / B
2. The distance between the target and the ship
3. Approach
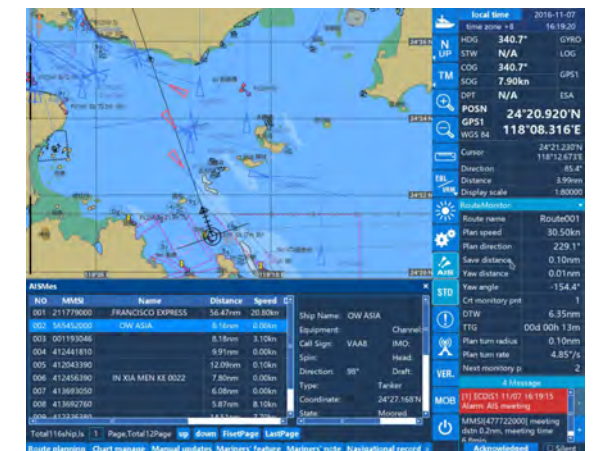
AIS sleep target

Manual Update

Nautical personnel can use non-integrated updates in the manual entry display. The system updates manually through point objects, simple line objects, and area objects such as the routing scheme and the navigation area. For manual updates, the system automatically checks for updates and related indications and alarms like the integrated ENC update. Not only can add, delete, move, modify and other operations, and each operation time, type, chart units, objects and other information will be saved to the manual update log inside.
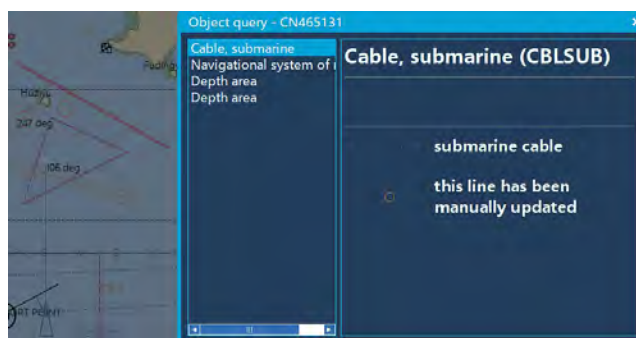

Aero FR m
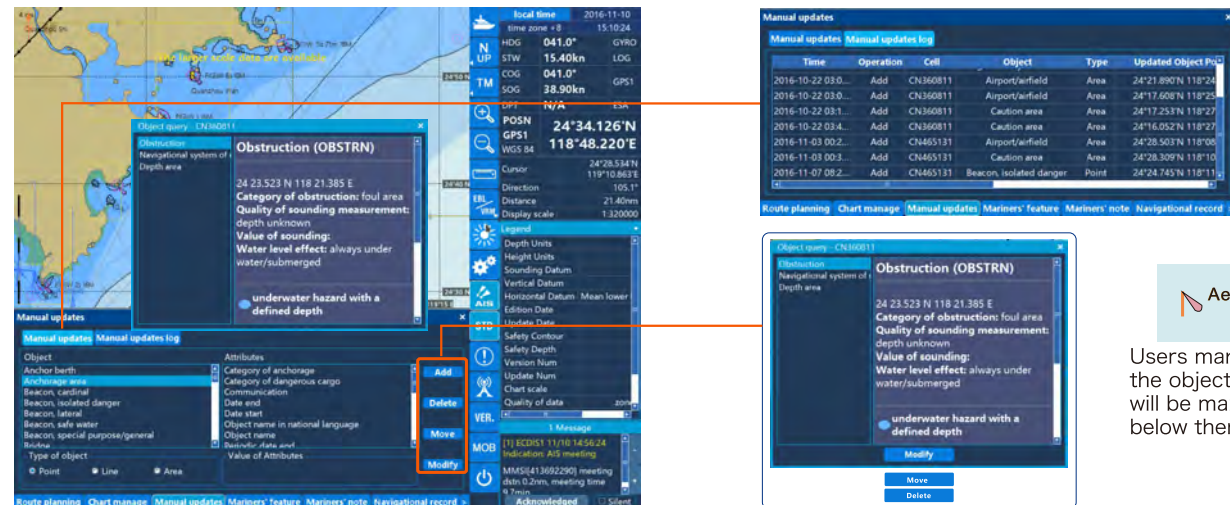
Users manually update the object, The objects will be marked orange below them.

