HEADWAY

船舶通讯导航设备

Professional Navigation & Communication Solutions

青岛海德威科技有限公司

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目录 Contents

青岛海德威科技有限公司是一家以科技创新为宗旨的高新技术企业，专业研发、生产、销售高端船舶配套产品，并提供全球范围专业售后服务。

Qingdao Headway Technology Co., Ltd. is a high-tech enterprise that takes technological innovation as the purpose, specializes in professional R&D, production and sales of high-tech marine accessories and provides worldwide professional after-sales service.

公司简介

海德威创立伊始便规划了“创造高端船配产品，打造船配民族品牌”的发展愿景，至今，海德威凭借自己的智慧和努力，创造出了令客户满意的产品，并对客户、合作伙伴和新技术始终保持高度的热情，在开拓进取的道路上不断完善自我、成就客户、促进社会的进步。秉承“服务，创新，共赢”的企业精神，海德威乘风破浪，不断前进，以成熟的管理与完善的体系吸引了大批正直诚信、勇于迎接挑战并坚持不懈的高素质人才，立志将中国制造的高端船配产品装配到世界的每一条船舶。

公司总部设立于中国青岛，在青岛高科技园建立了独立的研发中心和生产基地。国内设立了上海分公司，广州、深圳、大连、舟山、山海关、南通、天津等 15 个分支机构，同时在全球 56 个国家建立了 120 多个服务网点，形成了完善的全球服务网络。

海德威的产品系列涵盖环境保护、通讯导航、自动化设备等各个领域：
海洋卫士压载水处理系统是海德威自主研发生产的高端船配产品，已获得 ABS, BV, CCS, DNV-GL, LR, NK, RINA, RS, USCG-AMS 以及利比里亚船籍国认证等十余项权威认可，已成为行业内的知名商标，销量位居世界前茅。拥有海德威完全自主知识产权的另一成熟产品——船载航行数据记录仪，以其高技术含量、稳定可靠的操作系统、世界权威船级社的认可等优势，被成功应用到世界各地船只。成功研发的电子海图、船桥航行值班报警系统现已进入规模化生产阶段。今后公司将继续秉承科技创新精神，陆续推出废气处理装置、雷达、自动舵、船用监控、GPS、计程仪、测深仪、罗经等一系列产品。

从初创至今，海德威筚路蓝缕、披荆斩棘，历经千锤百炼，凭借不断推陈出新的技术、逐渐成熟完善的管理，积极吸取行业经验，积累强劲动力，大浪淘沙，面对激烈竞争和博弈，海德威必将脱颖而出，为中国船配行业做出自己的贡献。

Company Profile

Since its foundation, Headway has planned the development vision to be a “Professional Manufacturing and Service Provider of High-tech Marine Equipment“ . Over the past decade, Headway staff have created and innovated satisfying products for customers by virtue of their own wisdoms and efforts, always maintained a high level of enthusiasm for customers, partners and new technologies, sought for self-improvement, helped customers to achieve their goals, and promoted the social progress on the forging-ahead road. Adhering to dedication and innovation entrepreneurial spirits, Headway sailed through wind and waves to make progress continuously, attracted a large number of upright, honest, and unremitting high-quality talents with courage in meeting the challenges by dint of its mature management and perfect systems, and determined to install the high-tech marine equipments made in China onboard every vessel of the world.

Headquartered in Qingdao, China, Headway has set up an independent R&D center and production base in Qingdao Hi-tech Park, established one subsidiary company in Shanghai, and branch offices Guangzhou, Shenzhen, Dalian, Zhoushan, Shanhaiguan, Nantong, Huangdao and other cities, established more than 120 service stations in 56 countries and areas around the world, and formed a unique complete and large-scale global service system.

OceanGuard Ballast Water Management System (BWMS) is a high-tech marine product independently developed and produced by Headway, during the past few years, OceanGuard BWMS has obtained more than ten type approvals including ABS, BV, CCS, DNV-GL, LR, Liberian, NK, RINA, RS and USCG-AMS. OceanGuard BWMS has become one of the most famous and popular brand in market. Voyage Data Recorder, another mature product that Headway owns completely independent intellectual property and approvals of world authoritative Classification Societies. The Electronic Chart Display and Information System (ECDIS) and Bridge Navigation Watch Alarm System (BNWAS) has entered the batch production stage. The company will continue to uphold the scientific and technological innovation spirit to launch a range of products, including Exhausted Gas Cleaning System, Radar, Automatic Pilot, CCTV, GPS, Speed Log, Echo Sounder, Gyro Compass, etc.

From initial development till now, Headway endured great hardships in pioneer work, overcame all obstacles, went through many tries and tests, actively absorbed industry experience, and accumulated powerful strengths by virtue of constantly creative technologies and gradually mature and sound management. Surviving from severe competition, Headway will stand out to make its contribution to marine equipments industry in China.

HEADWAY TECHNOLOGY CO., LTD.

01 VDR&S-VDR HMT-100A

船载航行数据记录仪

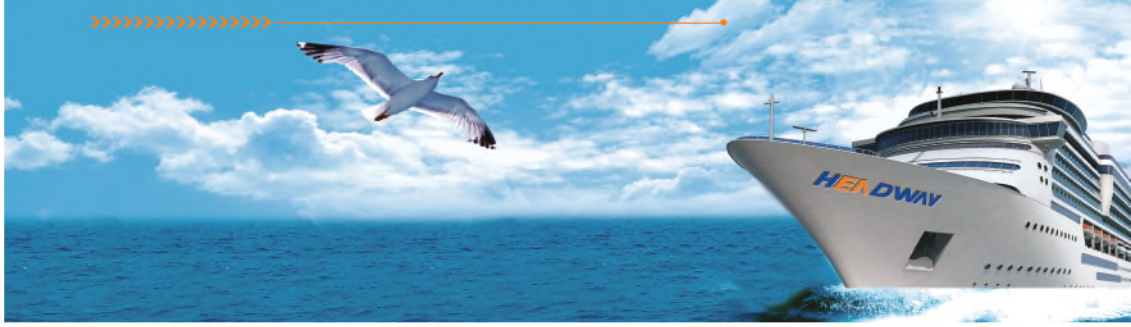
海德威®VDR&S-VDR组成部分

- **主机箱**
- 高度集成设计，所有功能在一个芯片内完成，大大简化电路板复杂度，更高的稳定性；
- 双核 ARM 处理器，确保数据高速高效处理；
- 可同时连接两路雷达（主、副雷达）和电子海图（主、副电子海图）；
- 可同时连接固定记录介质（下沉式黑匣子）和自浮式记录介质（上浮式黑匣子）；
- 固定记录介质和自浮式记录介质可连续记录 48 小时航行数据；存储卡可以存储最近 30 天数据；
- 15W 低功率设计，体积小安装方便，具备抗震保护功能；
- 适用船电 110V/220V 50Hz/60Hz 直接接入，无须人工调节，控制装置保证在主电源失电时自动切换到船用 24V 备用电源，继续工作；
- 当船用紧急电源失电后自动切换到电池供电，继续记录 2 小时以上的语音数据，免维护电池可用两年。
- 交流电输入范围：110V/220V 50Hz/60Hz
- 直流电：24V