● Add area
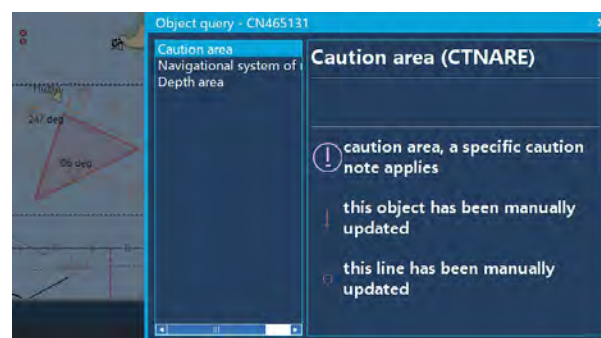
● Add line

ECDIS Training

In order to make sure all the user can operate the ECDIS under satey and efficient, it is necessary to have a trainning. ECDIS implementation on board is an investment that benefits from the many advantages ECDIS offers and the shipowner, such as reducing the time spent on chart management and voyage planning, as well as achieving greater security through proper setup and operation of ECDIS, thus significantly reducing stranding risks. Training should be provided in a variety of forms, and the crew should receive general training to fully understand the ECDIS concept, the ECDIS management rules and the impact on bridge operation, and specific types of ECDIS training, which would help the operator to become familiar with the specific ship Contained ECDIS.

The operation of the training which is orgnized by XINUO include: on-site installation, commissioning, ECDIS operation, chart operations, hardware maintenance and so on. the trainees should participate in an assessment after passing the examination and will be issued a training certificate, obtain a certificate before boarding operation ECDIS.

The training program is as follows:
● System description
● Be familiar with the menu structure
● Route planning
● Manual Update
● Crew object
● Navigation records
● Load and update charts and licenses
● Update the software
● Hardware maintenance

ECDIS After-sales Service

It is also true that the proper working conditions are present and the failure of the equipment in the voyage may adversely affect the safety and efficiency of the ship at sea.Usually, theer are two main reason for device failure: a defect in the device itself, and improper installation and setup of the device. XINUO will conduct a overall inspection on the product before it being installed and have a thoroughly tests on the product before it being delivered to the vessel.

ECDIS Color Platte

Night Mode

Dusk Mode

Daytime Mode

Anti dazzle, Highlighting, Wide viewing angles

Anti Apparent Fatigue Clear and Comfortable

- Anti dazzle
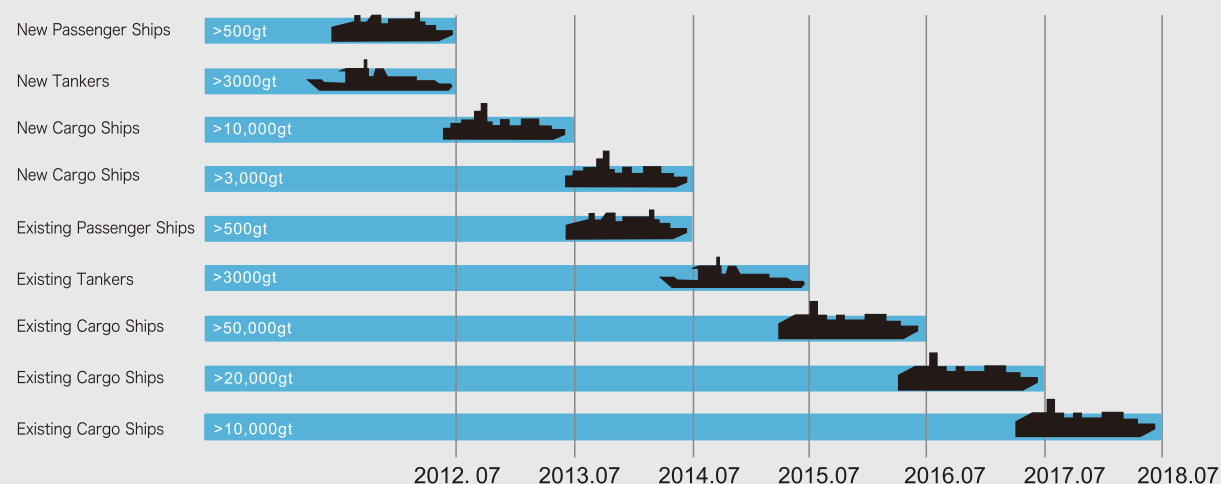- Anti flash point
- Anti reflection