Headway VDR&S-VDR components

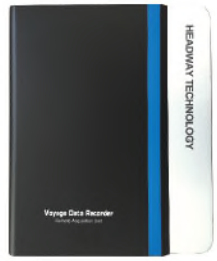
- **Main Cabinet Unit**
- Highly integrated design, all functions are realized in a single chip, which greatly simplifies the complexity of the circuit board, and improves the stability.
- Dual-core ARM processor, ensures high speed and efficient data processing.
- Designed to be connected by two radars (both main and aided radars) and two ECDIS (both main and aided ECDIS).
- Can be connected by a fixed recording medium (fixed PDC) and the float recording medium (float-free PDC) at the same time.
- Data of 30 days can be recorded in the Main Cabinet Unit, and 48 hours' data can be recorded in the fixed PDC and float-free PDC.
- Low power consumption of only 15W, with small size and flexible installation as well as anti-seismic design.
- The main and supplementary power supply work with 110V/220V 50Hz/60Hz without any manual configuration. The control panel ensures that the machine can continue to work with supplementary power of 24V when the main power supply fails.
- After the ship loses it emergency power, the battery will supply the power and go on to record audio data for over 2 hours. The maintenance-free batteries can be used for 2 years.
- AC input range: 110V/220V 50Hz/60Hz
- The DC input range: 24V

SVDR-EC Certificate | SVDR-CCS Certificate | VDR-EC Certificate | VDR-CCS Certificate



- **远程采集单元**

可编辑信号采集模块，对于没有标准数据接口设备，可以将模块安装在现场，方便简洁获取需要的开关量或模拟量数据。



- **Remote Acquisition Unit**

As to device without standard digital interface, the editable signal gathering module can be installed at the scene to obtain necessary digit and analog data.

- **远程报警单元**

全程监控VDR的运行状况，带有声光报警指示，液晶显示更容易让您排除故障。

- **Remote Alarm Unit**

It conducts round-the-clock monitor of the VDR with acoustic and light alarm indications, the liquid display will enable you to more easily get ride of faults.

麦克风单元

嵌入式设计，方便安装，外形美观，带有自检测功能，可以有效防止因麦克风的损伤而造成声音信号的采集失败，特有的自增益放大功能，可以保证声音信号的远程传输而不失真。

Microphone

It has an embedded design, elegant outer appearance, easy to install with self-inspection function in order to avoid the failure of audio signals gathering due to the damage of microphone. Its in-built amplifying function enables the transmission of high-fidelity audio signal in a long distance.

下沉式数据保护容器

数据保护容器是一种特殊的容器，技术含量高，世界上只有少数的厂家生产。

国际电工委员会IEC61996文件明确指出：VDR的最终记录介质应安装在符合以下标准要求的保护容器中：

【穿刺】带有直径100毫米锥头的重250千克的物体从3米高处落下

【冲击】50g的半正弦脉冲，持续11ms

【耐火】260度的低温10小时，1100度的高温1小时

【深海压力】在海水中经受6000米的水深压力和30天的海水浸泡

Fixed Protective Data Capsule

The Protective Data Capsule is a special one with high technology, which can be produced by only a few manufacturers in the world.

IEC61996 specifies that the final recording medium for the VDR must be installed in the capsule in accordance with the following standards:

【Penetration】an object with a prick of 100mm diameter and a weight of 250kg falling from 3 meters above.

【Impact】 50g semi-sine pulses for continuous 11ms.

【Fire-resistance】 260℃ low temperature for 10 hours, and 1100℃ high temperature for 1 hour.

【Pressure in deep sea】 30 days at 60Mpa (6,000 meters depth) under sea and 30 days dipping.

上浮式数据保护容器

- 多用途上浮式储存单元包括 VDR 的存储介质和一个惯用的 GMDSS 卫星示位标，又叫 EPIRB。上浮式储存单元包含最近 48 个小时记录的所有数据
- 保护容器落入水中后，该保护单元保留 VDR 的有效信息自动上浮到水表面，没必要耗费时间和精力在水下寻找，通过卫星定位来寻找，打捞方便
- 以太网信号传输
- 记录的数据传输更快捷，脱离和漂浮更容易
- 完整的 406MHz 和 121.5MHz 的 COSPAS/SARSA 卫星位标
- 最少 7 天的电池使用寿命
- 完整的自动压力释放装置
- 打捞挂钩设计更方便打捞

Float-free Protective Data Capsule

- This multi-used float-free storage unit includes a VDR storage medium and a conventional GMDSS satellite position indicator beacon, also called EPIRB. The Float-Free Storage Unit includes all the updated 48 hours date.
- After the protective data capsule falls into water, it will keep the valid information of the VDR and automatically float on the water surface. There is no need to look for it under the water. It is more convenient to locate and salvage it through satellite.
- Transmission of Ethernet Signal.
- Solid storage medium of 256GB.
- More quickly transmission of recorded data and easier to float and detach.
- Integral 406 MHz with 121.5 MHz COSPAS/SARSA satellite beacon.
- 7 days' lifetime of battery (minimum).
- Integral automatic pressure-release device.
- Salvage hook to make salvage more convenient.

IEC61996-1 ed.1 与 IEC61996-1 ed.2 主要区别

区别	IEC61996-1 ed.1	IEC61996-1 ed.2
产品型号	HMT-S100, HMT-100	HMT-100A
PDC存储时间	12小时	48小时
备份数据容量	48小时（3次事故备份）	30天
备份数据物理特性	空间可存12个小时的3次事故 事故数据存储由船员手动启动	无事故存储功能，VDR具有足够的空间 保存相关数据直至相关机构登船检测
上浮PDC	非强制安装 （部分船级社和船旗国要求必须安装）	强制安装 （48小时存储容量）
雷达	主雷达数据必须存储	桥楼上所有雷达数据必须存储
电子海图/显示	非强制	桥楼上所有电子海图/显示数据必须存储
传感器输入信号	—	倾角仪（若安装），AIS数据必须储存

IEC61996-1 ed.1 VS. IEC61996-1 ed.2 – Major differences

Item	IEC61996-1 ed.1	IEC61996-1 ed.2
Headway Product	HMT-S100, HMT-100	HMT-100A
Capsule memory capacity	12 Hours	48 Hours
Back up memory capacity	48 Hours	30 Days
Back up memory physical properties	Easy removal. Space for 3 incidentsof 12 hours Incidents save initiated by crew	No incident storage. Instead enough data spaces to retain the data until Authorities can board the vessel
Float free Capsule	Not mandatory (required by some classes / flag states)	Mandatory 48 Hours memory capacity
Radar	Main radar required to be recorded	All radar on bridge required to be recorded
ECDIS/Display	Not mandatory	All ECDIS / Display used for navigation required to be recorded
Sensor Input	—	Inclinometer if fitted AIS mandatory
Bridge Alarm Unit / Bridge Control Panel	Facilitate incident save Audible Alarm	No incident save functionality No Audible Alarm.Facilitate VDR operational performance test (OPT)

新旧标准VDR记录数据对比

记录数据	S-VDR	旧版VDR	新版VDR
适用标准	IEC61996-2 ed.2	IEC61996-1 ed.1	IEC61996-1 ed.2
日期和时间	√	√	√
船位、航速、艏向	√	√	√
桥楼音频、通讯音频	√	√	√
雷达数据	*	√	√
AIS	*	—	√
测深仪	**	√	√
船舵命令与响应	**	√	√
主机命令与响应	**	√	√
船舱开启（门）状态	**	√	√
水密门与防火门	**	√	√
主报警	**	√	√
加速与船体压力	**	**	**
风速风向	**	**	**
辅助雷达	—	—	√
电子海图	—	—	√
倾角仪	—	—	√

注：

*如果安装 则雷达数据必须记录 AIS数据也必须记录

**如果安装相关设备，则需记录，例如使用IEC61162格式传输数据的设备

VDR recording requirements according to applicable standard

Data items to be recorded	S-VDR	Previous VDR	New VDR
Applicable standard	IEC61996-2 ed.2	IEC61996-1 ed.1	IEC61996-1 ed.2
Date and time	√	√	√
Ship's position, Speed, Heading	√	√	√
Bridge audio, Communication audio	√	√	√
Radar data	*	√	√
AIS	*	—	√
Echo sounder	**	√	√
Rudder order and response	**	√	√
Engine order and response	**	√	√
Hull opening (doors) status	**	√	√
Watertight and fire doors	**	√	√
Main Alarms	**	√	√
Acceleration and hull stresses	**	**	**
Wind speed and direction	**	**	**
Second Radar	—	—	√
ECDIS	—	—	√
Inclinometer	—	—	√

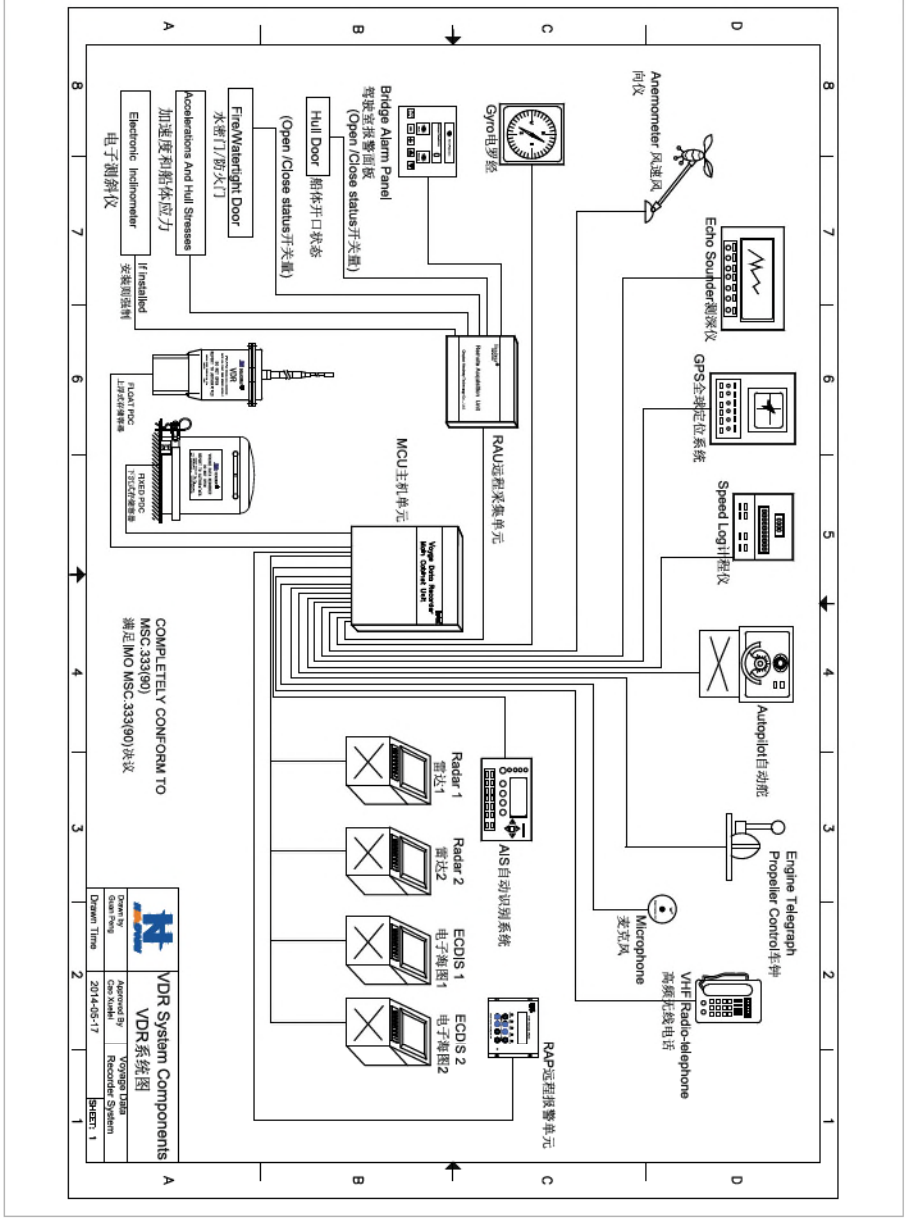
Note:

*Radar must be recorded if possible using COTS equipment else AIS data must be recorder.