VS

> Anti dazzle screen

> Common screen

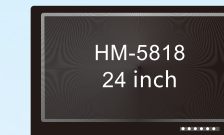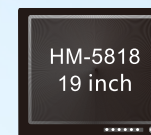## ECDIS Installation Timetable

At the NAV-54 meeting in 2008, the International Maritime Organization (IMO) enforce all international vessels over 3,000 gross ton (passenger ships over 500 gross ton) to install ECDIS. The as shown in the diagram below. A new equipment will be required to install an ECDIS, as well as suitable backup arrangements. The backup can be another type of approved ECDIS or the official latest paper chart.
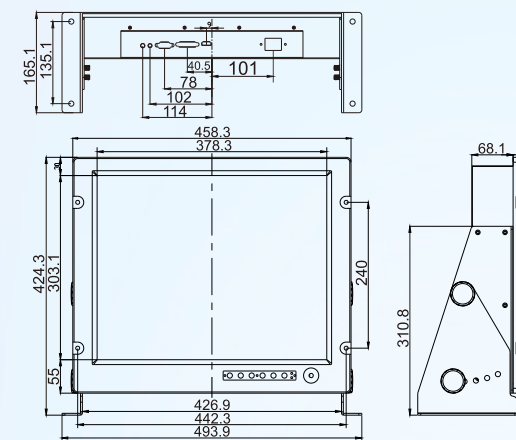
According to different ship type and size,
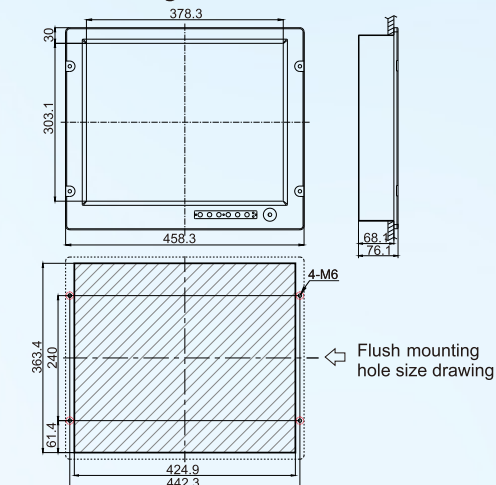below table shows the effective date of the specification for each ship type:

New Passenger Ships	>500gt							
New Tankers	>3000gt							
New Cargo Ships	>10,000gt							
New Cargo Ships	>3,000gt							
Existing Passenger Ships	>500gt							
Existing Tankers	>3000gt							
Existing Cargo Ships	>50,000gt							
Existing Cargo Ships	>20,000gt							
Existing Cargo Ships	>10,000gt							

2012. 07   2013.07   2014.07   2015.07   2016.07   2017.07   2018.07

Display Unit Installation Dimensions (Unit: mm)

HM-5818 19 inch

HM-5818 24 inch

19 inch Counter Mounting:

Flush Mounting:

Flush mounting hole size drawing

24 inch Counter Mounting:

Flush Mounting:

Flush mounting hole size drawing

Processor

HM-5818 ECDIS
ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEM

Operation Unit