**If suitable equipment is fitted i.e. equipment which transmits data using the IEC61162 format.

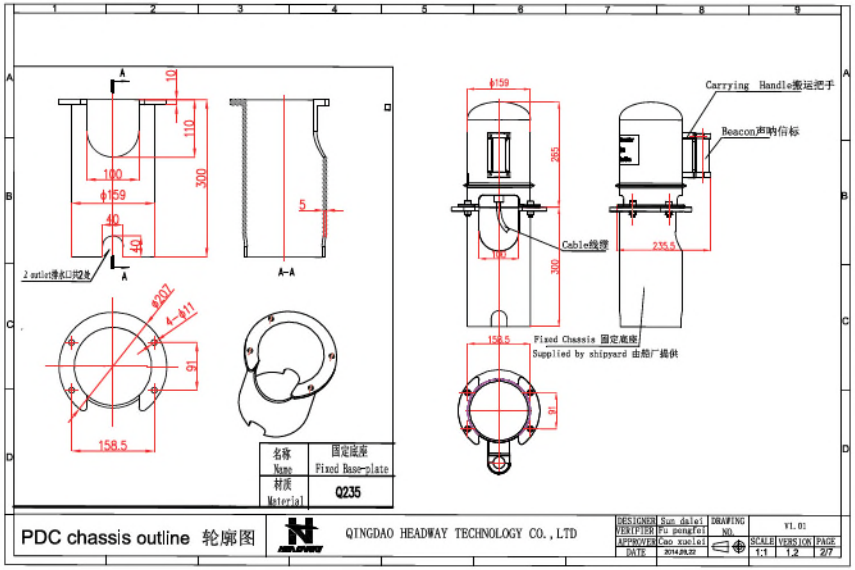
设备连接图 Configuration

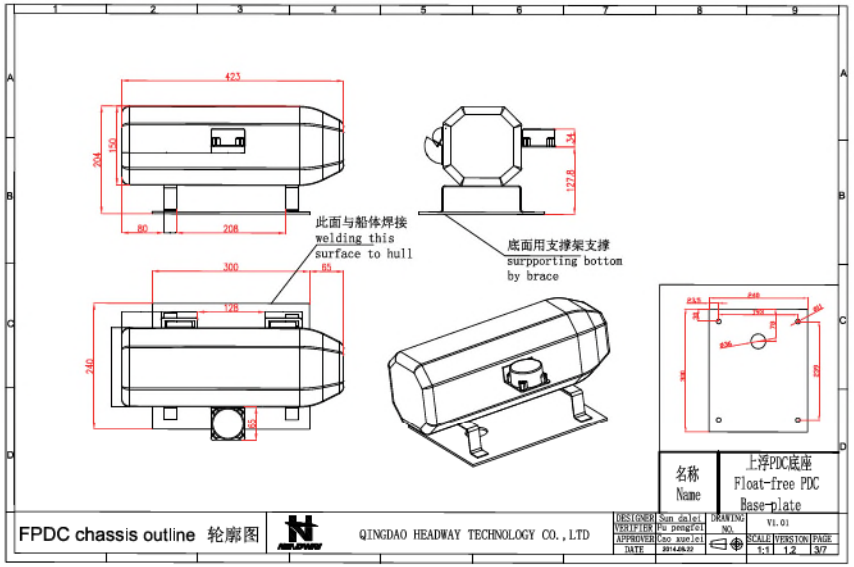
单位 Unit: mm



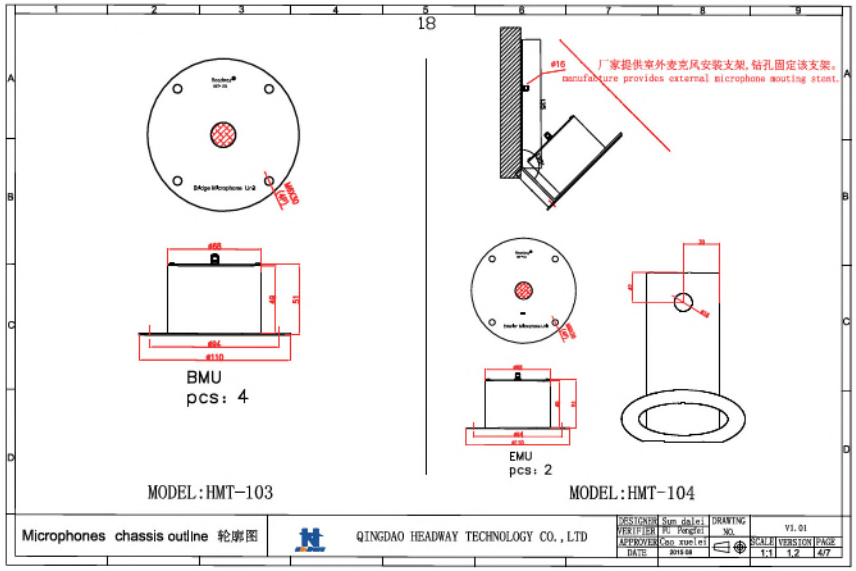
单位 Unit: mm

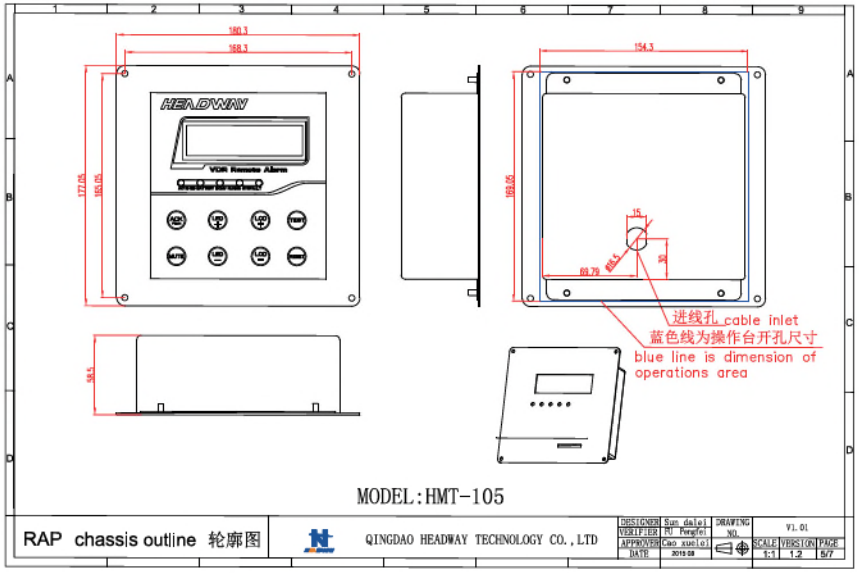
Dimensions 设备尺寸图



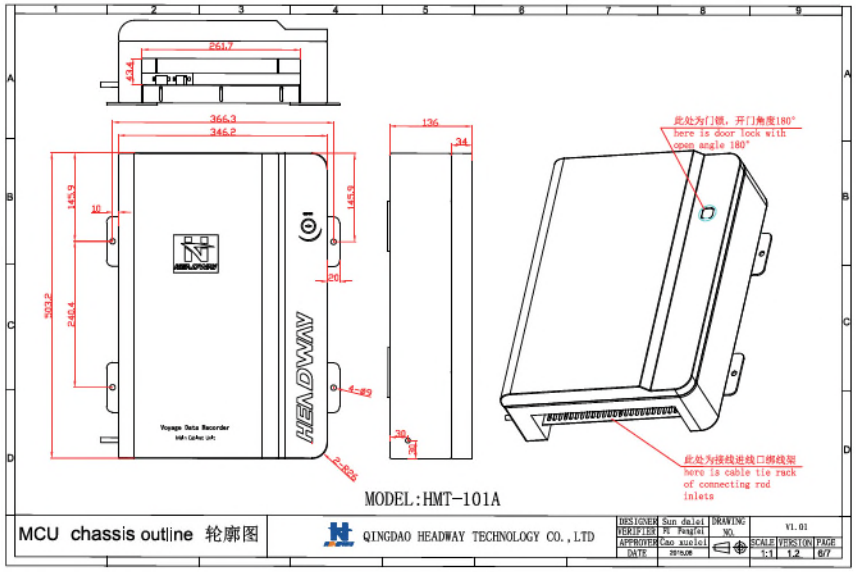


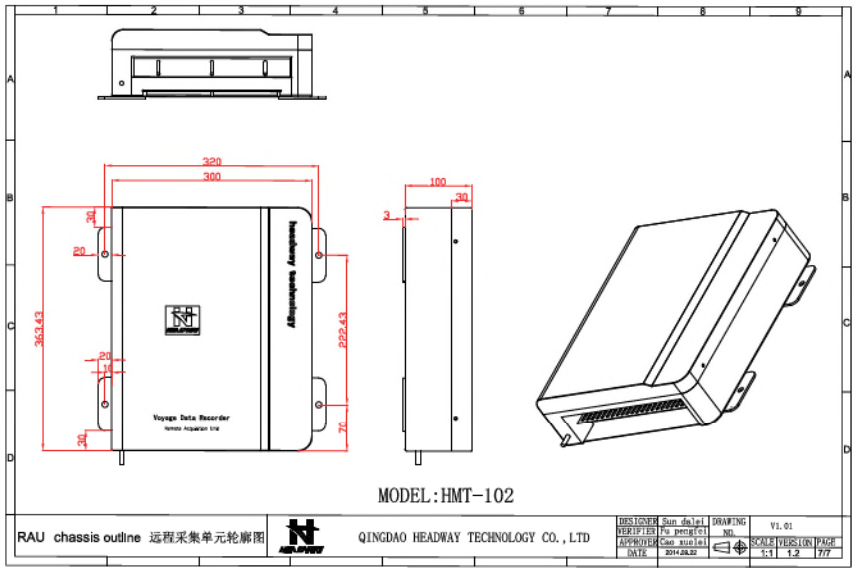
设备尺寸图 Dimensions　　单位 Unit: mm





单位 Unit: mm　　Dimensions 设备尺寸图





Electronic Chart Display and Information System HMT-E1000

电子海图显示与信息系统

02

- 实时辅助导航系统
- 先进智能管理系统
- 辅助避碰报警功能
- 操作界面简单方便
- 支持多种海图，兼容性强
- 全方位航海信息记录和查询

- Auxiliary Navigation
- Navigation Administration
- Object Collision-Avoidance Alarms
- Easy Operation with Simple Interfaces
- Support for Multiple Charts, Strong Compatiblity
- Omnidirectional Navigation Information Record and Inquiry

产品介绍

海德威电子海图显示与信息系统（ECDIS）可结合 AIS、GPS、ARPA、罗经、计程仪、测深仪、自动舵等多种通讯导航设备，综合处理海上地理信息、本船航行状态、航行环境、多个目标船动态等多种信息，可进行完善的船舶导航、避碰辅助和航行管理功能，可广泛应用于各种大中型船舶，极大地保障了船舶航行安全，并能够显著提高营运效率。

Introduction

Headway® ECDIS is able to combine with AIS, GPS, ARPA, Gyro Compass, Speed Log, Echo Sounder, Autopilot and other communication and navigation equipments, so as to deal with varieties of information, including maritime geography, sailing states of this vessel, navigation environment and dynamics of a number of target vessels. It can realize functions of navigation, collision-avoidance assistance and route management of vessels, and can be widely used in a variety of large and medium sized vessels, which greatly ensures the safety of vessel's voyage, and markedly improves operational efficiencies.

CCS Type Approval | GL Certificate

台式机（非一体机）
Desktop-type（Non All-in-One）

柜式机
Cabinet-type

功能丰富

- 辅助导航
- 目标避碰报警
- 航行管理
- 海图信息查询
- 海图快速缩放
- 海图更新
- 多种显示模式
- 完善的意外断电保护功能

Multiple Functions

- Auxiliary Navigation
- Object Collision-Avoidance Alarms
- Navigation Administration
- Chart Information Inquiry
- Chart Quick Zoom
- Chart Update
- Multiple Display Modes
- Perfect Accidental Power-off Protection

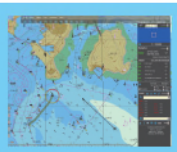
个性化功能设计

- 支持AIO信息导入
- 提供鹰眼图显示窗口
- 直观显示AIS船名
- 一键还原系统
- 良好的人机交互界面，操作简单

Personalization Design

- Support AIO import
- Minimap display window
- Visual display AIS ship's name
- OneKey recovery system
- Friendly interfaces and simple operation

产品标准 Product Standards



- IMO Resolution A.694(17)
- IMO Resolution A.817(19)
- IHO S-52/S-57/S-63
- SOLAS Resolution V/18.1, V/19.2.1.4, V/19.2.1.5
- IEC 61174(2008)
- IEC 60945(2002)
- IEC 62288(2008)
- IEC 61162
- MSC.232(82)

• 主机单元

• 显示单元

• 信号采集单元

• 控制单元

• 不间断电源

设备规格与技术参数

• 主机单元

【处理器】
Intel® CoreTMi7, 具有良好的性能和处理速度
采用SSD，读写速度更快
良好的电磁兼容性和安全性

【接口丰富】
VGA×1(连接显示单元)；
LAN×2（支持10/100/1000Mbps，其中LAN1连接信号采集单元)；
USB×4；
COM×4 (RS485)；
HDMI×1；
AUDIO×3 (MIC-in/Line-in/Line-out)

• 显示单元

海德威® ECDIS的显示单元采用性能稳定和显示效果优异的船舶专用显示器
24英寸和 27英寸
彩色液晶显示
最大分辨率：1920×1200

• 信号采集单元

信号采集单元用于连接需要在ECDIS上显示的信号（GPS、罗经、计程仪、测深仪、AIS、ARPA和天气信息）到主机单元
输入：RS485
波特率：110bps~460.8Kbps
信号采集单元与主机单元之间利用网线连接

• 控制单元

采用军工级带有蓝色背光的海事专用键盘；以USB 与主机单元连接；且带有硬质轨迹球；同时，在键盘上可以实现主要功能操作

• 不间断电源

海德威® ECDIS提供不间断电源（UPS）用以满足MSC.232(82)标准的相关规定
输入：220VAC 50Hz 4.7A
输出： 220VAC 4.5A

Equipment Specification

• Main Cabinet Unit

【Processor】
Intel® CoreTMi7, with good performance and processing speed.
Industrial-grade SSD with faster read and write speed.
Perfect electromagnetic compatibility and security.

【Various Interfaces】
VGA×1(connect display unit);
LAN×2 (support 10/100/1000Mbps, LAN1 connect signal acquisition unit);
USB×4;
COM×4 (RS485);
HDMI×1;
AUDIO×3 (MIC-in/Line-in/Line-out)

• Display Unit

Headway® ECDIS use the special monitor for vessel with stable and excellent display performance
24"and 27"(widescreen)
Color LED
Resolution: 1920×1200

• Acquisition Unit

Acquisition unit is used to connect necessary signals(GPS, GYRO, SPEED LOG, ECHO SOUNDER, AIS, ARPA and WEATHER) with Main Cabinet Unit
Input: RS485
Baud rate: 110bps~460.8Kbps
Ethermet cable connection

• ECDIS Keyboard / Trackball

Military-grade marine keyboard with blue backlight; Connection to Main Unit via USB port; Supplied with Dura Track trackball; Can realize the main functions operation

• Uninterruptible Power Supply

According to MSC.232(82) standard, ECDIS need fit with emergency power supply, so Headway® ECDIS is supplied with UPS
Input: 220VAC 50Hz 4.7A
Output: 220VAC 4.5A
Capacity: 1000VA 900W

多样化的船员培训方案 Multiple Training Options

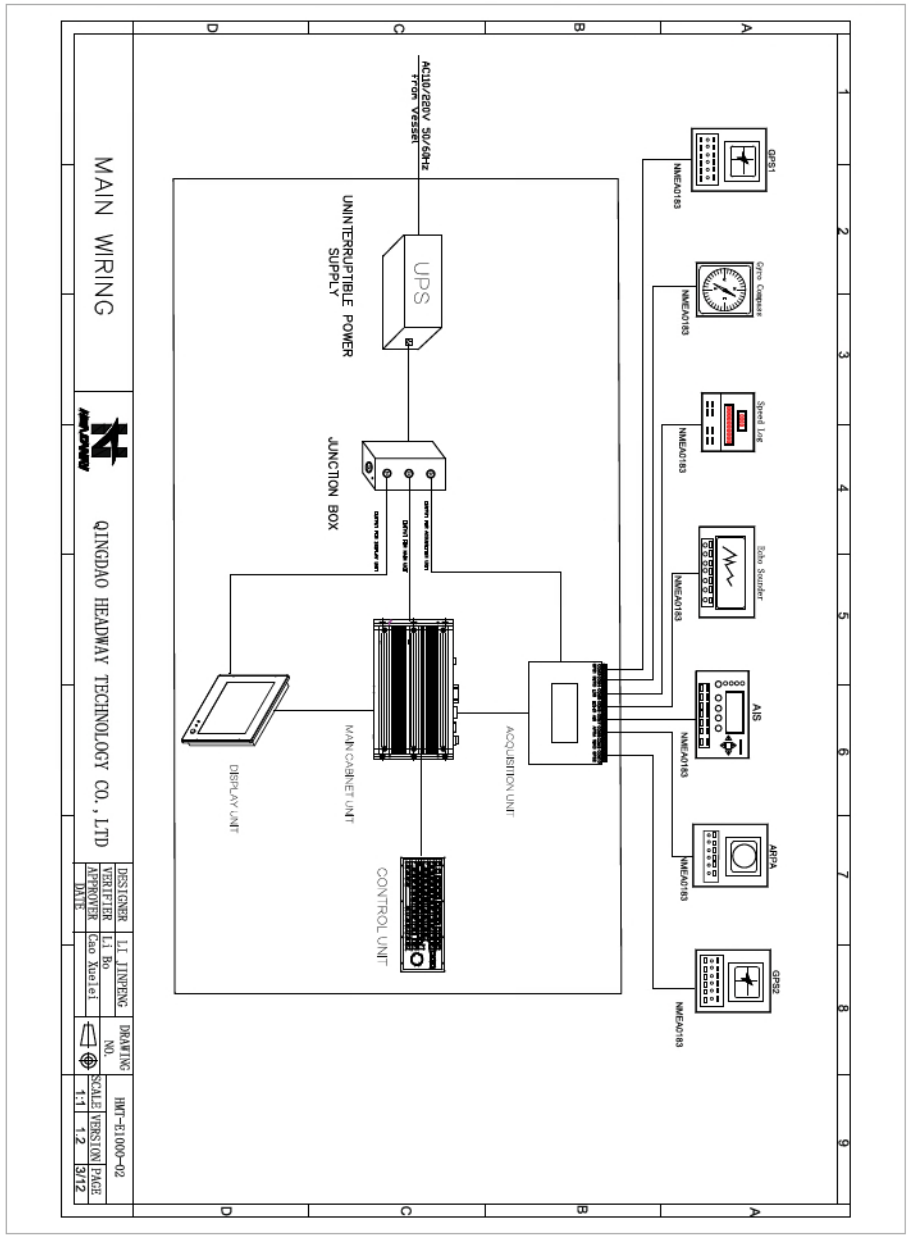
设备装船后会立即对在船的船员进行免费培训
Free training for onboard crews after installation

利用系统内置的 CBT（Computer Based Training）进行培训
Training through build-in CBT (Computer Based Training) System

在当地授权代理或合作的培训中心接受培训
Accept training at local authorized agents

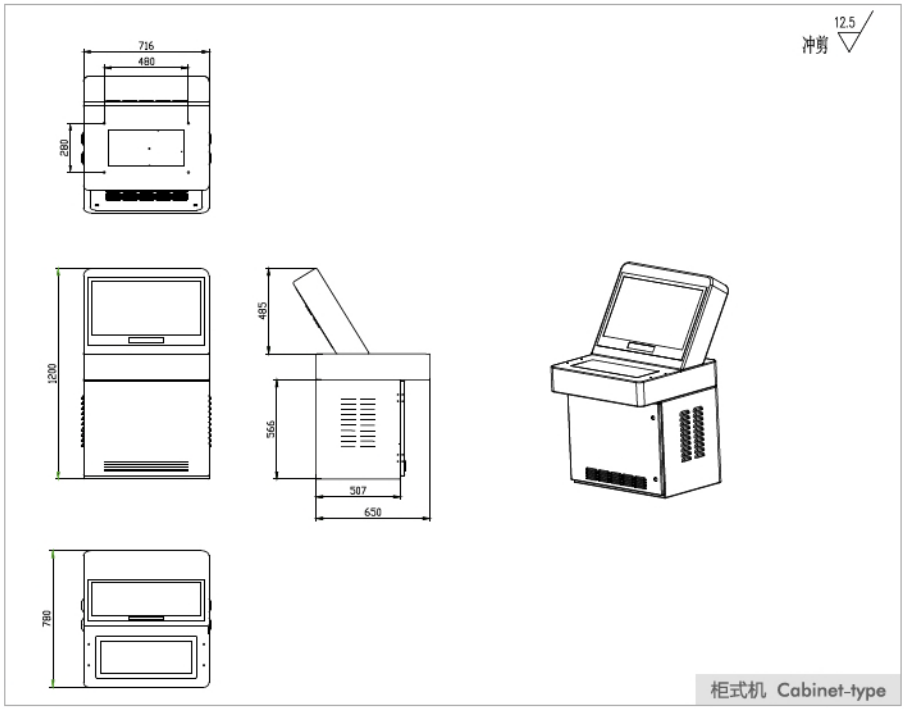
设备连接图 Configuration

单位 Unit: mm

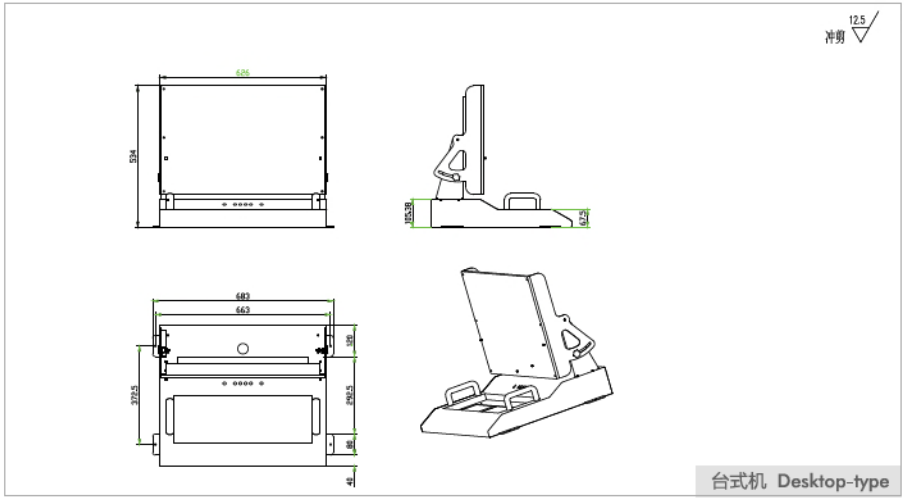


Dimensions 设备尺寸图

单位 Unit: mm



柜式机 Cabinet-type

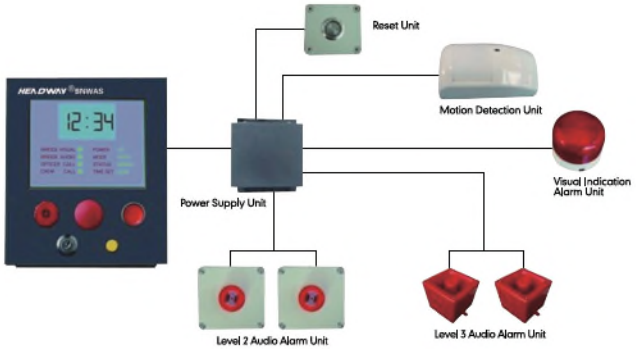


台式机 Desktop-type

Bridge Navigational Watch Alarm System

桥楼航行值班报警系统

05



产品介绍

桥楼航行值班报警系统（Bridge Navigational Watch Alarm System），旨在监视桥楼活动并发现由于操作者失去工作能力而可能导致的海上事故。当值班驾驶员（OOW）失去履行其职责的能力时，系统将自动向船长或其它 OOW 报警。

系统首先是向 OOW 提出报警，如果没有得到应答，则将向船长或另一位有能力的 OOW 报警。此外，BNWAS 还可向 OOW 提供即时求助的呼叫措施。无论何时只要船首航向或航迹控制系统运行，BNWAS 就应处于工作状态，但船长禁止时除外。

Introduction on BNWAS

BNWAS (Bridge Navigational Watch Alarm System) is aimed to monitor the activities on bridge and avoid the marine accident which might be caused by operators' losing operation capability. When the OOW (Officer Of the Watch) loses his operation capability the system will give an alarm to the captain or other OOW by itself.

First, the system gives a warning to the OOW, if not answered, it will give an alarm to the captain or another OOW who has operation capability. In addition, BNWAS provides OOW with call measures which can deal with instant SOS. The system should be in working conditions at all times if only the Heading and Path Control System is working, excluding the captain forbiddance.

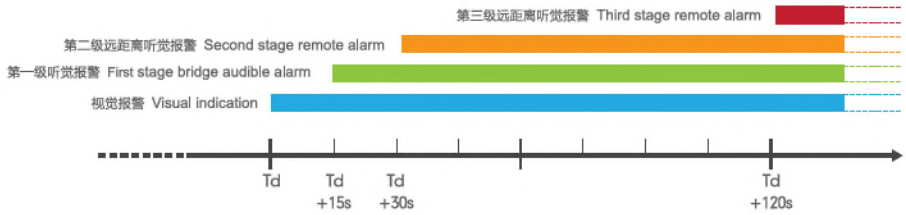
产品特点

- 体积小
- 安装方便
- 可扩展性好
- 采用触摸屏设计，操作方便

Characteristics

- Small in size
- Easy installation
- Flexible scalability
- Touch screen, easy operation

报警顺序 Alarm Sequence



（Td为选择的休眠期 Td=selected dormant oeriod）

MSC.282(86) 号决议

- 2011 年 7 月 1 日及以后建造的客船及 150 总吨及以上的货船；
- 2011 年 7 月 1 日以前建造的客船，不晚于 2012 年 7 月 1 日以后的第 1 次检验；
- 2011 年 7 月 1 日以前建造的货船，3000 总吨及以上，不晚于 2012 年 7 月 1 日以后的第 1 次检验；
- 2011 年 7 月 1 日以前建造的货船，500 总吨及以上但小于 3000 总吨，不晚于 2013 年 7 月 1 日以后的第 1 次检验；
- 2011 年 7 月 1 日以前建造的货船，150 总吨及以上但小于 500 总吨，不晚于 2014 年 7 月 1 日以后的第 1 次检验；

按照以上要求，船舶需安装桥楼航行值班报警系统（BNWAS）

Resolution MSC. 282 (86)

- Passenger ships and cargo ships (DWT≥150T) built after July 1st, 2011.
- Passenger ships, built before July 1st, 2011, not later than its first inspection after July 1st, 2012.
- Cargo ships (DWT≥3000T) built before July 1st, 2011, not later than its first inspection after July 1st, 2012.
- Cargo ships (500T≤DWT＜3000T) built before July 1st, 2011, not later than its first inspection after July 1st, 2013.
- Cargo ships (150T≤DWT＜500T) built before July 1st, 2011, not later than its first inspection after July 1st, 2014.

相关标准

- IEC60945–2002：船舶导航和无线电通讯设备系统一般要求、试验方法和要求的试验结果；
- IEC62616：海上导航和无线电通信设备和系统—船桥航行值班报警系统；
- IEC61162–2010：海上导航和无线电通信设备及系统数字接口；
- IEC62288–2008：海上导航和无线电通信设备和系统；
- IEC61000：电磁兼容性试验和测量技术；
- GISPR16：无线电干扰和抗扰度测量方法；
- CCS DG01–2006：电气电子产品形式认可试验指南；
- IEC60529：电器外壳保护分类等级；
- IMO A. 813 (19)：所有船舶电器及电子设备电磁兼容性的一般要求；
- IMO A. 1021 (26)：警报器和指示器规则；
- MSC. 128 (75)：船桥航行值班报警系统（BNWAS）性能标准；
- CCS《钢质海船入级规范》(2009)；

Standard

- IEC60945-2002: Vessel navigation and radio communication equipment system' s general requirements, testing method and the required test results.
- IEC62616: Marine navigation and radio communication equipment and its system- Bridge Navigational Watch Alarm System.
- IEC61162-2010: Maritime navigation and radio communication equipment and systems- digital interface.
- IEC62288-2008: Marine navigation and radio communication equipment and its systems.
- IEC61000: Marine navigation and radio communication equipment and its systems.
- GISPR16: Radio disturbance and immunity measuring method.
- CCS DG01-2006: Electrical and Electronic Equipment Type Approval Test Guidance.
- IEC60529: Electrical shell classification conservation level.
- IMO A. 813 (19): General requirements of electromagnetic compatibility for all vessels.
- IMO A. 1021 (26): Alarm and indicators rules.
- MSC. 128 (75): Performance criterion of Bridge Navigational Watch Alarm System.
- CCS Classification Rules of Steel Sea-going Vessel (2009).

产品规格

	规格（mm）		IP等级	输入	功能
主控单元	180×180×70		IP22	DC24V	控制系统运行，连接自动舵、VDR等外部设备并进行数据处理，也是系统的主要操作单元
电源单元	210×150×50		IP22	AC110V/220V	连接外部电源，给系统供电，同时也是复位单元、报警单元的接线盒
复位单元	62×57×35		IP56	DC24V	报警复位
报警单元	光报警	φ80×52	IP22	DC24V	报警
	声报警	78×73×57			
		128×128×130			
运动检测单元	110×60×49		IP22	DC12V/24V	通过检测人体移动来判断驾驶室是否有值班人员

Specification

	Specification (mm)		IP Degree	Input	Function
Main Control Unit	180×180×70		IP22	DC24V	Control of entire system, including connecting with autopilot, VDR, and other exterior equipments, as well as dealing with data
Power Supply Unit	210×150×50		IP22	AC110V/220V	Connecting with external power supply and supplying power to the system. Also used as junction box of reset unit and alarm units
Reset Unit	62×57×35		IP56	DC24V	Alarm resetting
Alarm Unit	Visual Indication Alarm Unit	φ80×52	IP22	DC24V	Alarm
	Audio Alarm Unit	78×73×57			
		128×128×130			
Motion Detection Unit	110×60×49		IP22	DC12V/24V	Through detecting movement of the body to judge whether there are people on duty or not

04 自动驾驶仪 Marine Autopilot

- 控制精度高；
- 无效操舵少；
- 对外接口通用性好；
- 提供航向、航迹和航路控制三种型号自动舵；
- 人机操作逻辑简单，信息显示界面友好。

- High Control Accuracy;
- Less Noneffective Steering;
- Good Universalizable External Interface;
- Provide three types of autopilot for heading control, track control and navigation control;
- Simple human-machine operation logic and friendly information display interface.

产品介绍

海德威船舶自动驾驶仪，是海德威科技有限公司在深入研究船舶控制设备需求和现状的基础上，针对不同航行需求的船舶而分类设计的船舶控制设备。海德威船舶自动驾驶仪，基于电罗经、磁罗经、计程仪、电子海图、GPS、北斗等传感器设备，利用先进的信号滤波、航向控制和航路制导算法实现船舶航向、航迹和航路的有效控制。

海德威船舶自动驾驶仪包括航向自动舵 HCS–XX、航迹自动舵 TCS–XX 以及航路自动舵 NAV–XX，分别满足沿岸、近海和远洋船舶的行驶需求。

Introduction

Headway marine autopilot is the ship control equipment, which is specifically designed for vessels with different sailing requirements by Headway Technology Co., Ltd. and is based on the further study of ship control equipment needs and current situation. Based on gyro compass, magnetic compass, log, ECDIS, GPS and BeiDou sensor devices, Headway marine autopilot use advanced signal filtering, course control and route guidance algorithm to effectively control the ship course, track and seaway.

Headway marine autopilot include heading autopilot–HCS-XX, track autopilot–TCS-XX and navigation autopilot–NAV-XX, which respectively meet the needs of coastal sailing, offshore sailing and ocean-going sailing.

系统特点

- **航向控制能耗低**
  在保证航向控制精度满足 IEC11674 规范的各项指标的前提下，具有无效操舵少，舵机能耗低的特点。海德威船舶自动驾驶仪，采用实时跟踪波浪干扰峰值频率，动态调节滤波器参数的方法，有效滤出航向信号中由海洋高频干扰引起的偏航，大幅度减少无效操舵，降低操舵频率和幅度，减小能耗。

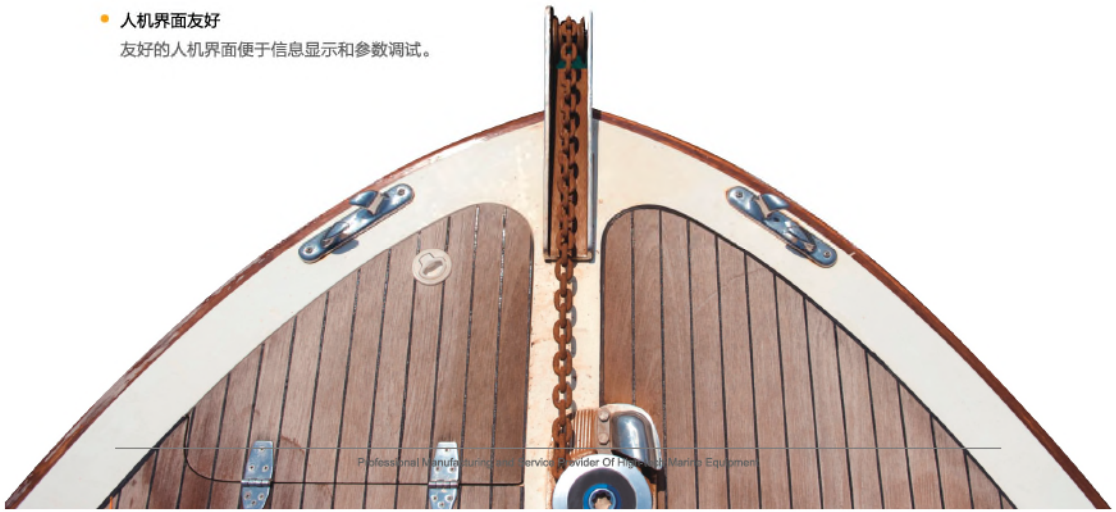
- **参数设置内容丰富**
  系统设置有 27 个工程师参数、 32 个船员参数确保人、机、船和海洋环境的有机结合，最大限度地发挥自动驾驶仪的操控能力。

- **对外接口多样化**
  系统针对电罗经、磁罗经、计程仪、电子海图、GPS、舵机等外部设备接口的多样性，设计相应的接口形式，可使自动驾驶仪能适应不同接口形式的外部设备。

- **航迹控制精度高**
  海德威船舶自动驾驶仪，根据本船动力学性能和位置传感器精度，通过合理配置航迹控制制导器参数，可有效克服海风和海流等低频环境干扰，使船舶能够始终行驶在预定航线两侧规定的误差范围内，实现船舶对地航线的有效控制。航迹控制性能满足 IEC62065 对 A 类设备的相关技术要求。

- **航路控制支持大圆航法**
  航路自动舵，接收 ECDIS 发送的计划航路，控制船舶按预定航路直行和转弯，直至到达最后一个航路点。航路自动舵既支持等向线航法也支持大圆航法。满足 IEC62065 对 C 类设备的相关技术要求。

- **人机界面友好**
  友好的人机界面便于信息显示和参数调试。



System Features

- **Low energy consumption for heading control**

  On the premise of ensuring the heading control accuracy to meet IEC11674, Headway marine autopilot has characteristics of less noneffective steering and low steering engine's energy consumption. Headway marine autopilot use the methods of real-time tracking of wave interference peak frequency and dynamic adjustment of filter parameters to effectively filter out the ship's yaw caused by high frequency interference in course signals, which will greatly reduce noneffective steering, lower steering frequency and amplitude and reduce energy consumption.

- **Abundant parameter settings**

  System settings include 27 engineer parameters and 32 crew parameters, which can realize the organic combination of human, machine, ship and ocean environment and maximize the autopilot control ability.

- **Diverse external interfaces**

  According to the external device interface's diversity of electric compass, magnetic compass, log, ECDIS, GPS, steering engine, etc., the corresponding form of interface for system is designed, so the autopilot is well compatible with different forms of external device interface.

- **High track control accuracy**

  Based on ship's dynamic performance and accuracy of position sensor and through the reasonable configuration of track control guidance parameters, Headway marine autopilot can effectively overcome the low frequency environment interference (winds and currents) to make sure that ship's position can be always within the both sides' error range of predetermined route and realize the effective control for the ship's route. Track control performance can meet the related technical requirements of IEC62065 for class A equipment.

- **Navigation control support orthodromy**

  Navigation autopilot receive planned route from ECDIS and control the ship straightly sailing and turn until arriving at the final waypoint according to the predetermined route. Navigation autopilot not only supports rhumb line sailing but also supports orthodromy. Meet related technical requirements of IEC62065 for class C equipment.

- **Friendly Human-Machine interface**

  Friendly Human-Machine interface benefits information display and parameter adjustment.

技术参数

供电电压	AC220V　DC24V
极限温度	工作：-15℃-55℃　存储：-40℃-70℃
信号输入	电罗经：NMEA语句HEHDT，HETHS，GPHDT，GPTHS 磁罗经：NMEA语句HCHDT，HCHDG，HCTHS 计程仪：NMEA语句VTG，VHW，VBW，200脉冲/海里 电子海图（NAV）：NMEA语句APB GPS：NMEA语句GPGGA,GPGLL
符合规范	ISO/IEC 11674（HCS-XX）　IEC62065（TCS-XX，NAV-XX） EN/IEC 61162-1　EN/IEC60945　ISO 16329　IEC62288
信号输出	输出到舵机的信号：触电输出（DC24V-2A）；电压输出（+/-10V DC-最大5mA） 输出到VDR信号：NMEA语句HDT，RSA，ALR 报警输出：传感器故障报警、航偏报警、航向监控报警、系统失电、低速报警

Technical Specification

Power Supply Voltage	AC220V　DC24V
Limit Temperature	Working: -15℃-55℃　Storage: -40℃-70℃
Signal Input	Gyro Compass：NMEA sentence: HEHDT，HETHS，GPHDT，GPTHS Magnetic Compass：NMEA sentence: HCHDT，HCHDG，HCTHS Log：NMEA sentence: VTG，VHW，VBW，200 Pulse / miles ECDIS(NAV): NMEA sentence: APB GPS: NMEA sentence: GPGGA,GPGLL
Standards	ISO/IEC 11674（HCS-XX）　IEC62065（TCS-XX，NAV-XX） EN/IEC 61162-1　EN/IEC60945　ISO 16329　IEC62288
Signal Output	Output signal to steering engine: Contact Voltage Output (DC24V-2A); Voltage Output(+/-10V DC- Maximum 5mA) Output signal to VDR: NMEA sentence: HDT，RSA，ALR Alarm output: Sensor fault alarm, deviation alarm, Course monitoring alarm, System lose electric alarm, Low speed alarm

全球服务网络

公司总部设立于中国青岛，在青岛高科技园建立了独立的研发中心和生产基地。国内设立上海分公司，广州、深圳、大连、舟山、山海关、南通、天津等15个分支机构，同时在全球56个国家建立了120多个服务网点，形成了完善的全球服务网络。

ARGENTINA | AUSTRALIA | BANGLADESH | BRAZIL | BULGARIA | CANADA | CHILE | CHINA | CYPRUS | CROATIA
JAPAN | KENYA | KOREA | LATVIA | LEBANON | LITHUANIA | MALAYSIA | MALTA | MEXICO | MOROCCO | NETHERLANDS
SINGAPORE | SOUTHAFRICA | SPAIN | SWEDEN | TAIWAN | THAILAND | TRINIDAD&TOBAGO | TURKEY | U.A.E.

Global Service Network

Headquartered in Qingdao, China, Headway has set up an independent R&D center and production base in Qingdao Hi-tech Park, established one subsidiary company in Shanghai, and branch offices Guangzhou, Shenzhen, Dalian, Zhoushan, Shanhaiguan, Nantong, Huangdao and other cities, established more than 120 service stations in 56 countries and areas around the world, and formed a unique complete and large-scale global service system.

DENMARK | EGYPT | ESTONIA | FRANCE | GERMANY | GREECE | INDIA | INDONESIA | IRAN | ISRAEL | ITALY
NIGERIA | NORWAY | PAKISTAN | PANAMA | PERU | PHILIPPINES | POLAND | QATAR | ROMANIA | RUSSIA
UKRAINE | U.K. | URUGUAY | USA | VIETNAM